Dictionary of Engineering

Second Edition
## Contents

- **Preface** ....................................................................................................................v
- **Staff** ........................................................................................................................vi
- **How to Use the Dictionary** ....................................................................................vii
- **Fields and Their Scope** .......................................................................................ix
- **Pronunciation Key** ...............................................................................................xi
- **A-Z Terms** ...........................................................................................................1-626
- **Appendix** ............................................................................................................627-643
  - Equivalents of commonly used units for the U.S. Customary System and the metric system ..................................................629
  - Conversion factors for the U.S. Customary System, metric system, and International System .............................................630
  - Special constants .................................................................................................634
  - Electrical and magnetic units ..............................................................................635
  - Dimensional formulas of common quantities ..................................................635
  - Internal energy and generalized work ...............................................................636
  - General rules of integration ..............................................................................637
  - Schematic electronic symbols ............................................................................639
This page intentionally left blank.
The McGraw-Hill Dictionary of Engineering provides a compendium of more than 18,000 terms that are central to the various branches of engineering and related fields of science. The coverage in this Second Edition is focused on building construction, chemical engineering, civil engineering, control systems, design engineering, electricity and electronics, engineering acoustics, industrial engineering, mechanics and mechanical engineering, systems engineering, and thermodynamics. Many new entries have been added since the previous edition with others revised as necessary. Many of the terms used in engineering are often found in specialized dictionaries and glossaries; this Dictionary, however, aims to provide the user with the convenience of a single, comprehensive reference.

All of the definitions are drawn from the McGraw-Hill Dictionary of Scientific and Technical Terms, Sixth Edition (2003). Each definition is classified according to the field with which it is primarily associated; if it is used in more than one area, it is identified by the general label [ENGINEERING]. The pronunciation of each term is provided along with synonyms, acronyms, and abbreviations where appropriate. A guide to the use of the Dictionary appears on pages vii and viii, explaining the alphabetical organization of terms, the format of the book, cross referencing, and how synonyms, variant spellings, abbreviations, and similar information are handled. The Pronunciation Key is given on page xi. The Appendix provides conversion tables for commonly used scientific units as well as listings of useful mathematical, engineering, and scientific data.

It is the editors’ hope that the Second Edition of the McGraw-Hill Dictionary of Engineering will serve the needs of scientists, engineers, students, teachers, librarians, and writers for high-quality information, and that it will contribute to scientific literacy and communication.

Mark D. Licker
Publisher
Staff

Mark D. Licker, Publisher—Science

Elizabeth Geller, Managing Editor
Jonathan Weil, Senior Staff Editor
David Blumel, Staff Editor
Alyssa Rappaport, Staff Editor
Charles Wagner, Digital Content Manager
Renee Taylor, Editorial Assistant

Roger Kasunic, Vice President—Editing, Design, and Production

Joe Faulk, Editing Manager
Frank Kotowski, Jr., Senior Editing Supervisor

Ron Lane, Art Director

Thomas G. Kowalczyk, Production Manager
Pamela A. Pelton, Senior Production Supervisor

Henry F. Beechhold, Pronunciation Editor
Professor Emeritus of English
Former Chairman, Linguistics Program
The College of New Jersey
Trenton, New Jersey
How to Use the Dictionary

ALPHABETIZATION. The terms in the McGraw-Hill Dictionary of Engineering, Second Edition, are alphabetized on a letter-by-letter basis; word spacing, hyphen, comma, solidus, and apostrophe in a term are ignored in the sequencing. For example, an ordering of terms would be:

<table>
<thead>
<tr>
<th>abat-vent</th>
<th>ADP</th>
</tr>
</thead>
<tbody>
<tr>
<td>A block</td>
<td>air band</td>
</tr>
<tr>
<td>Abney level</td>
<td>airblasting</td>
</tr>
</tbody>
</table>

FORMAT. The basic format for a defining entry provides the term in boldface, the field is small capitals, and the single definition in lightface:

term [FIELD] Definition.

A field may be followed by multiple definitions, each introduced by a boldface number:

term [FIELD] 1. Definition. 2. Definition. 3. Definition.

A term may have definitions in two or more fields:


A simple cross-reference entry appears as:

term See another term.

A cross reference may also appear in combination with definitions:


CROSS REFERENCING. A cross-reference entry directs the user to the defining entry. For example, the user looking up “access flooring” finds:

access flooring See raised flooring.

The user then turns to the “R” terms for the definition. Cross references are also made from variant spellings, acronyms, abbreviations, and symbols.

ARL See acceptable reliability level.
arriswise See arrisways.
at See technical atmosphere.

ALSO KNOWN AS . . . , etc. A definition may conclude with a mention of a synonym of the term, a variant spelling, an abbreviation for the term, or other
such information, introduced by “Also known as . . .,” “Also spelled . . .,” “Abbreviated . . .,” “Symbolized . . .,” “Derived from . . ..” When a term has more than one definition, the positioning of any of these phrases conveys the extent of applicability. For example:

**term**  
[CIV ENG] 1. Definition. Also known as synonym.  
Symbolized T.

In the above arrangement, “Also known as . . .” applies only to the first definition; “Symbolized . . .” applies only to the second definition.

**term**  
[ENG ACOUS] Definition.  
Also known as synonym.

In the above arrangement, “Also known as . . .” applies only to the second field.

**term**  
[CIV ENG] Also known as synonym.  
[ENG ACOUS] Definition.

In the above arrangement, “Also known as . . .” applies to both definitions in the first field.

**term**  
Also known as synonym.  
[ENG ACOUS] Definition.

In the above arrangement, “Also known as . . .” applies to all definitions in both fields.
building construction—The technology of assembling materials into a structure, especially one designated for occupancy.

civil engineering—The planning, design, construction, and maintenance of fixed structures and ground facilities for industry, for transportation, for use and control of water, for occupancy, and for harbor facilities.

control systems—The study of those systems in which one or more outputs are forced to change in a desired manner as time progresses.

design engineering—The branch of engineering concerned with the design of a product or facility according to generally accepted uniform standards and procedures, such as the specification of a linear dimension, or a manufacturing practice, such as the consistent use of a particular size of screw to fasten covers.

electricity—The science of physical phenomena involving electric charges and their effects when at rest and when in motion.

electronics—The technological area involving the manipulation of voltages and electric currents through the use of various devices for the purpose of performing some useful action with the currents and voltages; this field is generally divided into analog electronics, in which the signals to be manipulated take the form of continuous currents or voltages, and digital electronics, in which signals are represented by a finite set of states.

engineering—The science by which the properties of matter and the sources of power in nature are made useful to humans in structures, machines, and products.

engineering acoustics—The field of acoustics that deals with the production, detection, and control of sound by electrical devices, including the study, design, and construction of such things as microphones, loudspeakers, sound recorders and reproducers, and public address systems.

industrial engineering—A branch of engineering dealing with the design, development, and implementation of integrated systems of humans, machines, and information resources to provide products and services.
**mechanical engineering**—The branch of engineering concerned with energy conversion, mechanics, and mechanisms and devices for diverse applications, ranging from automotive parts through nanomachines.

**mechanics**—The branch of physics which seeks to formulate general rules for predicting the behavior of a physical system under the influence of any type of interaction with its environment.

**systems engineering**—The branch of engineering dealing with the design of a complex interconnection of many elements (a system) to maximize an agreed-upon measure of system performance.

**thermodynamics**—The branch of physics which seeks to derive, from a few basic postulates, relations between properties of substances, especially those which are affected by changes in temperature, and a description of the conversion of energy from one form to another.
Pronunciation Key

Vowels

a as in bat, that
ä as in bail, crate
ä as in bother, father
e as in bet, net
ê as in beat, treat
i as in bit, skit
ô as in boat, note
ó as in bought, taut
û as in book, pull
ü as in boot, pool
ə as in but, sofa
au as in crowd, power
ói as in boil, spoil
yo as in formula, spectacular
yû as in fuel, mule

Consonants

b as in bib, dribble
ch as in charge, stretch
d as in dog, bad
f as in fix, safe
g as in good, signal
h as in hand, behind
j as in joint, digit
k as in cast, brick
l as in Bach (used rarely)
m as in loud, bell
n as in new, dent
ŋ indicates nasalization of preceding vowel
ŋ as in ring, single
p as in pier, slip
r as in red, scar
s as in sign, post
sh as in sugar, shoe
t as in timid, cat
th as in thin, breath
ð as in then, breathe
v as in veil, weave
z as in zoo, cruise
zh as in beige, treasure

Semivowels/Semiconsonants

w as in wind, twin
y as in yet, onion

Stress (Accent)

precedes syllable with primary stress
precedes syllable with secondary stress
precedes syllable with variable or indeterminate primary/secondary stress

Syllabication

· Indicates syllable boundary when following syllable is unstressed
a See ampere.  
A See ampere, angstrom.  
Å See angstrom.

a axis  [MECH ENG] The angle that specifies the rotation of a machine tool about the x axis.  
abandon  [ENG] To stop drilling and remove the drill rig from the site of a boreshole before the intended depth or target is reached.

abate  [ENG] 1. To remove material, for example, in carving stone. 2. In metalwork, to excise or beat down the surface in order to create a pattern or figure in low relief.

abatement  [ENG] 1. The waste produced in cutting a timber, stone, or metal piece to a desired size and shape. 2. A decrease in the amount of a substance or other quantity, such as atmospheric pollution.

abat-jour  [BUILD] A device that is used to deflect daylight downward as it streams through a window.

abattoir  [IND ENG] A building in which cattle or other animals are slaughtered.

abate milling  [MECH ENG] A milling method in which parts are placed in a row parallel to the axis of the cutting tool and are milled simultaneously.

abreuvoir  [CIV ENG] A space between stones in which parts are placed in a row parallel to the axis of the cutting tool and are milled simultaneously.

abroad, in 1. far from one's homeland. 2. in another country.

abroadness  The condition of being abroad.

abroadness  The extent to which a person or group is involved in activities or interests outside their home country.

abroadness  The extent to which a person or group is involved in activities or interests outside their home country.

abroadness  The extent to which a person or group is involved in activities or interests outside their home country.
ABS

**ABS** See antilock braking system.

**absolute alimeter** [[ENG]] An instrument which employs radio, sonic, or capacitive technology to produce on its indicator the measurement of distance from the aircraft to the terrain below. Also known as terrain-clearance indicator.  \{ \text{ˌab-\text{sa},\text{lūt \text{ˈtɪm-ə-ˌdɑr}} \}

**absolute altitude** [[ENG]] Altitude above the actual surface, either land or water, of a planet or natural satellite.  \{ \text{ˌab-\text{sa},\text{lūt \text{ˈal-\text{tə-tūd}}} \}

**absolute blocking** [[CIV ENG]] A control arrangement for rail traffic in which a track is divided into sections or blocks upon which a train may not enter until the preceding train has left.  \{ \text{ˌab-\text{sa},\text{lūt \text{ˈblāk-əj}}} \}

**absolute block system** [[CIV ENG]] A block system in which only a single railroad train is permitted within a block section during a given period of time.  \{ \text{ˌab-\text{sa},\text{lūt \text{ˈblāk \ ˌsɪs-\text{təm}}} \}

**absolute efficiency** [[ENG ACOUS]] The ratio of the power output of an electroacoustic transducer, under specified conditions, to the power output of an ideal electroacoustic transducer.  \{ \text{ˌab-\text{sa},\text{lūt \text{ˈəf-\text{fish-ən-ˌsət}}} \}

**absolute expansion** [[THERMO]] The true expansion of a liquid with temperature, as calculated when the expansion of the container in which the volume of the liquid is measured is taken into account, in contrast with apparent expansion.  \{ \text{ˌab-\text{sa},\text{lūt \text{ɪkˈspæn-\text{ʃən}}} \}

**absolute instrument** [[ENG]] An instrument which measures a quantity (such as pressure or temperature) in absolute units by means of simple physical measurements on the instrument.  \{ \text{ˌab-\text{sa},\text{lūt \textˈɪn-\textˈstrə-mənt}} \}

**absolute magnetometer** [[ENG]] An instrument used to measure the intensity of a magnetic field without reference to other magnetic instruments.  \{ \text{ˌab-\text{sa},\text{lūt \text{ˈmæg-\text{naˈtəm-ə-ˌdɑr}}} \}

**absolute manometer** [[ENG]] 1. A gas manometer whose calibration, which is the same for all ideal gases, can be calculated from the measurable physical constants of the instrument. 2. A manometer that measures absolute pressure.  \{ \text{ˌab-\text{sa},\text{lūt \text{ˈmaˈnæm-ə-ˌdɑr}}} \}

**absolute pressure gage** [[ENG]] A device that measures the pressure exerted by a fluid relative to a perfect vacuum, used to measure pressures very close to a perfect vacuum.  \{ \text{ˌab-\text{sa},\text{lūt \textˈprəʃə-ˌrə \ˌgæi}} \}

**absolute pressure transducer** [[ENG]] A device that responds to absolute pressure as the input and provides a measurable output of a nature different than but proportional to absolute pressure.  \{ \text{ˌab-\text{sa},\text{lūt \textˈprəʃə-ˌtrənzə-ˌdjuː-ˌsər}} \}

**absolute scale** See absolute temperature scale.  \{ \text{ˌab-\text{sa},\text{lūt \ˌskæl}} \}

**absolute specific gravity** [[MECH]] The ratio of the weight of a given volume of a substance in a vacuum at a given temperature to the weight of an equal volume of water in a vacuum at a given temperature.  \{ \text{ˌab-\text{sa},\text{lūt \ˈspəˈsil-kək \ˈgrov-\text{ˌælə}}} \}

**absolute stop** [[CIV ENG]] A railway signal which indicates that the train must make a full stop and not proceed until there is a change in the signal. Also known as stop and stay.  \{ \text{ˌab-\text{sa},\text{lūt \ˈstəp \ˌstei}} \}

**absolute temperature** [[THERMO]] 1. The temperature measurable in theory on the thermodynamic temperature scale. 2. The temperature in Celsius degrees relative to the absolute zero at $-273.16$°C (the Kelvin scale) or in Fahrenheit degrees relative to the absolute zero at $-459.69$°F (the Rankine scale).  \{ \text{ˌab-\text{sa},\text{lūt \textˈtem-ˌprə-ˌchûr}} \}

**absolute temperature scale** [[THERMO]] A scale with which temperatures are measured relative to absolute zero. Also known as absolute scale.  \{ \text{ˌab-\text{sa},\text{lūt \textˈtem-ˌprə-ˌchûr \ˌskæl}} \}

**absolute volume** [[ENG]] The total volume of the particles in a granular material, including both permeable and impermeable voids but excluding spaces between particles.  \{ \text{ˌab-\text{sa},\text{lūt \textˈvæl-\text{ˈyəm}}} \}

**absolute zero** [[THERMO]] The temperature of $-273.16$°C, or $-459.69$°F, or 0 K, thought to be the temperature at which molecular motion vanishes and a body would have no heat energy.  \{ \text{ˌab-\text{sa},\text{lūt \textˈzɪr-ˌoʊ}} \}

**absorber** [[CHEM ENG]] Equipment in which a gas is absorbed by contact with a liquid.  \{ \text{ˌɛkˈlɛktər \ˌmərə \ˈdʒiːˈnɛtər \ˈdʒiːˈnɛtər} \}

**absorber capacity** [[CHEM ENG]] During natural gas processing, the maximum volume of the gas that can be processed through an absorber without alteration of specified operating conditions.  \{ \text{ˌabˈsɔrˈbər \ˌkəˌpəsəˈdʒiːə} \}

**absorber plate** [[ENG]] A part of a flat-plate solar collector that provides a surface for absorbing incident solar radiation.  \{ \text{ˌabˈsɔrˈbər \ˌplæt} \}

**absorbing boom** [[CIV ENG]] A device that floats on the water and is used to stop the spread of an oil spill and aid in its removal.  \{ \text{ˌabˈsɔrb-ˌiŋ \ˌbʊm} \}

**absorbing well** [[CIV ENG]] A shaft that permits water to drain through an impermeable stratum to a permeable stratum.  \{ \text{ˌabˈsɔrb-ˌiŋ \ˌwel} \}

**absorption bed** [[CIV ENG]] A sizable pit containing coarse aggregate about a distribution pipe system; absorbs the effluent of a septic tank.  \{ \text{ˌabˈsɔrp-ˌʃon \ˌbed} \}

**absorption column** See absorption tower.  \{ \text{ˌabˈsɔrp-ˌʃon \ˌkəˌlən} \}
absorption cycle [MECH ENG] In refrigeration, the process whereby a circulating refrigerant, for example, ammonia, is evaporated by heat from an aqueous solution at elevated pressure and subsequently reabsorbed at low pressure, displacing the need for a compressor. (əˈbərsərp-ˌshan, sə-ˌkəl)

absorption dynamometer [ENG] A device for measuring mechanical forces or power in which the mechanical energy input is absorbed by friction or electrical resistance. (əˈbərsərp-ˌshan ˈdərn-ˌməm-ˌəd-ər)

absorption-emission pyrometer [MECH ENG] A thermometer for determining gas temperature from measurement of the radiation emitted by a calibrated reference source before and after this radiation has passed through and been partially absorbed by the gas. (əˈbərsərp-ˌshan ˈərmiʃ-ən pəl-ˈrəm-ˌəd-ər)

absorption hygrometer Also known as chemical hygrometer. [ENG] An instrument with which the water vapor content of the atmosphere is measured by means of the absorption of vapor by a hygroscopic chemical. (əˈbərsərp-ˌshan həˈgrām-ˌəd-ər)

absorption loss [ENG] The quantity of water that is lost during the initial filling of a reservoir because of absorption by soil and rocks. (əˈbərsərp-ˌshan ˈlop)

absorption meter [ENG] An instrument designed to measure the amount of light transmitted through a transparent substance, using a photocell or other light detector. (əˈbərsərp-ˌshan ˈmed-ər)

absorption number [ENG] A dimensionless group used in the field of gas absorption in a wetted-wall column; represents the liquid side mass-transfer coefficient. (əˈbərsərp-ˌshan ˌnəm-bər)

absorption plant [CHEM ENG] A facility to recover the condensable portion of natural or refinery gas. (əˈbərsərp-ˌshan, ˈplænt)

absorption process [CHEM ENG] A method in which light oil is introduced into an absorption tower so that it absorbs the gasoline in the rising wet gas; the light oil is then distilled to separate the gasoline. (əˈbərsərp-ˌshan ˈprəs-əs)

absorption field [ENG] Refrigeration in which cooling is effected by the expansion of liquid ammonia into gas and absorption of the gas by water; the ammonia is reused after the water evaporates. (əˈbərsərp-ˌshan ˈraˌfiˌəˌrəˌshan)

absorption system [MECH ENG] A refrigeration system in which the refrigerant gas in the evaporator is taken up by an absorber and is then, with the application of heat, released in a generator. (əˈbərsərp-ˌshan, ˈsətəm-ən)

absorption tower [ENG] A vertical tube in which a rising gas is partially absorbed by a liquid in the form of falling droplets. Also known as absorption column. (əˈbərsərp-ˌshan, tərərərə)

absorption trench [CIV ENG] A trench containing coarse aggregate about a distribution tile pipe through which septic-tank effluent may move beneath earth. (əˈbərsərp-ˌtrenk)

absorptivity [THERMO] The ratio of the radiation absorbed by a surface to the total radiation incident on the surface. (əˈbərsərp-ˌtivˌəd-ər)

Abt track [CIV ENG] One of the cogs or rails used for railroad tracking in mountains and so arranged that the cogs are not opposite one another on any pair of rails. (əˈbətˌtræk)

abutment [CIV ENG] A surface or mass provided to withstand thrust; for example, end supports of an arch or a bridge. (əˈbət-əment)

abutting joint [DES ENG] A joint which connects two pieces of wood in such a way that the direction of the grain in one piece is angled (usually at 90°) with respect to the grain in the other. (əˈbəttingˌjənt)

abutting tenons [DES ENG] Two tenons inserted into a common mortise from opposite sides so that they contact. (əˈbəttingˌten-ənz)

ac See alternating current.

accelerated aging [ENG] Hastening the deterioration of a product by a laboratory procedure in order to determine long-range storage and use characteristics. (əˈkəlsəˌərˌəd-əd ˈəj-ədʒ)

accelerated life test [ENG] Operation of a device, circuit, or system above maximum ratings to produce premature failure, used to estimate normal operating life. (əˈkəlsəˌərˌəd-əd-əd ˈlifˌtest)

accelerated weathering [ENG] A laboratory test used to determine, in a short period of time, the resistance of a paint film or other exposed surface to weathering. (əˈkəlsəˌərˌəd-əd-əd ˈweətərˌing)

accelerating incentive See differential piece-rate system. (əˈkəlsəˌərˌəd-əd-əd ˌi̇nˌsenˌtiv)

accelerating potential [ELECTR] The energy potential in electron-beam equipment that imparts additional speed and energy to the electrons. (əˈkəlsəˌərˌəd-əd-əd ˌpətənˌten-sal)

acceleration [MECH] The rate of change of velocity with respect to time. (əˈkəlsəˌərəˌrəˌshan)

acceleration analysis [MECH ENG] A mathematical technique, often done graphically, by which accelerations of parts of a mechanism are determined. (əˈkəlsəˌərəˌrəˌshan əˌnələˌsəs)

acceleration-error constant [CONT SYS] The ratio of the acceleration of a controlled variable of a servomechanism to the actuating error when the actuating error is constant. (əˈkəlsəˌərəˌrəˌshan ˈərəˌkəntənˌstænt)

acceleration measurement [MECH] The technique of determining the magnitude and direction of acceleration, including translational and angular acceleration. (əˈkəlsəˌərəˌrəˌshan ˈmiəˌhərəˌmənt)

acceleration of free fall See acceleration of gravity. (əˈkəlsəˌərəˌrəˌshan əv ˈfriˌfəl)
acceleration of gravity  [MECH] The acceleration imparted to bodies by the attractive force of the earth; has an international standard value of 980.665 cm/s\(^2\) but varies with latitude and elevation. Also known as acceleration of free fall, apparent gravity. (ak,sel·ə-ra·shan əv ‘grav-ə-dē)  

acceleration signature  [IND ENG] A printed record that shows the pattern of acceleration and deceleration of an anatomical reference point in the performance of a task. (ak,sel·ə-ra·shan ‘sig-na-char)  

acceleration tolerance  [ENG] The degree to which personnel or equipment withstands acceleration. (ak,sel·ə-ra·shan ‘tāl-ə-rəns)  

acceleration voltage  [ELECTR] The voltage between a cathode and accelerating electrode of an electron tube. (ak,sel·ə-ra·shan ‘vōl-tā)  

accelerator  [MECH ENG] A device for varying the speed of an automotive vehicle by varying the supply of fuel. (ak,sel·ə-rād-ar)  

accelerator jet  [MECH ENG] The jet through which the fuel is injected into the incoming air in the carburetor of an automotive vehicle with rapid demand for increased power output. (ak ‘sel·ə-rād-ar ·jet)  

accelerator linkage  [MECH ENG] The linkage connecting the accelerator pedal of an automotive vehicle to the carburetor throttle valve or fuel injection control. (ak,sel·ə-rād-ar ·laį-kij)  

accelerator pedal  [MECH ENG] A pedal that operates the carburetor throttle valve or fuel injection control of an automotive vehicle. (ak,sel·ə-rād-ar ·pedal)  

accelerator pump  [MECH ENG] A small cylinder and piston controlled by the throttle of an automotive vehicle so as to provide an enriched air-fuel mixture during acceleration. (ak,sel·ə-rād-ar ·pämp)  

accelerogram  [ENG] A record made by an accelerometer. (ak,sel·ə-ra·gram)  

accelerograph  [ENG] An accelerometer having provisions for recording the acceleration of a point on the earth during an earthquake or for recording any other type of acceleration. (ak ‘sel·ə-ra·graf)  

accelerometer  [ENG] An instrument which measures acceleration or gravitational force capable of imparting acceleration. (ak,sel·ə-rām-ədor)  

accelerometry  [IND ENG] The quantitative determination of acceleration and deceleration in the entire human body or a part of the body in the performance of a task. (ak,sel·ə-rām-ə-drē)  

accent lighting  [CIV ENG] Directional lighting which highlights an object or attracts attention to a particular area. (’ak-sent ·lild-ig)  

acceptability  [ENG] State or condition of meeting minimum standards for use, as applied to methods, equipment, or consumable products. (ak,sep·tābil·ə-dē)  

acceptable quality level  [IND ENG] The maximum percentage of defects that has been determined tolerable as a process average for a sampling plan during inspection or test of a product with respect to economic and functional requirements of the item. Abbreviated AQL. (ak’sep·tā-bal ·kwōl-ə-dē ·lev·al)  

acceptable reliability level  [IND ENG] The required level of reliability for a part, system, device, and so forth, may be expressed in a variety of terms, for example, number of failures allowable in 1000 hours of operating life. Abbreviated ARL. (ak’sep·tā-bal ·rāl·əbil·ə-dē ·lev·al)  

acceptance criteria  [IND ENG] Standards of judging the acceptability of manufactured items. (ak’sep·tāns ·krit·ərē-ə)  

acceptance number  [IND ENG] The maximum allowable number of defective pieces in a sample of specified size. (ak’sep·tāns ·nām-bār)  

acceptance sampling  [IND ENG] Taking a sample from a batch of material to inspect for determining whether the entire lot will be accepted or rejected. (ak’sep·tāns ·sam·pľ·pliŋ)  

acceptance test  [IND ENG] A test used to determine conformance of a product to design specifications, as a basis for its acceptance. (ak’sep·tāns ·test)  

acceptor  [CHEM ENG] A calcined carbonate used to absorb the carbon dioxide evolved during a coal gasification process. (ak’sep·tār)  

access  [CIV ENG] Freedom, ability, or the legal right to pass without obstruction from a given point on earth to some other objective, such as the sea or a public highway. (’ak’ses)  

access door  [BUILD] A provision for access to concealed plumbing or other equipment without disturbing the wall or fixtures. (’ak’ses ·dōr)  

access eye  [CIV ENG] A threaded plug fitted into bends and junctions of drain, waste, or soil pipes to provide access when a blockage occurs. See cleanout. (’ak’ses ·f buz)  

access flooring  See raised flooring. (’ak’ses ·fur-śe)  

access hole  See manhole. (’ak’ses ·hōl)  

accessory  [MECH ENG] A part, subassembly, or assembly that contributes to the effectiveness of a piece of equipment without changing its basic function; may be used for testing, adjusting, calibrating, recording, or other purposes. (ak’ses ·ə-rē)  

access road  [CIV ENG] A route, usually paved, that enables vehicles to reach a designated facility expeditiously. (’ak’ses ·roid)  

access tunnel  [CIV ENG] A tunnel provided for an access road. (’ak’ses ·tān·əl)  

accident-cause code  [IND ENG] Sponsored by the American Standards Association, the code that classifies accidents under eight defective working conditions and nine improper working practices. (’ak’sa·dent ·kaʊ ·kōd)  

accident frequency rate  [IND ENG] The number of all disabling injuries per million worker-hours of exposure. (’ak’sa·dent ·friˈkwən·sē ·rāt)  

accident severity rate  [IND ENG] The number of
acetylene torch
See oxyacetylene cutting. ['ak-ˌse-dəl, 'en ,ˈkat-ˌiŋ]
acetylene generator [ENG] A steel cylinder or tank that provides for controlled mixing of calcium carbide and water to generate acetylene. ['ak-ˌse-dəl, ˈjenˌəˌdəlˌar]
acetylene torch See oxyacetylene torch. ['ak-ˌse-dəlˌarˌtɔrk]
acme thread

acme thread See acme screw thread. [ˈak-mē
thread]

acouboy [ENG] An acoustic listening device similar to a sonobuoy; used on land to form an electronic fence that will pick up sounds of enemy movements and transmit them to orbiting aircraft or land stations. [ˈəkˈbōi]

acoustical ceiling [BUILD] A ceiling covered with or built of material with special acoustical properties. [ˈəkˈstəʊ̆kəl ˈselərɪŋ]

acoustical ceiling system [BUILD] A system for the structural support of an acoustical ceiling; lighting and air diffusers may be included as part of the system. [ˈəkˈstəʊ̆kəl ˈselərɪŋ ˈsis-təm]

acoustical door [BUILD] A solid door with gasketing along the top and sides, and usually an automatic door bottom, designed to reduce noise transmission. [ˈəkˈstəʊ̆kəl ˈdɔːr]

acoustical model [CIV ENG] A model used to investigate certain acoustical properties of an auditorium or room such as sound pressure distribution, sound-ray paths, and focusing effects. [ˈəkˈstəʊ̆kəl ˈmɛd-əl]

acoustical treatment [CIV ENG] That part of building planning that is designed to provide a proper acoustical environment; includes the use of acoustical material. [ˈəkˈstəʊ̆kəl ˈtɛrmənt]

acoustic array [ENG ACOUS] A sound-transmitting or sound-receiving system whose elements are arranged to give desired directional characteristics. [ˈəkˈstəʊ̆kəl əˈrɑː]

acoustic center [ENG ACOUS] The center of the spherical sound waves radiating outward from an acoustic transducer. [ˈəkˈstəʊ̆kəl ˈsen-tər]

acoustic clarifier [ENG ACOUS] System of cones loosely attached to the baffle of a loudspeaker and designed to vibrate and absorb energy during sudden loud sounds to suppress these sounds. [ˈəkˈstəʊ̆kəl ˈklaɹə,flə-rər]

acoustic coupler [ENG ACOUS] A device used between the modem of a computer terminal and a standard telephone line to permit transmission of digital data in either direction without making direct connections. [ˈəkˈstəʊ̆kəl ˈkæp-lər]

acoustic delay [ENG ACOUS] A delay which is deliberately introduced in sound reproduction by having the sound travel a certain distance along a pipe before conversion into electric signals. [ˈəkˈstəʊ̆kəl ˈdiˈlə]

acoustic detection [ENG] Determination of the profile of a geologic formation, an ocean layer, or some object in the ocean by measuring the reflection of sound waves off the object. [ˈəkˈstəʊ̆kəl ˈdɪtekˈsʰən]

acoustic fatigue [MECH] The tendency of a material, such as a metal, to lose strength after acoustic stress. [ˈəkˈstəʊ̆kəl ˈfətɪdʒ]

acoustic feedback [ENG ACOUS] The reverberation of sound waves from a loudspeaker to a preceding part of an audio system, such as to the microphone, in such a manner as to reinforce, and distort, the original input. Also known as acoustic regeneration. [ˈəkˈstəʊ̆kəl ˈfɛdˌbæk]

acoustic generator [ENG ACOUS] A transducer which converts electrical, mechanical, or other forms of energy into sound. [ˈəkˈstəʊ̆kəl ˈjen-əˌrɑːd-ər]

acoustic heat engine [ENG] A device that transforms heat energy first into sound energy and then into electrical power, without the use of moving mechanical parts. [ˈəkˈstəʊ̆kəl ˈheat ˌen-ˌjɑːn]

acoustic hologram [ENG] The phase interference pattern, formed by acoustic beams, that is used in acoustical holography, when light is made to interact with this pattern, it forms an image of an object placed in one of the beams. [ˈəkˈstəʊ̆kəl ˈhɒl-əˌgrəm]

acoustic horn See horn. [ˈəkˈstəʊ̆kəl ˈhɔr̩n]

acoustic jamming [ENG ACOUS] The deliberate radiation or reradiation of mechanical or electro-acoustic signals with the objectives of obliterating or obscuring signals which the enemy is attempting to receive and of deterring enemy weapons systems. [ˈəkˈstəʊ̆kəl ˈjam-ɪŋ]

acoustic labyrinth [ENG ACOUS] Special baffle arrangement used with a loudspeaker to prevent cavity resonance and to reinforce bass response. [ˈəkˈstəʊ̆kəl ˈlæb-əˌrɪnθ]

acoustic line [ENG ACOUS] The acoustic equivalent of an electrical transmission line, involving baffles, labyrinths, or resonators placed at the rear of a loudspeaker and arranged to help reproduce the very low audio frequencies. [ˈəkˈstəʊ̆kəl ˈlɪn]

acoustic ocean-current meter [ENG] An instrument that measures current flow in rivers and oceans by transmitting acoustic pulses in opposite directions parallel to the flow and measuring the difference in pulse travel times between transmitter-receiver pairs. [ˈəkˈstəʊ̆kəl ˈoʊ-ʃənˌkɑːr-ənt ˈmɛd-ər]

acoustic position reference system [ENG] An acoustic system used in offshore oil drilling to provide continuous information on ship position with respect to an ocean-floor acoustic beacon transmitting an ultrasonic signal to three hydrophones on the bottom of the drilling ship. [ˈəkˈstəʊ̆kəl ˈpoʊz̩-ʃənˌrɛfˌransˌsis-ˈtəm]

acoustic radar [ENG] Use of sound waves with radar techniques for remote probing of the lower atmosphere, up to heights of about 5000 feet (1500 meters), for measuring wind speed and direction, humidity, temperature inversions, and turbulence. [ˈəkˈstəʊ̆kəl ˈræd-əˌdɑːr]

acoustic radiator [ENG ACOUS] A vibrating surface that produces sound waves, such as a loudspeaker cone or a headphone diaphragm. [ˈəkˈstəʊ̆kəl ˈræd-əˌdɑːr]

acoustic radiometer [ENG] An instrument for measuring sound intensity by determining the unidirectional steady-state pressure caused by the reflection or absorption of a sound wave at a boundary. [ˈəkˈstəʊ̆kəl ˈræd-əˌdɑːr]
walls of an enclosure, at a given point in the enclosure. \( \text{akusi-tik } 'r\alpha-sho' \)

**acoustic reflex enclosure** [ENG ACOUS] A loudspeaker cabinet designed with a port to allow a low-frequency contribution from the rear of the speaker cone to be radiated forward. \( \text{akusi-tik } 're,fleks in,kl\ddot{o}r-zhar' \)

**acoustic regeneration** See acoustic feedback. \( \text{akusi-tik } 're,jen-'o-ra-sho' \)

**acoustic seal** [ENG ACOUS] A joint between two parts to provide acoustical coupling with low losses of energy, such as between an earphone and the human ear. \( \text{akusi-tik } 'se'l' \)

**acoustic signature** [ENG] In acoustic detection, the profile characteristic of a particular object or class of objects, such as a school of fish or a specific ocean-bottom formation. \( \text{akusi-tik } 'sig-na-char' \)

**acoustic spectrograph** [ENG] A spectrograph used with sound waves of various frequencies to study the transmission and reflection properties of ocean thermal layers and marine life. \( \text{akusi-tik } 'spek-tra,graf' \)

**acoustic spectrometer** [ENG ACOUS] An instrument that measures the intensities of the various frequency components of a complex sound wave. Also known as audio spectrometer. \( \text{akusi-tik } spek'tram-od-ar' \)

**acoustic strain gage** [ENG] An instrument used for measuring structural strains; consists of a length of fine wire mounted so its tension varies with strain; the wire is plucked with an electromagnetic device, and the resulting frequency of vibration is measured to determine the amount of strain. \( \text{akusi-tik } 'stran-gai' \)

**acoustic theodolite** [ENG] An instrument that uses sound waves to provide a continuous vertical profile of ocean currents at a specific location. \( \text{akusi-tik } 'the-od-il' \)

**acoustic transducer** [ENG ACOUS] A device that converts acoustic energy to electrical or mechanical energy, such as a microphone or phonograph pickup. \( \text{akusi-tik } tran'du-sar' \)

**acoustic transformer** [ENG ACOUS] A device, such as a horn or megaphone, for increasing the efficiency of sound radiation. \( \text{akusi-tik } tranz 'fo\text{-}mar' \)

**acoustic treatment** [BUILD] The use of sound-absorbing materials to give a room a desired degree of freedom from echo and reverberation. \( \text{akusi-tik } 'tr\text{-}et-man't \)

**acoustic-wave-based sensor** [ENG] A device that employs a surface acoustic wave, a thickness-shear-mode resonance (a resonant oscillation of a thin plate of material), or other type of acoustic wave to measure the physical properties of a thin film or liquid layer or, in combination with chemically sensitive thin films, to detect the presence and concentration of chemical analytes. \( \text{akusi-stik } 'wai\text{-}b\text{-}tast ,sen-sar' \)

**acoustic well logging** [ENG] A ground exploration method that uses a high-energy sound source and a receiver, both underground. \( \text{akusi-tik } 'wel ,z\ddot{a}g-\ddot{i}p' \)

**acoustoelectronics** [ENG ACOUS] The branch of electronics that involves use of acoustic waves at microwave frequencies (above 500 megahertz), traveling on or in piezoelectric or other solid substrates. Also known as pretersonics. \( \text{akusi-tik } 'a,lek\ddot{r}en-iks' \)

**acquisition** [ENG] The process of pointing an antenna or a telescope so that it is properly oriented to allow gathering of tracking or telemetry data from a satellite or space probe. \( \text{akwa-'zish-an' } \)

**acquisition and tracking radar** [ENG] A radar set capable of locking onto a received signal and tracking the object emitting the signal; the radar may be airborne or on the ground. \( \text{akwa-'zish-an an } 'trak-ing ,ra,dar' \)

**acre** [MECH] A unit of area, equal to 43,560 square feet, or to 4046.8564224 square meters. \( \text{'a-ker' } \)

**acrometer** [ENG] An instrument to measure the density of oils. \( \text{akram-od-ar'} \)

**actinogram** [ENG] The record of heat from a source, such as the sun, as detected by a recording instrument. \( \text{akti'n-od-gram' } \)

**actinograph** [ENG] A recording actinometer. \( \text{akti'n-od-gram' } \)

**actinometer** [ENG] Any instrument used to measure the intensity of radiant energy, particularly that of the sun. \( \text{ak-ta-'nam-od-ar'} \)

**action** [MECH] An integral associated with the trajectory of a system in configuration space, equal to the sum of the integrals of the generalized momenta of the system over their canonically conjugate coordinates. Also known as phase integral. \( \text{ak-shan' } \)

**activate** [ELEC] To make a cell or battery operative by addition of a liquid. [ELECTR] To treat the filament, cathode, or target of a vacuum tube to increase electron emission. [ENG] To set up conditions so that the object will function as designed or required. \( \text{ak-ta-va't } \)

**activated sludge** [CIV ENG] A semiliquid mass removed from the liquid flow of sewage and subjected to aeration and aerobic microbial action; the end product is dark to golden brown, partially decomposed, granular, and flocculent, and has an earthy odor when fresh. \( \text{ak-ta-vad-ad ‘sla’ } \)

**activated-sludge effluent** [CIV ENG] The liquid from the activated-sludge treatment that is further processed by chlorination or by oxidation. \( \text{ak-ta-vad-ad ‘sla’ ef,lui-ant } \)

**activated-sludge process** [CIV ENG] A sewage treatment process in which the sludge in the secondary stage is put into aeration tanks to facilitate aerobic decomposition by microorganisms; the sludge and supernatant liquor are separated in a settling tank; the supernatant liquor or effluent is further treated by chlorination or oxidation. \( \text{ak-ta-vad-ad ‘sla’ pra,sas } \)

**active accommodation** [CONT SYS] The alteration of preprogrammed robotic motions by the integrated effects of sensors, controllers, and the robotic motion itself. \( \text{ak-tiv a,ka\text{-}mad-ad-shan } \)
active area

active area  [ELECTR] The area of a metallic rectifier that acts as the rectifying junction and conducts current in the forward direction. {ˈak-tɪv ˈɛr-e-ə}

active-cord mechanism  [MECH ENG] A slender, chainlike grouping of joints and links that makes active and flexible winding motions under the control of actuators attached along its body. {ˈak-tɪv kɔrd ˈmek-əˌnɪz-əm}

active detection system  [ENG] A guidance system which emits energy as a means of detection; for example, sonar and radar. {ˈak-tɪv dɪˈtekʃənˌsiʒ-təm}

active earth pressure  [CIV ENG] The horizontal pressure that an earth mass exerts on a wall. {ˈak-tɪv ərth ˈpresh-ər}

active illumination  [ENG] Lighting whose direction, intensity, and pattern are controlled by commands or signals. {ˈak-tɪv əˌlʊm-əˌnɑːˌʃən}

active infrared detection system  [ENG] An infrared detection system in which a beam of infrared rays is transmitted toward possible targets, and rays reflected from a target are detected. {ˈak-tɪv ɪnˈfraˌred dɪˈtekʃənˌsiʒ-təm}

active leaf  [BUILD] In a door with two leaves, the leaf which carries the latching or locking mechanism. Also known as active door. {ˈak-tɪv ˈlɛf}

active material  [ELEC] 1. A fluorescent material used in screens for cathode-ray tubes. 2. An energy-storing material, such as lead oxide, used in the plates of a storage battery. 3. A material, such as the iron of a core or the copper of a winding, that is involved in energy conversion in a circuit. 4. In a battery, the chemically reactive material in either of the electrodes that participates in the charge and discharge reactions. [ELECTR] The material of the cathode of an electron tube that emits electrons when heated. {ˈak-tɪv məˈtɪr-əˈsɑl}

active sludge  [CIV ENG] A sludge rich in destructive bacteria used to break down raw sewage. {ˈak-tɪv ˈsloʊdʒ}

active solar system  [MECH ENG] A solar heating or cooling system that operates by mechanical means, such as motors, pumps, or valves. {ˈak-tɪv ˈsoʊˌlɑrˌsiʒ-təm}

active sonar  [ENG] A system consisting of one or more transducers to send and receive sound, equipment for the generation and detection of the electrical impulses and to and from the transducer, and a display or recorder system for the observation of the received signals. {ˈak-tɪv ˈsoʊˌnɑr}

active system  [ENG] In radio and radar, a system that requires transmitting equipment, such as a beacon or transponder. {ˈak-tɪv ˈsiʒ-təm}

active vibration suppression  [MECH ENG] The prevention of undesirable vibration by techniques involving feedback control of the vibratory motion, whereby the forces designed to reduce the vibration depend on the system displacements and velocities. {ˈak-tɪv vɪˈbrəˌʃənˌsəˌpresh-ən}

activity  [SYS ENG] The representation in a PERT or critical-path-method network of a task that takes up both time and resources and whose performance is necessary for the system to move from one event to the next. {ˈak-tɪv əˌdɛ ˈeɪtɪv ɪˈdʒiː-

activity chart  [IND ENG] A tabular presentation of a series of operations of a process plotted against time scale. {ˈak-tɪv əˌdɛ ˈdɑrˌəˌʃən}

activity duration  [SYS ENG] In critical-path-method terminology, the estimated amount of time required to complete an activity. {ˈak-tɪv əˌdɛ ˈdɑrˌəˌʃən}

activity sampling  See work sampling. {ˈak-tɪv əˌdɛ ˌsæmˌplɪŋ}

actual cost  [IND ENG] Cost determined by an allocation of cost factors recorded during production. {ˈækˌchaʊˌwɔlˈkɒst}

actual cubic feet per minute  [CHEM ENG] A measure of the volume of gas at operating temperature and pressure, as distinct from volume of gas at standard temperature and pressure. Abbreviated acfm. {ˈækˌchaʊˌwɔl ˈkjuːˌbɪk fɛt ˈpɜrnˌmɪnˌæt}

actual horsepower See actual power. {ˈækˌchaʊˌwɔlˈhɔrsˌpau̇rˌər}

actual power  [MECH ENG] The power delivered at the output shaft of a source of power. Also known as actual horsepower. {ˈækˌchaʊˌwɔlˈpau̇rˌər}

actual time  [IND ENG] Time taken by a worker to perform a given task. {ˈækˌchaʊˌwɔl ˈtɪm}

actuate  [MECH ENG] To put into motion or mechanical action, as by an actuator. {ˈækˌchaʊˌwət}

actuated roller switch  [MECH ENG] A centrifugal sequence-control switch that is placed in contact with a belt conveyor, immediately preceding the conveyor which it controls. {ˈækˌchaʊˌwɔdˌədəˈrɔlˌswɪtʃ}

actuating system  [CONT SYS] An electric, hydraulic, or other system that supplies and transmits energy for the operation of other mechanisms or systems. {ˈækˌchaʊˌwɔdˌəˌdiˌsəˌtəm}

actuator  [CONT SYS] A mechanism to activate process control equipment by use of pneumatic, hydraulic, or electronic signals; for example, a valve actuator for opening or closing a valve to control the rate of fluid flow. [ENG ACOUS] An auxiliary external electrode used to apply a known electrostatic force to the diaphragm of a microphone for calibration purposes. Also known as electrostatic actuator. [MECH ENG] A device that produces mechanical force by means of pressurized fluid. {ˈækˌchaʊˌwɔdˌər}

adamantine drill  [MECH ENG] A core drill with hardened steel shot pellets that revolve under the rim of the rotating tube, employed in rotary drilling in very hard ground. {ˈadˌəməˌtənˌtɛn ˈdrl}

Adam’s catalyst  [CHEM ENG] Finely divided platinum(IV) oxide, made by fusing hexachloroplatinic(IV) acid with NaNO₃. {ˈaˌdæmz ˈkædˌəˌəst}
adjustable base anchor

ada mud [ENG] A conditioning material added to drilling mud to obtain satisfactory cores and samples of formations. (ˈædəˌmud)

adapter [ENG] A device used to make electrical or mechanical connections between items not originally intended for use together. (ˈædəˌpər"

adaptive branch [CONT SYS] A branch instruction in the computer program controlling a robot that may lead the robot to execute a series of instructions, depending on external conditions. (ˈædəˌpərˌbæŋkˌʃən)

adaptive control [CONT SYS] A control method in which one or more parameters are sensed and used to vary the feedback control signals in order to satisfy the performance criteria. (ˈædəˌpərˌtvlˌkənˌtrəl)

adaptive-control function [CONT SYS] That level in the functional decomposition of a large-scale control system which updates parameters of the optimizing control function to achieve a best fit to current plant behavior, and updates parameters of the direct control function to achieve good dynamic response of the closed-loop system. (ˈædəˌpərˌtvlˌkənˌtrəlˌpərˌstrəkˌchar)

adaptive system [SYS ENG] A system that can change itself in response to changes in its environment in such a way that its performance improves through a continuing interaction with its surroundings. (ˈædəˌpərˌtvlˌsɪsˌtəm)

adaptometer [ENG] An instrument that measures the lowest brightness of an extended area that can barely be detected by the eye. (ˈædəˌpərˌtvlˌmædˌɔr)

addendum [DES ENG] The radial distance between two concentric circles on a gear, one being that whose radius extends to the top of a gear tooth (addendum circle) and the other being that which will roll without slipping on a circle on a mating gear (pitch line). (ˈædəˌdənˌdəmˌsərˌkəl)

adder [ELECTR] A circuit in which two or more signals are combined to give an output-signal amplitude that is proportional to the sum of the input-signal amplitudes. Also known as adder circuit. (ˈædəˌdər)

adding tape [ENG] A surveyor's tape that is calibrated from 0 to 100 by full feet (or meters) in one direction, and has 1 additional foot (or meter) beyond the zero end which is subdivided in tenths or hundredths. (ˈædəˌtæpˌtərəlˌbæsˌæŋˌkər)
adjustable parallels  [ENG] Wedge-shaped iron bars placed with the thin end of one on the thick end of the other, so that the top face of the upper and the bottom face of the lower remain parallel, but the distance between the two faces is adjustable; the bars can be locked in position by a screw to prevent shifting. { ə'jas-tə-bal 'pər-ə,lez}

adjustable square  [ENG] A try square with an arm that is at right angles to the ruler, the position of the arm can be changed to form an L or a T. Also known as double square. { ə'jas-tə-bal 'skwer}

adjustable wrench  [ENG] A wrench with one jaw which is fixed and another which is adjustable; the size is adjusted by a knurled screw. { ə'jas-tə-bal 'rench}

adjusting  [ENG] In measurement technology, setting or compensating a measuring instrument or a weight in such a way that the indicated value deviates as little as possible from the actual value. { ə'jest-in}

adjutage  [ENG] A tube attached to a container of liquid at an orifice to facilitate or regulate outflow. {æj-'ɔ,tæzə}

admittance  [ELEC] A measure of how readily air, as in sand or soil. { e admittance

adobe construction  [BUILD] Wall construction with sun-dried blocks of adobe soil. { ə'dəb-bə kan'stræk-shən}

ADP See automatic data processing

ADR studio  [ENG ACOUS] A sound-recording studio used in motion-picture and television production to allow an actor who did not intelligibly record his or her speech during the original filming or video recording to do so by watching himself or herself on the screen and repeating the original speech with lip synchronization; it is equipped with facilities for recreating the acoustical liveness and background sound of the environment of the original dialog. Derived from automatic dialog replacement studio. Also known as post synchronizing studio. { æd'mit-əns}

adz block  [DES ENG] A tool having a rollerk

adz  [DES ENG] A cutting tool with a thin arched blade, sharpened on the concave side, at right angles on the handle, used for rough dressing of timber. { əd'z blov}(adj)

adz  [ENG] A fluid-holding tank with provisions to aerate its contents by bubbling air into a solution by spraying, stirring, or similar method. 2. Supplying or infusing with air, as in sand or soil. { ər-ə-shan}

aerator  [DES ENG] A tool having a roller equipped with hollow fins; used to remove cores of soil from turf. [ENG] 1. One who aerates. 2. Equipment used for aeration. 3. Any device for supplying air or gas under pressure, as for fumigating, welding, or ventilating. [MECH ENG] Equipment used to inject compressed air into sewage in the treatment process. { ər-ət-ər}

aerial cableway  See aerial tramway. { ər-əl ka-′bæl,wa}

aerial photogrammetry  [ENG] Use of aerial photographs to make accurate measurements in surveying and mapmaking. { ər-əl ə fot-ə-grə-mə-trē}

aerial photographic reconnaissance  See aerial photoreconnaissance. { ər-əl ə ˌfōd-əˌgraf-ik ri′kān-ə-sans}

aerial photography  [ENG] The making of photographs of the ground surface from an aircraft, spacecraft, or rocket. Also known as aero photograpy. { ər-əl ə fa′tār-ə-fē }

aerial photoreconnaissance  [ENG] The obtaining of information by air photography; the three types are strategic, tactical, and survey-cartographic photoreconnaissance. Also known as aerial photographic reconnaissance. { ər-əl ə ˌfōd-əˌri′kān-ə-sans}

aerial reconnaissance  [ENG] The collection of information by visual, electronic, or photographic means while aloft. { ər-ə-l ri′kān-ə-sans}

aerial ropeway  See aerial tramway. { ər-ə-l ′rōp,wa}
aerial spud [MECH ENG] A cable for moving and anchoring a dredge. ['eɪr-eɪl 'spæd]  
aerial survey [ENG] A survey utilizing photographic, electronic, or other data obtained from an airborne station. Also known as aerosurvey, air survey. ['eɪr-eɪl 'sər-vaɪ]  
aerial tramway [MECH ENG] A system for transporting bulk materials that consists of one or more cables supported by steel towers and is capable of carrying a traveling carriage from which loaded buckets can be lowered or raised. Also known as aerial cableway, aerial ropeway. ['eɪr-eɪl 'træm,waɪ]  
aeroballistics [MECH] The study of the interaction of projectiles or high-speed vehicles with the atmosphere. ['eɪr-ə-bal'listɪks]  
aerobic-anaerobic interface [CIV ENG] That point in bacterial action in the body of a sewage sludge or compost heap where both aerobic and anaerobic microorganisms participate, and the decomposition of the material goes no further. ['eɪr-əbɪk-ənərəbɪk 'ɪntəfɪr]  
aerobic digestion [CHEM ENG] Digestion of matter suspended or dissolved in waste by microorganisms under favorable conditions of oxygenation. ['eɪr-əbɪk 'dʒɪstʃən]  
aerobic lagoon [CIV ENG] An aerated pond in which the solids from a sewage plant are placed in the lower layer, the solids are partially decomposed by anaerobic bacteria, while air or oxygen is bubbled through the upper layer to create an aerobic condition. ['eɪr-əbɪk 'læʊɡɔn]  
aerobic pond See aerobic lagoon. ['eɪr-əbɪk 'pɒnd]  
aeroclorination [CIV ENG] Treatment of sewage with compressed air and chlorine gas to remove fatty substances. ['eɪr-əkloʊrənɪkeɪʃən]  
aerodrome See airport. ['eɪr-ədrəm]  
aerodynamic balance [ENG] A balance used for the measurement of the forces exerted on the surfaces of instruments exposed to flowing air; frequently used in tests made on models in wind tunnels. ['eɪr-ədə'næm-ɪk 'bæl-əns]  
aerodynamic trajectory [MECH] A trajectory or part of a trajectory in which the missile or vehicle encounters sufficient air resistance to stabilize its flight or to modify its course significantly. ['eɪr-ədə'ræktɪri]  
aerolasticity [MECH] The deformation of structurally elastic bodies in response to aerodynamic loads. ['eɪr-ə'læsɪstɪs]  
aerofall mill [MECH ENG] A grinding mill of large diameter with either lumps of ore, pebbles, or steel balls as crushing bodies; the dry load is airsew to remove mesh material. ['eɪr-əfʊll 'mɪl]  
aerofilter [CIV ENG] A filter bed for sewage treatment consisting of coarse material and operated at high speed, often with recirculation. ['eɪr-ə,ˈfɪl-tər]  
aerograph [ENG] Any self-recording instrument carried aloft by any means to obtain meteorological data. ['eɪr-əˌgrɑf]  
aerometeograph [ENG] A self-recording instrument used on aircraft for the simultaneous recording of atmospheric pressure, temperature, and humidity. ['eɪr-əˌmɛt-əˌgrɑf]  
aerometer [ENG] An instrument to ascertain the weight or density of air or other gases. ['eɪr-əˌmət-ər]  
aerophotography See aerial photography. ['eɪr-əˌfəʊˌtəˈɡrəfi]  
aerosol generator [MECH ENG] A mechanical means of producing a system of dispersed phase and dispersing medium, that is, an aerosol. ['eɪr-əˌsɔlˌdʒenərətə]  
aerospace engineering [ENG] Engineering pertaining to the design and construction of aircraft and space vehicles and the control of missiles, earth satellites, and space vehicles and probes. ['eɪr-əˌspæsˌɪndəstrɪ]  
aerospace industry [ENG] Industry concerned with the use of vehicles in both the earth's atmosphere and space. ['eɪr-əˌspæsˌɪnˌdæstrɪ]  
aerostatic balance [ENG] An instrument for weighing air. ['eɪr-əˌstætɪkˌbaləns]  
aerosurvey See aerial survey. ['eɪr-əˌsərvə]  
aerotrain [ENG] A train that is propelled by a fan jet engine and floats on a cushion of low-pressure air, traveling at speeds up to 267 miles (430 kilometers) per hour. ['eɪr-əˌtræn]  
aesthesiometer See esthesiometer. (es,θiˈzɪmətər)  
affreightment [IND ENG] The lease of a vessel for the transportation of goods. (ˌɑfrɛɪtment)  
A frame [BUILD] A dwelling whose main frames are in the shape of the letter A. [ENG] Two poles supported in an upright position by braces or guys and used for lifting equipment. Also known as double mast. (ˈɑf,frɛm)  
afterboil [MECH ENG] In an automotive engine, coolant boiling after the engine has stopped because of the inability of the engine at rest to dissipate excess heat. (ˈɑfˌtərˌboɪl)  
afterburning [MECH ENG] Combustion in an internal combustion engine following the maximum pressure of explosion. (ˈɑfˌtərˌbɑrnɪŋ)  
aftercondenser [MECH ENG] A condenser in the second stage of a two-stage ejector, used in steam power plants, refrigeration systems, and air conditioning systems. (ˈɑfˌtərˌkɑndensər)  
aftercooler [MECH ENG] A heat exchanger which cools air that has been compressed; used on turbocharged engines. (ˈɑfˌtərˌkʊlrər)  
aftercooling [MECH ENG] The cooling of a gas after its compression. (ˈɑfˌtərˌkʊlnɪŋ)  
afterfilter [MECH ENG] In an air-conditioning system, a high-efficiency filter located near a terminal unit. Also known as final filter. (ˈɑfˌtərˌfiˈlɪtər)
afterrunning [MECH ENG] In an automotive engine, continued operation of the engine after the ignition switch is turned off. Also known as dieseling, run-on. 'əf-tər,ən-'iŋ-

after top dead center [MECH ENG] The position of the piston after reaching the top of its stroke in an automotive engine. 'əf-tər 'tāp ˈded 'sen-tər-

agger [CIV ENG] A material used for road fill over low grade ground. 'əj-ər-

aggregate bin [ENG] A structure designed for storing and dispensing dry granular construction materials such as sand, crushed stone, and gravel; usually has a hopperlike bottom that funnels the material to a gate under the structure. 'əg-grə-gət 'bīn-

aggregate interlock [ENG] The projection of aggregate particles or portions thereof from one side of a joint or crack in concrete into recesses in the other side so as to effect load transfer in compression and shear, and to maintain mutual alignment. 'əg-grə-gət 'in-'tər-lək-

aggregate production scheduling [IND ENG] A type of planning at a broad level without consideration of individual products and activities in order to develop a program of output that will meet future demand under given constraints. 'əg-rə-gət ˈprāj-dək-shən ˈskeptə-ˈpə-ləj-

aggressive carbon dioxide [CHEM ENG] The carbon dioxide dissolved in water in excess of the amount required to precipitate a specified concentration of calcium ions as calcium carbonate, used as a measure of the corrosivity and scaling properties of water. 'əgˈres-iv 'kər-ˈbən dəlˈaık,ˌstəd-

agile manufacturing [IND ENG] Operations that can be rapidly reconfigured to satisfy changing market demands. 'ə-gəl, ˈmən-səˈjü-ət-kər-

aging [ELEC] Allowing a permanent magnet, capacitor, meter, or other device to remain in storage for a period of time, sometimes with a voltage applied, until the characteristics of the device become essentially constant. [ENG] 1. The changing of the characteristics of a device due to its use. 2. Operation of a product before shipment to stabilize characteristics or detect early failures. 'ə-gi-

agitating speed [MECH ENG] The rate of rotation of the drum or blades of a truck mixer or other device used for agitation of mixed concrete. 'ə-gi-ˈtædˌiŋˌspèd-

agitating truck [MECH ENG] A vehicle carrying a drum or agitator body, in which freshly mixed concrete can be conveyed from the point of mixing to that of placing, the drum being rotated continuously to agitate the contents. 'ə-giˈtædˌiŋˌtræk-

agitator [MECH ENG] A device for keeping liquids and solids in liquids in motion by mixing, stirring, or shaking. 'ə-giˈtædˌər-

agitator body [MECH ENG] A truck-mounted drum for transporting freshly mixed concrete. Rotation of internal paddles or of the drum prevents the setting of the mixture prior to delivery. 'ə-giˈtædˌər-ˈbādˌə-

agricultural pipe drain [CIV ENG] A system of porous or perforated pipes laid in a trench filled with gravel or the like, used for draining subsoil. 'ə-griˈrækəlˌcha-rəlˌpripˌdræn-

tural robot [CONT SYS] A robot used to pick and harvest farm products and fruits. 'ə-griˈrækəlˌcha-rəlˌtōˌbät-

AGV See automated guided vehicle.

aided tracking [ENG] A system of radar-tracking a target signal in bearing, elevation, or range, or any combination of these variables, in which the rate of motion of the tracking equipment is machine-controlled in collaboration with an operator so as to minimize tracking error. 'əd-ədˌtrəkˈtɪŋ-

aided-tracking mechanism [ENG] A device consisting of a motor and variable-speed drive which provides a means of setting a desired tracking rate into a director or other fire-control instrument, so that the process of tracking is carried out automatically at the set rate until it is changed manually. 'əd-ədˌtrəkˌtɪŋˌməkˌə-ˌnizəm-

aided-tracking ratio [ENG] The ratio between the constant velocity of the aided-tracking mechanism and the velocity of the moving target. 'əd-ədˌtrəkˌtɪŋˌrə-ˈshō-

aiguille [ENG] A slender form of drill used for boring or drilling a blasthole in rock. 'əˈgwəl-

aiming circle [ENG] An instrument for measuring angles in azimuth and elevation in connection with artillery firing and general topographic work, equipped with fine and coarse azimuth micrometers and a magnetic needle. 'əmˈiŋ-

aiming screws [MECH ENG] On an automotive vehicle, spring-loaded screws designed to secure headlights to a support frame and permit aiming of the headlights in horizontal and vertical planes. 'əmˈiŋˌskrüz-

AIR See air-injection reactor. 'ər-

air-actuated [ENG] Powered by compressed air. 'ər-ˈakˌchaˌwədˌəd-

air-arc furnace [ENG] An arc furnace designed to power wind tunnels, the air being superheated to 20,000 K and expanded to emerge at supersonic speeds. 'ərˌərˌkər-

air aspirator valve [MECH ENG] On certain automotive engines, a one-way valve installed on the exhaust manifold to allow air to enter the exhaust system; provides extra oxygen to convert carbon monoxide to carbon dioxide. Also known as gulp valve. 'ərˌəsˈpæˌrædˌərˌvəl-

air-assist forming [ENG] A plastics thermoforming method in which air pressure is used to partially preform a sheet before it enters the mold. 'ərˌəsˈsistˌfərmin-

air-atomizing oil burner [ENG] An oil burner in which a stream of fuel oil is broken into very fine droplets through the action of compressed air. 'ərˌətˌəmˈzətˌərˌoɪˌbərnˌər-

air bag [MECH ENG] An automotive vehicle passenger safety device consisting of a passive restraint in the form of a bag which is automatically
inflated with gas to provide cushioned protection against the impact of a collision. (′erˌbæg)

air belt  [MECH ENG] The chamber which equalizes the pressure that is blasted into the cupola at the tuyeres. (′erˌbelt)

air bind  [ENG] The presence of air in a conduit or pump which impedes passage of the liquid. (′erˌbind)

airblasting  [ENG] A blasting technique in which air at very high pressure is piped to a steel shell in a shot hole and discharged. Also known as air breaking. (′erˌblæst-ig)

air bleeder  [MECH ENG] A device, such as a needle valve, for removing air from a hydraulic system. (′erˌbliď-ər)

airborne collision warning system  [ENG] A system such as a radar set or radio receiver carried by an aircraft to warn of the danger of possible collision. (′erˌbôrn kal′iZH-ən ˌbôrn-igˌsis-
tam)

airborne detector  [ENG] A device, transported by an aircraft, whose function is to locate or identify an air or surface object. (′erˌbôrn diˈtek-tər)

airborne electronic survey control  [ENG] The airborne portion of very accurate positioning systems used in controlling surveys from aircraft. (′erˌbôrn iˌlekˈtrân-ik ˈsôr-
ˌvā ˈkàn trôl)

airborne intercept radar  [ENG] Airborne radar used to track and “lock on” to another aircraft to be intercepted or followed. (′erˌbôrn ˈin-
tərˌsept ˌrāˌdär)

airborne magnetometer  [ENG] An airborne instrument used to measure the magnetic field of the earth. (′erˌbôrn ˌmagnəˈtām-əd-ər)

airborne profile recorder  [ENG] An electronic instrument that emits a pulsed-type radar signal from an aircraft to measure vertical distances between the aircraft and the earth’s surface. Abbreviated APR. Also known as terrain profile recorder (TPR). (′erˌbôrn ˈprôˌflīˌrîˌkôrd-ər)

airborne radar  [ENG] Radar equipment carried by aircraft to assist in navigation by piloting, to determine drift, and to locate weather disturbances; a very important use is locating other aircraft either for avoidance or attack. (′erˌbôrn ˈrāˌdär)

airborne waste  [ENG] Vapors, gases, or particulates introduced into the atmosphere by evaporation, chemical, or combustion processes; a frequent cause of smog and an irritant to eyes and breathing passages. (′erˌbôrn ˈwäst)

air-bound  [ENG] Of a pipe or apparatus, containing a pocket of air that prevents or reduces the desired liquid flow. (′erˌbōnd)

air brake  [MECH ENG] An energy-conversion mechanism activated by air pressure and used to retard, stop, or hold a vehicle or, generally, any moving element. (′erˌbrake)

air breaking  See airblasting. (′erˌbræk-ig)

air-breathing  [MECH ENG] Of an engine or aerodynamic vehicle, required to take in air for the purpose of combustion. (′erˌbrêth-ig)
The maintenance of certain aspects of the environment within a defined space to facilitate the function of that space; aspects controlled include air temperature and motion, radiant heat level, moisture, and concentration of pollutants such as dust, microorganisms, and gases. Also known as climate control.

See pneumatic conveyor. See air-cooled engine.

An engine cooled directly by a stream of air without the interposition of a liquid medium.

A finned-tube (extended-surface) heat exchanger with hot fluids inside the tubes, and cooling air that is fan-blowed (forced draft) or fan-pulled (induced draft) across the tube bank.

Lowering of air temperature for comfort, process control, or food preservation.

See airway.

The sensing and discovery of the presence of aircraft; major techniques include radar, acoustical, and optical methods.

An instrument carried by an aircraft for the purpose of obtaining samples of airborne particles.

To vulcanize at ordinary room temperatures, or without the aid of heat.

A stream of high-velocity temperature-controlled air which is directed compressed air is the actuating fluid.

An empty space left around the external foundation wall of a building.

A transporta-

A suspended acoustical ceiling in which the board or tile is provided with small, evenly distributed mechanical perforations; designed to provide a desired flow of air from a pressurized plenum above.

A type of diving in which the diver's breathing medium is a normal atmospheric mixture of oxygen and nitrogen, limited to depths of 190 feet (58 meters).

An empty space left around the external foundation wall of a building to prevent the earth from lying against it and causing dampness.

Combining pneumatic and hydraulic action for operation.

A drill powered by compressed air.

Removing moisture from a material by exposure to air to the extent that no further moisture is released on contact with air important in lumber manufacture.

An engine in which compressed air is the actuating fluid.

The inclusion of minute bubbles of air in cement or concrete through the addition of some material during grading or mixing to reduce the surface tension of the water, giving improved properties for the end product.

A device that is fitted to a pipe carrying a liquid for releasing excess air; it contains a valve that controls air release while preventing loss of liquid.

Any air-exhaust unit used to carry away dirt particles, odors, or fumes.

The area of an airport for the takeoff and landing of airplanes.

A device that reduces the concentration of solid particles in an airstream to a level that can be tolerated in a process or space occupancy; a component of most systems in which air is used for industrial processes, ventilation, or comfort air conditioning.

Dissolved air flotation.

A pipe, tube, or channel through which air moves into or out of an enclosed space. Also known as air duct.
airflow orifice  [ENG] An opening through which air moves out of an enclosed space. {‘erˌflō əˈrɪfɪs}.

airflow pipe  [ENG] A tube through which air is conveyed from one location to another. {‘erˌflō ˈpɪp}.

air-fuel mixture  [MECH ENG] In a carbureted gasoline engine, the charge of air and fuel that is mixed in the appropriate ratio in the carburetor and subsequently fed into the combustion chamber. {‘erˌfyʊlˌmɪks-ˈcharər}.

air gage  [ENG] 1. A device that measures air pressure. 2. A device that compares the shape of a machined surface to that of a reference surface by measuring the rate of passage of air between the surfaces. {‘erˌgæl}.

air gap  [ELECTR] 1. A gap or an equivalent filler of nonmagnetic material across the core of a choke, transformer, or other magnetic device. 2. A spark gap consisting of two electrodes separated by air. 3. The space between the stator and rotor in a motor or generator. [ENG] 1. The distance between two components or parts. 2. In plastic extrusion coating, the distance from the opening of the extrusion die to the nip formed by the pressure and chill rolls. 3. The unobstructed vertical distance between the lowest opening of a faucet (or the like) which supplies a plumbing fixture (such as a tank or washbowl) and the level at which the fixture will overfill. {‘erˌgæp}.

air grating  [BUILD] A fixed metal grille on the exterior of a building through which air is admitted. {‘erˌgrætɪŋ}.

air hammer  See pneumatic hammer. {‘erˌhæmər}.

air-handling system  [MECH ENG] An air-conditioning system in which an air-handling unit provides part of the treatment of the air. {‘erˌhænd-lɪŋˌsɪs-ˈtəm}.

air-handling unit  [MECH ENG] A packaged assembly of air-conditioning components (coils, filters, fan humidifier, and so forth) which provides for the treatment of air before it is distributed. {‘erˌhændˌlɪŋˌjuːˈnæt}.

air heater  See air preheater. {‘erˌhɛdər}.

air-heating system  See air preheater. {‘erˌhɛdərnˌsɪs-ˌtəm}.

air hoist  [MECH ENG] A lifting tackle or tugger constructed with cylinders and pistons for reciprocating motion and air motors for rotary motion, all powered by compressed air. Also known as pneumatic hoist. {‘erˌhɔɪst}.

air horn  [MECH ENG] In an automotive engine, the upper portion of the carburetor barrel through which entering air passes in quantities controlled by the choke plate and the throttle plate. {‘erˌhɔrn}.

air horsepower  [MECH ENG] The theoretical (minimum) power required to deliver the specified quantity of air under the specified pressure conditions in a fan, blower, compressor, or vacuum pump. Abbreviated air hp. {‘erˌhɔpˌˌpauər}.

air injection reacto r  [MECH ENG] A unit installed in an automotive engine which mixes fresh air with hot exhaust gases in the exhaust manifold to react with any gasoline that has escaped unburned from the cylinders. Abbreviated AIR. {‘erˌɪnjektʃən rɪˈæk-tər}.

air injection system  [MECH ENG] A device that uses compressed air to inject the fuel into the cylinder of an internal combustion engine. Also known as thermostart. {‘erˌɪnjektʃənˌsɪs-ˌtəm}.

air inlet  [MECH ENG] In an air-conditioning system, a device through which air is exhausted from a room or building. {‘erˌɪnˌlɛt}.

air-inlet valve  [MECH ENG] In a heating/air-conditioning system of a motor vehicle, a valve in the plenum blower assembly that permits selection of either inside or outside air. {‘erˌɪnˌlɛtˌvəl}.

air knife  [ENG] A device that uses a thin, flat jet of air to remove the excess coating from freshly coated paper. {‘erˌnɪ夫ˌkɒd-ɪŋ}.

air-knife coating  [ENG] An even film of coating left on paper after treatment with an air knife. {‘erˌnɪ夫ˌkɑd-ɪŋˌkoʊtɪŋ}.

air-lance  [ENG] To direct a pressurized-air stream to remove unwanted accumulations, as in boiler-wall cleaning. {‘erˌlɑns}.

air leakage  [MECH ENG] 1. In ductwork, air which escapes from a joint, coupling, and such. 2. The undesired leakage or uncontrolled passage of air from a ventilation system. {‘erˌleɪˈkeɪ-əl}.

airless spraying  [ENG] The spraying of paint by means of high fluid pressure and special equipment. Also known as hydraulic spraying. {‘erˌlɛs ˈspær-ɪŋ}.

air lift  [MECH ENG] 1. Equipment for lifting slurry or dry powder through pipes by means of compressed air. 2. See air-lift pump. {‘erˌlɪft}.

air-lift hammer  [MECH ENG] A gravity drop hammer used in closed die forging in which the ram is raised to its starting point by means of an air cylinder. {‘erˌlɪftˌhæmər}.

air-lift pump  [MECH ENG] A device composed of two pipes, one inside the other, used to extract water from a well; the lower end of the pipes is submerged, and air is delivered through the inner pipe to form a mixture of air and water which rises in the outer pipe above the water in the well; also used to move corrosive liquids, mill tailings, and sand. Also known as air lift. {‘erˌlɪftˌpʌmp}.

air line  [ENG] A fault, in the form of an elongated bubble, in glass tubing. Also known as hairline. [MECH ENG] A duct, hose, or pipe that supplies compressed air to a pneumatic tool or piece of equipment. {‘erˌlɪn}.

air-line lubricator  See line oiler. {‘erˌlɪnˌljuː-ˈbrəˌkɑd-ər}.

air lock  [ENG] 1. A chamber capable of being hermetically sealed that provides for passage between two places of different pressure, such as between an altitude chamber and the outside.
air-lock strip

airport engineering [CIV ENG] The planning, design, construction, and operation and maintenance of facilities providing for the landing and takeoff, loading and unloading, servicing, maintenance, and storage of aircraft. {‘er,port en.'ja'nir-iş}
air separator  [MECH ENG] A device that uses an air current to separate a material from another of greater density or particles from others of lesser size.  

air shaft  [BUILD] An open space surrounded by the walls of a building or buildings to provide ventilation for windows. Also known as air well.  

air shot  [ENG] A shot prepared by loading (charging) so that an air space is left in contact with the explosive for the purpose of lessening its shattering effect.  

Airslide conveyor  [MECH ENG] An air-activated gravity-type conveyor, of the Fuller Company, using low-pressure air to aerate or fluidize pulverized material to a degree which will permit it to flow on a slight incline by the force of gravity.  

air space  [ENG] An enclosed space containing air in a wall for thermal insulation.  

airspeed head  [ENG] Any instrument or device, usually a pitot tube, mounted on an aircraft for receiving the static and dynamic pressures of the air used by the airspeed indicator.  

airspeed indicator  [ENG] A device that computes and displays the speed of an aircraft relative to the air mass in which the aircraft is flying.  

air spring  [MECH ENG] A spring in which the energy storage element is air confined in a container that includes an elastomeric bellows or diaphragm.  

air-standard cycle  [THERMO] A thermodynamic cycle in which the working fluid is considered to be a perfect gas with such properties of air as a volume of 12.4 cubic feet per pound at 14.7 pounds per square inch (approximately 0.7756 cubic meter per kilogram at 101.36 kilopascals) and 492°F and a ratio of specific heats of 1.4.  


air starting valve  [MECH ENG] A device that admits compressed air to an air starter.  

air stripping  [CHEM ENG] The process of bubbling air through water to remove volatile organic substances from the water.  

air-supply mask  See air-tube breathing apparatus.  

air surveillance  [ENG] Systematic observation of the airspace by visual, electronic, or other means, primarily for identifying all aircraft in that airspace, and determining their movements.  

air surveillance radar  [ENG] Radar of moderate range providing position of aircraft by azimuth and range data without elevation data, used for air-traffic control.  

air survey  See aerial survey.  

air-suspension encapsulation  [CHEM ENG] A technique for microencapsulation of various types of solid particles; the particles undergo a series of cycles in which they are first suspended by a vertical current of air while they are sprayed with a solution of coating material, and are then moved by the airstream into a region where they undergo a drying treatment. Also known as Wurster process.  

air-suspension system  [MECH ENG] Parts of an automotive vehicle that are intermediate between the wheels and the frame, and support the car body and frame by means of a cushion of air to absorb road shock caused by passage of the wheels over irregularities.  

air sweetening  [CHEM ENG] A process in which air or oxygen is used to oxidize lead mercaptidesized material to a degree which will permit it to dissolve in a water wash.  

air system  [MECH ENG] A mechanical refrigeration system in which air serves as the refrigerant in a cycle comprising compressor, heat exchanger, expander, and refrigerating core.  

air terminal  [CIV ENG] A facility providing a place of assembly and amenities for airline passengers and space for administrative functions.  

air thermometer  [ENG] A device that measures the temperature of an enclosed space by means of variations in the pressure or volume of air contained in a bulb placed in the space.  

airtight  [ENG] Not permitting the passage of air. Also known as airproof.  

air-to-air resistance  [CIV ENG] The resistance provided by the wall of a building to the flow of heat.  

air toxics See hazardous air pollutants.  

air trap  [CIV ENG] A U-shaped pipe filled with water that prevents the escape of foul air or gas from such systems as drains and sewers. See air pocket.  

air-tube breathing apparatus  [ENG] A device consisting of a smoke helmet, mask, or mouthpiece supplied with fresh air by means of a flexible tube. Also known as air-supply mask.  

air-tube clutch  [MECH ENG] A clutch fitted with a tube whose inflation causes the clutch to engage, and deflation, to disengage.  

air valve  [MECH ENG] A valve that automatically lets air out of or into a liquid-carrying pipe when the internal pressure drops below atmospheric.  

air vessel  [ENG] 1. An enclosed volume of air which uses the compressibility of air to minimize water hammer. Also known as accumulator.  

2. An enclosed chamber using the compressibility of air to promote a more uniform flow of water in a piping system.  

air washer  [MECH ENG] 1. A device for cooling and cleaning air in which the entering warm,
moist air is cooled below its dew point by refrigerated water so that although the air leaves close to saturation with water, it has less moisture per unit volume than when it entered. 2. Apparatus for washing particulates and soluble impurities from air by passing the airstream through a liquid bath or spray. (’er ,wash-ar )

**air-water jet**  [ENG] A jet of mixed air and water which leaves a nozzle at high velocity, used in cleaning the surfaces of concrete or rock. (’er ,wod-ar )

**air-water storage tank**  [ENG] A water storage tank in which the air above the water is compressed. (’er ,wod-ar ’stor-ii ,tank )

**airway**  [BUILD] A passage for ventilation between thermal insulation and roof boards. (’er ,wà )

**air well**  [ENG] See air shaft. (’er ,wel )

**Airy points**  [ENG] The points at which a horizontal rod is optionally supported to avoid its bending. (’er-e ,pawns )

**Airy stress function**  [MECH] A biharmonic function of two variables whose second partial derivatives give the stress components of a body subject to a plane strain. (’er-e ’stres ,faŋk-shàn )

**aisleway**  [CIV ENG] A passage or walkway within a factory, storage building, or shop permitting the flow of inside traffic. (’il, wà )

**Aitken dust counter**  [ENG] An instrument for determining the dust content of the atmosphere. Also known as Aitken nucleus counter. (’át-kan ’dast ,kaunt-ar )

**Aitken nucleus counter** See Aitken dust counter. (’át-kan ’nû-klé-as ,kaunt-ar )

**alarm gage**  [ENG] A device that actuates a signal either when the steam pressure in a boiler is too high or when the water level in a boiler is too low. (’al-làm ,gàl )

**alarm system**  [ENG] A system which operates a warning device after the occurrence of a dangerous or undesirable condition. (’al-làm sis-tam )

**alarm valve**  [ENG] A device that sounds an alarm when water flows in an automatic sprinkler system. (’al-làm ,valv )

**albedometer**  [ENG] An instrument used for the measurement of the reflecting power, that is, the albedo, of a surface. (’al-bàdà-mad-ar )

**Alberger process**  [CHEM ENG] A method of manufacturing salt by heating brine at high pressure and passing it to a graverel which removes calcium sulfate; the salt crystallizes as the pressure is reduced and thus is separated from the brine. (’al-bàr-gàr ’präs-os )

**alcoholimeter** See alcoholometer. (’al-ka,hól-lim-àd-ar )

**alcoholometer**  [ENG] See alcoholometer. (’al-ka,hól ,med-ar )

**alcoholometer**  [ENG] A device, such as a form of hydrometer, that measures the quantity of an alcohol contained in a liquid. Also known as alcoholimeter. (’al-ka,hól-làm-mad-ar )

**alcohol thermometer**  [ENG] A liquid-in-glass thermometer that uses ethyl alcohol as its working substance. (’al-ka,hól-thor’màm-ad-ar )

**alidade**  [ENG] 1. An instrument for topographic surveying and mapping by the plane-table method. 2. Any sightline device employed for angular measurement. (’al-à,dàd )

**aligning drift**  [MECH ENG] A rod or bar that is used for aligning parts during assembly. (’al-líng ,drift )

**alignment**  [CIV ENG] In a survey for a highway, railroad, or similar installation, a ground plan that shows the horizontal direction of the route. (’elektr ’) The process of adjusting components of a system for proper interrelationship, including the adjustment of tuned circuits for proper frequency response and the time synchronization of the components of a system. (’al-líng )

**Placing of surveying points along a straight line. (’al-líng-mànt )

**alignment correction**  [ENG] A correction applied to the measured length of a line to allow for not holding the tape exactly in a vertical plane of the line. (’al-líng-mànt kà-rek-shàn )

**alignment pin**  [DES ENG] Pin in the center of the base of an octal, loctal, or other tube having a single vertical projecting rib that aids in correctly inserting the tube in its socket. (’al-líng-mànt ,pin )

**alignment wire** See ground wire. (’al-líng-mànt ,wàr )

**alkali ion diode**  [ENG] In testing for leaks, a device which senses the presence of halogen gases by the use of positive ions of alkali metal on the heated diode surfaces. (’al-ka ,li ’fàn ,dí, ðd )

**alkaline wash**  [CHEM ENG] The removal of impurities from kerosine, used for illuminating purposes, by caustic soda solution. (’al-ka-lín ,wàsh )

**Alkark process**  [CHEM ENG] Catalytic alkylation of aromatic hydrocarbons with olefins to produce alkylaromatics; for example, production of ethylbenzene from benzene and ethylene. (’al-kàr ,pràn-os )

**alkylate bottom**  [CHEM ENG] Residue from fractionation of total alkylate which boils at a higher temperature than aviation gasolines. (’al-ka,làt ’bàd-ar )

**alkylation**  [CHEM ENG] A refinery process for chemically combining isoparaffin with olefin hydrocarbons. (’al-ka’la-shàn )

**aligne**  [BUILD] A part of a wall which is thinner than the rest, especially the spandrel under a window. (’al-lezh )

**Allen screw**  [DES ENG] A screw or bolt which has an axial hexagonal socket in its head. (’al-len ,skrù )

**Allen wrench**  [DES ENG] A wrench made from a straight or bent hexagonal rod, used to turn an Allen screw. (’al-len ,rench )

**alligator shears**  [ENG] A cutting tool with a fixed lower blade and a movable upper blade (shearing arm) that moves in an arc around a fulcrum pin, used mainly for shearing applications that do not require great accuracy. (’al-a-gàd-ar ,shirz )
alligator wrench  [DES ENG] A wrench having fixed jaws forming a V, with teeth on one or both jaws.  \{'al-ga-tr, tren\}
allocate  [IND ENG] To assign a portion of a resource to an activity.  \{'a-lok\,kät\}
allowable bearing value  [CIV ENG] The maximum permissible pressure on foundation soil that provides adequate safety against rupture of the soil mass or movement of the foundation of such magnitude as to impair the structure imposing the pressure. Also known as allowable soil pressure.  \{a\lau-a-bal 'ber-iŋ, val-yü\}
allowable load  [MECH] The maximum force that may be safely applied to a solid, or is permitted by applicable regulators.  \{a\lau-a-bal 'lōd\}
allowable soil pressure  See allowable bearing value.  \{a\lau-a-bal 'soil pre-shər\}
allowable stress  [MECH] The maximum force per unit area that may be safely applied to a solid.  \{a\lau-a-bal 'strēs\}
allowance  [DES ENG] An intentional difference in sizes of two mating parts, allowing clearance usually for a film of oil, for running or sliding fits.  \{a\lau-a-ans\}
allowed hours  See standard hour.  \{a\lau-aūd 'ə-a-rə\}
allowed time  [IND ENG] Amount of time allowed each employee for personal needs during a work cycle.  \{a\lau-aūd 'tim\}
alloy junction  [ELECTR] A junction produced by alloying one or more impurity metals to a semiconductor to form a p or n region, depending on the impurity used. Also known as fused junction.  \{'a\lau-loy 'jänk-shən\}
alloy-junction diode  [ELECTR] A junction diode made by placing a pill of doped alloying material on a semiconductor material and heating until the molten alloy melts a portion of the semiconductor, resulting in a p\n junction when the dissolved semiconductor recrystallizes. Also known as fused-junction diode.  \{'a\lau-loy 'jänk-shan 'dĭl-ōd\}
al-translational system  [CONT SYS] A simple robotic system in which there is no rotation of the robot or its components during movements of the robot's body.  \{'o\lau-tranzˈlæshən ə-sis-təm\}
al-weather airport  [CIV ENG] An airport with facilities to permit the landing of qualified aircraft and aircrewmen without regard to operational weather limits.  \{'o\lau-weth-ər ərˈpɔrt\}
apha  [ELECTR] The ratio between the change in collector current and the change in emitter current of a transistor.  \{'a\lau-fə\}
apha cutoff frequency  [ELECTR] The frequency at the high end of a transistor's range at which current amplification drops 3 decibels below its low-frequency value.  \{'a\lau-fə ˈkod,əf ˈfrē-kwən-sə\}
apha-ray vacuum gage  [ENG] An ionization gage in which the ionization is produced by alpha particles emitted by a radioactive source, instead of by electrons emitted from a hot filament, used chiefly for pressures from 10⁻¹² to 10⁻⁷ torr. Also known as alphatron.  \{'a\lau-fə rə ˈvák-yūm ɡaɪ\}
alphatron  See alpha-ray vacuum gage.  \{'a\lau-trən\}
alta  See altitude.
altaimuth  [ENG] An instrument equipped with both horizontal and vertical graduated circles, for the simultaneous observation of horizontal and vertical directions or angles. Also known as astronomical theodolite, universal instrument.  \{'a\lau-təz-im\}
alta-azimuth mounting  See altitude-azimuth mounting.  \{'a\lau-təz-im\'
alternate energy  [ENG] Any source of energy other than fossil fuels that is used for constructive purposes.  \{'o\lau-tə-rət-nət ən-ər-jē\}
alternating current  [ELECT] Electric current that reverses direction periodically, usually many times per second. Abbreviated ac.  \{'o\lau-tə-rət-nət ər\}
alternating-current welder  [ENG] A welding machine utilizing alternating current for welding purposes.  \{'o\lau-tə-rət-nəd-ər ər-weld\-
alternating stress  [MECH] A stress produced in a material by forces which are such that each force alternately acts in opposite directions.  \{'o\lau-tə-rət-nəd-ər əstres\}
altilgraph  [ENG] A pressure altimeter that has a recording mechanism to show the changes in altitude.  \{'a\lau-tə-graf\}
altilimeter  [ENG] An instrument which determines the altitude of an object with respect to a fixed level, such as sea level, there are two common types: the aneroid altimeter and the radio altimeter.  \{'a\lau-tə-mətər\}
altilmeter corrections  [ENG] Corrections which must be made to the readings of a pressure altimeter to obtain true altitudes, involve horizontal pressure gradient error and air temperature error.  \{'a\lau-tə-mətər kərek-shən\}
altilmeter setting  [ENG] The value of atmospheric pressure to which the scale of an aneroid altimeter is set; after United States practice, the pressure that will indicate airport elevation when the altimeter is 10 feet (3 meters) above the runway (approximately cockpit height).  \{'a\lau-tə-mətər ə-sed-ə\}
altilmeter-setting indicator  [ENG] A precision aneroid barometer calibrated to indicate directly the local altimeter setting.  \{'a\lau-tə-mətər ə-sed-ə ˈsēd-ər\}
altilmetry  [ENG] The measurement of heights in the atmosphere (altitude), generally by an altimeter.  \{'a\lau-tə-tri\}
altilitude  Abbreviated alt.  [ENG] 1. Height, measured as distance along the extended earth's radius above a given datum, such as average sea level. 2. Angular displacement above the horizon measured by an altitude curve.  \{'a\lau-təd, ə-əd ə\tɪd\}
altilitude azimuth  [ENG] An azimuth determined by solution of the navigational triangle with altitude, declination, and latitude given.  \{'a\lau-təd ətɪd əz-im\}
altilitude-azimuth mounting  [ENG] A two-axis telescope mounting in which the azimuth of the direction in which the telescope is pointed is
American standard pipe thread
American standard beam
American melting point
American standard beam
American standard channel
American standard pipe thread
American filter
American standard beam
American standard channel
American filter
American Table of Distances
American standard screw thread
American system drill
American filter
American condenser
American liquors
American meter
American synthesis
American valve
American ammoniation
American mortars
American amount
American ammoniation
American mortars
American amount
American ammoniation
American mortars
American amount
ampacity [ELEC] Current-carrying capacity in amperes; used as a rating for power cables. {\text{\'am-pə-sar-də}}

amperage [ELEC] The amount of electric current in amperes. Abbreviated amp. {\text{\'amp-rēj}}

amperere [ELEC] The unit of electric current in the rationalized meter-kilogram-second system of units; defined in terms of the force of attraction between two parallel current-carrying conductors. Abbreviated a; A; amp. {\text{\'am-prēr}}

amper-hour meter [ENG] A device that measures the total electric charge that passes a given point during a given period of time. {\text{\'am-pər ˈhauərtə}}

amperometric transducer [ENG] A transducer in which the concentration of a dissolved substance is determined from the electric current produced between two electrodes immersed in the test solution when one of the electrodes is kept at a selected electric potential with respect to the solution. {\text{\'am-pər-oˈmi-trik tranzˈdərə}}

amphibious [MECH ENG] Said of vehicles or equipment designed to be operated or used on either land or water. {\text{\'am-fib-ə-əs}}

amplification factor [ELECTR] In a vacuum tube, the ratio of the incremental change in plate voltage to a given small change in grid voltage, under the conditions that the plate current and all other electrode voltages are held constant. {\text{\'am-plə-ˈfək-tər jəkˈtər}}

amplification noise [ELECTR] Noise generated in the vacuum tubes, transistors, or integrated circuits of an amplifier. {\text{\'am-plə-ˈfək-tər nōz}}

amplifier [ENG] A device capable of increasing the magnitude or power level of a physical quantity, such as an electric current or a hydraulic mechanical force, that is varying with time, without distorting the wave shape of the quantity. {\text{\'am-pləˌfīrə}}

amplifier-type meter [ENG] An electric meter whose characteristics have been enhanced by the use of preamplification for the signal input eventually used to activate the meter. {\text{\'am-pləˌtīpəˌmētər}}

amplify [ENG ACOUS] To strengthen a signal by increasing its amplitude or by raising its level. {\text{\'am-pləˌfīˈərə}}

amplitude-frequency response See frequency response. {\text{\'am-pləˌfri-kənsi riˈspōnsə}}

amplitude-modulated indicator [ENG] A general class of radar indicators, in which the sweep of the electron beam is deflected vertically or horizontally from a base line to indicate the existence of an echo from a target. Also known as deflection-modulated indicator, intensity-modulated indicator. {\text{\'am-pləˌmōdəˈladəd jənˈdərəˌkədərə}}

amplitude modulation [ELECTR] Abbreviated AM. 1. Modulation in which the amplitude of a wave is the characteristic varied in accordance with the intelligence to be transmitted. 2. In telemetry, those systems of modulation in which each component frequency \( f \) of the transmitted intelligence produces a pair of sideband frequencies at carrier frequency plus \( f \) and carrier minus \( f \). {\text{\'am-pləˌmōdəˈladəd jənˈdərəˌkədərə}}

amyllograph [ENG] An instrument used to measure and record the viscosity of starch and flour pastes and the temperature at which they gelatinize. {\text{\'æm-əˌləˌgɹəf}}

analemma [CIV ENG] Any raised construction which serves as a support or rest. {\text{\'æn-əˌləmə}}

analog [ELECTR] 1. A physical variable which remains similar to another variable insofar as the proportional relationships are the same over some specified range, for example, a temperature may be represented by a voltage which is its analog. 2. Pertaining to devices, data, circuits, or systems that operate with variables which are represented by continuously measured voltages or other quantities. {\text{\'æn-əˌləg}}

analog output [CONT SYS] Transducer output in which the amplitude is continuously proportional to a function of the stimulus. {\text{\'æn-əˌləg ˈaʊtˌpʊt}}

analog readout [ENG] A scale on a balance that continuously indicates measurement values by the position of an index mark, either a line or a pointer, opposite a graduated scale which is usually marked with numbers. {\text{\'æn-əˌləg ˈredˌət}}

analog signal [ELECTR] A nominally continuous electrical signal that varies in amplitude or frequency in response to changes in sound, light, heat, position, or pressure. {\text{\'æn-əˌləg ˈsɪgˌnəl}}

analog switch [ELECTR] 1. A device that either transmits an analog signal without distortion or completely blocks it. 2. Any solid-state device, with or without a driver, capable of bilaterally switching voltages or current. {\text{\'æn-əˌləg ˈswɪtʃ}}

analog-to-digital converter [ELECTR] A device which translates continuous analog signals into proportional discrete digital signals. {\text{\'æn-əˌləg ˈtəˌdiʒˌdətəˌkənˈvərəntrə}}

analog-to-frequency converter [ELECTR] A converter in which an analog input in some form other than frequency is converted to a proportional change in frequency. {\text{\'æn-əˌləg ˈtəˌfrɛˈkwənˌsi kənˈvərəntrə}}

analog voltage [ELECTR] A voltage that varies in a continuous fashion in accordance with the magnitude of a measured variable. {\text{\'æn-əˌləg ˈvɒlˈtɪj}}

analytical aerotriangulation [ENG] Analytical phototriangulation, performed with aerial photographs. {\text{\'æn-əˌlədˈidəˌkəl ˈjɛrˌoˌtrɪləˌgəˌjəˌləˌʃən}}

analytical balance [ENG] A balance with a sensitivity of 0.1–0.01 milligram. {\text{\'æn-əˌlədˈidəˌkəl ˈbæləns}}

analytical centrifugation [ENG] Centrifugation following precipitation to separate solids from solid-liquid suspensions, faster than filtration. {\text{\'æn-əˌlədˈidəˌkəl ˈsɛnˌtrɪˌfəˌgəˌʃən}}
analytical nadir-point triangulation [ENG] A method of photogrammetry in which solutions are obtained by mathematical methods. \( \text{analytical nadir-point triangulation} \) 

analytical orientation [ENG] The computational steps required to determine tilt, direction of principal line, flight height, angular elements, and linear elements in preparing aerial photographs for rectification. \( \text{analytical orientation} \)

analytical photogrammetry [ENG] A method of photogrammetry in which solutions are obtained by mathematical methods. \( \text{analytical photogrammetry} \)

analytical photography [ENG] Photography, either motion picture or still, accomplished to determine (by qualitative, quantitative, or any other means) whether a particular phenomenon does or does not occur. \( \text{analytical photography} \)

analytical phototriangulation [ENG] A phototriangulation procedure in which the spatial solution is obtained by computational routines. \( \text{analytical phototriangulation} \)

analytical radar prediction [ENG] Prediction based on proven formulas, power tables, or graphs; considers surface height, structural and terrain information, and criteria for radar reflectivity together with the aspect angle and range to the target. \( \text{analytical radar prediction} \)

analytical radial triangulation [ENG] Radial triangulation performed by computational routines. \( \text{analytical radial triangulation} \)

analytical three-point resection radial triangulation [ENG] A method of computing the coordinates of the ground principal points of overlapping aerial photographs by resecting on three horizontal control points appearing in the overlap area. \( \text{analytical three-point resection radial triangulation} \)

analytical ultracentrifuge [ENG] An ultracentrifuge that uses one of three optical systems (schlieren, Rayleigh, or absorption) for the accurate determination of sedimentation velocity or equilibrium. \( \text{analytical ultracentrifuge} \)

analytic mechanics [MECH] The application of differential and integral calculus to classical (nonquantum) mechanics. \( \text{analytic mechanics} \)

analyzer [ENG] A multifunction test meter, measuring volts, ohms, and amperes. Also known as set analyzer. \( \text{analyzer} \)

anchor [ENG] A device connecting a structure to a heavy masonry or concrete object to a metal plate or to the ground to hold the structure in place. \( \text{anchor} \)

anchorageslip [CIV ENG] An area where a vessel anchors or may anchor because of either suitability or designation. Also known as anchor station. \( \text{anchorageslip} \)

anchorage [CIV ENG] 1. An area where a vessel anchors or may anchor because of either suitability or designation. Also known as anchor station. 2. A device which anchors tendons to the posttensioned concrete member. 3. In pretensioning, a device used to anchor tendons temporarily during the hardening of the concrete. \( \text{anchorage} \)

anchorage deformation [CIV ENG] The shortening of tendons due to their modification or slippage when the prestressing force is transferred to the anchorage device. Also known as anchor slip. \( \text{anchorage deformation} \)

anchorage zone [CIV ENG] 1. In posttensioning, the region adjacent to the anchorage for the tendon which is subjected to secondary stresses as a result of the distribution of the prestressing force. 2. In pretensioning, the region in which bond stresses are developed. \( \text{anchorage zone} \)

anchor bolt [CIV ENG] A bolt used with its head embedded in masonry or concrete and its threaded part protruding to hold a structure or machinery in place. Also known as anchor rod. \( \text{anchor bolt} \)

anchor buoy [ENG] One of a series of buoys marking the limits of an anchorage. \( \text{anchor buoy} \)

anchor charge [ENG] A procedure that allows several charges to be preloaded in a seismic shot hole; the bottom charges are fired first, and the upper charges are held down by anchors. \( \text{anchor charge} \)

anchored bulkhead [CIV ENG] A bulkhead secured to anchor piles. \( \text{anchored bulkhead} \)

anchor log [CIV ENG] A log, beam, or concrete block buried in the earth and used to hold a guy rope firmly. Also known as deadman; ground anchor. \( \text{anchor log} \)

anchor nut [DES ENG] A nut in the form of a tapped insert forced under steady pressure into a hole in sheet metal. \( \text{anchor nut} \)

anchor pile [CIV ENG] A pile that is located on the land side of a bulkhead or pier and anchors it
through such devices as rods, cables, and chains.  
anchor plate [CIV ENG] A metal or wooden plate fastened to or embedded in a support, such as a floor, and used to hold a supporting cable firmly.  
anchor rod [ENG] See anchor bolt.  
anchor station [ENG] See anchorage.  
anchor tower [CIV ENG] 1. A tower which is a part of a crane staging or stiffleg derrick and serves as an anchor. 2. A tower that supports and anchors an overhead transmission line.  
anchor wall [ENG] See deadman.  
AND gate [ELECTR] A circuit which has two or more input-signal ports and which delivers an output only if and when every input signal port is simultaneously energized. Also known as AND circuit, passive AND gate.  
AND/NOR gate [ELECTR] A single logic element whose operation is equivalent to that of two AND gates with outputs feeding into a NOR gate.  
AND NOT gate [ELECTR] A coincidence circuit that performs the logic operation AND NOT, under which a result is true only if statement A is true and statement B is not. Also known as A AND NOT B gate.  
AND-OR-INVERT gate [ELECTR] Gating circuit that produces a prescribed output condition when several possible combined input signals are applied; exhibits the characteristics of the AND gate and the OR gate.  
Anandrade’s creep law [MECH] A law which states that creep exhibits a transient state in which strain is proportional to the cube root of time and then a steady state in which strain is proportional to time.  
Andrews’s curves [THERMO] A series of isothersms for carbon dioxide, showing the dependence of pressure on volume at various temperatures.  
anechoic chamber [ENG] 1. A test room in which all surfaces are lined with a sound-absorbing material to reduce reflections of sound to a minimum. Also known as dead room, free-field room. 2. A room completely lined with a material that absorbs radio waves at a particular frequency or over a range of frequencies; used principally at microwave frequencies, such as for measuring radar beam cross sections.  
anelasticity [MECH] Deviation from a proportion- 
tional relationship between stress and strain.  
anemobiograph [ENG] A recording pressure-
tube anemometer in which the wind scale of the float manometer is linear through the use of springs; an example is the Dines anemometer.  
anemoclinometer [ENG] A type of instrument which measures the inclination of the wind to the 
horizontal plane.  
anemograph [ENG] A record made by an anemograph.  
anemogram [ENG] A record made by an anemograph.  
anemometer [ENG] A device which measures air speed.  
anemoscope [ENG] An instrument for indicating the direction of the wind.  
anemovane [ENG] A combined contact anemometer and wind vane used in the Canadian Meteorological Service.  
aneroid [ENG] 1. Containing no liquid or using no liquid. 2. See aneroid barometer.  
aneroid altimeter [ENG] An altimeter containing an aneroid barometer that actuates the indicator.  
aneroid barograph [ENG] An aneroid barometer arranged so that the deflection of the aneroid capsule actuates a pen which graphs a record on a rotating drum. Also known as aneroidograph, barograph, barometograph.  
aneroid barometer [ENG] A barometer which utilizes an aneroid capsule. Also known as aner- 
oid.  
aneroid calorimeter [ENG] A calorimeter that uses a metal of high thermal conductivity as a heat reservoir.  
aneroid capsule [ENG] A thin, disk-shaped box or capsule, usually metallic, partially evacuated and sealed, held extended by a spring, which expands and contracts with changes in atmos- 
pheric or gas pressure. Also known as bellows.  
aneroid diaphragm [ENG] A thin plate, usually metal, covering the end of an aneroid capsule and moving axially as the ambient gas pressure increases or decreases.  
aneroid flowmeter [ENG] A mechanism to measure fluid flow rate by pressure of the fluid against a bellows counterbalanced by a cali- 
brated spring.  
aneroid liquid-level meter [ENG] A mechanism to measure fluid depth by pressure of the fluid against a bellows which in turn acts on a manom- 
eter or signal transmitter.  
aneroidograph See aneroid barograph.  
aneroid valve [MECH ENG] A valve actuated or control- 
ed by an aneroid capsule.  
angethcho [ENG] A radar echo from a region where there are no visible targets, may be caused by insects, birds, or refractive index variations in the atmosphere.  
angel echo [ENG] A radar beam cross sections. Principally at microwave frequencies, such as for measuring radar beam cross sections.  
angel echo
angle back-pressure valve  [MECH ENG] A back-pressure valve with its outlet opening at right angles to its inlet opening. (ˈaŋ-gəlˈbækˌprɛʃərˌvɑl)  
angle bar  [BUILD] An upright bar at the meeting of two faces of a polygonal window, bay window, or bow window. (ˈaŋ-gəlˈbær)  
angle bead  [BUILD] A strip, usually of metal or wood, set at the corner of a plaster wall to protect the corner or serve as a guide to float the plaster flush with it. (ˈaŋ-gəlˈbɛd)  
angle beam  [ENG] Ultrasonic waves transmitted for the inspection of a metallic surface at an angle measured from the beam center line to a normal to the test surface. (ˈaŋ-gəlˈbɛm)  
angle blasting  [ENG] Sandblasting, or the like, or bow window. Also known as angle; angle bar. (ˈaŋ-gəlˈblæst-ərˌval)  
angle block  [ENG] A small block of wood used to fasten adjacent pieces, usually at right angles, or glued into the corner of a wooden frame to stiffen it. Also known as glue block. (ˈaŋ-gəlˈblæk)  
angle board  [DES ENG] A board whose surface is cut at a desired angle, serves as a guide for cutting or planing other boards at the same angle. (ˈaŋ-gəlˈbɔrd)  
angle bond  [CIV ENG] A tie used to bond masonry work at wall corners. (ˈaŋ-gəlˈbænd)  
angle brace  [ENG] A brace across the interior angle of two members that meet at an angle. Also known as angle tie. (ˈaŋ-gəlˈbræs)  
angle brick  [ENG] Any brick having an oblique shape to fit an oblique, salient corner. (ˈaŋ-gəlˈbrɪk)  
angle clip  [CIV ENG] A short strip of angle iron used to secure structural elements at right angles. (ˈaŋ-gəlˈklɪp)  
angle closer  [ENG] A specially shaped brick used to close the bond at the corner of a wall. (ˈaŋ-gəlˈklərər)  
angle divider  [DES ENG] A square for setting or bisecting angles; one side is an adjustable hinged blade. (ˈaŋ-gəlˈdəvrər)  
angle dozer  [MECH ENG] A power-operated machine fitted with a blade, adjustable in height and angle, for pushing, sidecasting, and spreading loose excavated material as for open cast pits, clearing land, or leveling runways. Also known as angling dozer. (ˈaŋ-gəlˈdəzər)  
angle equation  [ENG] A condition equation which expresses the relationship between the sum of the measured angles of a closed figure and the theoretical value of that sum, the unknowns being the corrections to the observed directions or angles, depending on which are used in the adjustment. Also known as triangle equation. (ˈaŋ-gəlˈəŋOLTˈkwaɪənt)  
angle fillet  [ENG] A wooden strip, triangular in cross section, which is used to cover the internal joint between two surfaces meeting at an angle of less than 180°. (ˈaŋ-gəlˌfɪlt)  
angle fishtails  [CIV ENG] Plates which join the rails and prevent the rail joint from sagging where heavy cars and locomotives are used. Also known as angle, angle bar. (ˈaŋ-gəlˈfishˌpläts)  
angle float  [ENG] A trowel having two edge surfaces bent at 90°, used to finish corners in freshly poured concrete and in plastering. (ˈaŋ-gəlˌflɔt)  
angle gauge  [CIV ENG] A template used to set or check angles in building construction. (ˈaŋ-gəlˌɡeɪdʒ)  
angle gear  See angular gear. (ˈaŋ-gəlˌgɛr)  
angle globe valve  [ENG] A globe valve having an angular configuration that permits it to be fitted at bends in pipework. (ˈaŋ-gəlˌɡlɒbˌvəlv)  
angle hip tile  See arris hip tile. (ˈaŋ-gəlˌhɪpˌtɪl)  
angle iron  [CIV ENG] 1. An L-shaped cleat or brace. 2. A length of steel having a cross section resembling the letter L. (ˈaŋ-gəlˌɪrn)  
angle joint  [ENG] A joint between two pieces of lumber which results in a change in direction. (ˈaŋ-gəlˌˈdʒɔnt)  
angle lacing  [CIV ENG] A system of lacing in which angle irons are used in place of bars. (ˈaŋ-gəlˌˈlæs-ɪŋ)  
angle method of adjustment  [ENG] A method of adjustment of observations which determines corrections to observed angles. (ˈaŋ-gəlˌˈmethəd əv ˈɵrəs-mənt)  
angle of action  [MECH ENG] The angle of revolution of either of two wheels in gear during which any particular tooth remains in contact. (ˈaŋ-gəlˈəʊ əv ˈækˈʃən)  
angle of advance  See angular advance. (ˈaŋ-gəlˌəʊv ədˈvəns)  
angle of approach  [CIV ENG] The maximum angle of an incline onto which a vehicle can move from a horizontal plane without interference. [MECH ENG] The angle that is turned through by either of paired wheels in gear from the first contact between a pair of teeth until the pitch points of these teeth fall together. (ˈaŋ-gəlˌəʊv əpˈrɑrθ)  
angle of bite  See angle of nip. (ˈaŋ-gəlˌəʊv əbɪt)  
angle of departure  [CIV ENG] The maximum angle of an incline from which a vehicle can move onto a horizontal plane without interference, such as from rear bumpers. [ELECTR] See angle of radiation. (ˈaŋ-gəlˌəʊv dɪˈpɑrˌtʃər)  
angle of depression  [ENG] The angle in a vertical plane between the horizontal and a descending line. Also known as depression angle; descending vertical angle, minus angle. (ˈaŋ-gəlˌəʊv dɪˈpreshən)  
angle of elevation  [ENG] The angle in a vertical plane between the local horizon and an ascending line, as from an observer to an object; used in astronomy, surveying, and so on. Also known as ascending vertical angle; elevation angle. (ˈaŋ-gəlˌəʊv əlˈəʊvəˌʃən)
angle of external friction [ENG] The angle between the abscissa and the tangent of the curve representing the relationship of shearing resistance to normal stress acting between soil and the surface of another material. Also known as angle of wall friction. {ˈæŋˌgæl əv ˈekˈstərnəl frikˈʃən}

angle of fall [MECH] The vertical angle at the level point, between the line of fall and the base of the trajectory. {ˈæŋˌgæl əv ˈfɔl}

angle of impact [MECH] The acute angle between the tangent to the trajectory at the point of impact of a projectile and the plane tangent to the surface of the ground or target at the point of impact. {ˈæŋˌgæl əv ˈɪmˌpakt}

angle of nip [MECH ENG] The largest angle that will just grip a lump between the jaws, rolls, or mantle and ring of a crusher. Also known as angle of bite, nip. {ˈæŋˌgæl əv ˈnɪp}

angle of obliquity See angle of pressure. {ˈæŋˌgæl əv ˈɒˈblɪk veɪd ə}

angle of orientation [MECH] Of a projectile in flight, the angle between the plane determined by the axis of the projectile and the tangent to the trajectory (direction of motion), and the vertical plane including the tangent to the trajectory. {ˈæŋˌgæl əv ˈɔrˌɛənˈteɪʃən}

angle of pressure [DES ENG] The angle between the profile of a gear tooth and a radial line at its pitch point. Also known as angle of obliquity. {ˈæŋˌgæl əv ˈpresh ɔr}

angle of recess [MECH ENG] The angle that is turned through by either of two wheels in gear, from the coincidence of the pitch points of a pair of teeth until the last point of contact of the teeth. {ˈæŋˌgæl əv ˈreˌsɛs}

angle of repose [ENG] See angle of rest. [MECH] The angle between the horizontal and the plane of contact between two bodies when the upper body is just about to slide over the lower. Also known as angle of friction. {ˈæŋˌgæl əv ˈrɪˈpɑs}

angle of rest [ENG] The maximum slope at which a heap of any loose or fragmented solid material will stand without sliding, or will come to rest when poured or dumped in a pile or on a slope. Also known as angle of repose. {ˈæŋˌgæl əv ˈrɛst}

angle of thread [DES ENG] The angle occurring between the sides of a screw thread, measured in an axial plane. {ˈæŋˌgæl əv ˈθred]

angle of torsion [MECH] The angle through which a part of an object such as a shaft or wire is rotated from its normal position when a torque is applied. Also known as angle of twist. {ˈæŋˌgæl əv ˈtɔrˌʃən}

angle of wall friction See angle of external friction. {ˈæŋˌgæl əv ˈwɔlˌfrikˈʃən}

angle of wrap [DES ENG] On a band brake mechanism, the distance, expressed in degrees, that the brake band wraps around the brake flange. {ˈæŋˌgæl əv ˈræp}

angle paddle [ENG] A hand tool used to finish a plastered surface. {ˈæŋˌgælˌpædəl}

angle plate [DES ENG] An L-shaped plate or a plate having an angular section. {ˈæŋˌgælˌplæt}

angle post [BUILD] A railing support used at a landing or other break in the stairs. {ˈæŋˌgælˌpɔst}

angle press [MECH ENG] A hydraulic plastics-molding press with both horizontal and vertical rams; used to produce complex moldings with deep undercuts. {ˈæŋˌgælˌpresh}

angle rafter [BUILD] A rafter, such as a hip rafter, at the angle of the roof. {ˈæŋˌgælˌræˈtər}

angle section [CIV ENG] A structural steel member having an L-shaped cross section. {ˈæŋˌgælˌsɛkˈʃən}

angle-stem thermometer [ENG] A device used to measure temperatures in oil-custody tanks; the angle of the calibrated stem may be 90° or greater to the sensitive portion of the thermometer, as needed to fit the tank shell contour. {ˈæŋˌgælˌstɛmˌθɛrˌməʊˈtər}

angle stile [BUILD] A narrow strip of wood used to conceal the joint between a wall and a vertical wood surface which makes an angle with the wall, as at the edge of a corner cabinet. {ˈæŋˌgælˌstɪl}

angle structure [CIV ENG] A method of building a tower for mechanical strength in which braces are placed at angles with respect to the vertical support rods. {ˈæŋˌgælˌstrʌktʃər}

angle strut [CIV ENG] An angle-shaped structural member which is designed to carry a compression load. {ˈæŋˌgælˌstrʌt}

angle valve [DES ENG] A manually operated valve with its outlet opening oriented at right angles to its inlet opening; used for regulating the flow of a fluid in a pipe. {ˈæŋˌgælˌvalv}

angle variable [MECH] The dynamical variable w conjugate to the action variable J, defined only for periodic motion. {ˈæŋˌgælˌvərˌɪŋˌəˌbɑl}

angling dozer See angle dozer. {ˈæŋˌgælˌdəˈzər}

angstrom [MECH] A unit of length, 10⁻¹⁰ meter, used primarily to express wavelengths of optical spectra. Abbreviated Å, Å. Also known as tenthmeter. {ˈæŋˌstrɑm}

Ångström compensation pyrheliometer [ENG] A pyrheliometer consisting of two identical Manginian strips, one shaded, the other exposed to sunlight, an electrical current is passed through the shaded strip to raise its temperature to that of the exposed strip, and the electric power required to accomplish this is a measure of the solar radiation. {ˈɒŋˌstræm kæmˈpænˌsəˌʃən pəˈriˌhɛlɪˌmɪtər}

angular acceleration [MECH] The time rate of change of angular velocity. {ˈæŋˌgælˌəˌsɛlˌəˌræˌkeɪlə}
angular bitstalk

engine and the virtual crank radius of the eccentric exceeds a right angle. Also known as angle of advance, angular lead.  

angular bitstock [MECH] A bitstock whose handles are positioned to permit its use in corners and other cramped areas. Also known as angular bitstock.  

angular clearance [DES ENG] The relieved space located below the straight of a die, to permit passage of blanks or slugs.  

angular cutter [MECH] A tool-steel cutter used for finishing surfaces at angles greater or less than 90° with its axis of rotation.  

angular error of closure See error of closure.  

angular gear [MECH ENG] A gear that transmits motion between two rotating shafts that are not parallel. Also known as angle gear.  

angular impulse [MECH] The integral of the torque applied to a body over time.  

angular lead See angular advance.  

angular length [MECH] A length expressed in stresses and to make the material less brittle. The unit of the length per radian or degree of a Also known as temper.  

angular advancement See angular advance.  

angular momentum [MECH] 1. The cross product of a vector from a specified reference point to a particle, with the particle's linear momentum. Also known as moment of momentum. 2. For a system of particles, the vector sum of the angular momenta (first definition) of the particles.  

angular pitch [DES ENG] The angle determined by the length along the pitch circle of a gear between successive teeth.  

angular rate See angular speed.  

angular shear [MECH ENG] A shear effected by two cutting edges inclined to each other to reduce the force needed for shearing.  

angular speed [MECH] Change of direction per unit time, as of a target on a radar screen, without regard to the direction of the rotation axis; in other words, the magnitude of the angular velocity vector. Also known as angular rate.  

angular travel error [MECH] The error which is introduced into a predicted angle obtained by multiplying an instantaneous angular velocity by a time of flight.  

angular velocity [MECH] The time rate of change of angular displacement.  

angular bitstalk

angular lead

angular advancement

angular momenta

angular pitch

angular rate

angular shear

angular speed

angular travel error

angular velocity
direction of flow in one or more circuits. \( \text{\textit{an-fric-tion ma-té-ri-al}} \)

anode [ELECTR] The terminal at which current enters a primary cell or storage battery, it is positive with respect to the device, and negative with respect to the external circuit. [ELECTR]

1. The collector of electrons in an electron tube. Also known as plate; positive electrode. 2. In a semiconductor diode, the terminal toward which forward current flows from the external circuit. \( \{\text{\textit{an-dód}}\, \text{\textit{kor-ant}}\} \)

anode current [ELECTR] The electron current flowing through an electron tube from the cathode to the anode. Also known as plate current. \( \{\text{\textit{an-dód}}\, \text{\textit{kár-án}t}\} \)

anomalous expansion [THERMO] An increase in the volume of a substance that results from a decrease in its temperature, such as is displayed by water at temperatures between 0 and 4°C (32 and 39°F). \( \{\text{\textit{an-nám-ás-lás} ik'span-shán}\} \)

anomaly finder [ENG] A computer-controlled data-plotting system used on ships to measure and record seismic, gravity, magnetic, and other geophysical data and water depth, time, course, and speed. \( \{\text{\textit{an-nám-ás-le̱,fin-dár}}\} \)

anonymous dimensionless group 1–4 [CHEM ENG] Four of the dimensionless groups, used to solve problems in transfer processes, gas absorption in wetted-wall columns, and laminar boundary-layer flow. \( \{\text{\textit{án-nám-ás-díjmen-shán-lás} ‘grup \text{\textit{wan to} ‘for}}\} \)

antenna circuit [ELECTR] A complete electric circuit which includes an antenna. \( \{\text{\textit{án-tén-ás} \text{\textit{sár-kát}}}\} \)

antenna tilt error [ENG] Angular difference between the tilt angle of a radar antenna shown on a mechanical indicator, and the electrical center of the radar beam. \( \{\text{\textit{án-tén-ás} \text{\textit{tilt},er-ar}}\} \)

anticathode [ELECTR] The anode or target of an x-ray tube, on which the stream of electrons from the cathode is focused and from which x-rays are emitted. \( \{\text{\textit{án-té-ká-thód},ód}\} \)

antichlor [CHEM ENG] A chemical used in the manufacture of paper or textiles to remove excess chlorine or bleaching solution. \( \{\text{\textit{án-tí-clór}}\} \)

anticollision radar [ENG] A radar set designed to give warning of possible collisions during movements of ships or aircraft. \( \{\text{\textit{án-té-ká-li-zán},rás,drär}\} \)

anticreeper [CIV ENG] A device attached to a railroad rail to prevent it from moving in the direction of its length. \( \{\text{\textit{án-té-krép-ar}}\} \)

antidieseling solenoid See idle-stop solenoid. \( \{\text{\textit{án-tí-dez-sé-al} ‘só-la-nóid}\} \)

antifriction [MECH ENG] Making friction smaller in magnitude. \( \{\text{\textit{án-tí-frík-shán}}\} \)

antifriction bearing [MECH ENG] Any bearing having the capability of reducing friction effectively. \( \{\text{\textit{án-tí-frík-shán,ber-i̱n}\} \)

antifriction material [ENG] A machine element made of Babbitt metal, lignum vitae, rubber, or a combination of a soft, easily deformable metal overlaid on a hard, resistant one. \( \{\text{\textit{án-tí-frík-shán ma-tír-re̱-ál}}\} \)

anti-g suit See g suit. \( \{\text{\textit{án-té-gé,\textit{süt}}\} \)

antiknock blending value [ENG] The numerical improvement by an antiknock additive to gasoline octane, often a greater amount than the additive’s own octane value. \( \{\text{\textit{án-té-nák ‘blend-i̱n},\textit{\textit{val-yú}}\} \)

antiknock rating [ENG] Measurement of the ability of an automotive gasoline to resist detonation or pinging in spark-ignited engines. \( \{\text{\textit{án-té-nák ‘rad-i̱n}\} \)

antilock braking system [MECH ENG] For vehicles, a sensor-control system found in braking systems which prevents wheel lockup while allowing the brakes to continue slowing the wheel. Abbreviated ABS. \( \{\text{\textit{án-té-lák ‘brák-i̱n} sis-täm}\} \)

antimagnetic [ENG] Constructed so as to avoid the influence of magnetic fields, usually by the use of nonmagnetic materials and by magnetic shielding. \( \{\text{\textit{án-té-mág-ned-ik}}\} \)

antinoise microphone [ENG ACOUS] Microphone with characteristics which discriminate against acoustic noise. \( \{\text{\textit{án-tí-nóiz ‘mi-krá},fón}\} \)

antiozonant [CHEM ENG] A protective agent which can be added to rubber during processing to diminish the deteriorating effects of ozone. \( \{\text{\textit{án-tí-ó-zon-ánt}}\} \)

antipercolator [MECH ENG] In an automotive engine, a valve in the carburetor that is designed to vent vapor when the throttle plate is closed; prevents fuel from dropping into the carburetor due to unvented pressure. \( \{\text{\textit{án-tí-pé-kól-tor}}\} \)

antiquing [ENG] 1. Producing a rich glow on the surface of a leather by applying stain, wax, or oil, allowing it to set, and rubbing or brushing the leather. 2. A technique of handling wet paint. \( \{\text{\textit{án-tí-ki} ‘rad\} \)

antirad [CHEM ENG] An inhibitor incorporated into rubber during manufacturing to reduce the degrading effects of radiation. \( \{\text{\textit{án-tí-rád} ‘rad\} \)

antiradar coating [ENG] A surface treatment used to reduce the reflection of electromagnetic waves so as to avoid radar detection. \( \{\text{\textit{án-tí-rá} ‘dár,\textit{kód-i̱n}\} \)

antirattle spring [MECH ENG] In an automotive vehicle, a spring installed to hold parts in the clutches and the disk brakes together, prevents rattling. \( \{\text{\textit{án-tí-rá-tál} ‘sprí̱n}\} \)

anti-redemption agent [CHEM ENG] An additive used in a detergent to help prevent soil from resettling on a fabric after it has been removed during washing. \( \{\text{\textit{án-tí-té-ré-dep-\textit{a-zísh-an},á-ján}t\} \)

antireflection coating [ENG] The application of a thin film of dielectric material to a surface to reduce its reflection and to increase its transmis-}

sion of light or other electromagnetic radiation. \( \{\text{\textit{án-tí-ré-fi-lék-shán,\textit{kód-i̱n}}\} \)

antiresonance [ELECTR] See parallel resonance.
antiskid plate

[ENG] The condition for which the impedance of a given electric, acoustic, or dynamic system is very high, approaching infinity. {an-tē'rez-ən'sənz}

antiskid plate [ENG] A sheet of metal roughed on both sides and placed between piled objects, such as boxes in a freight car, to prevent sliding. {an-'tē-skid 'plat}

antismudge ring [BUILD] A frame attached around a ceiling-mounted air diffuser, to minimize the formation of rings of dirt on the ceiling. {an-'tē-spajm-eyed 'rin}

antitheft device [MECH ENG] A piece of equipment installed on an automotive vehicle in order to prevent or slow down theft; designs include mechanical locks on the steering wheel and ignition switch as well as other means of shutting off the ignition system, shutting off fuel flow, or sounding an alarm. {an-'theft dı'veyəz}

anvil [ENG] 1. The part of a machine that absorbs the energy delivered by a sharp force or blow. 2. The stationary end of a micrometer caliper. {an-'val}

AOQL See average outgoing quality limit.

aperiodic waves [ELEC] The transient current wave in a series circuit with resistance R, inductance L, and capacitance C when $\frac{1}{4} L = 4 C$. {ə'per-ı-dık w'ıvz}

aperture [ELECTR] An opening through which electrons, light, radio waves, or other radiation can pass. {ə'par-ı-char}

aperture disk [ENG] A disk with a small round opening used in a densitometer to vary the amount of light or the area to be measured. {ə'par-ı-char 'disk}

apex [ENG] In architecture or construction, the highest point, peak, or tip of any structure. {ə'pek'

apical angle [MECH] The angle between the tangents to the curve outlining the contour of a projectile at its tip. {ə'pı-kal lı'kəl gal}

API scale [CHEM ENG] The American Petroleum Institute hydrometer scale for the measurement of the specific gravity of liquids; used primarily in the American petroleum industry. {ə'api'skəl}

apphorometer [ENG] An apparatus used to identify minerals by sublimation. {ə'pa-fə'rəm-əd-ar}

apothecaries' dram See dram. {ə'path-ı-ker-ɛz 'drəm}

apothecaries' ounce See ounce. {ə'path-ı-ker-ɛz 'ənz}

apothecaries' pound See pound. {ə'path-ı-ker-ɛz 'pənd}

apparent expansion [THERMO] The expansion of a liquid with temperature, as measured in a graduated container without taking into account the container's expansion. {ə'pa-rənt ɪk'span-ən'sən}

apparent force [MECH] A force introduced in a relative coordinate system in order that Newton's laws be satisfied in the system; examples are the Coriolis force and the centrifugal force incorporated in gravity. {ə'pa-rənt 'fɔrs}

apparent gravity See acceleration of gravity. {ə'pa-rənt 'grav-əd-ə}

apparent motion See relative motion. {ə'pa-rənt 'mən-dən'sən}

apparent source See effective center. {ə'pa-rənt 'sərs}

apparent weight [MECH] For a body immersed in a fluid (such as air), the resultant of the gravitational force and the buoyant force of the fluid acting on the body; equal in magnitude to the true weight minus the weight of the displaced fluid. {ə'pa-rənt ˈwætə}

appliance [ENG] A piece of equipment that draws electric or other energy and produces a desired work-saving or other result, such as an electric heater, a radio, or an electronic range. {ə'pləns}

appliance panel [ENG] In electric systems, a metal housing containing two or more devices (such as fuses) for protection against excessive current in circuits which supply portable electric appliances. {ə'plən-pan al}

applied research [ENG] Research directed toward using knowledge gained by basic research to make things or to create situations that will serve a practical or utilitarian purpose. {ə'pləd riˈsærk}

applied strategic research [ENG] Research done to provide a basic understanding of a current applied project. {ə'pləd strə'tēdʒik riˈsærk}

applied trim [BUILD] Supplementary and separate decorative strips of wood or moldings applied to the face or sides of a frame, such as a doorframe. {ə'pləd ˈtrim}

approach [MECH ENG] The difference between the temperature of the water leaving a cooling tower and the wet-bulb temperature of the surrounding air. {əˈprəʊk}

approach signal [CIV ENG] A railway signal warning an engineer of a signal ahead that displays a restrictive indication. {əˈprəʊk ˈsiɡ-nəl}

approach vector [CONT SYS] A vector that describes the orientation of a robot gripper and points in the direction from which the gripper approaches a workpiece. {əˈprəʊk ˈvektər}

apron [BUILD] 1. A board on an interior wall beneath a windowsill. 2. The vertical rear panel of a sink attached to a wall. 3. A section of a concrete slab extending beyond the face of a building on adjacent ground. Also known as a skirt, skirting. 4. A vertical panel installed behind a sink or lavatory. {CIV ENG} 1. A hard-surfaced area, usually paved, adjacent to a Ship or the like, used to park, load, unload, or service vehicles. 2. A covering of a material such as concrete or timber over soil to prevent erosion by flowing water, as at the bottom of a dam. 3. A concrete or wooden shield that is situated along the bank of a river, along a sea wall, or below a dam. 4. In a railroad system, a bridge structure that carries tracks and is hinged to land for connecting the deck of a railroad-car ferry
to the shore. [MECH ENG] A plate serving to protect or cover a machine. {'är-prän}
apron conveyor [MECH ENG] A conveyor used for carrying granular or lumpy material and consisting of two strands of roller chain separated by overlapping plates, forming the carrying surface, with sides 2–6 inches (5–15 centimeters) high. {'är-prän kan-va-ar}
apron feeder [MECH ENG] A limited-length version of apron conveyor used for controlled-rate feeding of pulverized materials to a process or packaging unit. Also known as plate-belt feeder, plate feeder. {'är-prän ,fēd-or}
apron flashing [BUILD] 1. The flashing that covers the joint between a vertical surface and a sloping roof, as at the lower edge of a chimney. 2. The flashing that diverts water from a vertical surface into a gutter. {'är-prän ,flash-in}
apron lining [BUILD] The piece of boarding which covers the rough apron piece of a staircase. {'är-prän ,lin-ing}
apron piece [BUILD] A beam that supports a landing or a series of winders in a staircase. {'är-prän ,pēz}
apron rail [BUILD] A lock rail having a raised ornamental molding. {'är-prän ,rāl}
apron wall [BUILD] In an exterior wall, a panel which extends downward from a windowsill to the top of a window below. {'är-prän ,wōl}
AQL See acceptable quality level.
aqueduct [CIV ENG] An artificial tube or channel for conveying water. {'ak-wō,dakt}
ablation [IND ENG] A semijudicial means of settling labor-management disputes in which both sides agree to be bound by the decision of one or more neutral persons selected by some method mutually agreed upon. {'ar-bā-tra-shan}
arbor [MECH ENG] 1. A cylindrical device positioned between the spindle and outer bearing of a milling machine and designed to hold a milling cutter. 2. A shaft or spindle used to hold a revolving cutting tool or the work to be cut. {'är-bar}
arbor collar [ENG] A cylindrical spacer that positions and secures a revolving cutter on an arbor. {'är-bar ,kāl-ər}
arbor hole [DES ENG] A hole in a revolving cutter or grinding wheel for mounting it on an arbor. {'är-bar ,hōl}
arbor press [MECH ENG] A machine used for forcing an arbor or a mandrel into drilled or bored parts preparatory to turning or grinding. Also known as mandrel press. {'är-bar ,pres}
arbor support [ENG] A device to support the outer end or intermediate point of an arbor. {'är-bar sā-prōrt}
arc See electric arc. The graduated scale of an instrument for measuring angles, as a marine sextant; readings obtained on that part of the arc beginning at zero and extending in the direction usually considered positive are popularly said to be on the arc, and those beginning at zero and extending in the opposite direction are said to be on the arc. {'är-kər}
arch force [MECH] The force of a plasma arc through a nozzle or opening. {'ärk,fōrs}
arbor [CIV ENG] A structure curved and so designed that when it is subjected to vertical loads, its two end supports exert reaction forces with inwardly directed horizontal components; common uses for the arch are as a bridge, support for a roadway or railroad track, or part of a building. {'ärk}
arch band [CIV ENG] Any narrow elongated surface forming part of or connected with an arch. {'ärch ,bānd}
arbor bar [BUILD] 1. A curved chimney bar. 2. A curved bar in a window sash. {'ärch ,bār}
arbor beam [CIV ENG] A curved beam, used in construction, with a longitudinal section bounded by two arcs having different radii and centers of curvature so that the beam cross section is larger at either end than at the center. {'ärch ,bēm}
arbor brace [BUILD] A curved brace, usually used in pairs to support a roof frame and give the effect of an arch. {'ärch ,brās}
arbor bridge [CIV ENG] A bridge having arches as the main supports. {'ärch ,brij}
arbor center [CIV ENG] A temporary structure for support of the parts of a masonry or concrete arch during its construction. {'ärch ,sēn-tar}
arbor corner bead [BUILD] A corner bead which is cut on the job, used to form and reinforce the curved portion of arch openings. {'ärch ,kōr-nær ,bed}
arbor dam [CIV ENG] A dam having a curved face on the downstream side, the curve being roughly a portion of a cylinder whose axis is vertical. {'ärch ,dām}
arched construction [BUILD] A method of construction relying on arches and vaults to support walls and floors. {'ärch kon-strāk-shan}
arbor girder [CIV ENG] A normal H-section steel girder bent to a circular shape. {'ärch ,gēr-dar}
arbor-gravity dam [CIV ENG] An arch dam stabilized by gravity due to great mass and breadth of the base. {'ärch ,grav-ad-e ,dām}
Archimedes’ screw [MECH ENG] A device for raising water by means of a rotating broad-threaded screw or spirally bent tube within an inclined hollow cylinder. {'ärk-ka-mēdzˈēz ˈskrū}
arbor [CIV ENG] 1. The transfer of stress from a yielding part of a soil mass to adjoining less-yielding or restrained parts of the mass. 2. A system of arches. 3. The arched part of a structure. {'ärch-i-jē}
arbor [CIV ENG] The science of planning and building a structure to ensure the most advantageous flow of sound to all listeners. {'ärk-ˈtēk-char əˈril-sticks}
arbor [CIV ENG] The branch of engineering dealing primarily with building
architectural millwork

materials and components with and the design of structural systems for buildings, in contrast to heavy construction such as bridges. {ār-kaṭek-char-āl 'en-ja'nīrīg}

architectural millwork [CIV ENG] Ready-made millwork especially fabricated to meet the specifications for a particular job, as distinguished from standard or stock items or sizes. Also known as custom millwork. {ār-kaṭek-char-āl 'milwork}

architectural volume [CIV ENG] The cubic content of a building calculated by multiplying the floor area by the height. {ār-kaṭek-char-āl 'vāl-yām}

architecture [ENG] 1. The art and science of designing buildings. 2. The product of this art and science. {ār-kaṭek-char-}

arch press [MECH ENG] A punch press having an arch-shaped frame to permit operations on wide work. {ārch 'pres}

arch rib [CIV ENG] One of a set of projecting molded members subdividing the undersurface of an arch. {ārch 'rib}

arch ring [CIV ENG] A curved member that provides the main support of an arched structure. {ārch 'riŋ}

arch truss [CIV ENG] A truss having the form of an arch or arches. {ārch 'trās}

arc of contact See arc of contact. {ārk av 'ak-shān}

arc of approach [DES ENG] In toothed gearing, the part of arc of contact along which the flank of the driving wheel contacts the face of the driven wheel. {ārk av 'əprōch}

arc of contact [MECH ENG] 1. The angular distance over which a gear tooth travels while it is in contact with its mating tooth. Also known as arc of action. 2. The angular distance a pulley travels while in contact with a belt or rope. {ārk av 'kān, takt}

arc of recess [DES ENG] In toothed gearing, the part of the arc of contact wherein the face of the driving wheel touches the flank of the driven wheel. {ārk av 're,ses}

arcrometer [ENG] A device for determining the density of a liquid by measuring the apparent weight loss of a solid of known mass and volume when it is immersed in the liquid. {ārk'mān-'dər}

arc process [CHEM ENG] A former process that used electric arcs for fixation (oxidation) of atmospheric nitrogen to manufacture nitric acid. {ārk 'prās-as}

articization [ENG] The preparation of equipment for operation in an environment of extremely low temperatures. {ārd-ik,'ūz-shān}

arc triangulation [ENG] A system of triangulation in which an arc of a great circle on the surface of the earth is followed in order to tie in two distant points. {ārk 'tri,āq-gyāl-lā-shān}

area [MECH] A unit of area, used mainly in agriculture, equal to 100 square meters. {ār}

area coverage [ENG] Complete coverage of an area by aerial photography having parallel overlapping flight lines and stereoscopic overlap between exposures in the line of flight. {ēr-ē-ā 'kav-'riː}

area drain [CIV ENG] A receptacle designed to collect surface or rain water from an open area. {ēr-ē-ā 'drān}

area landfill [CIV ENG] A sanitary landfill operation that takes care of the solid waste of more than one municipality in a region. {ēr-ē-ā 'land,fil}

area light [CIV ENG] 1. A source of light with significantly dimensions in two directions, such as a window or luminous ceiling. 2. A light used to illuminate large areas. {ēr-ē-ā 'līt}

area meter [ENG] A mechanism to measure fluid flow rate through a fixed-area conduit by the movement of a weighted piston or float supported by the flowing fluid: includes rotameters and piston-type meters. {ēr-ē-ā 'med-ar}

area of use [ENG] For a balance depending on gravitational acceleration, an area that includes a sufficient number of locations providing a mean value for the gravitational acceleration of the given balance. {ēr-ē-ā 'wūs}

area survey [ENG] A survey of areas large enough to require loops of control. {ēr-ē-ā 'sār,va}

area triangulation [ENG] A system of triangulation designed to progress in every direction from a control point. {ēr-ē-ā 'tri,āq-gyāl-shān}

area wall [CIV ENG] A retaining wall around an area. {ēr-ē-ā 'wōl}

areaway [CIV ENG] An open space at subsurface level adjacent to a building, providing access to and utilities for a basement. {ēr-ē-ā 'wa}

Argand lamp [ENG] A gas lamp having a tube-shaped wick, allowing a current of air inside as well as outside the flame. {ār-gān 'lamp}

argentometer [ENG] A hydrometer used to find the amount of silver salt in a solution. {ār-jān'tām-ad-ar}

Arkansas stone [ENG] A whetstone made of Arkansas stone, for sharpening edged tools. {ār-kān'sōs, 'stōn}

ARL See acceptable reliability level

arm [CONT SYS] A robot component consisting of an interconnected set of links and powered joints that move and support the wrist socket and end effector [ELEC]. See branch. [ENG ACOUS] See tone arm. [ārm]

arm conveyor [MECH ENG] A conveyor in the form of an endless belt or chain to which are attached projecting arms or shelves which carry the materials. {ārm kan-'vā-ar}

arm elevator [MECH ENG] A chain elevator with protruding arms to cradle fixed-shape objects, such as drums or barrels, as they are moved upward. {ārm 'el-ə-vād-ar}

armored faceplate [DES ENG] A tamper-proof faceplate or lock front, mortised in the edge of a door to cover the lock mechanism. {ārm-'mārd 'fās,plāt}

armored front [DES ENG] A lock front used on mortise locks that consists of two plates, the
underplate and the finish plate. \( '\text{\'ar-mərd} \text{\'fr\'ant} \) armor plate \[\text{\textsc{build}}\] A metal plate which protects the lower part of a door from kicks and scratches, covering the door to a height usually 39 inches (1 meter) or more. \( '\text{\'ar-mər-plət} \)

arm solution \[\text{\textsc{cont sys}}\] The computation performed by a robot controller to calculate the joint positions required to achieve desired tool positions. \( '\text{\'är-mər-lju\text{-}'shən} \)

arm-tool aggregate \[\text{\textsc{ind eng}}\] A biomechanical unit comprising the arm and the tool that it holds and manipulates. \( '\text{\'är-təl}'\text{-gət} \)

aromatization \[\text{\textsc{chem eng}}\] Conversion of any nonaromatic hydrocarbon structure to aromatic hydrocarbon, particularly petroleum. \( \text{'a,\text{-rə-məd-əz-ən-'shən} } \)

arostat process \[\text{\textsc{chem eng}}\] A process in which aromatic molecules are saturated by catalytic hydrogenation to produce high-quality jet fuels, low- aromatic-content solvents, and high-purity cyclohexane from benzene. \( '\text{\'ar-a,\text{-stə-pəs-əs} } \)

array \[\text{\textsc{electr}}\] A group of components such as antennas, reflectors, or directors arranged to provide a desired variation of radiation transmission or reception with direction. \( \text{\'ə-rə} \)

array radar \[\text{\textsc{eng}}\] A radar incorporating a multiplicity of phased antenna elements. \( \text{\'ə-rə 'rə,där} \)

array sonar \[\text{\textsc{eng}}\] A sonar system incorporating a phased array of radiating and receiving transducers. \( \text{\'ə-rə so,'nər} \)

arrest \[\text{\textsc{elec}}\] See lightning arrester. \[\text{\textsc{eng}}\] A wire screen at the top of an incinerator or chimney which prevents sparks or burning material from leaving the stack. \( \text{'ər-es-tər} \)

arrestment device \[\text{\textsc{eng}}\] A locking mechanism installed on a balance for holding one of several levers in place; serves to protect the balance. \( '\text{\'ar-əst-mənt di,viš} \)

arrièrê-vousssure \[\text{\textsc{build}}\] 1. An arch or vault in a thick wall carrying the thickness of the wall, especially one over a door or window frame. \( '\text{\'ær-ə,\text{-ər,və\text{-}'ʃər} } \)

2. A relieving arch behind the face of a wall. \( '\text{\'ær-əs 'ʃiil-ət} \)

arris fillet \[\text{\textsc{build}}\] A triangular wooden piece that raises the slates of a roof against a chimney or wall so that rain runs off. \( '\text{\'ær-əs 'ʃiil-ət} \)

arris gutter \[\text{\textsc{build}}\] A V-shaped wooden gutter fixed to the eaves of a building. \( '\text{\'ær-əs 'gəd-'ər} \)

arris hip tile \[\text{\textsc{build}}\] A special roof tile having an L-shaped cross section, made to fit over the hip of a roof. Also known as hip tile. \( '\text{\'ær-əs 'hip-ťl} \)

arris rail \[\text{\textsc{civ eng}}\] A rail of triangular section, usually formed by slitting diagonally a strip of square section. \( '\text{\'ær-əs 'rəl} \)

arrisins tool \[\text{\textsc{eng}}\] A tool similar to a float, but having a form suitable for rounding an edge of freshly placed concrete. \( '\text{\'ær-əs-'səng 'ʃiil} \)

arris tile \[\text{\textsc{build}}\] Any angularly shaped tile. \( '\text{\'ær-əs 'təl} \)

arrisways \[\text{\textsc{civ eng}}\] Diagonally, in respect to the manner of laying tiles, slates, bricks, or timber. Also known as arriswise. \( '\text{\'ær-əs-wəz} \)

arriswise See arrisways. \( '\text{\'ær-əs-'wiz} \)

arrival rate \[\text{\textsc{ind eng}}\] The mean number of new calling units arriving at a service facility per unit time. \( '\text{\'ār-ɪv-əl rət} \)

articulated drop chute \[\text{\textsc{eng}}\] A drop chute, for a falling stream of concrete, which consists of a vertical succession of tapered metal cylinders, so designed that the lower end of each cylinder fits into the upper end of the one below. \( '\text{\'ār-tık-\text{-ya-lăd-'dəd 'drəp sʰu̯t} } \)

articulated leader \[\text{\textsc{mech eng}}\] A wheeled-mounted transport unit with a pivotal loading element used in earth moving. \( '\text{\'ār-tık-\text{-ya-lăd-əd 'lëd-ər} } \)

articulated structure \[\text{\textsc{civ eng}}\] A structure in which relative motion is allowed to occur between parts, usually by means of a hinged or sliding joint or joints. \( '\text{\'ār-tık-\text{-ya-lăd-əd 'strək-\'char} } \)

articulated train \[\text{\textsc{eng}}\] A railroad train whose cars are permanently or semipermanently connected. \( '\text{\'ār-tık-\text{-ya-lăd-əd 'trăn} } \)

articulation \[\text{\textsc{cont sys}}\] The manner and actions of joining components of a robot with connecting parts or links that allow motion. \( '\text{\'ār-tık-\text{-ya-lăd-ən-'shən} } \)

articulation point See cut point. \( '\text{\'ār-tık-\text{-ya-lăd-ən-'pənt} } \)

artificial atmosphere \[\text{\textsc{chem eng}}\] A mixture of gases used in industrial operations in place of air, classified as an active, or process, atmosphere, or an inactive, or protective, atmosphere. \( '\text{\'ār-tık-\text{-fəsh-əl 'at\text{-məs-ˈfɪr} } \)

artificial ear \[\text{\textsc{eng acous}}\] A device designed to duplicate the frequency response, acoustic impedance, threshold sensitivity, and relative perception of loudness, consisting of a special microphone enclosed in a box with properties similar to those of the human ear. \( '\text{\'ār-tık-\text{-fəsh-əl 'ɪr} } \)

artificial ground \[\text{\textsc{elec}}\] A common correction for a radio-frequency electrical or electronic circuit that is not directly connected to the earth. \( '\text{\'ār-tık-\text{-fəsh-əl 'gɹænd} } \)

artificial harbor \[\text{\textsc{eng}}\] 1. A harbor protected by breakwaters. \( '\text{\'ār-tık-\text{-fəsh-əl 'hɚr-ber} } \)

2. A harbor formed by dredging. \( '\text{\'ār-tık-\text{-fəsh-əl 'hɚr-ber} } \)

artificial monument \[\text{\textsc{eng}}\] A relatively permanent object made by humans, such as an abutment or stone marker, used to identify the location of a survey station or corner. \( '\text{\'ār-tık-\text{-fəsh-əl 'mən-tənt} } \)

artificial nourishment \[\text{\textsc{civ eng}}\] The process of replenishing a beach by artificial means, such as the deposition of dredged material. \( '\text{\'ār-tık-\text{-fəsh-əl 'nər-ish-mənt} } \)

artificial recharge \[\text{\textsc{eng}}\] The recharge of an aquifer depleted by abnormally large withdrawals, by the use of injection wells and other techniques. \( '\text{\'ār-tık-\text{-fəsh-əl 'rər-ˈʃarj} } \)

artificial variable \[\text{\textsc{ind eng}}\] One type of variable introduced in a linear program model in order to find an initial basic feasible solution, an
artificial voice

artificial variable is used for equality constraints and for greater-than or equal inequality constraints.

artificial voice [ENG] Acous. 1. Small loudspeaker mounted in a shaped baffle which is proportioned to simulate the acoustical constants of the human head; used for calibrating and testing close-talking microphones. 2. Synthetic speech produced by a multiple tone generator, used to produce a voice reply in some real-time computer applications. ['ærd-ə-fiʃ-əl 'voɪs]

artificial weathering [ENG] The controlled production of changes in materials under laboratory conditions to simulate actual outdoor exposure. ['ærd-ə-fiʃ-əl 'wɛθər-ɪŋ]

asbestos-cement cladding [BUILD] Asbestos board and component wall systems, directly supported by wall framing, forming a wall or wall facing. ['æs-bɛs-ə-təs sɪmənt 'klæd-ɪŋ]

as-built drawing See as-fitted drawing. {'æz ˈbɪlt ˈdroʊ-ɪŋ}

as-built schedule [IND ENG] The final schedule for a project, reflecting the actual scope, actual completion dates, actual duration of the specified activities, and start dates. {'æz ˈbɪlt ˈskɛj-əl}

ascending branch [MECH] The portion of the trajectory between the origin and the summit on which a projectile climbs and its altitude constantly increases. {'æs-ænd ˈbrændʒ}

ascending vertical angle See angle of elevation. {'æs-ændɪŋ ˈvɜr-tɪkəl ˈæŋ-gəl}

as-fitted drawing [ENG] A drawing as amended after completion of an industrial facility in order to provide an accurate record of the details of the entire installation in their final form. Also known as as-built drawing, as-made drawing. {'æz ˈfɪt-tɪd ˈdroʊ-ɪŋ}

ash [ENG] An undesirable constituent of diesel fuel whose quantitative measurement indicates fuel cleanliness and freedom from abrasive material. {'æʃ}

ash collector See dust chamber. {'æʃ kəˈlɛk-tər}

ash conveyor [MECH ENG] A device that transports refuse from a furnace by fluid or mechanical means. {'æš kənˈvɛər}

ash dump [ENG] An opening in the opening of a fireplace or firebox through which ashes are swept to an ash pit below. {'æš ˈdʌmp}

ash furnace [ENG] A furnace in which materials are fitted for glassmaking. {'æʃ ˈfɔr-nəs}

ashlar [CIV ENG] Masonry with an exposed side of square or rectangular stones. {'æʃ ˈlær}

ashlar line [BUILD] The outer line of a wall above any projecting base. {'æʃ-ər lɨn}

ash pan [ENG] A metal receptacle beneath a fireplace or furnace grating for collection and removal of ashes. {'æʃ pæn}

ash pit [BUILD] The ash-collecting area beneath a fireplace hearth. {'æʃ ˈpɪt}

ash pit door [ENG] A cast-iron door providing access to an ash pit for ash removal. {'æʃ ˈpɪt ˈdɔr}

A size [ENG] 1. One of a series of sizes to which trimmed paper and board are manufactured, for size AN, with N equal to any integer from 0 to 10, the length of the longer side is $2^{2N} + 1$ inches, while the length of the shorter side is $2^{2N} + 1.4$ inches, with both lengths rounded off to the nearest millimeter. 2. Of a sheet of paper, the dimensions 8.5 inches by 11 inches (216 millimeters by 279 millimeters). {'æz siz}

as-made drawing See as-fitted drawing. {'æz mad ˈdroʊ-ɪŋ}

aspect [CIV ENG] Of railway signals, what the engineer sees when viewing the blades or lights in their relative positions or colors. {'æz spekt}

aspect angle [ENG] The angle formed between the longitudinal axis of a projectile in flight and the axis of a radar beam. {'æz spekt ˈænd əŋ-gəl}

aspect ratio [DES ENG] 1. The ratio of frame width to frame height in television, it is 4:3 in the United States and Britain. 2. In any rectangular configuration (such as the cross section of a rectangular duct), the ratio of the longer dimension to the shorter. [MECH ENG] In an automobile vehicle, the ratio of the height of a tire to its width. Also known as tire profile. {'æz spekt, rə-ʃoʊ}

asphalt cutter [MECH ENG] A powered machine having a rotating abrasive blade, used to saw through bituminous surfacing material. {'æz ˈsflət kəd-ər}

asphalt heater [ENG] A piece of equipment for raising the temperature of bitumen used in paving. {'æz ˈsflət ˈhɛd-ər}

asphalt leveling course [CIV ENG] A layer of an asphalt-aggregate mixture of variable thickness, used to eliminate irregularities in contour of an existing surface, prior to the placement of a superimposed layer. {'æz ˈsflət ˈlev-əl-ɪŋ, kɔrs}

asphalt overlay [CIV ENG] One or more layers of asphalt construction on an existing pavement. {'æz ˈsflət ˈəʊv-ərˌlɑːr}

asphalt pavement [CIV ENG] A pavement consisting of a surface layer of mineral aggregate, coated and cemented together with asphalt cement on supporting layers. {'æz ˈsflət ˈpæv-əment}

asphalt soil stabilization [CIV ENG] The treatment of naturally occurring nonplastic or moderately plastic soil with liquid asphalt at normal temperatures to improve the load-bearing qualities of the soil. {'æz ˈsflət ˈsoʊl, stæb-ə-ləzən}

aspirating burner [ENG] A burner in which combustion air at high velocity is drawn over an orifice, creating a negative static pressure and thereby sucking fuel into the stream of air, the mixture of air and fuel is conducted into a combustion chamber, where the fuel is burned in suspension. {'æzˈpɑːrəd-ɪŋ ˈbɔːrnər}

aspiration meteorograph [ENG] An instrument for the continuous recording of two or more meteorological parameters, with the ventilation being provided by a suction fan. {'æzˈpɔːrəˌʃænˌmɛd-ɛðərˌɡrɑːf}
aspiration psychrometer | ENG | A psychrometer in which the ventilation is provided by a suction fan. (ās-prä’tə-shən, sī’krām-əd-ər)
aspiration thermograph | ENG | A thermograph in which the ventilation is provided by a suction fan. (ās-prä’tə-shən ‘thərm-ə-graf)
aspirator | ENG | Any instrument or apparatus that utilizes a vacuum to draw up gases or granular materials. (ās-prä’, rād-ər)
assy balance | ENG | A sensitive balance used in the assaying of gold, silver, and other precious metals. (ās, bāl-’ans)
assembling bolt | CIV ENG | A threaded bolt for holding together temporarily the several parts of a structure during riveting. (ā’sem-bli’ bōlt)
assembly | MECH ENG | A unit containing the component parts of a mechanism, machine, or similar device. (ā’sem-bli’)
assembly line | IND ENG | A mass-production arrangement whereby the work in process is progressively transferred from one operation to the next until the product is assembled. (ā’sem-bli’ ‘lin)
assembly-line balancing | IND ENG | Assigning numbers of operators or machines to each operation of an assembly line so as to meet the required production rate with a minimum of idle time. (ā’sem-bli’ ‘lin bal-’ans-t).in)
assembly machine | MECH ENG | A machine in a manufacturing facility that produces a configuration of some practical value from discrete components. (ā’sem-bli’ ma’shən)
assembly method | IND ENG | The technique used to assemble a manufactured product, such as hand assembly, progressive line assembly, and automatic assembly. (ā’sem-bli’ ‘meth-əd)
assembly time | ENG | 1. The elapsed time after the application of an adhesive until its strength becomes effective. 2. The time elapsed in performing an assembly or subassembly operation. (ā’sem-bli’ ‘tim)
assets | IND ENG | All the resources, rights, and property owned by a person or a company; the book value of these items as shown on the balance sheet. (ā’sets)
assignable cause | IND ENG | Any identifiable factor which causes variation in a process outside the predicted limits, thereby altering quality. (ā’sin’-ə-bal ‘kōz)
asizze | CIV ENG | 1. A cylindrical block of stone forming one unit in a column. 2. A layer of stonework. (ā’siz)
Assmann psychrometer | ENG | A special form of the aspiration psychrometer in which the thermometric elements are well shielded from radiation. (ās-mān’ sī’krām-əd-ər)
assumed plane coordinates | ENG | A local plane-coordinate system set up at the convenience of the surveyor. (ās’üm’d plān’’ko’ORD-natz)
astatic galvanometer | ENG | A sensitive galvanometer designed to be independent of the earth’s magnetic field. (ā’stād-ik’ gal-və’nām-əd-ər)
astatic governor | SIR | isochronous governor. (ā’stād-ik’ gav-ə-nor)
astatic gravimeter | ENG | A sensitive gravimeter designed to measure small changes in gravity. (ā’stād-ik’ gra’vim-əd-ər)
astatic magnetometer | ENG | A magnetometer for determining the gradient of a magnetic field by measuring the difference in reading from two magnetometers placed at different positions. (ā’stād-ik’ , mag-ə’tām-əd-ər)
astatic wattmeter | ENG | An electrodynamic wattmeter designed to be insensitive to uniform external magnetic fields. (ā’stād-ik’ wāt, mēd-ər)
astatized gravimeter | ENG | A gravimeter, sometimes referred to as unstable, where the force of gravity is maintained in an unstable equilibrium with the restoring force. (ā’s-tə’fizd gra’vim-əd-ər)
astern | ENG | To the rear of an aircraft, vehicle, or vessel; behind, from the back. (ō’stərn)
astragal | BUILD | 1. A small convex molding decorated with a string of beads or bead-and-reel shapes. 2. A plain bead molding. 3. A member, or combination of members, fixed to one of a pair of doors or casement windows to cover the joint between the meeting stiles and to close the clearance gap. (ā’s-trə-gal)
astragal front | DES ENG | A lock front which is shaped to fit the edge of a door with an astragal molding. (ā’s-trə-gal’ frənt)
astral lamp | ENG | An Argand lamp designed so that its light is not prevented from reaching a table beneath it by the flattened annular reservoir holding the oil. (ā’s-trə-lamp)
astroballistics | MECH | The study of phenomena arising out of the motion of a solid through a gas at speeds high enough to cause ablation; for example, the interaction of a meteoroid with the atmosphere. (ā’s-trō-bal’lístiks)
astralobale | ENG | An instrument designed to observe the positions and measure the altitudes of celestial bodies. (ā’s-trə-lāb)
astronomical instruments | ENG | Specific kinds of telescopes and ancillary equipment used by astronomers to study the positions, motions, and composition of stars and members of the solar system. (ās-trə’nām-ə-kal’ in-strā-māns)
astronomical theodolite | SIR | altazimuth. (ās-trə’nām-ə-kal’ thē’-ād-ər)
astronomical traverse | ENG | A survey traverse in which the geographic positions of the stations are obtained from astronomical observations, and lengths and azimuths of lines are obtained by computation. (ās-trə’nām-ə-kal’ trō’vārəs)
asymmetric rotor | MECH ENG | A rotating element for which the axis (center of rotation) is not centered in the element. (ās-sym-ətrik’ rōd-ər)
asymmetric top | MECH | A system in which all three principal moments of inertia are different. (ās-sym-ətrik’ tōp)
asynchronous control | CONT SYS | A method of control in which the time allotted for performing
asynchronous device

an operation depends on the time actually re-
required for the operation, rather than on a prede-
termined fraction of a fixed machine cycle.

asynchronous device [CONT SYS] A device in
which the speed of operation is not related to any
frequency in the system to which it is connected.

asynchronous operation [ELECTR] An opera-
tion that is started by a completion signal from
a previous operation, proceeds at the maximum
speed of the circuits until finished, and then
generates its own completion signal.

asynchronous timing [IND ENG] A simulation
method for queues in which the system model
is updated at each arrival or departure, resulting
in the master clock being increased by a variable
amount.

at See technical atmosphere.

ata [MECH] A unit of absolute pressure in the
metric technical system equal to 1 technical
atmosphere. (a-ta)

aetheralize [ENG] To make independent of
temperature or of thermal effects.

atm See atmosphere.

atmometer See atmometer. (at-ma'dam-ad-ar)

atmometer [ENG] The general name for an in-
strument which measures the evaporation rate
of water into the atmosphere. Also known as
atmometer, evaporation gage, evaporimeter.

atm pressure (a-tma'dam-ad-ar)

atmosphere [MECH] A unit of pressure equal to
101,325 kilopascals, which is the air pressure
measured at mean sea level. Abbreviated atm.
Also known as standard atmosphere. (at-
ma, sfir)

atmospheric cooler [MECH ENG] A fluids cooler
that utilizes the cooling effect of ambient air
surrounding the hot, fluids-filled tubes.

atmospheric distillation [CHEM ENG] Distilla-
tion operation conducted at atmospheric pres-
sure, in contrast to vacuum distillation or pres-
sure distillation.

atmospheric impurity [ENG] An extraneous
substance that is mixed as a contaminant with
the air of the atmosphere.

atmospheric noise [ELECTR] Noise heard dur-
ing radio reception due to atmospheric interfer-
ence.

atmospheric steam curing [ENG] The steam
curing of concrete or cement products at atmo-
spheric pressure, usually at a maximum ambient
temperature between 100 and 200°F (40 and
95°C).

atomic force microscope [ENG] A device for
mapping surface atomic structure by measuring
the forces acting on the tip of a sharply pointed
wire or other object that is moved over the sur-
face.

atomic moisture meter [ENG] An instrument
that measures the moisture content of coal in-
stantaneously and continuously by bombarding
it with neutrons and measuring the neutrons
which bounce back to a detector tube after strik-
ing hydrogen atoms of water.

atomic power plant See nuclear power plant.

atomization [MECH ENG] The mechanical sub-
division of a bulk liquid or meltable solid, such
as certain metals, to produce drops, which vary
in diameter depending on the process from un-
der 10 to over 1000 micrometers.

atomizer [MECH ENG] A device that produces a
mechanical subdivision of a bulk liquid, as by
spraying, sprinkling, misting, or nebulizing.

atomizer burner [MECH ENG] A liquid-fuel
burner that atomizes the unignited fuel into a
fine spray as it enters the combustion zone.

atomizer mill [MECH ENG] A solids grinder, the
product from which is a fine powder.

atomizing humidifier [MECH ENG] A humidifier
in which tiny particles of water are introduced
into a stream of air.

attached thermometer [ENG] A thermometer
which is attached to an instrument to determine
its operating temperature.

attemperation [ENG] The regulation of the tem-
perature of a substance.

attemperation of steam [MECH ENG] The con-
trolled cooling, in a steam boiler, of steam at
the superheater outlet or between the primary
and secondary stages of the superheater to regu-
late the final steam temperature.

attenuate [ENG ACOUS] To weaken a signal by
reducing its level.

attenuation [ELEC] The exponential decrease
with distance in the amplitude of an electrical
signal traveling along a very long uniform trans-
mission line, due to conductor and dielectric
losses.

attic [BUILD] The part of a building immediately
below the roof and entirely or partly within the
roof framing.

attic tank [BUILD] An open tank which is in-
stalled above the highest plumbing fixture in a

atomic force microscope
atomic moisture meter
autogenous grinding

building and which supplies water to the fixtures by gravity. {ˈɪd-ɪkˌtæŋk}  
atticurage [BUILD] Of a doorway, having jamb which are inclined slightly inward, so that the opening is wider at the threshold than at the top. {ˈæt-ɪkˌkær}  
attic ventilator [BUILD] A mechanical fan located in the attic space of a residence, usually moves large quantities of air at a relatively low velocity. {ˈæt-ɪkˌvent-əlˌdɑr}  
attraction gripper [CONT SYS] A robot component that uses adhesion, suction, or magnetic forces to grasp a workpiece. {ˈætrakʃənˌgripər}  
attribute sampling [IND ENG] A quality-control inspection method in which the sampled articles are classified only as defective or nondefective. {ˈætrəˌbjuːtˌsæmplɪŋ}  
attributes testing [ENG] A reliability test procedure in which the items under test are classified according to qualitative characteristics. {ˈætrəˌbjuːtsˌtɛst-ɪŋ}  
attrition mill [MECH ENG] A machine in which materials are pulverized between two toothed metal disks rotating in opposite directions. {ˈætrɪʃənˌmɪl}  
Atwood machine [MECH ENG] A device comprising a pulley over which is passed a stretch-free cord with a weight hanging on each end. {ˈætˌwudˈmeʃən}  
audible leak detector [ENG] A device used as an auxiliary to the main leak detector for conversion of the output signal into audible sound. {ˈəʊdəˌbɪlˈlɛkˈdʒərəˈtɛkˈtər}  
audio-frequency meter [ENG] One of a number of types of frequency meters usable in the audio range; for example, a resonant-reed frequency meter. {ˈəʊdəˌfriːˈkwɔnəˌsiˌmɛdər}  
audiometer [ENG] An instrument composed of an oscillator, amplifier, and attenuator and used to measure hearing acuity for pure tones, speech, and bone conduction. {ˈəʊdəˌeɪtəˈmədər}  
audio-modulated radiosonde [ENG] A radiosonde with a carrier wave modulated by audio-frequency signals whose frequency is controlled by the sensing elements of the instrument. {ˈəʊdəˌmoʊˌdʒələʊˌrəˈlædəˌrədˌrədəˌsænd}  
audio patch bay [ENG ACOUS] Specific patch panels provided to terminate all audio circuits and equipment used in a channel and technical control facility, this equipment can also be found in transmitting and receiving stations. {ˈəʊdəˌpætʃˌbeɪ}  
audio spectrometer See acoustic spectrometer. {ˈəʊdəˌspektˈtræmədər}  
audio system See sound-reproducing system. {ˈəʊdəˌsɪstrəm}  
audio taper [ENG ACOUS] A special type of potentiometer used in a volume-control apparatus to compensate for the nonlinearity of human hearing and give the impression of a linear increase in audibility as volume is raised. Also known as linear taper. {ˈəʊdəˌteɪpər}  
audiphone [ENG ACOUS] A device that enables persons with certain types of deafness to hear, consisting of a plate or diaphragm that is placed against the teeth and transmits sound vibrations to the inner ear. {ˈɔdəˌfəʊn}  
auger [DES ENG] 1. A wood-boring tool that consists of a shank with spiral channels ending in two spurs, a central tapered feed screw, and a pair of cutting lips. 2. A large augerlike tool for boring into soil. {ˈəʊgər}  
auger bit [DES ENG] A bit shaped like an auger but without a handle, used for wood boring and for earth drilling. {ˈəʊɡərˌbit}  
auger boring [ENG] 1. The hole drilled by the use of auger equipment. 2. See auger drilling. {ˈəʊɡərˌbɔːrɪŋ}  
auger conveyor See screw conveyor. {ˈəʊɡərˌkærˌvər}  
auger drilling [ENG] A method of drilling in which penetration is accomplished by the cutting or gouging action of chisel-type cutting edges forced into the substance by rotation of the auger bit. Also known as auger boring. {ˈəʊɡərˌdrlɪŋ}  
auger packer [MECH ENG] A feed mechanism that uses a continuous auger or screw inside a cylindrical sleeve to feed hard-to-fl ow granulated solids into shipping containers, such as bags or drums. {ˈəʊɡərˌpækər}  
auger [ENG] A priming tube, used in blasting. Also spelled augette. {ˈəʊʒət}  
augette See auger. {ˈəʊʒət}  
auralization See virtual acoustics. {ˈɔrəˌɑːzəˌʃən}  
autoadaptivity [CONT SYS] The ability of an advanced robot to sense the environment, accept commands, and analyze and execute operations. {ˈəʊtəˈædəptəˈtɪvˌəʊdə}  
autoclave [ENG] An airtight vessel for heating and sometimes agitating its contents under high steam pressure, used for industrial processing, sterilizing, and cooking with moist or dry heat at high temperatures. {ˈəʊtəˌklaʊv}  
autoclave curing [ENG] Steam curing of concrete products, sand-lime brick, asbestos cement products, hydrous calcium silicate insulation products, or cement in an autoclave at maximum ambient temperatures generally between 340 and 420°F (170 and 215°C). {ˈəʊtəˌklævˌkjuərɪŋ}  
autoclave molding [ENG] A method of curing reinforced plastics that uses an autoclave with 50–100 pounds per square inch (345–690 kilo- pascals) steam pressure to set the resin. {ˈəʊtəˌklævˌməldəriŋ}  
autocorrelation [ELECTR] A technique used to detect cyclic activity in a complex signal. {ˈəʊtəˌkərˌɑːləˈʃən}  
autofrettage [ENG] A process for hardening gun barrels, prestressing the metal increases the load at which its permanent deformation occurs. {ˈəʊtəˌfretdiːj}  
autogenous grinding [MECH ENG] The secondary grinding of material by tumbling the material in a revolving cylinder, without balls or bars taking part in the operation. {ˈɔtəˈjænəsˌgrɪndɪŋ}
autogenous healing  [ENG] A natural process of closing and filling cracks in concrete or mortar while it is kept damp. {oṭajā-'nās 'helīn īn}

autogenous mill  See autogenous tumbling mill. {oṭajā-'nās 'mil}

autogenous tumbling mill  [MECH ENG] A type of ball-mill grinder utilizing as the grinding medium the coarse feed (incoming) material. Also known as autogenous mill. {oṭajā-'nās 'tomb līn, 'mil}

autoignition  [MECH ENG] Spontaneous ignition of some or all of the fuel-air mixture in the combustion chamber of an internal combustion engine. Also known as spontaneous combustion. {ōd-'ōgīnīt 'nasān}

automanual system  [CIV ENG] A railroad signal system in which signals are set manually but are activated automatically to return to the danger position by a passing train. {ōd-'ōmān-'yā-wāl 'sis-tom}

automated guided vehicle  [IND ENG] In a flexible manufacturing system, a driverless computer-controlled vehicle equipped with guidance and collision-avoidance systems and used to transport workpieces and tools between workstations. Abbreviated AGV. {ōd-'ōmād-ad 'gīd-ad 've-'ā-kāl}

automated guided vehicle system  [CONT SYS] A computer-controlled system that uses pallets and other interface equipment to transport workpieces to numerically controlled machine tools and other equipment in a flexible manufacturing system, moving in a predetermined pattern to ensure automatic, accurate, and rapid work-machine contact. {ōd-'ōmād-ad 'gīd-ad 've-'ā-kāl, sis-tom}

automatic  [ENG] Having a self-acting mechanism that performs a required act at a predetermined time or in response to certain conditions. {ōd-'ōmād-ik}

automatic balance  [ENG] A balance capable of performing weighing procedures without the intervention of an operator. {ōd-'ōmād-ik 'balāns}

automatic batcher  [MECH ENG] A batcher for concrete which is actuated by a single starter switch, opens automatically at the start of the weighing operations of each material, and closes automatically when the designated weight of each material has been reached. {ōd-'ōmād-ik 'bač-hor}

automatic calibration  [ENG] A process in which an electronic device automatically performs the recalibration of a measuring range of a weighing instrument, for example an electronic balance. {ōd-'ōmād-ik, kal-'ā-brā-šān}

automatic check-out system  [CONT SYS] A system utilizing test equipment capable of automatically and simultaneously providing actions and information which will ultimately result in the efficient operation of tested equipment while keeping time to a minimum. {ōd-'ōmād-ik 'chek autā, sis-tom}

automatic choke  [MECH ENG] A device for enriching the air-fuel mixture in a cold automotive engine when the accelerator is first depressed; the choke plate opens automatically when the engine achieves normal operating temperature. {ōd-'ōmād-ik 'chok}

automatic control  [CONT SYS] Control in which regulating and switching operations are performed automatically in response to predetermined conditions. Also known as automatic regulation. {ōd-'ōmād-ik kantrōl}

automatic control balance  [ENG] An automatic balance fitted with an accessory which determines whether a package has been filled within preselected limits. Also known as check-weigher. {ōd-'ōmād-ik kantrōl balāns}

automatic-control block diagram  [CONT SYS] A diagrammatic representation of the mathematical relationships defining the flow of information and energy through the automatic control system, in which the components of the control system are represented as functional blocks in series and parallel arrangements according to their position in the actual control system. {ōd-'ōmād-ik kantrōl 'blāk dr-ā,gram}

automatic-control error coefficient  [CONT SYS] Three numerical quantities that are used as a measure of the steady-state errors of an automatic control system when the system is subjected to constant, ramp, or parabolic inputs. {ōd-'ōmād-ik kantrōl 'er-ār, ko-dilīsh-ānt}

automatic-control frequency response  [CONT SYS] The steady-state output of an automatic control system for sinusoidal inputs of varying frequency. {ōd-'ōmād-ik 'frē-kwān-sē ri 'spāns}

automatic controller  [CONT SYS] An instrument that continuously measures the value of a variable quantity or condition and then automatically acts on the controlled equipment to correct any deviation from a desired preset value. Also known as automatic regulator, controller. {ōd-'ōmād-ik kantrōl-ār}

automatic-control servo valve  [CONT SYS] A mechanically or electrically actuated servo valve controlling the direction and volume of fluid flow in a hydraulic automatic control system. {ōd-'ōmād-ik kantrōl 'sārvō, valv}

automatic-control stability  [CONT SYS] The property of an automatic control system whose performance is such that the amplitude of transient oscillations decreases with time and the system reaches a steady state. {ōd-'ōmād-ik kantrōl sta, bil-ā-de}

automatic control system  [CONT SYS] A control system having one or more automatic controllers connected in closed loops with one or more processes. Also known as regulating system. {ōd-'ōmād-ik kantrōl sis-tom}

automatic-control transient analysis  [CONT SYS] The analysis of the behavior of the output variable of an automatic control system as the system changes from one steady-state condition to another in terms of such quantities as maximum overshoot, rise time, and response time. {ōd-'ōmād-ik kantrōl 'tran-zhant, 'nal-ā-sās}

automatic coupling  [MECH ENG] A device
which couples rail cars when they are bumped together. ⟨şd-şmad-ik ‘kāp-līq⟩

automatic data processing  [ENG] The machine performance, with little or no human assistance, of any of a variety of tasks involving informational data; examples include automatic and responsive reading, computation, writing, speaking, directing artillery, and the running of an entire factory. Abbreviated ADP. ⟨şd-şmad-ik ‘dād-a ‘prās, sī-ʃp⟩

automatic dialog replacement studio  See ADR studio. ⟨şd-şmad-ik ‘dr-a, lāg ‘ril-pās-mant, sūd-e, ʃp⟩

automatic door bottom  [ENG] A movable plunger, in the form of a horizontal bar at the bottom of a door, which drops automatically when the door is closed, sealing the threshold and reducing noise transmission. Also known as automatic threshold closer. ⟨şd-şmad-ik ‘dør, ṣād-am⟩

automatic drill  [DES ENG] A straight brace for bits whose shank comprises a coarse-pitch screw sliding in a threaded tube with a handle at the end; the device is operated by pushing the handle. ⟨şd-şmad-ik ‘dril⟩

automatic fire pump  [MECH ENG] A pump which provides the required water pressure in a fire standpipe or sprinkler system, when the water pressure in the system drops below a preselected value, a sensor causes the pump to start. ⟨şd-şmad-ik ‘fr-, pām-p⟩

automatic flushing system  [CIV ENG] A water tank system which provides automatically for the periodic flushing of urinals or other plumbing fixtures, or of pipes having too small a slope to drain effectively. ⟨şd-şmad-ik ‘flash-in, sī-stam⟩

automatic ignition  [ENG] A device that lights the fuel in a gas burner when the gas-control valve is turned on. ⟨şd-şmad-ik ‘ig’n-ʃīsh-ʃn⟩

automatic indexing  [CONT SYS] The procedure for determining the orientation and position of a workpiece with respect to an automatically controlled machine, such as a robot manipulator, that is to perform an operation on it. ⟨şd-şmad-ik ‘in, dēk-ʃn⟩

automatic level control  [ELECTR] A circuit that keeps the output of a radio transmitter, tape recorder, or other device essentially constant, even in the presence of large changes in the input amplitude. Abbreviated ALC  [MECH ENG] In an automotive vehicle, a system in which two air-chamber shock absorbers in the rear are fed compressed air by an electric compressor; pressure in the air chambers is determined automatically by sensors to maintain the vehicle at a predetermined height regardless of load. ⟨şd-şmad-ik ‘lēv-al ʃan-tral⟩

automatic microfilmer  [ENG] A device used to place microfilm in jackets at relatively high speeds. ⟨şd-şmad-ik ‘mī-kro, fīl-ər⟩

automatic mold  [ENG] A mold used in injection or compression molding of plastic objects so that repeated molding cycles are possible, including ejection, without manual assistance. ⟨şd-şmad-ik ‘mōłd⟩

automatic press  [MECH ENG] A press in which mechanical feeding of the work is synchronized with the press action. ⟨şd-şmad-ik ‘préʃ⟩

automatic pumping station  [CHEM ENG] An installation on a pipeline that automatically provides the proper pressure when a fluid is being transported. ⟨şd-şmad-ik ‘pāmping, ʃtā-shan⟩

automatic ranging  See autoranging. ⟨şd-şmad-ik ‘rān-ʃing⟩

automatic record changer  [ENG ACOUS] An electric phonograph that automatically plays a number of records one after another. ⟨şd-şmad-ik ‘rek-ord, ʃān-ʒar⟩

automatic regulation  See automatic control. ⟨şd-şmad-ik ‘reg-yəl-fā-shan⟩

automatic regulator  See automatic controller. ⟨şd-şmad-ik ‘reg-yəl-ʃar⟩

automatic sampler  [MECH ENG] A mechanical device to sample process streams (gas, liquid, or solid) either continuously or at preset time intervals. ⟨şd-şmad-ik ‘sām-plar⟩

automatic screw machine  [MECH ENG] A machine designed to automatically produce finished parts from bar stock at high production rates; the term is not an exact, specific machine-tool classification. ⟨şd-şmad-ik ‘skrū-ma, ʃēn⟩

automatic shut-off  [ENG ACOUS] A switch in some tape recorders which automatically stops the machine when the tape ends or breaks. ⟨şd-şmad-ik ‘šād-ʃl, ʃl⟩

automatic slips  [ENG] A pneumatic or hydraulic device for setting and removing slips automatically. Also known as power slips. ⟨şd-şmad-ik ‘slips⟩

automatic stoker  [MECH ENG] A device that supplies fuel to a boiler furnace by mechanical means. Also known as mechanical stoker. ⟨şd-şmad-ik ‘stok-ər⟩

automatic test equipment  [ENG] Test equipment that makes two or more tests in sequence without manual intervention; it usually stops when the first out-of-tolerance value is detected. ⟨şd-şmad-ik ‘test i, kwip-mant⟩

automatic threshold closer  See automatic door bottom. ⟨şd-şmad-ik ‘thresh-hold, kloz-ər⟩

automatic time switch  [ENG] Combination of a switch with an electric or spring-wound clock, arranged to turn an apparatus on and off at predetermined times. ⟨şd-şmad-ik ‘tīm, swīch⟩

automatic track shift  [ENG ACOUS] A system used with multiple-track magnetic tape recorders to index the tape head, after one track is played, to the correct position for the start of the next track. ⟨şd-şmad-ik ‘trak-shift⟩

automatic tuning system  [CONT SYS] An electrical, mechanical, or electromechanical system that tunes a radio receiver or transmitter automatically to a predetermined frequency when a button or lever is pressed, a knob turned, or
automatic-type belt-tensioning device

a telephone-type dial operated. (šod-ṣ̌mad-ik ṭun-iɣ sis-tam)

automotive-type belt-tensioning device [MECH ENG] Any device which maintains a predetermined tension in a conveyor belt. (šod-ṣ̌mad-ik ṭip 'belt ṭen-shaŋ-iɣ di-viš)

automatic volume compressor See volume compressor. (šod-ṣ̌mad-ik vāl-yam ḳam,pres-ar)

automatic volume expander See volume expander. (šod-ṣ̌mad-ik vāl-yam ik,spond-ar)

automatic wet-pipe sprinkler system [ENG] A sprinkler system, all of whose parts are filled with water at sufficient pressure to provide an immediate continuous discharge if the system is activated. (šod-ṣ̌mad-ik wet ṭip spṛiŋk-ḷar sis-tam)

automatic zero setting [ENG] A system for automatic correction of zero-point drifts or for compensation of soiling of load receivers on a balance by means of a special accessory component. (šod-ṣ̌mad-ik ṛiɾ-ɾ̣oˌ ṣed-iɣ)

automation [ENG] 1. The use of technology to ease human labor or extend the mental or physical capabilities of humans. 2. The mechanisms, machines, and systems that save or eliminate labor, or imitate actions typically associated with human beings. (šod-ṣ̌ma-ʃ̣-an)

automechanism [CONT SYS] A machine or other device that operates automatically or under control of a servomechanism. (šod-ṣ̌me-ḳaˌ niz-anti)

automobile [MECH ENG] A four-wheeled, trackless, self-propelled vehicle for land transportation of as many as eight people. Also known as car. (šod-ṣ̌ma-bel)

automobile chassis [MECH ENG] The automobile frame, together with the wheels, power train, brakes, engine, and steering system. (šod-ṣ̌ma-bel cha-si-ʃ̣-e)

automotive air conditioning [MECH ENG] A system for maintaining comfort of occupants of automobiles, buses, and trucks, limited to air cooling, air heating, ventilation, and occasional demistification. (šod-ṣ̌mad-iv 'er kan dish-an-iɣ)

automotive body [ENG] An enclosure mounted on and attached to the frame of an automotive vehicle, to contain passengers and luggage, or in the case of commercial vehicles the commodities being carried. (šod-ṣ̌mad-iv 'baːd-ə)

automotive brake [MECH ENG] A friction mechanism that slows or stops the rotation of the wheels of an automotive vehicle, so that tire traction slows or stops the vehicle. (šod-ṣ̌ma-ṣ̌-med-iv 'brak)

automotive engine [MECH ENG] The fuel-consuming machine that provides the motive power for automobiles, airplanes, tractors, buses, and motorcycles and is carried in the vehicle. (šod-ṣ̌ma-ṣ̌-med-iv 'en-ʃaŋ)

automotive engineering [MECH ENG] The branch of mechanical engineering concerned primarily with the special problems of land transportation by a four-wheeled, trackless, automotive vehicle. (šod-ṣ̌ma-ṣ̌-med-iv ,en-ʃaŋ-ʃ̣ir-iɣ)

automotive frame [ENG] The basic structure of all automotive vehicles, except tractors, which is supported by the suspension and upon which or attached to which are the power plant, transmission, clutch, and body or seat for the driver. (šod-ṣ̌ma-ṣ̌-med-iv 'fṛam)

automotive ignition system [MECH ENG] A device in an automotive vehicle which initiates the chemical reaction between fuel and air in the cylinder charge. (šod-ṣ̌ma-ṣ̌-med-iv ig’nish-an sis-tam)

automotive steering [MECH ENG] Mechanical means by which a driver controls the course of a moving automobile, bus, truck, or tractor. (šod-ṣ̌ma-ṣ̌-med-iv 'stir-iɣ)

automotive suspension [MECH ENG] The springs and related parts intermediate between the wheels and frame of an automotive vehicle that support the frame on the wheels and absorb road shock caused by passage of the wheels over irregularities. (šod-ṣ̌ma-ṣ̌-med-iv sas'pen-ʃan)

automotive transmission [MECH ENG] A device for providing different gear or drive ratios between the engine and drive wheels of an automotive vehicle, a principal function being to enable the vehicle to accelerate from rest through a wide speed range while the engine operates within its most effective range. (šod-ṣ̌ma-ṣ̌-med-iv tranz 'mish-an)

automotive vehicle [MECH ENG] A self-propelled vehicle or machine for land transportation of people or commodities or for moving materials, such as a passenger car, bus, truck, motocycle, tractor, airplane, motorboat, or earthmover. (šod-ṣ̌ma-ṣ̌-med-iv 've-ʃ̣-a-kal)

autonomous robot [ENG] A robot that not only can maintain its own stability as it moves, but also can plan its movements. (oʃ̣ṭaŋ-maš rob,ṣ̌aʃ̣-ṭ)

autonomous vehicle [ENG] A vehicle that is able to plan its path and to execute its plan without human intervention. (oʃ̣ṭaŋ-maš 've-ʃ̣-a-kal)

autopatrol [MECH ENG] A self-powered blade grinder. Also known as motor grinder. (šod-ṣ̌-paˌtṛoʃ̣)

autoradar plot See chart comparison unit. (šod-ṣ̌-oʃ̣ṭaˌdar,pḷat)

autoradiography [ENG] A technique for detecting radioactivity in a specimen by producing an image on a photographic film or plate. Also known as radioautography. (šod-ṣ̌-ṛad-ə'g̣-ə-roʃ̣-
əfe)

autorail [MECH ENG] A self-propelled vehicle having both flange wheels and pneumatic tires to permit operation on both rails and roadways. (šod-ṣ̌-ṛaʃ̣l)

autoranging [ENG] Automatic switching of a multi-range meter from its lowest to the next higher range, with the switching process repeated until a range is reached for which the full-scale value is not exceeded. Also known as automatic ranging. (šod-ṣ̌-ṛan-ʃ̣iɣ)
avalanche noise

autoreducing tachymeter [ENG] A class of tachymeter by which horizontal and height distances are read simultaneously. {ˈɔ:d-ə-rɪdʒu-zən təˈkɪm-əd-ər}

autorotation [MECH] 1. Rotation about any axis of a body that is symmetrical and exposed to a uniform airstream and maintained only by aerodynamic moments. 2. Rotation of a stalled symmetrical airfoil parallel to the direction of the wind. {ˈɔ:d-ə,roʊˈtɑː/shən}

autosled [MECH] A propeller-driven machine equipped with runners and wheels and adaptable to use on snow, ice, or bare roads. {ˈɔd-ə/ˈsled}

autostability [CONT SYS] The ability of a device (such as a servomechanism) to hold a steady position, either by virtue of its shape and proportions, or by control by a servomechanism. {ˈɔd-ə-stəˈbil-əd-ər}

auxanometer [ENG] An instrument used to detect and measure plant growth rate. {ˈɔːɡˌzaːnəm-əd-ər}

auxiliary dead latch [DES ENG] A supplementary latch in a lock which automatically deadlocks the main latch bolt when the door is closed. Also known as auxiliary latch bolt, deadlocking latch bolt, trigger bolt. (ˈɔɡˌzɪlˌyəˌrɛdˌdɛdˌlɑch)

auxiliary latch bolt See auxiliary dead latch. {ˈɔgˌzɪlˌyəˌrɛlˈlɑchˌbɒlt}

auxiliary power plant [MECH ENG] Ancillary equipment, such as pumps, fans, and soot blowers, used with the main boiler, turbine, engine, waterwheel, or generator of a power-generating station. (ˈɔɡˌzɪlˌyəˌrɛˈpauˌərˌplɑnt)

auxiliary rafter [BUILD] A member strengthening the principal rafter in a truss. {ˈɔɡˌzɪlˌyəˌrɛˈræfˈtɔr}

auxiliary reinforcement [CIV ENG] In a pre-stressed structural member, any reinforcement in addition to that whose function is pre-stressing. (ˈɔɡˌzɪlˌyəˌrɛˌreɪnˌfɔrsˈmɑnt)

auxiliary rim lock [DES ENG] A secondary or extra lock that is surface-mounted on a door to provide additional security. (ˈɔɡˌzɪlˌyəˌrɛˈrɪmˌlɑk)

auxiliary rope-fastening device [MECH ENG] A device attached to an elevator car, to a counterweight, or to the overhead dead-end rope-hitch support, that automatically supports the car or counterweight in case the fastening for the wire rope (cable) fails. (ˈɔɡˌzɪlˌyəˌrɛˌrɔːpˌfasˌənˌɪŋˈdɪˌvɪs)

auxiliary thermometer [ENG] A mercury-in-glass thermometer attached to the stem of a reversing thermometer and read at the same time as the reversing thermometer so that the correction to the reading of the latter, resulting from change in temperature since reversal, can be computed. (ˈɔɡˌzɪlˌyəˌrɛˌθɑrˌməm-əd-ər)

auxograph [ENG] An automatic device that records changes in the volume of a body. {ˈɔkˌsaˈɡrɑf}

auxometer [ENG] An instrument that measures the magnification of a lens system. (ˈɔkˌsəˌməd-ər)

availability [SYS ENG] The probability that a system is operating satisfactorily at any point in time, excluding times when the system is under repair. (ˈɔvəˈrəlˈbɪlˌəd-ər)

availability ratio [IND ENG] The ratio of the amount of time a system is actually available for use to the amount of time it is supposed to be available. (ˈəˌvəˌrəlˌbɪlˌəd-ərˌrəˈʃoʊ)

available draft [MECH ENG] The usable differential pressure in the combustion air in a furnace, used to sustain combustion of fuel or to transport products of combustion. (ˈəˌvəˌrəlˌbɪlˌdɹəfənt)

available energy [MECH ENG] Energy which can in principle be converted to mechanical work. (ˈəˌvəˌrəlˌbɪlˌənˈeɪdʒən)

available heat [MECH ENG] The heat per unit mass of a working substance that could be transformed into work in an engine under ideal conditions for a given amount of heat per unit mass furnished to the working substance. (ˈəˌvəˌrəlˌbɪlˌhæt)

available motions inventory [IND ENG] A list of all motions available to a human for performing a specific task. (ˈəˌvəˌrəlˌbɪlˌməˈʃənˌɪnˈventɔr)

avalanche [ELECTR] 1. The cumulative process in which an electron or other charged particle accelerated by a strong electric field collides with and ionizes gas molecules, thereby releasing new electrons which in turn have more collisions, so that the discharge is thus self-maintained. Also known as avalanche effect, cascade; cumulative ionization; electron avalanche; Townsend avalanche; Townsend ionization. 2. Cumulative multiplication of carriers in a semiconductor as a result of avalanche breakdown. Also known as avalanche effect. (ˈəˈvəˌrəlˌbɪlˌənˈvælənsh)

avalanche breakdown [ELECTR] Nondestructive breakdown in a semiconductor diode when the electric field across the barrier region is strong enough so that current carriers collide with valence electrons to produce ionization and cumulative multiplication of carriers. (ˈəˈvəˌrəlˌbɪlˌbɹækˈdɑːn)

avalanche diode [ELECTR] A semiconductor breakdown diode, usually made of silicon, in which avalanche breakdown occurs across the entire pn junction and voltage drop is then essentially constant and independent of current. The two most important types are IMPATT and TRAPATT diodes. (ˈəˈvəˌrəlˌbɪlˌdɹətˌdəd)

avalanche effect See avalanche. (ˈəˈvəˌrəlˌbɪlˌənˈvælənʃ)

avalanche impedance [ELECTR] The complex ratio of the reverse voltage of a device that undergoes avalanche breakdown to the reverse current. (ˈəˈvəˌrəlˌbɪlˌɪmˈpɛdəns)

avalanche-induced migration [ELECTR] A technique of forming interconnections in a field-programmable logic array by applying appropriate voltages for shorting selected base-emitter junctions. (ˈəˈvəˌrəlˌbɪlˌɪnˈdɪdˌmiˈɡreɪˌʃən)

avalanche noise [ELECTR] 1. A junction phenomenon in a semiconductor in which carriers
in a high-voltage gradient develop sufficient energy to dislodge additional carriers through physical impact; this agitation createsragged current flows which are indicated by noise. 2. The noise produced when a junction diode is operated at the onset of avalanche breakdown. (‘av-ri-ij’, nôiz)

**avalanche oscillator** [ELECTR] An oscillator that uses an avalanche diode as a negative resistance to achieve one-step conversion from direct current to microwave outputs in the gigahertz range. (‘av-ri-ij’, lanch jás-ə,lâd-ər)

**avalanche photodiode** [ELECTR] A photodiode operated in the avalanche breakdown region to achieve internal photocurrent multiplication, thereby providing rapid light-controlled switching operation. (‘av-ri-ij’, lanch fó-d-o-dîd,ôd)

**avalanche protector** [MECH ENG] Guard plates installed on an excavator to prevent loose material from sliding into the wheels or tracks. (‘av-ri-ij’, lanch pra,tek-tôr)

**avalanche transistor** [ELECTR] A transistor that utilizes avalanche breakdown to produce chain generation of charge-carrying hole-electron pairs. (‘av-ri-ij’, lanch tran’tiz-îr)

**avalanche voltage** [ELECTR] The reverse voltage required to cause avalanche breakdown in a pn semiconductor junction. (‘av-ri-ij’, jîv-îl-îj)

**average acoustic output** [ENG ACOUS] Vibratory energy output of a transducer measured by a radiation pressure balance; expressed in terms of watts per unit area of the transducer face. (‘av-ri-ij’, a’kú-stik, à’ut-pût)

**average noise figure** [ELECTR] Ratio in a transducer of total output noise power to the portion thereof attributable to thermal noise in the input termination, the total noise being summed over frequencies from zero to infinity, and the noise temperature of the input termination being standard (290 K). (‘av-ri-ij’, ‘nôiz, fig-yôr)

**average outgoing quality limit** [IND ENG] The average quality of all lots that pass quality inspection, expressed in terms of percent defective. Abbreviated AQL. (‘av-ri-ij’, à’ut,gó-îj, ‘kwâl-ôd-ô, lim-at)

**average power output** [ELECTR] Radio-frequency power, in an audio-modulation transmitter, delivered to the transmitter output terminals, averaged over a modulation cycle. (‘av-ri-ij’, ‘pôw-ô, à’ut-pût)

**average sample number** [IND ENG] An anticipated number of pieces that must be inspected to determine the acceptability of a particular lot. (‘av-ri-ij’, ˈsam-pôl, ˈnôm-bôr)

**averaging** [CONT SYS] The reduction of noise received by a robot sensor by screening it over a period of time. (‘av-ri-ij’, ‘i-nôj)

**averaging device** [ENG] A device for obtaining the arithmetic mean of a number of readings, as on a bubble sextant. (‘av-ri-ij’, ‘di’vis)

**averaging pitot tube** [ENG] A flowmeter that consists of a rod extending across a pipe with several interconnected upstream holes, which simulate an array of pitot tubes across the pipe, and a downstream hole for the static pressure reference. (‘av-ri-ij’, ‘pô-tô, ˈtûb)

**aviation method** [ENG] Determination of knock-limiting power, under lean-mixture conditions, of fuels used in spark-ignition aircraft engines. (‘av-ri-ij’, àv’i-ə-shân, ‘meth-əd)

**avionics** [ENG] The design and production of airborne electrical and electronic devices; term is derived from aviation electronics. (‘av-ri-ij’, ‘e-niks)

**avogram** [MECH] A unit of mass, equal to 1 gram divided by the Avogadro number. (‘av-o’ri-ij, gram)

**avoidable delay** [IND ENG] An interruption under the control of the operator during the normal operating time. (‘av-rid’ô-bal dl’ôl)

**avoiddupois pound** See pound. (‘av-rid-pôi’z, ‘pôund)

**avoiddupois weight** [MECH] The system of units which has been commonly used in English-speaking countries for measurement of the mass of any substance except precious stones, precious metals, and drugs; it is based on the pound (approximately 453.6 grams) and includes the short ton (2000 pounds), long ton (2240 pounds), ounce (one-sixteenth ounce), and dram (one-sixteenth ounce). (‘av-rid-pôi’z, ‘wôt)

**awl** [DES ENG] A point tool with a short wooden handle used to mark surfaces and to make small holes, as in leather or wood. (‘ôl)

**awning window** [BUILD] A window consisting of a series of vertically arranged, top-hinged rectangular sections; designed to admit air while excluding rain. (‘on-îj, ‘윈-dô)

**ax** [DES ENG] An implement consisting of a heavy metal wedge-shaped head with one or two cutting edges and a relatively long wooden handle, used for chopping wood and felling trees. (‘aks)

**axed brick** [ENG] A brick, shaped with an ax, that has not been trimmed. Also known as rough-axed brick. (‘akst, ‘brik)

**axhammer** [DES ENG] An ax having one cutting edge and one hammer face. (‘aks,ham-ər)

**axial fan** [MECH ENG] A fan whose housing confines the gas flow to the direction along the rotating shaft at both the inlet and outlet. (‘ak-sê-əl, ‘fôn)

**axial-flow compressor** [MECH ENG] A fluid compressor that accelerates the fluid in a direction generally parallel to the rotating shaft. (‘ak-sê-əl, ‘filô, ‘kâm,prés-ər)

**axial-flow pump** [MECH ENG] A pump having an axial-flow or propeller-type impeller; used when maximum capacity and minimum head are desired. Also known as propeller pump. (‘ak-sê-əl, ‘filô, ‘pomp)

**axial force diagram** [CIV ENG] In statics, a graphical representation of the axial load acting at each section of a structural member, plotted to scale and with proper sign as an ordinate at each point of the member and along a reference line representing the length of the member. (‘ak-sê-əl, ‘fôrs, ‘di’a-grams)
axis of torsion [MECH] An imaginary line along which a geometrical figure is symmetric. Also known as symmetry axis.  

axis of rotation [MECH] A straight line passing through the points of a rotating rigid body that remain stationary, while the other points of the body move in circles about the axis.  

axis of sighting [ENG] A line taken through the sights of a gun, or through the optical center and centers of curvature of lenses in any telescopic instrument.  

axis of symmetry [MECH] An imaginary line about which a geometrical figure is symmetric. Also known as symmetry axis.  

axis of torsion [MECH] An axis parallel to the generators of a cylinder undergoing torsion, located so that the displacement of any point on the axis lies along the axis. Also known as axis of twist.  


axis lead [ELEC] A wire lead extending from the end along the axis of a resistor, capacitor, or other component.  

axis of freedom [MECH] A line about which a body rotates.  

axis modulus [MECH] The ratio of a simple tension stress applied to a material to the resulting stress.  

azimuth [ENG] In directional drilling, the direction of the face of the deviation tool with respect to magnetic north.  

azimuth-adjustment slide rule [ENG] A circular slide rule by which a known angular correction for fire at one elevation can be changed to the proper correction for any other elevation.  

azimuth line [ENG] Any horizontal circle dial that reads azimuth.  

azimuth error [ENG] An error in the indicated azimuth of a target detected by radar.  

azimuth indicator [ENG] An instrument for measuring azimuths, particularly a device which fits over a central pivot in the glass cover of a magnetic compass. Also known as azimuth bar, bearing bar.  

azimuth instrument [ENG] An instrument for measuring azimuths, particularly a device which fits over a central pivot in the glass cover of a magnetic compass. Also known as azimuth bar, bearing bar.  

azimuth alignment [ENG] A process by which a liquid mixture is separated into pure components with the help of an additional substance or solvent.  

azimuth angle [ENG] An angle in triangulation or in traverse through which the computation of azimuth is carried.  

azimuth bar [ENG] An instrument for measuring azimuths, particularly a device which fits over a central pivot in the glass cover of a magnetic compass. Also known as azimuth bar, bearing bar.  

azimuth circle [DES ENG] A ring calibrated from 0 to 360° over a compass, compass repeater, radar plan position indicator, direction finder, and so on, which provides means for observing compass bearings and azimuths.  

azimuth dial [ENG] An approach-radar scope which displays azimuth information.  

azimuth instrument [ENG] An instrument for measuring azimuths, particularly a device which fits over a central pivot in the glass cover of a magnetic compass. Also known as azimuth bar, bearing bar.  

azimuth line [ENG] A radial line from the principal point, isocenter, or nadir point of a photograph, representing the direction to a similar point of an adjacent photograph in the same.
flight line, used extensively in radial triangulation. ('az-math,lin)

azimuth marker [ENG] 1. A scale encircling the plan position indicator scope of a radar on which the azimuth of a target from the radar may be measured. 2. Any of the reference limits inserted electronically at 10 or 15° intervals which extend radially from the relative position of the radar on an off-center plan position indicator scope. ('az-math,mär-kər)

azimuth scale [ENG] A graduated angle-measuring device on instruments, gun carriages, and so forth that indicates azimuth. ('az-math,skal)

azimuth-stabilized plan position indicator [ENG] A north-upward plan position indicator (PPI), a radarscope, which is stabilized by a gyrocompass so that either true or magnetic north is always at the top of the scope regardless of vehicle orientation. ('az-math 'sta-balizd 'plan pa'zish-on 'in-da,kəd-ər)

azimuth transfer [ENG] Connecting, with a straight line, the nadir points of two vertical photographs selected from overlapping flights. ('az-math 'tranz,fər)

azimuth traverse [ENG] A survey traverse in which the direction of the measured course is determined by azimuth and verified by back azimuth. ('az-math trə'vers)

Azusa [ENG] A continuous-wave, high-accuracy, phase-comparison, single-station tracking system operating at C-band and giving two direction cosines and slant range which can be used to determine space position and velocity of a vehicle (usually a rocket or a missile). ('əz'sə)
backacter See backhoe.  
backband [BUILD] A piece of millwork used around a rectangular window or door casing as a cover for the gap between the casing and the wall or as a decorative feature. Also known as backbend.  
backbend [BUILD] 1. At the outer edge of a metal door or window frame, the face which returns to the wall surface. 2. See backband.  
back bias [ELECTR] 1. Degenerative or regenerative voltage which is fed back to circuits before its originating point, usually applied to a control anode of a tube or other device. 2. Voltage applied to a grid of a tube (or tubes) or electrode of another device to reduce a condition which has been upset by some external cause.  
back boxing See backlining.  
backbreak See overbreak.  
back check [DES ENG] In a hydraulic door closer, a mechanism that slows the speed with which a door may be opened.  
backdigger See backhoe.  
back-draft damper [MECH ENG] A damper with blades actuated by gravity, permitting air to pass through them in one direction only.  
back edging [ENG] Cutting through a glazed ceramic pipe by first chipping through the glaze around the outside and then chipping the pipe itself.  
back end See thrust yoke.  
backfill [CIV ENG] Earth refilling a trench or an excavation around a building, bridge abutment, and the like.  
back fillet [BUILD] The return of the margin of a groove, doorjamb, or window jamb when it projects beyond a wall.  
backfire [CIV ENG] A fire that is started in order to burn against and cut off a spreading fire. [ELECTR] See arback. [ENG] Momentary backward burning of flame into the tip of a torch. Also known as flashback. [MECH ENG] In an internal combustion engine, an improperly timed explosion of the fuel mixture in a cylinder, especially one occurring during the period that the exhaust or intake valve is open and resulting in a loud detonation.  
back flap hinge [DES ENG] A hinge having a flat plate or strap which is screwed to the face of a shutter or door. Also known as flap hinge.  
backflow [CIV ENG] The flow of water or other liquids, mixtures, or substances into the distributing pipes of a potable supply of water from any other than its intended source.  
backflow connection [CIV ENG] Any arrangement of pipes, plumbing fixtures, drains, and so forth, in which backflow can occur.  
backflow preventer See vacuum breaker.  
backflow valve See backwater valve.  
backfurrow [CIV ENG] In an excavation procedure, the first cut made on undisturbed land.  
back gaeing [MECH ENG] The technique of using gears on machine tools to obtain an increase in the number of speed changes that can be gotten with cone belt drives.  
background discrimination [ENG] The ability of a measuring instrument, circuit, or other device to distinguish signal from background noise.  
background noise [ENG] The undesired signals that are always present in an electronic or other system, independent of whether or not the desired signal is present.  
background returns [ENG] 1. Signals on a radar screen from objects which are of no interest. 2. See clutter.  
background signal [ENG] The output of a leak detector caused by residual gas to which the detector element reacts.  
back gutter [BUILD] A gutter installed on the uphill side of a chimney on a sloping roof to divert water around the chimney.  
back hearth [BUILD] That part of the hearth (or floor) which is contained within the fireplace itself. Also known as inner hearth.  
backhoe [MECH ENG] An excavator fitted with a hinged arm to which is rigidly attached a bucket that is drawn towards the machine in operation. Also known as backacter, backdigger, dragshovel; pullshovel.  

Copyright 2003 by The McGraw-Hill Companies, Inc. Click Here for Terms of Use.
backing

backing [CIV ENG] 1. The unexposed, rough masonry surface of a wall that is faced with finer work. 2. The earth backfill of a retaining wall. [ELECTR] Flexible material, usually cellulose acetate or polyester, used on magnetic tape as the carrier for the oxide coating. (‘bak-ing) 3. The amount by which the drill stem when the bit is being fed at a faster rate than the bit can cut. (‘bak-lash) 4. A strip of metal attached at the plies to the back side of lath, opposite the fin of a dip joint at the root of a weld to prevent spatter. (‘bak-ing)

backing board [BUILD] In a suspended acoustic ceiling, a flat sheet of gypsum board to which acoustical tile is attached by adhesive or mechanical means. (‘bak-ing, bôrd) 5. To withdraw the drill bit from a borehole. (‘bak-off)

backing brick [CIV ENG] A relatively low-quality brick used behind face brick or other masonry. (‘bak-ing, brick) 6. Testing for designed for screwing to a flat surface. (‘bak-ing)

backing off [ENG] Removing excessive body metal from badly worn bits. (‘bak-ing off) 7. Backing plate [ENG] A plate used to support the hardware for the cavity used in plastics injection molding. (‘bak-ing, plat) 8. Backing pump [MECH ENG] A vacuum pump in a vacuum system using two pumps in tandem, which works directly to the atmosphere and reduces the pressure to an intermediate value, usually between 100 and 0.1 pascals. Also known as fore pump. (‘bak-ing, pump) 9. Backing ring [ENG] A strip of metal attached at a pipe joint at the root of a weld to prevent spatter and to ensure the integrity of the weld. (‘bak-ing, ring)

backing space [ENG] Space between a fore pump and a diffusion pump in a leak-testing system. (‘bak-ing, spås) 10. Backing-space technique [ENG] Testing for leaks by connecting a leak detector to the backing space. (‘bak-ing, spås, tek’ne) 11. Backing up [CIV ENG] In masonry, the laying of backing brick. (‘bak-ing up)

back jamb See backlining. (‘bak-jamb) 12. Backjoint [CIV ENG] In masonry, a rabbet such as that made on the inner side of a chimneypiece to receive a slip. (‘bak-joint)

backlash [DES ENG] The amount by which the tooth space of a gear exceeds the tooth thickness of the mating gear along the pitch circles. [ELECTR] A small reverse current in a rectifier tube caused by the motion of positive ions produced in the gas by the impact of thermoelectrons. [ENG] 1. Relative motion of mechanical parts caused by looseness. 2. The difference between the actual values of a quantity when a dial controlling this quantity is brought to a given position by a clockwise rotation and when it is brought to the same position by a counter-clockwise rotation. (‘bak-lash)

backlining [BUILD] 1. A thin strip which lines a window casing, next to the wall and opposite the pulley stile, and provides a smooth surface for the working of the weighted sash. Also known as back boxing, back jamb. 2. That piece of framing forming the back recess for boxing shutters. (‘bak-lin-ing)

back lintel [BUILD] A lintel which supports the backing of a masonry wall, as opposed to the lintel supporting the facing material. (‘bak-lin-tel)

backlog [IND ENG] 1. An accumulation of orders promising future work and profit. 2. An accumulation of unprocessed materials or unperformed tasks. (‘bak-lág) 3. An accumulation of or- mend of unprocessed materials or un-work. (‘bak-lág)

back mixing [CHEM ENG] The tendency of re-acted chemicals to intermingle with unreacted feed in reactors, such as stirred tanks, packed towers, and baffled tanks. (‘bak-mik-sij)

back nailing [BUILD] Nailing the plies of a built- up roof to the substrate to prevent slippage. (‘bak-nål-ing) 4. A threaded nut, one side of which is dished to retain a grommet; used in forming a watertight pipe joint. 5. A locking nut on the shank of a pipe fitting, tap, or valve. (‘bak-nut) 6. Back off [ENG] 1. To unscrew or disconnect. 2. To withdraw the drill bit from a borehole. 3. To withdraw a cutting tool or grinding wheel from contact with the workpiece. (‘bak-of) 7. Back order [IND ENG] 1. An order held for future completion. 2. A new order placed for previously unavailable materials of an old order. (‘bak-ord-ar)

backplastering [BUILD] A coat of plaster applied to the back side of lath, opposite the fin-ished surface. (‘bak-plas-triŋ)

backplate [BUILD] A plate, usually metal or wooed, which serves as a backing for a structural member. (‘bak-plat)

backplate lamp holder [DES ENG] A lamp holder, integrally mounted on a plate, which is designed for screwing to a flat surface. (‘bak-plat, lamp, hól-dar)

back pressure [MECH ENG] Pressure due to a force that is operating in a direction opposite to that being considered, such as that of a fluid flow. [MECH ENG] Resistance transferred from rock into the drill stem when the bit is being fed at a faster rate than the bit can cut. (‘bak-presh-Ôr)

back-pressure-relief port [ENG] In a plastics extrusion die, an opening for the release of ex-cess material. (‘bak-preš-Ôr ri’lè, pôrt)

back rake [DES ENG] An angle on a single-point turning tool measured between the plane of the tool face and the reference plane. (‘bak-rák)

back-run process [CHEM ENG] A process for manufacturing water gas in which part of the run is made down, by passing steam through the superheater, thence up through the carburetor, down through the generator, and direct to the scrubbers. (‘bak-Ôn, prås-Ôs)

backsaw [DES ENG] A fine-tooth saw with its upper edge stiffened by a metal rib to ensure straight cuts. (‘bak-so) 12. Backscatter gage [ENG] A radar instrument used to measure the radiation scattered at 180° to the direction of the incident wave. (‘bak-skad-Ôr, gaj) 13. Backscattering thickness gage [ENG] A device that uses a radioactive source for measuring the thickness of materials, such as coatings, in which the source and the instrument measuring the radiation are mounted on the same side of the
material, the backscattered radiation thus being measured. { 'bak'skəd-ərni nθik-nas, ɡāl } 

backset [BUILD] The horizontal distance from the face of a lock or latch to the center of the keyhole, knob, or lock cylinder. { 'bak, set } 

backsight [ENG] 1. A sight on a previously established survey point or line. 2. Reading a level rod in its unchanged position after moving the leveling instrument to a different location. { 'bak, sīt } 

backsight method [ENG] 1. A plane-table traversing method in which the table orientation produces the alignment of the alidade on an established map line, the table being rotated until the line of sight is coincident with the corresponding ground line. 2. Sighting two pieces of equipment directly at each other in order to orient and synchronize one with the other in azimuth and elevation. { 'bak, sist 'meth-əd } 

back siphonage [CIV ENG] The flowing back of used, contaminated, or polluted water from a plumbing fixture or vessel into the pipe which feeds it, caused by reduced pressure in the pipe. { 'bak ʃi-fən-i-j ] } 

back solution [CONT SYS] The calculation of the tool-coordinated positions that correspond to specified robotic joint positions. { 'bak səˌlən-ʃən } 

backspace [MECH ENG] To move a typewriter carriage back one space by depressing a backspace key. { 'bak, spās } 

backstay [ENG] 1. A supporting cable that prevents a more or less vertical object from falling forward. 2. A spring used to keep together the flue or gas in a muffler. { bak' stā } 

back sweetening [CHEM ENG] The controlled addition of commercial-grade mercaptans to a petroleum stock having excess free sulfur in order to reduce free sulfur by forming a disulfide. { 'bak, swet-ən-iŋ } 

backup [BUILD] That part of a masonry wall behind the exterior facing. [CIV ENG] Overflow in a drain or piping system, due to stoppage. [ENG] 1. An item under development intended to perform the same general functions that another item also under development performs. 2. A compressible material used behind a sealant to reduce its depth and to support the sealant against sag or indentation. { 'bak, əp } 

backup strip [BUILD] A wood strip which is fixed at the corner of a partition or wall to provide a nailing surface for ends of lath. Also known as lathing board. { 'bak, əp ,strip } 

backup system [SYS ENG] A system, normally redundant but kept available to replace a system which may fail in operation. { 'bak, əp ,si-təm } 

backup tong [ENG] A heavy device used on a drill pipe to loosen the tool joints. { 'bak, əp ,tāŋ } 

back vent [CIV ENG] An individual vent for a plumbing fixture located on the downstream (sewer) side of a trap to protect the trap against siphonage. { 'bak ,vent } 

backwards-bladed aerodynamic fan [MECH ENG] A fan that consists of several streamlined blades mounted in a revolving casing. { 'bak ward ,blād-əd ,ər-ō-dīn-em-ik ,fan } 

backward pass [IND ENG] The calculation of late finish times (dates) for all uncompleted network activities for a specific project by subtracting durations of uncompleted activities from the scheduled finish time of the final activity. { 'bak,ward 'pəs } 

backwash [CHEM ENG] 1. In an ion-exchange resin system, an upward flow of water through a resin bed that cleans and regenerates the resin particles after exhaustion. 2. Sdr blowback. { 'bak, wāsh } 

backwater valve [ENG] A type of check valve in a drainage pipe, reversal of flow causes the valve to close, thereby cutting off flow. Also known as backflow valve. { 'bak ,wōd-ər ,val } 

badger [DES ENG] Sdr badger plane. [ENG] A tool used inside a pipe or culvert to remove any excess mortar or deposits. { 'baj-ər } 

badger plane [DES ENG] A hand plane whose mouth is cut obliquely from side to side, so that the plane can work close up to a corner. Also known as badger. { 'baj-ər ,plān } 

baffle [ELEC] Device for deflecting oil or gas in a circuit breaker [ELECTR] An auxiliary member in a gas tube used, for example, to control the flow of mercury particles or deionize the mercury following conduction. [ENG] A plate that regulates the flow of a fluid, as in a steam-boiler furnace or a gas line filter. [ENGACOUS] A cabinet or partition used with a loudspeaker to reduce interaction between sound waves produced simultaneously by the two surfaces of the diaphragm. { 'baf-əl } 

bag [ENG] 1. A flexible cover used in bag molding. 2. A container made of paper, plastic, or cloth without rigid walls to transport or store material. { 'bag } 

bag filter [ENG] Filtering apparatus with porous cloth or felt bags through which dust-laden gases are sent, leaving the dust on the inner surfaces of the bags. { 'bag ,fil-teɾ } 

baghouse [ENG] The large chamber or room for holding bag filters used to filter gas streams from a furnace. { 'bag ,hous } 

bag molding [ENG] A method of molding plastic or plywood-plastic combinations into curved shapes, in which fluid pressure acting through a flexible cover, or bag, presses the material to be molded against a rigid die. { 'bag ,məld-ɪŋ } 

Bagnold number [ENG] A dimensionless number used in saltation studies. { 'bagnəld ,nəm-bar } 

bag plug [ENG] An inflatable drain stopper, located at the lowest point of a piping system, that acts to seal a pipe when inflated. { 'bag ,pləg } 

bag trap [ENG] An S-shaped trap in which the vertical inlet and outlet pipes are in alignment. { 'bag ,trap }
baguette

baguette See bead molding. [ba'get]
bail [ENG] A loop of heavy wire snap-fitted around two or more parts of a connector or other device to hold the parts together. [bal] bailer [ENG] A long, cylindrical vessel fitted with a bail at the upper end and a flap or tongue valve at the lower extremity, used to remove water, sand, and mud- or cuttings-laden fluids from a borehole. Also known as bailing bucket. { 'bål-ør }

Bailey bridge [CIV ENG] A lattice bridge built of interchangeable panels connected at the corners with steel pins, permitting rapid construction, developed in Britain about 1942 as a military bridge. [ 'bål-ē bri] Bailey meter [ENG] A flowmeter consisting of a helical quarter-turn vane which operates a counter to record the total weight of granular material flowing through vertical or near-vertical ducts, spouts, or pipes. { 'bål-ē ,mød-ør }
bailing [ENG] Removal of the cuttings from a well during cable-tool drilling, or of the liquid from a well, by means of a bailer. [ 'bål-iŋ ]
bailing bucket See bailer. [ 'bål-iŋ ,båk-at ]
bailing drum [ENG] A reel for winding bailing line. [ 'bål-iŋ ,dräm ]
bailing line [ENG] A cable attached to the bailer of a derrick, it is passed over a sheave at the top of the derrick and spooled on a reel. [ 'bål- iŋ ,lin ]
baked finish [ENG] A paint or varnish finish obtained by baking, usually at temperatures above 150°F (65°C), thereby developing a tough, durable film. [ 'båk t fin-ish ]
bakeout [ENG] The degassing of surfaces of a vacuum system by heating during the pumping process. [ 'båk aut ]
baker bell dolphin [CIV ENG] A dolphin consisting of a heavy bell-shaped cap pivoted on a group of piles; a blow from a ship will tilt the bell, thus absorbing energy. [ 'båk-ør ,bel ,dål-fón ]
baking [ENG] The use of heat on fresh paint films to speed the evaporation of thinners and to promote the reaction of binder components so as to form a hard polymeric film. Also known as stoving. [ 'båk-iŋ ]

balance [ELEC] The state of an electrical network when it is adjusted so that voltage in one branch induces or causes no current in another branch. [ENG] An instrument for measuring mass or weight. [ 'bål-ونs ]

balance arm [BUILD] On a projected window, a side supporting arm which is constructed so that the center of gravity of the sash is not changed appreciably when the window is opened. [ 'bål-ôn ,aŋm ]

balance bar See balance beam. [ 'bål-ôn ,bår ]

balance beam [CIV ENG] A long beam, attached to a gate (or drawbridge, and such) so as to counterbalance the weight of the gate during opening or closing. Also known as balance bar. [ 'bål-ôn ,bém ]

balanced armature unit [ENG ACOUS] Driving unit used in magnetic loudspeakers, consisting of an iron armature pivoted between the poles of a permanent magnet and surrounded by coils carrying the audio-frequency current, variations in audio-frequency current cause corresponding changes in armature magnetism and corresponding movements of the armature with respect to the poles of the permanent magnet. { 'bål-ôn st 'årm-a-char ,yû-ŋat }

balanced construction [BUILD] A plywood or sandwich-panel construction which has an odd number of plies laminated together so that the construction is identical on both sides of a plane through the center of the panel. { 'bål-ôn st kanstrak-shôn }

balanced design [ENG] A winding pattern used in fabricating filament-wound reinforced plastics that renders the stresses in all the filaments equal. { 'bål-ôn st dí-zûn }

balanced door [BUILD] A door equipped with double-pivoted hardware which is partially counterbalanced to provide easier operation. { 'bål-ôn st 'dôr }

balanced draft [ENG] The maintenance of a constant draft in a furnace by monitoring both the incoming air and products of combustion. { 'bål-ôn st 'dråft }

balanced earthwork [CIV ENG] Cut-and-fill work in which the amount of fill equals the amount of material excavated. { 'bål-ôn st 'arth-wôrk }

balanced line [ELEC] A transmission line consisting of two conductors capable of being operated so that the voltages of the two conductors at any transverse plane are equal in magnitude and opposite in polarity with respect to ground. [IND ENG] A production line for which the time cycles of the operators are made approximately equal so that the work flows at a desired steady rate from one operator to the next. { 'bål-ôn st ,lin }

balanced method [ENG] Method of measurement in which the reading is taken at zero; it may be a visual or audible reading, and in the latter case the null is the no-sound setting. { 'bål-ôn st 'mêth-ad }

balanced reinforcement [CIV ENG] An amount and distribution of steel reinforcement in a flexural reinforced concrete member such that the allowable tensile stress in the steel and the allowable compressive stress in the concrete are attained simultaneously. { 'bål-ôn st ,rœ-ôn 'fôr-smont }

balanced sash [BUILD] In a double-hung window, a sash which opens by being raised or lowered and which is balanced with counterweights or pretensioned springs so that little force is required to move the sash. { 'bål-ôn st ,såsh } 

balanced step [BUILD] One of a series of winders arranged so that the width of each winder tread (at the narrow end) is almost equal to the tread width in the straight portion of the adjacent stair flight. Also known as dancing step, dancing winder. { 'bål-ôn st ,step } 

balanced valve [ENG] A valve having equal fluid pressure in both the opening and closing directions. { 'bål-ôn st ,valv }
ball-float liquid-level meter

balance method  See null method. {’bal-ôns, ’meth-ôd}
balance pipe  [ENG] A pipe in a compressed-air piping system that is used to displace trapped air so that the condensate can flow freely into the trap. {’bal-ôns, ’pi:p}
balance tool  [MECH ENG] A tool designed for taking the first cuts when the external surface of a piece in a lathe is being machined; it is supported in the tool holder at an unvarying angle. {’bal-ôns, tûl}
balance wheel  [MECH ENG] 1. A wheel which governs or stabilizes the movement of a mechanism. 2. See flywheel. {’bal-ôns, ’wel}
balancing a survey  [ENG] Distributing corrections through any traverse to eliminate the error of closure and to obtain an adjusted position for each traverse station. Also known as traverse adjustment. {’bal-ôns-åj ’sår,vå}
balancing delay  [IND ENG] In motion study, idleness of one hand while the other is active to catch up. {’bal-ôns-åj ’di,lå}
balancing plug cock  See balancing valve. {’bal-ôns-åj ’plag ’kåk}
balancing valve  [ENG] A valve used in a pipe for controlling fluid flow; not usually used to shut off the flow. Also known as balancing plug cock. {’bal-ôns-åj ’valv}
balconet  [BUILD] A pseudo-balcony, a low ornamental railing at a window, projecting only slightly beyond the threshold or sill. {’bal-kå’net}
balcony  [BUILD] A deck which projects from a building wall above ground level. {’bal-kå’nê}
balcony outlet  [BUILD] In a vertical rainwater pipe that passes through an exterior balcony, a fitting which provides an inlet for the drainage of rainwater from the balcony. {’bal-kå’nê ’åut,let}
bale  [IND ENG] 1. A large package of material, pressed tightly together, tied with rope, wire, or hoops and usually covered with wrapping. 2. The amount of material in a bale, sometimes used as a unit of measure, as 500 pounds (227 kilograms) of cotton in the United States. {bål}
baler  [MECH ENG] A machine which takes large quantities of raw or finished materials and binds them with rope or metal straps or wires into a large package. {’bål-ôr}
baling  [CIV ENG] A technique used to convert loose refuse into heavy blocks by compaction; the blocks are then burned and are buried in sanitary landfill. {’bål-ônj}
balk  [BUILD] A squared timber used in building construction. [CIV ENG] A low ridge of earth that marks a boundary line. {bôk}
balking  [IND ENG] The refusal of a customer to hold by a spring against a seat; used to permit balking {’bål-ônj, ’valv}
ball  [MECH ENG] In fine grinding, one of the crushing bodies used in a ball mill. {bol}
ball-and-race-type pulverizer  [MECH ENG] A grinding machine in which balls rotate under an applied force between two races to crush materials, such as coal, to fine consistency. Also known as ball-bearing pulverizer. {’bol an ’ras ’pôl ’val-va ’rîz-ôr}
ball-and-ring method  See ring-and-ball test. {’bol an ’rin ’meth-ôd}
ball-and-socket joint  [MECH ENG] A joint in which a member ending in a ball is joined to a member ending in a socket so that relative movement is permitted within a certain angle in all planes passing through a line. Also known as ball joint. {’bol an ’sák-ôr ’jônt}
ball-and-trunnion joint  [MECH ENG] A joint in which a universal joint and a slip joint are combined in a single assembly. {’bol an ’trun-vôn ’jônt}
ballest  [CIV ENG] Crushed stone used in a railroad bed to support the ties, hold the track in line, and help drainage. [ELEC] A circuit element that serves to limit an electric current or to provide a starting voltage, as in certain types of lamps, such as in fluorescent ceiling fixtures. {’bal-ôst}
ball bearing  [MECH ENG] An antifriction bearing permitting free motion between moving and fixed parts by means of balls confined between outer and inner rings. {’bol ’ber-ônj}
ball-bearing hinge  [MECH ENG] A hinge which is equipped with ball bearings between the hinge knuckles in order to reduce friction. {’bol ’ber-ônj ’hinj}
ball-bearing pulverizer  See ball-and-race-type pulverizer. {’bol ’ber-ônj ’pôl ’val-va ’rîz-ôr}
ball bonding  [ENG] The making of electrical connections in which a flame is used to cut a wire, the molten end of which solidifies as a ball, which is pressed against the bonding pad on an integrated circuit. {’bol, ’bånd-ônj}
ball breaker  [ENG] 1. A steel or iron ball that is hoisted by a derrick and allowed to fall on blocks of waste stone to break them or to swing against old buildings to demolish them. Also known as skull cracker; wrecking ball. 2. A coring and sampling device consisting of a hollow glass ball, 3 to 5 inches (7.5 to 12.5 centimeters) in diameter, held in a frame attached to the triggering weight of theorer, used to indicate contact between corer and bottom. {’bol, ’bråk-ôr}
ball bushing  [MECH ENG] A type of ball bearing that allows motion of the shaft in its axial direction. {’bol, ’bûsh-ônj}
ball catch  [DES ENG] A door fastener having a contained metal ball which is under pressure from a spring; the ball engages a striking plate and keeps the door from opening until force is applied. {’bol, ’kach}
ball check valve  [ENG] A valve having a ball held by a spring against a seat, used to permit flow in one direction only. {’bol ’chek, ’valv}
ball float  [MECH ENG] A floating device, usually approximately spherical, which is used to operate a valve. {’bol ’flôt}
ball-float liquid-level meter  [ENG] A float which rises and falls with liquid level, actuating a
ball grinder

pointer adjacent to a calibrated scale in order to measure the level of a liquid in a tank or other container. {ból, ḫor [lit-kəd] [lev-əl, məd-ər]}
ball grinder See ball mill. {ból, grind-ar}
ballhead {MECH ENG} That part of the governor which contains flyweights whose force is balanced, at least in part, by the force of compression of a speeder spring. {ból, hed}

Balling hydrometer {ENG} A type of saccharometer used to determine the density of sugar solutions. {ból-in hīd-rəm-əd-ər}

ballistic body {ENG} A body free to move, behave, and be modified in appearance, contour, or texture by ambient conditions, substances, or forces, such as by the pressure of gases in a gun, by rifling in a barrel, by gravity, by temperature, or by air particles. {ból-is-tik, bād-e}

ballistic coefficient {MECH} The numerical measure of the ability of a missile to overcome air resistance, dependent upon the mass, diameter, and form factor. {ból-is-tik, kō-ə-fish-ənt}

ballistic conditions {MECH} Conditions which affect the motion of a projectile in the bore and through the atmosphere, including muzzle velocity, weight of projectile, size and shape of projectile, rotation of the earth, density of the air, temperature or elasticity of the air, and the wind. {ból-is-tik kən-dish-əns}

ballistic curve {MECH} The curve described by the path of a bullet, a bomb, or other projectile as determined by the ballistic conditions, by the propulsive force, and by gravity. {ból-is-tik 'kərv}

ballistic deflection {MECH} The deflection of a missile due to its ballistic characteristics. {ból-is-tik dill-kəf-šən}

ballistic density {MECH} A representation of the atmospheric density encountered by a projectile in flight, expressed as a percentage of the density according to the standard artillery atmosphere. {ból-is-tik 'den-səd-ət}

ballistic efficiency {MECH} 1. The ability of a projectile to overcome the resistance of the air; depends chiefly on the weight, diameter, and shape of the projectile. 2. The external efficiency of a rocket or other jet engine of a missile. {ból-is-tik 'līsh-ən-sē}

ballistic entry {MECH} Movement of a ballistic body from without to within a planetary atmosphere. {ból-is-tik 'en-tretry}

ballistic instrument {ENG} Any instrument, such as a ballistic galvanometer or a ballistic pendulum, that measures an impact or sudden pulse of energy. {ból-is-tik 'in-strə-mənt}

ballistic limit {MECH} The minimum velocity at which a particular armor-piercing projectile is expected to consistently and completely penetrate armor plate of given thickness and physical properties at a specified angle of obliquity. {ból-is-tik 'lim-ət}

ballistic magnetometer {ENG} A magnetometer designed to employ the transient voltage induced in a coil when either the magnetized sample or coil are moved relative to each other. {ból-is-tik, mag-nə-təm-əd-ər}
band mill [MECH ENG] A pulverizer that consists of a horizontal rotating cylinder, up to three diameters in length, containing a charge of tumbling or cascading steel balls, pebbles, or rods. Also known as ball grinder. 

balloon framing [CIV ENG] Framing for a building in which each stud is one piece from roof to foundation. 

balloting [MECH] A tossing or bounding movement of a projectile, within the limits of the bore diameter, while moving through the bore under the influence of the propellant gases. 

ball-peen hammer [ENG] A hammer with a ball at one end of the head, used in riveting and forming metal. 

ball pendulum test [ENG] A test for measuring the strength of explosives, consisting of measuring the swing of a pendulum produced by the explosion of a weighed charge of material. 

ball race [DES ENG] A track, channel, or groove in which ball bearings turn. 

ball screw [MECH ENG] An element used to convert rotation to longitudinal motion, consisting of a threaded rod linked to a threaded nut by ball bearings constrained to roll in the space formed by the threads, in order to reduce friction. 

ball test [CIV ENG] In a drain, a test for freedom from obstruction and for circularity in which a ball (less than the diameter of the drain by a specified amount) is rolled through the drain. 

ball-up [ENG] 1. During a drilling operation, collection by a portion of the drilling equipment of a mass of viscous consolidated material. 2. Failure of an anchor to hold on a soft bottom, by pulling out with a large ball of mud attached. 

ball valve [MECH ENG] A valve in which the fluid flow is regulated by a ball moving relative to a spherical socket as a result of fluid pressure and the weight of the ball. 

baluster [BUILD] A post which supports a handrail and encloses the open sections of a stairway. 

balustrade [BUILD] The railing assembly of a stairway consisting of the handrail, balusters, and usually a bottom rail. 

band [BUILD] Any horizontal flat member or molding or group of moldings projecting slightly from a wall plane and usually marking a division in the wall. Also known as band course; band molding. 

bandage [BUILD] A strap, band, ring, or chain placed around a structure to secure and hold its parts together, as around the springing of a band. [ELEC] Rubber ribbon about 4 inches (10 centimeters) wide for temporarily protecting a telephone or coaxial splice from moisture. 

band brake [MECH ENG] A brake in which the frictional force is applied by increasing the tension in a flexible band to tighten it around the drum. 

band chain [ENG] A steel or Invar tape, graduated in feet and at least 100 feet (30.5 meters) long, used for accurate surveying. 

band clamp [DES ENG] A two-piece metal clamp, secured by bolts at both ends, used to hold riser pipes. 

band clutch [MECH ENG] A friction clutch in which a steel band, lined with fabric, contracts onto the clutch rim. 

band course See band. 

banding [DES ENG] A strip of fabric which is used for bands. 

bandpass [ELECTR] A range, in hertz or kilohertz, expressing the difference between the limiting frequencies at which a desired fraction (usually half power) of the maximum output is obtained. 

band-pass amplifier [ELECTR] An amplifier designed to pass a definite band of frequencies with essentially uniform response. 

band-pass filter [ELECTR] An electric filter which transmits more or less uniformly in a certain band, outside of which the frequency components are attenuated. 

band-pass response [ELECTR] Response characteristics in which a definite band of frequencies is transmitted uniformly. Also known as flat top response. 

band-pass system [ENG.ACOUS] A loudspeaker system, often used for subwoofers, in which the speaker is mounted inside an enclosure on a shelf that divides the enclosure into two parts, and one or both parts are coupled to the outside by a vent; the frequency response of the system is that of a fourth-order band-pass filter (one vent) or an asymmetrical sixth-order band-pass filter (two vents). 

band-rejection filter See band-stop filter. 

band saw [MECH ENG] A power-operated woodworking saw consisting basically of a flexible band of steel having teeth on one edge, running over two vertical pulleys, and operated under tension. 

band selector [ELECTR] A switch that selects any of the bands in which a receiver, signal generator, or transmitter is designed to operate and usually has two or more sections to make the required changes in all tuning circuits simultaneously. Also known as band switch. 

band wheel [MECH ENG] In a drilling operation, a large wheel that transmits power from the engine to the walking beam.
bang-bang control  [CONT SYS] A type of automatic control system in which the applied control signals assume either their maximum or minimum values. ˈbaːŋ ˈbaːŋ ˈkɑːn,trɔl

bang-bang-off control  [CONT SYS] See bang-zero-bang control. ˈbaːŋ ˈbaːŋ ˈɔf ˈkɑːn,trɔl

bang-bang robot  [CONT SYS] A simple robot that can make only two types of motions. ˈbaːŋ ˈbaːŋ ˈtrɒ,tɑːt

bang-zero-bang control  [CONT SYS] A type of control in which the control values are at their maximum, zero, or minimum. Also known as bang-bang-off control. ˈbaːŋ ˈziːr,ə ˈbaːŋ ˈkɑːn,trɔl

banister  [BUILD] A handrail for a staircase. ˈbaːnˌstɑːr

bank  [CIV ENG] See embankment. ˈeɪlɛk ˈbiːkəŋment. ˈeɪlɛk ˈbɛrənˌmɑːnt

bank materials  [CIV ENG] Soil or rock in place before excavation or blasting. ˈbaːŋ ˈmɑːtɪrˈeɪ,ɔl

bank measure  [CIV ENG] The volume of a given portion of soil or rock as measured in its original position before excavation. ˈbaːŋ ˈmeɪdʒˌɔr

bar  [MECH] A unit of pressure equal to 10^5 pascals, or 10^6 newtons per square meter, or 10^6 dynes per square centimeter. ˈbɑːr

Bárány chair  [ENG] A chair in which a person is revolved to test his susceptibility to vertigo. ˈbɑːrənˌtʃɛr

barb bolt  [DES ENG] A bolt having jagged edges to prevent its being withdrawn from the object into which it is driven. Also known as rag bolt. ˈbaːrb ˈbɔːlt

bar bending  [CIV ENG] In reinforced concrete construction, the process of bending reinforcing bars to various shapes. ˈbɑːr ˈbenˌdɪŋ

bar chair  See bar support. ˈbɑːrˌcher

bar clamp  [DES ENG] A clamping device consisting of a long bar with adjustable clamping jaws, used in carpentry. ˈbɑːrˌklæmp

bare board  [ELECTR] A printed circuit board with conductors but no electronic components. ˈberˌbɔːrd

bareboat charter  [IND ENG] An agreement to charter a ship without its crew or stores; the fee for its use for a predetermined period of time is based on the price per ton of cargo handled. ˈberˌbɔːtˌchɑːrətər

barefaced tenon  [ENG] A tenon having a shoulder cut on one side only. ˈberˌfɑːst ˈtenˌɑn

bare tube  [ENG] In a heat exchanger, a tube whose inner and outer surfaces are both smooth. ˈberˌtʌb

bargeboard  See vergeboard. ˈbɑːrjˌbɔːrd

barge couple  [BUILD] 1. One of two rafters that support that part of a gable roof which projects beyond the gable wall. 2. One of the rafters (under the barge course) which serve as grounds for the vergeboards and carry the plastering or boarding of the soffits. Also known as barge rafter. ˈbɑːrjˌkɑːpəl

barge course  [BUILD] 1. The coping of a wall, formed by a course of bricks set on edge. 2. In a tiled roof, the part of the tiling which projects beyond the principal rafters where there is a gable. ˈbɑːrˌhɒl

Barl-Sol process  [CHEM ENG] Removal of waxes from liquid hydrocarbons by extraction of the wax with a mixed ethylene dichloride-benzene solvent, followed by separation from the hydrocarbon in a centrifuge. ˈbɑːrəlˌsɔːl prɒˈsɛs

bar joist  [BUILD] A small steel truss with wire or rod web lacing used for roof and floor supports. ˈbɑːrˌjoɪst

barker  [DES ENG] See bark spud. ˈbɑːkər

banker  [ENG] The bench or table upon which bricklayers and stonemasons prepare and shape their material. ˈbɑːkər

bank material  [CIV ENG] Soil or rock in place before excavation or blasting. ˈbɑːk ˈmɑːtɪrˈeɪˌɔl

bank measure  [CIV ENG] The volume of a given portion of soil or rock as measured in its original position before excavation. ˈbɑːk ˈmeɪdʒˌɔr

bar  [MECH] A unit of pressure equal to 10^5 pascals, or 10^6 newtons per square meter, or 10^6 dynes per square centimeter. ˈbɑːr

bar joining  [MECH ENG] A set of bars joined together at pivots by means of pins or equivalent devices, used to transmit power and information. ˈbɑːrˌjoɪŋˌkɪ

Barlow's equation  [MECH] A formula, t = DP/2S, used in computing the strength of cylinders subject to internal pressures, where t is the thickness of the cylinder in inches, D the outside diameter in inches, P the pressure in pounds per square inch, and S the allowable tensile strength in pounds per square inch. ˈbaːrˌloʊ ˈɪkˌwɛzən

barnacle  [ENG] A nodelike deposit that occurs on the surface of a heat exchanger tube or an evaporating device and has a semigranular outer shell bonded to the fouled surface, enclosing a slurry of putrefying organisms. ˈbɑːnˌkæl

barodynamics  [MECH] The mechanics of heavy structures which may collapse under their own weight. ˈbɑːroˌdæməstɪk

barogram  [ENG] The record of an aneroid barograph. ˈbɑːrˌoˌɡrɑːm
barograph See aneroid barograph.  (ˈbar-ə,graf)
barometer [ENG] An absolute pressure gage specifically designed to measure atmospheric pressure.  (ˈbɑrəm-ətər)
barometric [ENG] Pertaining to a barometer or to the results obtained by using a barometer.  (ˈbɑr-ə-metrik)
barometric altimeter See pressure altimeter.  (ˈbɑr-ə-metrik əl-ˈtɪm-ətər)
barometric condenser [MECH ENG] A contact condenser that uses a long, vertical pipe into which the condensate and cooling liquid flow to accomplish their removal by the pressure created at the lower end of the pipe.  (ˈbɑr-ə-metrik ən-kərdən-sər)
barometric draft regulator [MECH ENG] A damper usually installed in the breeching between a boiler and chimney; permits air to enter the breeching automatically as required, to maintain a constant overfire draft in the combustion chamber.  (ˈbɑrə-metrik ˈdraft ˈrɛktərəl-ər)
barometric elevation [ENG] An elevation above mean sea level estimated from the difference in atmospheric pressure between the point in question and an elevation of known value.  (ˈbɑrə-metrik əl-ˈvɑs-ən)
barometric fuse [ENG] A fuse that functions as a result of change in the pressure exerted by the surrounding air.  (ˈbɑrə-metrik ˈfyūz)
barometric hypsometry [ENG] The determination of elevations by means of either mercurial or aneroid barometers.  (ˈbɑrə-metrik ˌhɪpˈsæm-ə-trə)
barometric leveling [ENG] The measurement of approximate elevation differences in surveying with the aid of a barometer, used especially for large areas.  (ˈbɑrə-metrik ˈlevəl-ə"
barometric switch See baroswitch.  (ˈbɑrə-metrik ˈswich)
barograph See aneroid barograph.  (ˈbɑrə-me-trəf"
barometry [ENG] The study of the measurement of atmospheric pressure, with particular reference to ascertaining and correcting the errors of the different types of barometer.  (ˈbɑrə-mətər"
baromil [MECH] The unit of length used in graduating a mercury barometer in the centimeter-gram-second system.  (ˈbɑrə-ˌmil"
baroscope [ENG] An apparatus which demonstrates the equality of the weight of air displaced by an object and its loss of weight in air.  (ˈbɑrə-ˌskɔp"
barostat [ENG] A mechanism which maintains constant pressure inside a chamber.  (ˈbɑrə-ˌstat"
baroswitch [ENG] 1. A pressure-operated switching device used in a radiosonde which determines whether temperature, humidity, or reference signals will be transmitted.  2. Any switch operated by a change in barometric pressure. Also known as barometric switch.  (ˈbɑrə-ˌswich"
barothermograph [ENG] The record made by a barothermograph.  (ˈbɑrə-ˈθər-məˈɡrɑf)
barothermograph [ENG] An instrument which automatically records pressure and temperature.  (ˈbɑrə-ˈθər-məˈɡrɑf)
barothermohygrograph [ENG] An instrument that produces graphs of atmospheric pressure, temperature, and humidity on a single sheet of paper.  (ˈbɑrə-ˈθər-məˈhɪd-grɑf)
barotropic phenomenon [THERMO] The sinking of a vapor beneath the surface of a liquid when the vapor phase has the greater density.  (ˈbɑrə-ˈtrəp-ˌɪk ˈfɑrənəm-ən)
bar post [CIV ENG] One of the posts driven into the ground to form the sides of a field gate.  (ˈbɑrəˌpəst"
barrage [CIV ENG] An artificial dam which increases the depth of water of a river or watercourse, or diverts it into a channel for navigation or irrigation.  (ˈbɑrəræg)
barrage-type spillway [CIV ENG] A passage for surplus water with sluice gates across the width of the entrance.  (ˈbɑrəˌræzhˌtɪpˌspilˌwɔ"
barred-and-braced gate [CIV ENG] A gate with a diagonal brace to reinforce the horizontal timbers.  (ˈbɑrədˌanˌbɹəstˌgæt"
barred gate [CIV ENG] A gate with one or more horizontal timber rails.  (ˈbɑrədˌgæt"
barrel [DES ENG] 1. A container having a circular lateral cross section that is largest in the middle, and ends that are flat, often made of staves held together by hoops. 2. A piece of small pipe inserted in the end of a cartridge to carry the squib to the powder. 3. That portion of a pipe having a constant bore and wall thickness. [MECH] Abbreviated bbl. 1. The unit of liquid volume equal to 31.5 gallons (approximately 119 liters). 2. The unit of liquid volume for petroleum equal to 42 gallons (approximately 158 liters). 3. The unit of dry volume equal to 105 quarts (approximately 116 liters). 4. A unit of weight that varies in size according to the commodity being weighed.  (ˈbɑrəl"
barrel bolt [DES ENG] A door bolt which moves in a cylindrical casing; not driven by a key. Also known as tower bolt.  (ˈbɑrəlˌbɔlt"
barrel compressor [MECH ENG] A centrifugal compressor having a barrel-shaped housing.  (ˈbɑrəlˌkɑmˌprɛsər"
barrel drain [CIV ENG] Any drain which is cylindrical.  (ˈbɑrəlˌdræn"
barrel-etch reactor [ENG] A type of plasma reactor in which the specimens to be etched are placed in a quartz support stand and a plasma is generated which diffuses and contacts them.  (ˈbɑrəlˌɛtˈrɛkˌtər"
barrel fitting [DES ENG] A short length of threaded connecting pipe.  (ˈbɑrəlˌfɪtɪŋ"
barrelhead [DES ENG] The flat end of a barrel.  (ˈbɑrəlˌhed"
barrel roof [BUILD] 1. A roof of semicylindrical
barrels per calendar day

section; capable of spanning long distances parallel to the axis of the cylinder. 2. See barrel vault. ³ 'bar-əl ,rulf'

barrels per calendar day  [CHEM ENG] A unit measuring the average rate of oil processing in a petroleum refinery, with allowances for down-time over a period of time. Abbreviated BCD. ¹ 'bar-əl,pər ,kal-ən-dər ,dā'

barrels per day  [CHEM ENG] A unit measuring the rate at which petroleum is produced at the refinery. Abbreviated BD; bpd. ¹ 'bar-əl ,pər ,də'

barrels per month  [CHEM ENG] A unit measuring the rate at which petroleum is produced at the refinery. Abbreviated BM; bpm. ¹ 'bar-əl ,pər ,mənth'

barrels per stream day  [CHEM ENG] A measurement used to denote rate of oil or oil-product flow while a fluid-processing unit is in continuous operation. Abbreviated BSD. ¹ 'bar-əl ,pər ,strəm ,dā'

barren liquor  [CHEM ENG] Liquid (liquor) from filter-cake washing in which there is little or no recovery value, for example, barren cyanide liquor from washing of gold cake slimes. ¹ 'bar-ən ,lik-ər'

barricade [ENG] Structure composed essentially of concrete, earth, metal, or wood, or any combination thereof, and so constructed as to reduce or confine the blast effect and fragmentation of an explosion. ¹ 'bar-ə,kād'

barricade shield  [ENG] A type of movable shield made of a material designed to absorb ionizing radiation, for protection from radiation. ¹ 'bar-ə,kād ,shēld'

barrier capacitance  [ELECTR] The capacitance that exists between the p-type and n-type semiconductor materials in a semiconductor pn junction that is reverse-biased so that it does not conduct. Also known as depletion-layer capacitance; junction capacitance. ¹ 'bar-ər ,kās-pəd-ən-əns'

barrier curb  [CIV ENG] A curb with vertical sides high enough to keep vehicles from crossing it. ¹ 'bar-ər ,kər'b'

barrier layer  See depletion layer. ¹ 'bar-ər ,lār'

barrier separation  [CHEM ENG] The separation of a two-component gaseous mixture by selective diffusion of one component through a separative barrier (microporous metal or nonporous polymeric). ¹ 'bar-ər ,sep-ər-rā-shən'

barrier shield  [ENG] A wall or enclosure made of a material designed to absorb ionizing radiation, shielding the operator from an area where radioactive material is being used or processed by remote-control equipment. ¹ 'bar-ər ,shēld'

barrow  See handbarrow; wheelbarrow. ¹ 'ba-rō'

barrow liquor  [CIV ENG] A temporary pathway of wood planks or sheets to provide a smooth access for wheeled materials-handling carriers on a building site. ¹ 'ba-rō ,rohn'

bar sash lift  [BUILD] A type of handle, attached to the bottom rail of a sash, for raising or lowering it. ¹ 'ba-rə ,sash ,līf'

bar screen  [MECH ENG] A sieve with parallel steel bars for separating small from large pieces of crushed rock. ¹ 'ba-rə ,sken'

bar strainer  [DES ENG] A screening device consisting of a bar or a number of parallel bars; used to prevent objects from entering a drain. ¹ 'ba-rə ,strān-ər'

bar support  [CIV ENG] A device used to support or hold steel reinforcing bars in proper position before or during the placement of concrete. Also known as bar chair. ¹ 'ba-rə ,sər-pōrt'

bar test survey  [ENG] A leakage survey in which bar holes are driven or bored at regular intervals along the way of an underground gas pipe and the atmosphere in the holes is tested with a combustible gas detector or such. ¹ 'bər ,test ,'sər,vər̮'

Barth plan  [IND ENG] A wage incentive plan intended for a low task and for all efficiency points and defined as: earnings = rate per hour × square root of the product (hours standard × hours actual). ¹ 'bər-th ,plān'

bar turret lathe  [MECH ENG] A turret lathe in which the bar stock is slid through the headstock and collet on line with the turning axis of the lathe and held firmly by the closed collet. ¹ 'bər ,tə-rət ,lāth'

bar-type grating  [CIV ENG] An open grid assembly of metal bars in which the bearing bars (running in one direction) are spaced by rigid attachment to crossbars. ¹ 'bər ,tīp ,grād-ən'

barycentric energy  [MECH] The energy of a system in its center-of-mass frame. ¹ 'ba-rəSEN-trik ,ˈen-ə-riˌje-

barye  [MECH] The pressure unit of the centimeter-gram-second system of physical units, equal to 1 dyne per square centimeter (0.001 millibar). Also known as microbar. ¹ 'ba-rā'

basal tunnel  [ENG] A water supply tunnel constructed along the basal water table. ¹ 'ba-sāl ,tān-əl'

bascle  [ENG] A structure that rotates about an axis, as a seesaw, with a counterbalance (for the weight of the structure) at one end. ¹ 'bāskəl̃'

bascle bridge  [CIV ENG] A movable bridge consisting primarily of a cantilever span extending across a channel, it rotates about a horizontal axis parallel with the waterway. ¹ 'bāskəl̃ˌ bər-iə'

bascle leaf  [CIV ENG] The span of a bascle bridge. ¹ 'bāskəl̃ˌ lēf'

base  [CHEM ENG] The primary substance in solution in crude oil, and remaining after distillation. ¹ [ELECTR] 1. The region that lies between an emitter and a collector of a transistor and into which minority carriers are injected. 2. The part of an electron tube that has the pins, leads, or other terminals to which external connections are made either directly or through a socket. 3. The plastic, ceramic, or other insulating board that supports a printed wiring pattern. ¹ [ENG] Foundation or part upon which an object or instrument rests. ¹ (bās )
base anchor [BUILD] The metal piece attached to the base of a doorframe for the purpose of securing the frame to the floor. (ˈbāsˌ ənˈkär) base anchor

base apparatus [ENG] Any apparatus designed for use in measuring with accuracy and precision the length of a base line in triangulation, or the length of a line in first- or second-order traverse. (ˈbāsˌ əpˈär-ə-rad-əz) base apparatus

base bias [ELECTR] The direct voltage that is applied to the majority-carrier contact (base) of a transistor. (ˈbāsˌ bīs) base bias

base block [BUILD] 1. A block of any material, generally with little or no ornament, forming the lowest member of a base, or itself fulfilling the functions of a base, as a member applied to the foot of a door or to window trim. 2. A rectangular block at the base of a casing or column which the baseboard abuts. 3. See skirting block. (ˈbāsˌ ə blāk) base block

baseboard [BUILD] A finish board covering the interior wall at the junction of the wall and the floor Also known as skirting, skirting. (ˈbāsˌ bōrd) baseboard

baseboard heater [BUILD] Heating elements installed in panels along the baseboard of a wall. (ˈbāsˌ bōrd ˈhēd-ər) baseboard heater

baseboard radiator [CIV ENG] A heating unit which is located at the lower portion of a wall and to which heat is supplied by hot water, warm air, steam, or electricity. (ˈbāsˌ bōrd ˈrād-əˌ ˈdār-ər) baseboard radiator

base cap See base molding. (ˈbāsˌ ə kāp) base cap

base circle [DES ENG] The circle on a gear such that each tooth-profile curve is an involute of it. (ˈbāsˌ əsərˌkāl) base circle

base correction [ENG] The adjustment made to reduce measurements taken in field exploration to express them with reference to the base station values. (ˈbāsˌ kərˈrek-shən) base correction

base course [BUILD] The lowest course or first course of a wall. [CIV ENG] The first layer of material laid down in construction of a pavement. (ˈbāsˌ kōrs) base course

base elbow [DES ENG] A cast-iron pipe elbow having a baseplate or flange which is cast on it and by which it is supported. (ˈbāsˌ əlˌbō) base elbow

base electrode [ELECTR] An ohmic or majority carrier contact to the base region of a transistor. (ˈbāsˌ əlekˈtrod) base electrode

base flashing [BUILD] 1. The flashing provided by upturned edges of a watertight membrane on a roof. 2. Any metal or composition flashing at the joint between a roofing surface and a vertical surface, such as a wall or parapet. (ˈbāsˌ əˈflāzən) base flashing

base isolators [CIV ENG] Components placed within a building (not always at the base) which are relatively flexible in the lateral direction, yet can sustain the vertical load. When an earthquake causes ground motions, base isolators allow the structure to respond much more slowly than it would without them, resulting in lower seismic demand on the structure. Isolators may be laminated steel with high-quality rubber pads, sometimes incorporating lead or other energy-absorbing materials. (ˈbāsˌ ə-səlˌə-làrd-ər) base isolators

base line Abbreviated BL. [ELECTR] The line traced on amplitude-modulated indicators which corresponds to the power level of the weakest echo detected by the radar; it is retraced with every pulse transmitted by the radar but appears as a nearly continuous display on the scope. [ENG] 1. A surveyed line, established with more than usual care, to which surveys are referred for coordination and correlation. 2. A cardinal line extending east and west along the astronomic parallel passing through the initial point, along which standard township, section, and quarter-section corners are established. (ˈbāsˌ əlˈn) base line

base-line check See ground check. (ˈbāsˌ ə lˈn ˈchek) base-line check

basement [BUILD] A building story which is wholly or less than half below ground; it is generally used for living space. (ˈbāsˌ əmənt) basement

basement wall [BUILD] A foundation wall which encloses a usable area under a building. (ˈbāsˌ əməntˌ əˌwəl) basement wall

base molding [BUILD] Molding used to trim the upper edge of interior baseboard. Also known as base cap. (ˈbāsˌ əˈmōld-ən) base molding

base net [ENG] A system, in surveying, of quadrilaterals and triangles that include and are quite close to a base line in a triangulation system. (ˈbāsˌ ənət) base net

base pin See pin. (ˈbāsˌ ə pīn) base pin

base plate [DES ENG] The part of a theodolite which carries the lower ends of the three foot screws and attaches the theodolite to the tripod for surveying. [ENG] A metal plate that provides support or a foundation. (ˈbāsˌ əˈplāt) base plate

base pressure [MECH] A pressure used as a reference base, for example, atmospheric pressure. (ˈbāsˌ əˈpresh-ər) base pressure

base scribe [ENG] A metal scribe with expanded or short perforated flanges that serves as a dividing strip between plaster and cement and acts as a guide to indicate proper thickness of cement or plaster. (ˈbāsˌ əˈskrēd) base scribe

base sheet [BUILD] Saturated or coated felt sheeting which is laid as the first ply in a built-up roofing membrane. (ˈbāsˌ əˈshēt) base sheet

base shoe [BUILD] A molding at the base of a baseboard. (ˈbāsˌ əˌshū) base shoe

base shoe corner [BUILD] A molding piece or block applied in the corner of a room to eliminate the need for mitering the base shoe. (ˈbāsˌ əˌshūˌ əˌkōr-nər) base shoe corner

base station [ENG] The point from which a survey begins. (ˈbāsˌ əˈstāˌshən) base station

base tee [DES ENG] A pipe tee with a connected baseplate for supporting it. (ˈbāsˌ əˌtī) base tee

base tile [BUILD] The lowest course of tiles in a tiled wall. (ˈbāsˌ əˌtīl) base tile

base time See normal element time; normal time. (ˈbāsˌ əˌtəm) base time

basic element See elemental motion. (ˈbāsˌ əˈsikˌ əˌləmənt) basic element

53
bastard thread  [DES ENG] A screw thread that does not match any standard threads. ('bas-tard, thread)

bastard tuck point [BUILD] An imitation tuck point in which the external face is parallel to the wall, but projects slightly and casts a shadow. Also known as bastard point. ('bas-tard,tak ,poin-in)

bat bolt  [DES ENG] A bolt whose butt or tang is bashed or jagged. ('bat,bolt)

batch  [ENG] 1. The quantity of material required for or produced by one operation. 2. An amount of material subjected to some unit chemical process or physical mixing process to make the final product substantially uniform. ('bach)

batch box  [ENG] A container of known volume used to measure and mix the constituents of a batch of concrete, plaster, or mortar, to ensure proper proportions. ('bach,baiks)

batch distillation [CHEM ENG] Distillation where the entire batch of liquid feed is placed into the still at the beginning of the operation, in contrast to continuous distillation, where liquid is fed continuously into the still. ('bach dis-ta'lá-shan)

batched water  [ENG] The mixing water added to a concrete or mortar mixture before or during the initial stages of mixing. ('bach,wdód-ar)

batcher  [MECH ENG] A machine in which the ingredients of concrete are measured and combined into batches before being discharged to the concrete mixer. ('bach-ar)

batching  [ENG] Weighing or measuring the volume of the ingredients of a batch of concrete or mortar, and then introducing these ingredients into a mixer. ('bach-in)

batch manufacturing  [IND ENG] The manufacture of parts in discrete runs or lots, generally interspersed with other production procedures. ('bach,man-fak-char-in)

batch mixer  [MECH ENG] A machine which mixes concrete or mortar in batches, as opposed to a continuous mixer. ('bach,mik-ar)

batch plant  [ENG] An operating installation of equipment including batchers and mixers as required for batching or for batching and mixing concrete materials. ('bach,plan-t)

batch process  [ENG] A process that is not in continuous or mass production; operations are carried out with discrete quantities of material or a limited number of items. ('bach,prés-as)

batch production  See series production. ('bach pra'dak-shan)

batch reactor  [CHEM ENG] A chemical reactor in which the reactants and catalyst are introduced in the desired quantities and the vessel is then closed to the delivery of additional material. ('bach rē,ak-tar)

batch rectification  [CHEM ENG] Batch distillation in which the boiled-off vapor is re-condensed into liquid form and refluxed back into the still to make contact with the rising vapors. ('bach ,rek-ta-fal'ka-shan)
batch treatment  [CHEM ENG] A corrosion control procedure in which chemical corrosion inhibitors are injected into the lines of a production system.  
{ 'batch ,tɹənˌtɹɛnt }  
battens [CIV ENG] Horizontal boards rate, followed by a prolonged constant-average failure rate, after which the failure rate again increases sharply.  
{ 'bæt ,trən ,rəlt }  
bath level  [ENG] A device for measuring the inclination of a slope.  
{ 'bæt ,levˌəl }  
batter brace  [CIV ENG] A diagonal brace which reinforces one end of a truss. Also known as batter post.  
{ 'bætˌər ,bræs }  
batter stick  [CIV ENG] A tapered board which is hung vertically and used to test the batter of a wall surface.  
{ 'bætˌərˌstɪk }  
battery  [CHEM ENG] A series of distillation columns or other processing equipment operated as a single unit.  
[ ELEC ] A direct-current voltage source made up of one or more units that convert chemical, thermal, nuclear, or solar energy into electrical energy.  
{ 'bætər ɪ dɪ t }  
battery limits  [CHEM ENG] An area in a refinery or chemical plant encompassing a processing unit or battery of units along with their related utilities and services.  
{ 'bætər ɪ dɪ t ˌlɪmˌɪts }  
battening tool  [ENG] A mason's chisel usually 3–4 1/2 inches (7.6–11.4 centimeters) wide, used to dress stone to a striated surface.  
{ 'bætənɪŋˌtɹɪl }  
bay [ENG] A housing used for equipment.  
{ bæ }  
bayonet coupling  [DES ENG] A coupling in which two or more pins extend out from a plug and engage in grooves in the side of a socket.  
{ 'bæˌənˌtɹɪŋˌkɑːpˌɪn }  
bayonet socket  [DES ENG] A socket, having J-shaped slots on opposite sides, into which a
bayonet-tube exchanger  [MECH ENG] A dual-tube apparatus with heating (or cooling) fluid flowing into the inner tube and out of the annular space between the inner and outer tubes, can be inserted into tanks or other process vessels to heat or cool the liquid contents. {bà-nét ʃa:k-ər}  

bayonet-tube exchanger  [MECH ENG] A dual-tube apparatus with heating (or cooling) fluid flowing into the inner tube and out of the annular space between the inner and outer tubes, can be inserted into tanks or other process vessels to heat or cool the liquid contents. {bà-nét ʃa:k-ər}  

B-B fraction  [CHEM ENG] A mixture of butanes whose function is to carry lateral loads (perpendicular to the large dimension) and bending movements. {bèm}  

beam [CIV ENG] A body, with one dimension large compared with the other dimensions, whose function is to carry lateral loads (perpendicular to the large dimension) and bending movements. {bèm}  

beam-and-girder construction  [BUILD] A system of floor construction in which the load is distributed by slabs to spaced beams and girders. {bèm an ʃar-dár ʃan-strak-ʃan}  

beam-and-slab floor  [BUILD] A floor system in which a concrete floor slab is supported by reinforced concrete beams. {bèm an ʃla-bfl}  

Beaman stadia arc  [ENG] An attachment to an alidade consisting of a stadia arc on the outer edge of the visual vertical arc, enables the observer to determine the difference in elevation of the instrument and stadia rod without employing vertical angles. {bèm ʃtäd-ə ərk}  

beam bearing plate  [CIV ENG] A foundation plate (usually of metal) placed beneath the end of a beam, at its point of support, to distribute the end load at the point. {bèm, əriŋ, plät}  

beam blocking  [BUILD] 1. Boxing-in or covering a joist, beam, or girder to give the appearance of a larger beam. 2. Strips of wood used to create a false beam. {bèm, bläk-ŋ}  

beam bolster  [CIV ENG] A rod which provides support for steel reinforcement in formwork for a reinforced concrete beam. {bèm, əl-stər}  

beam box  [SEE wall box. {bèm, əl-ks}  

beam brick  [BUILD] A face brick which is used to bond to a poured-in-place concrete lintel. {bèm, əl-brik}  

beam bridge  [CIV ENG] A fixed structure consisting of a series of steel or concrete beams placed parallel to traffic and supporting the roadway directly on their top flanges. {bèm, əlriŋ}  

beam clip  [ENG] A device for attaching a pipe hanger to its associated structural beam when it is undesirable to weld the pipe hanger to supporting structural steelwork. Also known as girder clamp; girder clip. {bèm, əl-klip}  

beam column  [CIV ENG] A structural member subjected simultaneously to axial load and bending moments produced by lateral forces or eccentricity of the longitudinal load. {bèm, əl-əm}  

beam-deflection amplifier  [MECH ENG] A jet-interaction fluidic device in which the direction of a supply jet is varied by flow from one or more control jets which are oriented at approximately 90° to the supply jet. {bèm ʃləf-ʃan ʃam-əl-frər}  

beam fill  [BUILD] Masonry, brickwork, or cement fill, usually between joists or horizontal beams
at their supports; provides increased fire resistance. *bém, fil*

**beam form** [CIV ENG] A form which gives the necessary shape, support, and finish to a concrete beam. *bém, form*

**beamhouse** [CHEM ENG] A place where the initial wet operations of tanning, involving soaking in water and solutions of alkali, are carried out. *bém, haüs*

**beam pattern** See directivity pattern. *bém, pad-orn*

**beam pocket** [CIV ENG] 1. In a vertical structural member, an opening to receive a beam. 2. An opening in the form for a column or girder where the form for an intersecting beam is framed. *bém, pak-at*

**beam splice** [CIV ENG] A connection between two lengths of a beam or girder; may be shear or moment connections. *bém, spilis*

**beam spread** [ENG] The angle of divergence from the central axis of an electromagnetic or acoustic beam as it travels through a material. *bém, spred*

Beams served rotational method [ENG] A method of measuring the gravitational constant by determining the inertial reaction of a torsional pendulum to the angular acceleration of a rotating table that is required to cancel the attraction of the pendulum to two large masses. *bémz, sár, vód rótášjan-al, méth-ad*

**beam test** [CIV ENG] A test of the flexural strength (modulus of rupture) of concrete from measurements on a standard reinforced concrete beam. *bém, test*

**bean** [ENG] A restriction, such as a nipple, which is placed in a pipe to reduce the rate of fluid flow. *bén*

**bearer** [CIV ENG] Any horizontal beam, joist, or member which supports a load. *ber-ar*

**bearing** [CIV ENG] That portion of a beam, truss, or other structural member which rests on the supports. *MECH ENG* A machine part that supports another part which rotates, slides, or oscillates in or on it. *bér-ihj*

**bearing bar** [BUILD] A wrought-iron bar placed on masonry to provide a level support for floor joists. *CIV ENG* A load-carrying bar which supports a grating and which extends in the direction of the grating span. *ENG* Searazimuth instrument. *bér-ihj, bár*

**bearing cap** [DES ENG] A device designed to fit around a bearing to support or immobilize it. *bér-ihj, káp*

**bearing capacity** [MECH] Load per unit area which can be safely supported by the ground. *bér-ihj kápas-ad-e*

**bearing circle** [ENG] A ring designed to fit snugly over a compass or compass repeater, and provided with vanes for observing compass bearings. *bér-ihj, šar-ka*l*

**bearing cursor** [ENG] Of a radar set, the radial line inscribed on a transparent disk which can be rotated manually about an axis coincident with the center of the plan position indicator, used for bearing determination. Also known as mechanical bearing cursor. *bér-ihj, šar-sár*

**bearing distance** [CIV ENG] The length of a beam between its bearing supports. *bér-ihj, dis-tans*

**bearing partition** [BUILD] A partition which supports a vertical load. *bér-ihj porťish-an*

**bearing pile** [ENG] A vertical post or pile which carries the weight of a foundation, transmitting the load of a structure to the bedrock or subsoil without detrimental settlement. *bér-ihj, pil*

**bearing plate** [CIV ENG] A flat steel plate used under the end of a wall-bearing beam to distribute the load over a broader area. *bér-ihj, plát*

**bearing pressure** [MECH] Load on a bearing surface divided by its area. Also known as bearing stress. *bér-ihj, presh-ar*

**bearing strain** [MECH] The deformation of bearing parts subjected to a load. *bér-ihj, strán*

**bearing strength** [MECH] The maximum load that a column, wall, footing, or joint will sustain at failure, divided by the effective bearing area. *bér-ihj, strengkth*

**bearing stress** See bearing pressure. *bér-ihj, stres*

**bearing test** [ENG] A test of the bearing capacities of pile foundations, such as a field loading test of an individual pile, a laboratory test of soil samples for bearing capacities. *bér-ihj, test*

**bearing wall** [CIV ENG] A wall capable of supporting an imposed load. Also known as structural wall. *bér-ihj, wol*

**bear trap gate** [CIV ENG] A type of crest gate with an upstream leaf and a downstream leaf which rest in a horizontal position, one leaf overlapping the other, when the gate is lowered. *bér, trap, gát*

**beater** [ENG] 1. A tool for packing in material to fill a blasthole containing a charge of powder. 2. A laborer who shovels or dumps asbestos fibers and sprays them with water in order to prepare them for the beating. *MECH ENG* A machine that cuts or beats paper stock. *béd-ar*

**beater mill** See hammer mill. *béd-ar, mil*

**beating** [ENG] A process that reduces asbestos fibers to pulp for making asbestos paper. *béd-iŋ*

**Beattie and Bridgman equation** [THERMO] An equation that relates the pressure, volume, and temperature of a real gas to the gas constant. *(béd-e an brijjen, in kwa-zhan)*

**beat tone** [ENG ACOUS] Musical tone due to beats, produced by the heterodyning of two high-frequency wave trains. *(bét, ton)*

**bèche** [MECH ENG] A pneumatic forge hammer having an air-operated ram and an air-compressing cylinder integral with the frame. *(besh)*

**Beckmann thermometer** [ENG] A sensitive thermometer with an adjustable range so that small differences in temperature can be measured. *(bék-mán, teh'mán-ad-ar)*

**bed** [CIV ENG] 1. In Masonry and bricklaying, the side of a masonry unit on which the unit lies in the course of the wall; the underside when
Bedaux plan

the unit is placed horizontally. 2. The layer of mortar on which a masonry unit is set. [MECH ENG] The part of a machine having precisely machined ways or bearing surfaces which support or align other machine parts. (bed)

Bedaux plan [IND ENG] A wage incentive plan in which work is standardized into man-minute units called bedaux (B). 60 B per hour is 100% productivity, and earnings are based on work units per length of time. (ba’dō, plan)

bedding [CIV ENG] 1. Mortar, putty, or other substance used to secure a firm and even bearing, such as putty laid in the rabbet of a window frame, or mortar used to lay bricks. 2. A base which is prepared in soil or concrete for laying masonry or concrete. (bed-inj)

bedding course [CIV ENG] The first layer of mortar at the bottom of masonry. (bed-inj, kōrs)

bedding dot [BUILD] A small spot of plaster built out to the face of a finished wall or ceiling, serves as a screed for leveling and plumbing in the application of plaster. (bed-inj, dāt)

bed joint [CIV ENG] 1. A horizontal layer of mortar on which masonry units are laid. 2. One of the radial joints in an arch. (bed, joint)

bed molding [BUILD] 1. The lowest member of a band of moldings. 2. Any molding under a projection, such as between eaves and sidewalks. (bed, mōl-dìn)

beehive oven [ENG] An arched oven that carbonizes coal into coke by using the heat of combustion of gases that are formed, and of a small part of the coke that is formed, with no recovery of by-products. (be, hv, av-ān)

beetle See rammer. (bed-al)

behavioral dynamics [IND ENG] 1. The behavioral operating characteristics of individuals and groups in terms of how these people are conditioned by their working environments. 2. The interactions between individuals or groups in the workplace. (be-hā-vya-rāl dī-nām-īks)

Belfast truss [CIV ENG] A bowstring beam for large spans, having the upper member bent and the lower member horizontal; constructed entirely of timber components. (be, fast, trās)

bell [ENG] 1. A hollow metallic cylinder closed at one end and flared at the other, it is used as a fixed-pitch musical instrument or signaling device and is set vibrating by a clapper or tongue which strikes the lip. 2. See bell tap. (bel)

bell-and-spigot joint [ENG] A pipe joint in which a pipe ending in a bell-like shape is joined to a pipe ending in a spigotlike shape. (bel on ’spik-āt, joint)

bell cap [CHEM ENG] A hemispherical or trian-gular metal casting used on distillation-column trays to force upflowing vapors to bubble through layers of downcoming liquid. (bel kap)

bell caisson [CIV ENG] A type of drilled cais-son with a flared bottom. (bel ’ka,sān)

bell glass See bell jar. (bel, glas)

bell jar [ENG] A bell-shaped vessel, usually made of glass, which is used for enclosing a vacuum, holding gases, or covering objects. Also known as bell glass. (’bel, jār)

bell-jar testing [ENG] A leak testing method in which a vessel is filled with tracer gas and placed in a vacuum chamber, leaks are evidenced by gas drawn into the vacuum chamber. (’bel, jār, tes-tiŋ)

bell-joint clamp [ENG] A clamp applied to a bell-and-spigot joint to prevent leakage. (’bel, joint, klamp)

Bellman’s principle of optimality [IND ENG] The principle that an optimal sequence of decisions in a multistage decision process problem has the property that whatever the initial state and decisions are, the remaining decisions must constitute an optimal policy with regard to the state resulting from the first decisions. (’bel-man ’prin-sa-pal av, āp-ta’mal, ad-e)

bell mouth [DES ENG] A flared mouth on a pipe opening or other orifice. [ENG] A defect which occurs during metal drilling in which a twist drill produces a hole that is not a perfect circle. (bel, mau-th)

bellows [ENG] 1. A mechanism that expands and contracts, or has a rising and falling top, to suck in air through a valve and blow it out through a tube. 2. Any of several types of enclosures which have accordionlike walls, allowing one to vary the volume. 3. See aneroid capsule. (’bel-oz)

bellows expansion joint [DES ENG] In a run of piping, a joint formed with a flexible metal bel-lows which compress or stretch to compensate for linear expansion or contraction of the run of piping. (’bel-oz ik’span-šon, joint)

bellows gage [ENG] A device for measuring pressure in which the pressure on a bellows, with the end plate attached to a spring, causes a measurable movement of the plate. (’bel-oz, gāl)

bellows gas meter [ENG] A device for measuring the total volume of a continuous gas flow stream in which the motion of two bellows, alternately filled with and exhausted of the gas, actuates a register. (’bel-oz ’gas, méd-ər)

bellows seal [MECH ENG] A boiler seal in the form of a bellows which prevents leakage of air or gas. (’bel-oz, sēl)

bell-type manometer [ENG] A differential pressure gage in which one pressure input is fed into an inverted cuplike container floating in liquid, and the other pressure input presses down upon the top of the container so that its level in the liquid is the measure of differential pressure. (’bel, ’tip mā’nām-əd-ər)

belt [CIV ENG] In brickwork, a projecting row (or rows) of bricks, or an inserted row made of a different kind of brick. [MECH ENG] A flexible band used to connect pulleys or to convey materials by transmitting motion and power. (belt)

belt conveyor [MECH ENG] A heavy-duty con-veyor consisting essentially of a head or drive pulley, a take-up pulley, a level or inclined endless belt made of canvas, rubber, or metal, and carrying and return idlers. (’bel kon’vār)
belt course  See string course.  { 'belt, körös
belt drive  [MECH ENG] The transmission of power between shafts by means of a belt connecting the pulleys on the shafts.  { 'belt, driv
belted-bias tire  See bias-belted tire.  { 'belt-éd, bí-ás 'tīr
belt feeder  [MECH ENG] A short belt conveyor used to transfer granulated or powdered solids from a storage or supply point to an end-use point, for example, from a bin hopper to a chemical reactor.  { 'belt, fēd-or
belt guard  [MECH ENG] A cover designed to protect a belt as well as the pulleys it connects.  { 'belt, gārd
belt highway  See beltway.  { 'belt 'hi-wä
belt sander  [MECH ENG] A portable sanding tool having a power-driven abrasive-coated continuous belt.  { 'belt, san-där
belt slip  [MECH ENG] The difference in speed between the driving drum and belt conveyor.  { 'belt, slip
belt tightener  [MECH ENG] In a belt drive, a device that takes up the slack in a belt that has become stretched and permanently lengthened.  { 'belt, tīt-näör
beltway  [CIV ENG] A highway that encircles an urban area along its perimeter. Also known as belt highway, ring road.  { 'belt, wä
bench assembly  [ENG] A technique of fitting and joining parts using a bench as a work surface.  { 'bench, ə'sem-blé
bench check  [IND ENG] A workshop or servicing bay check which includes the typical check or actual functional test of an item to ascertain what is to be done to return the item to a serviceable condition or ascertain the item’s temporary or permanent disposition.  { 'bench, chek
bench dog  [ENG] A wood or metal peg placed in a slot or hole at the end of a bench, used to keep a workpiece from slipping.  { 'bench, dôg
bench hook  [ENG] Any device used on a carpenter’s bench to keep work from moving toward the rear of the bench. Also known as side hook.  { 'bench, hûk
bench marking  [CIV ENG] 1. Concrete laid on the side slopes of drainage channels where the slopes are interrupted by manholes, and so forth.  2. Concrete laid on sloping sites as a safeguard against sliding.  3. Concrete laid along the sides of a pipeline to provide additional support.  { 'bench-mark
bench lathe  [MECH ENG] A small engine or toolroom lathe suitable for attachment to a workbench; bed length usually does not exceed 6 feet (1.8 meters) and workpieces are generally small.  { 'bench, la-th
benchmark  [ENG] A relatively permanent natural or artificial object bearing a marked point whose elevation above or below an adopted datum—for example, sea level—is known. Abbreviated BM.  [IND ENG] A standard of measurement possessing sufficient identifiable characteristics common to the individual units of a population to facilitate economical and efficient comparison of attributes for units selected from a sample.  { 'bench, märk
benchmark index  [IND ENG] In manufacturing and mining, an index designed to reflect changes in output occurring between census years.  { 'bench, märk 'in-duésks
benchmark job  [IND ENG] A job that can be related or compared to other jobs in terms of common characteristics and considered an acceptable gauge for other jobs without the need of direct measurements.  { 'bench, märk ‘jōb
bench photometer  [ENG] A device which uses an optical bench with the two light sources to be compared mounted one at each end, the comparison between the two illuminations is made by a device moved along the bench until matching brightnesses appear.  { 'bench, tā-mād-ar
bench plane  [DES ENG] A plane used primarily in benchwork on flat surfaces, such as a block plane or jack plane.  { 'bench, plän
bench sander  [MECH ENG] A stationary power sander, usually mounted on a table or stand, which is equipped with a rotating abrasive disk or belt.  { 'bench, san-där
bench-scale testing  [ENG] Testing of materials, methods, or chemical processes on a small scale, such as on a laboratory worktable.  { 'bench, skäl ‘tes-tıp
bench stop  [ENG] A bench hook which is used to fasten work in place, often by means of a screw.  { 'bench, stäp
bench table  [BUILD] A projecting course of masonry at the foot of an interior wall or around a column, generally wide enough to form a seat.  { 'bench, tā-bal
bench vise  [ENG] An ordinary vise fixed to a workbench.  { 'bench, vīts
benchwork  [ENG] Any work performed at a workbench rather than on machines or in the field.  { 'bench, wōrk
bend  [DES ENG] 1. The characteristic of an object, such as a machine part, that is curved.  2. A section of pipe that is curved.  3. A knot formed by a rope fastened to an object or another rope.  { 'bend
bend allowance  [DES ENG] Length of the arc of the neutral axis between the tangent points of a bend in any material.  { 'bend ol-ä-län-ons
bender  See bending machine.  { 'ben-där
bending  [ENG] 1. The forming of a metal part, by pressure, into a curved or angular shape, or the stretching or flanging of it along a curved path.  2. The forming of a wooden member to a desired shape by pressure after it has been softened or plasticized by heat and moisture.  { 'ben-dip
bending brake  [MECH ENG] A press brake for
bending iron

making sharply angular linear bends in sheet metal. '{ben-ding, bêr-kêk}

bending iron [ENG] A tool used to straighten or to expand flexible pipe, especially lead pipe. '{ben-ding, jô-am}

bending machine [MECH ENG] A machine for bending a metal or wooden part by pressure. Also known as bender. '{ben-ding ma-shên]

bending moment [MECH] Algebraic sum of all moments located between a cross section and one end of a structural member, a bending moment that bends the beam convex downward is positive, and one that bends it convex upward is negative. '{ben-ding, mô-mânt]

bending-moment diagram [MECH] A diagram showing the bending moment at every point along the length of a beam plotted as an ordinate. '{ben-ding, mô-mônt, di-o-gra-am]

bending schedule [CIV ENG] A chart showing the shapes and dimensions of every reinforcing bar and the number of bars required on a particular job for the construction of a reinforced concrete structure. '{ben-ding, she-duh-ble]

bending stress [MECH] An internal tensile or compressive longitudinal stress developed in a beam in response to curvature induced by an external load. '{ben-ding, stres]

Bendix-Weiss universal joint [MECH ENG] A universal joint that provides for constant angular velocity of the driven shaft by transmitting the torque through a set of four balls lying in the plane that contains the bisector of, and is perpendicular to, the plane of the angle between the shafts. '{ben-diks, wîs, yû-na-vor-sal, jöint]

bend radius [DES ENG] The radius corresponding to the curvature of a bent specimen or part, as measured at the inside surface of the bend. '{bend, râd-ë-as]

bend wheel [MECH ENG] A wheel used to interrupt and change the normal path of travel of the conveying or driving medium, most generally used to effect a change in direction of conveyer travel from inclined to horizontal or a similar change. '{bend, we'l]

Benioff extensometer [ENG] A linear strain-meter for measuring the change in distance between two reference points separated by 60–90 feet (20–30 meters) or more. used to observe earth tides. '{ben-ë-of, e-k, sten-sâm-ad-ë-r]

bent [CIV ENG] A framework support transverse to the length of a structure. '{ bent]

bent bar [CIV ENG] A longitudinal reinforcing bar which is bent to pass from one face of a structural member to the other face. '{ bent, bär]

bent-tube boiler [MECH ENG] A water-tube steam boiler in which the tubes terminate in upper and lower steam-and-water drums. Also known as drum-type boiler. '{ bent, tüb 'boil-ë-r]

bentwood [ENG] Wood formed to shape by bending, rather than by carving or machining. '{ bent-wood]

benzol-acetone process [CHEM ENG] A solvent dewaxing process in which a mixture of the solvent and oil containing wax is cooled until the wax solidifies and is then removed by filtration. '{ben-zôl, 'äs-a-ton, prâs-ës]

Bergius process [CHEM ENG] Treatment of carbonaceous matter, such as coal or cellulosic materials, with hydrogen at elevated pressures and temperatures in the presence of a catalyst, to form an oil similar to crude petroleum. Also known as coal hydrogenation. '{ber-gë-as, prâs-ës]

Befl saddle [CHEM ENG] A type of column packing used in distillation columns. '{bôrl, sad-al]

berm [CIV ENG] A horizontal ledge cut between the foot and top of an embankment to stabilize the slope by intercepting sliding earth. '{barm]

Bernoulli-Euler law [MECH] A law stating that the curvature of a beam is proportional to the bending moment. '{ber-nû-le, jôil-ar-ë-lo]

Berthelot method [THERMO] A method of measuring the latent heat of vaporization of a liquid that involves determining the temperature rise of a water bath that encloses a tube in which a given amount of vapor is condensed. '{ber-tô, jô, meth-ad]

Berthon dynamometer [ENG] An instrument for measuring the diameters of small objects, consisting of two metal straightedges inclined at a small angle and rigidly joined together, a scale on one of the straightedges is used to read the diameters of objects inserted between them. '{bôrl-e-am di-tek-tô-r]

beryllium detector [ENG] An instrument designed to detect and analyze for beryllium by gamma-ray activation analysis. Also known as beryllometer. '{ber-ëll-e-am dî-tek-tô-r]

beryllometer See beryllium detector. '{ber-ëll-e-am-ë-dë-r]

best commercial practice [ENG] A manufacturing standard for a process vessel which has not been designed according to standard codes, such as the American Society of Mechanical Engineers Boiler Code. '{best kä-mar-shâl 'prâk-tas]

beta [ELECTR] The current gain of a transistor that is connected as a grounded-emitter amplifier, expressed as the ratio of change in collector current to resulting change in base current, the collector voltage being constant. '{bê-da]

beta-cutoff frequency [ELECTR] The frequency at which the current amplification of an amplifier transistor drops to 3 decibels below its value at 1 kilohertz. '{bê-da, 'käd-of, fê-ë-kwân-së]

Béthell process See full-cell process. '{béth-ël, prâs-ës]

Betterton-Kroll process [CHEM ENG] A method for obtaining pure bismuth from softened and desilverized lead. '{be-tô-rôn, krôl, prâs-ës]

Betti reciprocal theorem [MECH] A theorem in the mathematical theory of elasticity which states that if an elastic body is subjected to two systems of surface and body forces, then the work that would be done by the first system acting through the displacements resulting from
the second system equals the work that would be done by the second system acting through the displacements resulting from the first system.

\[ \text{bias compensation} \]

**Betti's method**  
[MECH] A method of finding the solution of the equations of equilibrium of an elastic body whose surface displacements are specified; it uses the fact that the dilatation is a harmonic function to reduce the problem to the Dirichlet problem. \( \text{bias} \rightarrow \text{tör-shan} \)

**B-H meter**  
[MECH ENG] A theory of windmill performance that considers the deceleration in the air traversing the windmill disk. \( \text{bias} \rightarrow \text{tör-shan} \)

**Bevel**  
[DES ENG] 1. The angle between one line or surface and another line or surface, or the horizontal, when this angle is not a right angle.  
2. A sloping surface or line. \( \text{bias} \rightarrow \text{tör-shan} \)

**Beveled closer**  
See king closer. \( \text{bias} \rightarrow \text{tör-shan} \)

**Beveled gear**  
[MECH ENG] One of a pair of gears used to connect two shafts whose axes intersect. \( \text{bias} \rightarrow \text{tör-shan} \)

**Bettz momentum theory**  
[MECH ENG] A theory of windmill performance that considers the deceleration in the air traversing the windmill disk. \( \text{bias} \rightarrow \text{tör-shan} \)

**Bibcock**  
[DES ENG] A faucet or stopcock whose nozzle is bent downward. Also spelled bibb cock. \( \text{bias} \rightarrow \text{tör-shan} \)

**Bicable tramway**  
[MECH ENG] A tramway consisting of two stationary cables on which the wheeled carriages travel, and an endless rope, which propels the carriages. \( \text{bias} \rightarrow \text{tör-shan} \)

**BiCMOS technology**  
[ELECTR] An integrated circuit technology that combines bipolar transistors and CMOS devices on the same chip. \( \text{bias} \rightarrow \text{tör-shan} \)

**Biaxial stress**  
[MECH] The condition in which there are three mutually perpendicular principal stresses; two act in the same plane and one is zero. \( \text{bias} \rightarrow \text{tör-shan} \)

**Biazziprocess**  
[CHEM ENG] A continuous-flow process for the nitrification of glycerin to nitroglycerin, also used to produce glycol dinitrate and diethylene glycol nitrate. \( \text{bias} \rightarrow \text{tör-shan} \)

**Bicycle**  
[MECH ENG] A human-powered land vehicle with two wheels, one behind the other, usually propelled by the action of the rider's feet on the pedals. \( \text{bias} \rightarrow \text{tör-shan} \)

**Bid**  
[ENG] An estimate of costs for specified desired time spacing of transitions from marking to spacing. \( \text{bias} \rightarrow \text{tör-shan} \)

**Bidirectional**  
[ENG] Being directionally responsive to inputs in opposite directions. \( \text{bias} \rightarrow \text{tör-shan} \)

**Bidirectional microphone**  
[ENG ACOUS] A microphone that responds equally well to sounds reaching it from the front and rear, corresponding to sound incidences of 0 and 180°. \( \text{bias} \rightarrow \text{tör-shan} \)

**Bierbaum scratch hardness test**  
[ENG] A test for the hardness of a solid sample by microscopic measurement of the width of scratch made by a diamond point under preset pressure. \( \text{bias} \rightarrow \text{tör-shan} \)

**Bifilar electrometer**  
[ELECTR] An electrostatic volt-current above about 40,000 hertz added to the bifilar electrometer.
bindercourse  See filar micrometer.  

bilateral tolerance  [DES ENG] The amount that the size of a machine part is allowed to vary above or below a basic dimension; for example, $3.650 \pm 0.003$ centimeters indicates a tolerance of $\pm 0.003$ centimeter.  

bilge block  [CIV ENG] A wooden support under means during the performance of a task to evaluate the condition of a ship's bilge in dry dock.  

billet  [CIV ENG] A wooden support under means during the performance of a task to evaluate the condition of a ship's bilge in dry dock.  

binary component  [ELECTR] An electronic component that can be in either of two conditions at any given time. Also known as binary device.  

binary counter  See binary scaler.  

binary device  See binary component.  

binary encoder  [ELECTR] An encoder that changes angular, linear, or other forms of input data into binary coded output characters.  

binary logic  [ELECTR] An assembly of digital logic elements which operate with two distinct states.  

binary scaler  [ELECTR] A scaler that produces one output pulse for every two input pulses. Also known as binary counter, scale-of-two circuit.  

binary separation  [CHEM ENG] Separation by distillation or solvent extraction of a fully miscible liquid mixture of two chemical compounds.  

binary signal  [ELECTR] A voltage or current which carries information by varying between two possible values, corresponding to 0 and 1 in the binary system.  

binary system  [ENG] Any system containing two principal components.  

binder course  [CIV ENG] Coarse aggregate with a bituminous binder between the foundation course and the wearing course of a pavement.  

binderless briquetting  [ENG] The briquetting of coal by the application of pressure without the addition of a binder.  

binding post  [ELEC] A manually turned screw terminal used for making electrical connections.  

bind-seize  See freeze.  

biochemical profile  [IND ENG] Data recorded by both electromyo graphic and biomechanical means during the performance of a task to evaluate changes in the functional capacity of a worker resulting from modifications in human-equipment interfaces.  

biocontrol system  [CONT SYS] A mechanical system that is controlled by biological signals, for example, a prosthesis controlled by muscle activity.  

bioengineering  [ENG] The application of engineering knowledge to the fields of medicine and biology.  

biometric  [ENG] An emission control device that uses microorganisms to destroy volatile organic compounds and hazardous air pollutants.  

bioinstrumentation  [ENG] The use of instruments attached to animals and man to record biological parameters such as breathing rate, pulse rate, body temperature, or oxygen in the blood.  

biomedical engineering  [ENG] The application of engineering technology to the solution of medical problems; examples are the development of prostheses such as artificial valves for the heart, various types of sensors for the blind, and automated artificial limbs.  

bionics  [ENG] The study of systems, particularly electronic systems, which function after the manner of living systems.  

biopak  [ENG] A container for housing a living organism in a habitable environment and for recording biological functions during space flight.  


biostabilizer  [CIV ENG] A component in mechanized composting systems; consists of a drum in which moistened solid waste is comminuted and tumbled for about 5 days until the aeration and biodegradation turns the waste into a fine dark compost.  

biotechnical robot  [CONT SYS] A robot that requires the presence of a human operator in order to function.  

biotelemetry  [ENG] The use of telemetry techniques, especially radio waves, to study behavior and physiology of living things.  

Biot-Fourier equation  [THERMO] An equation for heat conduction which states that the rate of change of temperature at any point divided
blackbody radiation

by the thermal diffusivity equals the Laplacian of the temperature. (bı˘dʒər-yä ı˘kwa˘za˘n)

biotron [ENG] A test chamber used for biological research within which the environmental conditions can be completely controlled, thus allowing observations of the effect of variations in environment on living organisms. (bı˘ ɾə˘tən)

bipolar amplifier [ELECTR] An amplifier capable of supplying a pair of output signals corresponding to the positive or negative polarity of the input signal. (bı˘pö˘lar ’am˘-pla˘-fı˘-ar)

bipolar circuit [ELECTR] A logic circuit in which zeros and ones are treated in a symmetric or bipolar manner, rather than by the presence or absence of a signal; for example, a balanced arrangement in a square-loop ferrite magnetic circuit. (bı˘pö˘lar ’s¨a˘r-kat)

bipolar junction transistor [ELECTR] A bipolar transistor that is composed entirely of one type of semiconductor, silicon. Abbreviated BJT. Also known as silicon homojunction. (bı˘,pöl˘ar ’saks˘han tran˘zis˘tar)

bipolar magnetic driving unit [ENG ACOUS] Headphone or loudspeaker unit having two magnetic poles acting directly on a flexible iron diaphragm. (bı˘pö˘lar mag˘ned-ı˘k ’driv-ı˘g ı˘yu˘-nät)

bipolar spin device See magnetic switch. (bı˘,pöl˘ar ’spin di˘-vı˘s)

bipolar spin switch See magnetic switch. (bı˘,pöl˘ar ’spin swı˘ch)

bipolar transistor [ELECTR] A transistor that uses both positive and negative charge carriers. (bı˘pö˘lar tran˘zis˘tar)

birdcaged wire [ENG] Wire rope whose strands have been distorted into the shape of a birdcage by a sudden release of a load during a hoisting operation. (bı˘rd˘käd˘ı˘ ,wı˘r)

Birkeland-Eyde process [CHEM ENG] An arc process of nitrogen fixation in which air passes through an alternating-current arc flattened by a magnetic field to form about 1% nitric oxide. (bı˘rkl¨a˘nd ’tڑ˘-də˘ pr˘äs˘-sıs˘)

Birmingham wire gage [DES ENG] A system of standard sizes of brass wire, telegraph wire, steel tubing, seamless tubing, sheet spring steel, strip steel, and steel plates, bands, and hoops. Abbre-viated BWG. (bı˘r˘m˘ın˘g˘a˘m ’wı˘r˘,gå˘ı)

birth-death process [IND ENG] A simple queuing model in which units to be served arrive (birth) and depart (death) in a completely random manner. (bı˘rth lı˘deth ,pr˘a˘sıs˘)

biscuit See preform. (bı˘s˘-kät)

bistable circuit [ELECTR] A circuit with two stable states such that the transition between the states cannot be accomplished by self-triggering. (bı˘sta˘l˘-ba˘l˘ ,s¨a˘r-kat)

bistable unit [ENG] A physical element that can be made to assume either of two stable states; a binary cell is an example. (bı˘sta˘l˘-ba˘l˘ ’yu˘-nät)

bistatic radar [ENG] Radar system in which the receiver is some distance from the transmitter, with separate antennas for each. (bı˘,städ˘-ık ’ra˘-dår)

bit [DES ENG] 1. A machine part for drilling or boring. 2. The cutting plate of a plane. 3. The blade of a cutting tool such as an ax. 4. A removable tooth of a saw. 5. Any cutting device which is attached to or part of a drill rod or drill string to bore or penetrate rocks. (bıt)

bit blank [DES ENG] A steel bit in which diamonds or other cutting media may be inset by hand peening or attached by a mechanical process such as casting, sintering, or brazing. Also known as bit shank; blank; blank bit; shank. (bıt ’blı˘k)

bit breaker [DES ENG] A heavy plate that fits in a rotary table for holding the drill bit while it is being inserted or broken out of the drill stem. (bıt ’brák˘-ar)

bit cone See roller cone bit. (bıt ’kön)

bit drag [DES ENG] A rotary-drilling bit that has serrated teeth. Also known as drag bit. (bıt ’drag)

bite [ENG] In glazing, the length of overlap of the inner edge of a frame over the edge of the glass. (bıt)

bit matrix [ENG] The material, usually powdered and fused tungsten carbide, into which diamonds are set in the manufacture of diamond bits. (bıt ’m˘a˘-triks)

bitrochanticer width [IND ENG] A measurement corresponding to hip breadth that is used in seating design. (bı˘-tra˘-ka˘nter-ı˘k ’wı˘tˇdˇı˘sh)

bit shank See bit blank. (bıt ’shan˘k)

bittern [CHEM ENG] Concentrated sea water or brine containing the bromides and magnesium and calcium salts left in solution after sodium chloride has been removed by crystallization. (bıt˘-am˘)

bituminous distributor [MECH ENG] A tank truck having a perforated spray bar and used for pumping hot bituminous material onto the surface of a road or driveway. (bı˘t˘m˘ın˘-ın˘s˘ dis˘trib˘-yad˘-ar˘)

bivane [ENG] A double-jointed vane which measures vertical as well as horizontal wind direction. (bı˘v˘an˘)

blackbody [THERMO] An ideal body which would absorb all incident radiation and reflect none. Also known as hohlraum; ideal radiator. (bı˘l˘b˘a˘d˘-ë˘)

blackbody radiation [THERMO] The emission of radiant energy which would take place from a blackbody at a fixed temperature, if it takes place at a rate expressed by the Stefan-Boltzmann law, with a spectral energy distribution described by Planck’s equation. (bı˘l˘b˘a˘d˘-ë˘ ,r˘-d˘é˘-a˘-s¨a˘n˘)
blackbody temperature  [THERMO] The temperature of a blackbody that emits the same amount of heat radiation per unit area as a given object, measured by a total radiation pyrometer. Also known as brightness temperature. {ˈblækˌbɒd-\text{-}\text{-}\text{ɪ} \text{-} \text{tem-\text{-}prə-}\text{-}\text{char}′}

black box  [ENG] Any component, usually electronic and having known input and output, that can be readily inserted into or removed from a specific place in a larger system without knowledge of the component’s detailed internal structure. {ˈblækˌbɑks}  

black-bulb thermometer  [ENG] A thermometer whose sensitive element has been made to approximate a blackbody by covering it with lampblack. {ˈblækˌbɑl-bə\text{-}thərˈmæm-\text{-}\text{əd-\text{-}ər}}

black smoke  [ENG] A smoke that has many particulates in it from inefficient combustion, comes from burning fossil fuel, either coal or oil. {ˈblækˌsmık}  

black-surface enclosure  [THERMO] An enclosure for which the interior surfaces of the walls possess the radiation characteristics of a blackbody. {ˈblækˌsərk-fəs inˈklozh-\text{-}ər}

blacktop paver  [MECH ENG] A construction vehicle that spreads a specified thickness of bituminous mixture over a prepared surface. {ˈblækˌtæpˌpāv-\text{-}ər}

bladder press  [MECH ENG] A machine which simultaneously molds and cures (vulcanizes) a pneumatic tire. {ˈbləd-\text{-}ərˌpərˌes}

blade  [ELEC] A flat moving conductor in a switch.  

1. A broad, flat arm of a fan, turbine, or propeller.  
2. The broad, flat surface of a bulldozer or snowplow by which the material is moved.  
3. The part of a cutting tool, such as a saw, that cuts.  

bladed-surface aerator  [CIV ENG] A bladed, rotating component of a water treatment plant, used to infuse air into the water. {ˈbləd-\text{-}ərdˌsərk-fəsˌ\text{-}ərˌdər}

Blake jaw crusher  [MECH ENG] A crusher with one fixed jaw plate and one pivoted at the top so as to give the greatest movement on the smallest lump. {ˈblækˌjɒˌkrəsh-\text{-}ər}

blank  [DES ENG] See bit blank.  

[LECTR] To cut off the electron beam of a television picture tube, camera tube, or cathode-ray oscilloscope tube during the process of retrace by applying a rectangular pulse voltage to the grid or cathode during each retrace interval. Also known as beam blank.  

[ENG]  

1. The result of the final cutting operation on a natural crystal.  
2. See blind.  

[blank]  

blank bit  See bit blank. {ˈblæŋkˌbɪt}

blanket gas  [CHEM ENG] A gas phase introduced into a vessel above a liquid phase to prevent contamination of the liquid, reduce hazard of detonation, or to exert pressure on the liquid. Also known as cushion gas. {ˈblæŋkˌketˌgæs}

blank flange  [DES ENG] A solid disk used to close off or seal a companion flange. {ˈblæŋkˌflæŋ}  

blankholder slide  [MECH ENG] The outer slide of a double-action power press, it is usually operated by toggles or cams. {ˈblæŋkˌhɒl-\text{-}dərˌsəld}  

blanking  [ENG]  

1. The closing off of flow through a liquid-containing process pipe by the insertion of solid disks at joints or unions; used during maintenance and repair work as a safety precaution. Also known as blinding.  
2. Cutting of plastic or metal sheets into shapes by striking with a punch. Also known as die cutting. {ˈblæŋkˌɪŋ}  

blast  [ENG] The setting off of a heavy explosive charge. {ˈblæst}  

blast burner  [ENG] A burner in which a controlled burst of air or oxygen under pressure is supplied to the illuminating gas used. Also known as blast lamp. {ˈblæstˌbəør-\text{-}ər}  

blast cleaning  [ENG] Any cleaning process in which an abrasive is directed at high velocity toward the surface being cleaned, for example, sand blasting. {ˈblæstˌklen-\text{-}ɪŋ}  

blast ditching  [CIV ENG] The use of explosives to aid in ditch excavation, such as for laying pipelines. {ˈblæstˌdɪtʃ-ɪŋ}  

blaster  [ENG] A device for detonating an explosive charge; usually consists of a machine by which an operator, by pressing downward or otherwise moving a handle of the device, may generate a powerful transient electric current which is transmitted to an electric blasting cap. Also known as blasting machine. {ˈblæs-\text{-}tər}  

blast freezer  [ENG] An upright freezer in which very cold air circulated by blowers is used for rapid freezing of food. {ˈblæstˌfri-\text{-}zər}  

blast heater  [MECH ENG] A heater that has a set of heat-transfer coils through which air is forced by a fan operating at a relatively high velocity. {ˈblæstˌhɛd-\text{-}ər}  

blasthole  [ENG]  

1. A hole that takes a heavy charge of explosive.  
2. The hole through which water enters in the bottom of a pump stock. {ˈblæstˌhɒl}  

blasthole drilling  [ENG] Drilling to produce a series of holes for placement of blasting charges. {ˈblæstˌhɒlˌdrɪl-ɪŋ}  

blasting  [ENG]  

1. Cleaning materials by a blast of air that blows small abrasive particles against the surface.  
2. The act of detonating an explosive. {ˈblæst-\text{-}ɪŋ}  

blasting cap  [ENG] A copper shell closed at one end and containing a charge of detonating compound, which is ignited by electric current or the spark of a fuse, used for detonating high explosives. {ˈblæst-\text{-}ɪŋˌ\text{-}kæp}  

blasting fuse  [ENG] A core of gunpowder in the center of jute, yarn, and so on for igniting an explosive charge in a shot hole. {ˈblæst-\text{-}ɪŋˌˌfju-\text{-}zər}  

blasting machine  See blaster. {ˈblæst-\text{-}ɪŋˌ\text{-}məˈʃen}  

blasting mat  [ENG] A heavy, flexible, tear-resistant covering that is spread over the surface during blasting to contain earth fragments. {ˈblæst-\text{-}ɪŋˌ\text{-}mæt}  

blast lamp  See blast burner, blowtorch. {ˈblæstˌlæmp}
A linear program—sures gases from an inner surface. { bleed

To let a fluid, such as air or liquid oxygen, escape under controlled conditions from a pipe, tank, or the like through a valve or outlet. { bleed

A high resistance connected across the dc output of a high-voltage power supply which serves to discharge the filter capacitors after the power supply has been turned off, and to provide a stabilizing load. { bleed

A connection located at a low place in an air line or a gasoline container so that, by means of a small valve, the condensed water or other liquid can be drained or bled off from the line or container without discharging the air or gas. { bleed

A multistage turbine where steam is extracted (bled) at pressures intermediate between throttle and exhaust, for process or feedwater heating purposes. { bleed

The undesirable movement of certain components of a plastic material to the surface of a finished article. Also known as migration. { bleed

Natural separation of a liquid from a liquid-solid or semisolid mixture; rock chips applied over the surface of a freshly tarred road. { bleed

A thin layer of lean concrete, fine gravel, or sand that is applied to a surface to smooth over voids in order to provide a cleaner, or more durable finish. { bleed

A layer of small liquid from a liquid-solid or semisolid mixture; rock chips applied over the surface of a freshly tarred road. { bleed

A unit of time equal to 10⁻³ day or to 0.864 second. { blink

A raised area on the surface of a metallic or plastic object caused by the pressure of gases developed while the surface was in a partly molten state, or by diffusion of high-pressure gases from an inner surface. { blister

The appearance of enclosed or broken macroscopic cavities in a body or in a glaze or other coating during firing. { blister

A metal or wood case enclosing one or more pulleys; has a hook with which it can be attached to an object. { block

A metal or wood case enclosing one or more pulleys; has a hook with which it can be attached to an object. { block

5 day bleeding off small quantities of contained fluid. { blend

Also known as dead area. { blend

A thin layer of lean concrete, fine gravel, or sand that is applied to a surface to smooth over voids in order to provide a cleaner, or more durable finish. { blend

A process control arrangement that separates the in-plant measuring points (for example, pressure, temperature, and flow rate) and control points (for example, a valve actuator) from the recorder or indicator at the central control panel. { blend

A process control arrangement that separates the in-plant measuring points (for example, pressure, temperature, and flow rate) and control points (for example, a valve actuator) from the recorder or indicator at the central control panel. { blend

A process control arrangement that separates the in-plant measuring points (for example, pressure, temperature, and flow rate) and control points (for example, a valve actuator) from the recorder or indicator at the central control panel. { blend

A process control arrangement that separates the in-plant measuring points (for example, pressure, temperature, and flow rate) and control points (for example, a valve actuator) from the recorder or indicator at the central control panel. { blend

A process control arrangement that separates the in-plant measuring points (for example, pressure, temperature, and flow rate) and control points (for example, a valve actuator) from the recorder or indicator at the central control panel. { blend

A process control arrangement that separates the in-plant measuring points (for example, pressure, temperature, and flow rate) and control points (for example, a valve actuator) from the recorder or indicator at the central control panel. { blend

A process control arrangement that separates the in-plant measuring points (for example, pressure, temperature, and flow rate) and control points (for example, a valve actuator) from the recorder or indicator at the central control panel. { blend

A process control arrangement that separates the in-plant measuring points (for example, pressure, temperature, and flow rate) and control points (for example, a valve actuator) from the recorder or indicator at the central control panel. { blend

A process control arrangement that separates the in-plant measuring points (for example, pressure, temperature, and flow rate) and control points (for example, a valve actuator) from the recorder or indicator at the central control panel. { blend

A process control arrangement that separates the in-plant measuring points (for example, pressure, temperature, and flow rate) and control points (for example, a valve actuator) from the recorder or indicator at the central control panel. { blend

A process control arrangement that separates the in-plant measuring points (for example, pressure, temperature, and flow rate) and control points (for example, a valve actuator) from the recorder or indicator at the central control panel. { blend

A process control arrangement that separates the in-plant measuring points (for example, pressure, temperature, and flow rate) and control points (for example, a valve actuator) from the recorder or indicator at the central control panel. { blend
block brake

a rope or other flexible material and independently rotating frictionless pulleys. Also known as block and fall. { 'blák an'fák-oıl }

block brake [MECH ENG] A brake which consists of a block or shoe of wood bearing upon an iron or steel wheel. { 'blák ,brák }

block diagram [ENG] A diagram in which the essential units of any system are drawn in the form of rectangles or blocks and their relation to each other is indicated by appropriate connecting lines. { 'blák ,dr'-ə-grăm }

blocked operation [CHEM ENG] The use of a single chemical or refinery process unit alternately in more than one operation; for example, a catalytic reactor will first produce a chemical product and then will be blocked from the main process stream during catalyst regeneration. { 'blált áp-ra'-shàn }

blocked resistance [ENG ACOUS] Resistance of an audio-frequency transducer when its moving elements are blocked so they cannot move; represents the resistance due only to electrical losses. { 'blált r'iz-ə-tans }

blocker-type forging [ENG] A type of forging designs involving the use of large radii and draft angles, smooth contours, and generous allowances. { 'blált-ə-r, ˈrip 'for-ən'ʃən' }

block hole [ENG] A small hole drilled into a rock or boulder into which an anchor bolt or a small charge or explosive may be placed; used in quarries for breaking large blocks of stone or boulders. { 'blák ,hōl }

blockhouse [ENG] 1. A reinforced concrete structure, often built underground or half-underground, and sometimes dome-shaped, to provide protection against blast, heat, or explosion during rocket launchings or related activities, and usually housing electronic equipment used in launching the rocket. 2. The activity that goes on in such a structure. { 'blák ,hō·səs }

blocking [ELECTR] 1. Applying a high negative bias to the grid of an electron tube to reduce its anode current to zero. 2. Overloading a receiver by an unwanted signal so that the automatic gain control reduces the response to a desired signal. 3. Distortion occurring in a resistance-capacitance-coupled electron tube amplifier stage when grid current flows in the following tube. [ENG] Undesired adhesion between layers of plastic materials in contact during storage or use. { 'blák-ən'jən' }

blocking capacitor See coupling capacitor. { 'blák-ən' kə'päs-əd-ər' }

blocking layer See depletion layer. { 'blák-ən' ˈlār' }

block plane [DES ENG] A small type of hand plane, designed for cutting across the grain of the wood and for planing end grains. { 'blák ,plän' }

block section [CIV ENG] In a railroad system, a specific length of track that is controlled by stop signals. { 'blák ,sék-shàn }

block signal system [CONT SYS] An automatic railroad traffic control system in which the track is sectionalized into electrical circuits to detect the presence of trains, engines, or cars. { 'blák ˈsīg-nəl, ˈsīz-ə-təm' }

block system [CIV ENG] A railroad system for controlling train movements by using signals between block posts, that is, the structures that contain the instruments indicating the positions of trains, conditions within block sections, and control levers for signals and other functions. { 'blák ,sīz-ə-təm' }

blood bank [ENG] A place for storing whole blood or plasma under refrigeration. { 'blád ,bānk' }

bloom [ENG] 1. Fluorescence in lubricating oils or a cloudy surface on varnished or enameled surfaces. 2. To apply an antireflection coating to glass. { 'blōm' }

blotter [ENG] A disk of compressible material used between a grinding wheel and its flanges to avoid concentrated stress. { 'blād-ər' }

blotter press [CHEM ENG] A plate-and-frame filter in which the filter medium is blotting paper. { 'bléd-ər' ,ˈpreshər' }

blowback [CHEM ENG] 1. A continuous stream of liquid or gas bled through air lines from instruments and to the process line being monitored; prevents process fluid from backing up and contacting the instrument. 2. Reverse flow of fluid through a filter medium to remove caked solids. Also known as backwash. [MECH ENG] See blowdown. { 'blô, bāk' }

blowby [MECH ENG] Leaking of fluid between a cylinder and its piston during operation. { 'blô, bī' }

blowcase [CHEM ENG] A cylindrical or spherical corrosion- and pressure-resistant container from which acid is forced by compressed air to the agitator, used in manufacture of acids but largely superseded by centrifugal pumps. Also known as acid blowcase; acid egg. { 'blô,kās' }

blowdown [CHEM ENG] Removal of liquids or solids from a process vessel or storage vessel or a line by the use of pressure. [MECH ENG] The difference between the pressure at which the safety valve opens and the closing pressure. Also known as blowback. { 'blô, daʊn' }

blowdown line [CHEM ENG] A large conduit to receive and confine fluids forced by pressure from process vessels. { 'blô, daʊnˌ lin' }

blowdown stack [CHEM ENG] A vertical stack or chimney into which the contents of a chemical or petroleum process unit are emptied in case of an operational emergency. { 'blô, daʊnˌ stak' }

blower [MECH ENG] A fan which operates where the resistance to gas flow is predominantly downstream of the fan. { 'blô-ər' }

blowing [CHEM ENG] The introduction of compressed air near the bottom of a tank or other container in order to agitate the liquid therein. [ENG] See blow molding. { 'blô-ən' }

blowing pressure [ENG] Pressure of the air or other gases used to inflate the parison in blow molding. { 'blô-ənˌ prəshər' }

blowing still [CHEM ENG] A still or process column in which blown or oxidized asphalt is made. { 'blô-ənˌ stil' }
body cone
body force
during Poinset motion. Also known as polhode cone. {‘bâd-ê, kûn’}

body force {MECH} An external force, such as gravity, which acts on all parts of a body. {‘bâd-ê’ foris’}

body-load aggregate {IND ENG} A biomechanical unit that comprises the combined weight of the load being manipulated and the body segments involved in the task. {‘bâd-ê’ lôd ‘a-gra-gat’}

body motion {IND ENG} Motion of parts of a human body requiring a change of posture or weight distribution. {‘bâd-ê’ mô-shan’}

body rotation {CONT SYS} An axis of motion of a pick-and-place robot. {‘bâd-ê’ rô’lô-shan’}

bogie Also spelled bogey, boggy. {ENG} 1. A supporting and aligning wheel or roller on the inside of an endless track. 2. A low truck or cart of solid build. 3. A truck or axle to which wheels are fixed, which supports a railroad car, the leading end of a locomotive, or the end of a vehicle (such as a gun carriage) and which is allowed to swivel under it. 4. A railroad car or locomotive supported by a bogie. {MECH ENG} The drive-wheel assembly and supporting frame comprising the four rear wheels of a six-wheel truck, mounted so that they can self-adjust to sharp curves and irregularities in the road. {‘bô-gê’}

boiler {MECH ENG} A water heater for generating steam. {‘bôil-ô’r}

boiler air heater {MECH ENG} A component of a steam-generating unit that transfers heat from the products of combustion after they have passed through the steam-generating and superheating sections to combustion air, which recycles heat to the furnace. {‘bôil-ô’r’ er, hêd-ôr’}

boiler casing {MECH ENG} The gas-tight structure surrounding the component parts of a steam generator. {‘bôil-ô’r’ kâs-îq’}

boiler circulation {MECH ENG} Circulation of water and steam in a boiler, which is required to prevent overheating of the heat-absorbing surfaces; may be provided naturally by gravitational forces, mechanically by pumps, or by a combination of both methods. {‘bôil-ô’r’ sar-kyä-lâ-shan’}

boiler cleaning {ENG} A mechanical or chemical process for removal of grease, scale, and other deposits from steam boiler surfaces. {‘bôil-ô’r’ klen-îq’}

boiler code {MECH ENG} A code, established by professional societies and administrative units, which contains the basic rules for the safe design, construction, and materials for steam-generating units, such as the American Society of Mechanical Engineers code. \{‘bôil-ô’r’ kód’\}

boiler controls {MECH ENG} Either manual or automatic devices which maintain desired boiler operating conditions with respect to variables such as feedwater flow, firing rate, and steam temperature. \{‘bôil-ô’r’ kan’trôla’\}

boiler draft {MECH ENG} The difference between atmospheric pressure and some lower pressure existing in the furnace or gas passages of a steam-generating unit. \{‘bôil-ô’r’ draft’\}

boiler economizer {MECH ENG} A component of a steam-generating unit that transfers heat from the products of combustion after they have passed through the steam-generating and superheating sections to the feedwater, which it receives from the boiler feed pump and delivers to the steam-generating section of the boiler. \{‘bôil-ô’r’ i’kän-ô, miz-ôr’\}

boiler efficiency {MECH ENG} The ratio of heat absorbed in steam to the heat supplied in fuel, usually measured in percent. \{‘bôil-ô’r’ i’lish-ôn-se’\}

boiler feedwater {MECH ENG} Water supplied to a steam-generating unit. \{‘bôil-ô’r’ fêd wôd-ôr’\}

boiler feedwater regulation {MECH ENG} Addition of water to the steam-generating unit at a rate commensurate with the removal of steam from the unit. \{‘bôil-ô’r’ fêd, wôd-ôr’ reg-yâl-lâ-shan’\}

boiler furnace {MECH ENG} An enclosed space provided for the combustion of fuel to generate steam in a boiler. Also known as steam-generating furnace. \{‘bôil-ô’r’ las-nas’\}

boiler heat balance {MECH ENG} A means of accounting for the thermal energy entering a steam-generating system in terms of its ultimate useful heat absorption or thermal loss. \{‘bôil-ô’r’ hêt, bal-ôns’\}

boiler horsepower {MECH ENG} A measurement of water evaporation rate. 1 boiler horsepower equals the evaporation per hour of 34.5 pounds (15.7 kilograms) of water at 212°F (100°C) into steam at 212°F. Abbreviated bhp. \{‘bôil-ô’r’ hôr’s, pau-ôr’\}

boiler hydrostatic test {MECH ENG} A procedure that employs water under pressure, in a new boiler before use or in old equipment after major alterations and repairs, to test the boiler’s ability to withstand about 1 1/2 times the design pressure. \{‘bôil-ô’r’ hî-drà-stad-îk’ test’\}

boiler layup {MECH ENG} A significant length of time during which a boiler is inoperative in order to allow for repairs or preventive maintenance. \{‘bôil-ô’r’ lâ-ap’\}

boiler setting {MECH ENG} The supporting steel and gastight enclosure for a steam generator. \{‘bôil-ô’r’ sed-îq’\}

boiler storage {MECH ENG} A steam-generating unit that, when out of service, may be stored wet (filled with water) or dry (filled with protective gas). \{‘bôil-ô’r’ stô-rî\}

boiler superheater {MECH ENG} A boiler component, consisting of tubular elements, in which heat is added to high-pressure steam to increase its temperature and enthalpy. \{‘bôil-ô’r’ śî-par, hêd-ôr’\}

boiler trim {MECH ENG} Piping or tubing close to or attached to a boiler for connecting controls, gages, or other instrumentation. \{‘bôil-ô’r’ trim’\}

boiler tube {MECH ENG} One of the tubes in a boiler that carry water (water-tube boiler) to be heated by the high-temperature gaseous products of combustion or that carry combustion
products (fire-tube boiler) to heat the boiler water that surrounds them.  

**boiler**  

**boiler walls**  

**boiler water**  

**boil off**  

**bolster**  

**bolster plate**  

**bolt**  

**bolt blank**  

**bolted joint**  

**bolted rail crossing**  

**bolting**  

**b bolt sleeve**  

**Boltzmann engine**  

**bomb ballistics**  

**bomb calorimeter**  

**bombproof**  

**bomb shelter**  

**bomb test**  

**bond course**  

**bonded strain gage**  

**bonded transducer**  

**bonder**  

**bonding strength**  

**Bond’s law**

---

**Bond’s law**  

A calorimeter designed with a strong-walled container constructed of a corrosion-resistant alloy, called the bomb, immersed in about 2.5 liters of water in a metal container, the sample, usually an organic compound, is ignited by electricity, and the heat generated is measured.  

**bombproof**  

Referring to shelter, building, or other installation resistant or impervious to the effects of bomb explosions.  

**bomb shelter**  

A bomb-proof structure for protection of people.  

**bond test**  

A leak-testing technique in which the vessel to be tested is immersed in a pressurized fluid which will be driven through any leaks present.  

**bond**  

A piece of building material that serves to unite or bond, such as an arrangement of masonry units.  

**Bond and Wang theory**  

A theory of crushing and grinding from which the energy, in horsepower-hours, required to crush a short ton of material is derived.  

**bond course**  

A course of headers to bond the facing masonry to the backing masonry.  

**bonded strain gage**  

A strain gage in which the resistance element is a fine wire, usually in zigzag form, embedded in an insulating backing material, such as impregnated paper or plastic, which is cemented to the pressure-sensing element.  

**bonded transducer**  

A transducer which employs a bonded strain gage for sensing pressure.  

**bonder**  

See bondstone.  

**bonding strength**  

Structural effectiveness of adhesives, welds, solders, glues, or of the chemical bond formed between the metallic and ceramic components of a cermet, when subjected to stress loading, for example, shear, tension, or compression.  

**Bond’s law**  

A statement that relates the work required for the crushing of solid materials (for example, rocks and ore) to the product size and surface area and the lengths...
Bond's third theory

of cracks formed. Also known as Bond's third theory. (ˈbænd ˈθɜːrd ˈbreɪdər)

Bond's third theory See Bond's law. (ˈbænd ˈθɜːrd ˈbreɪdər)

bondstone [BUILD] A stone joining the coping above a gable to the wall. [CIV ENG] A ma-
sonry stone set with its longest dimension perpendicu-
lar to the face wall to bind the wall to-
gether. Also known as bonder. (ˈbænd,ˈstɒn)

bond strength [ENG] The amount of adhesion between bonded surfaces measured in terms of
the stress required to separate a layer of material from the base to which it is bonded. (ˈbænd
ˌstrength)

bond timber [BUILD] A section of wood built horizontally into a brick or stone wall in order to
strengthen it or to hold it together during construction. (ˈbændˌ,tim-ˈbar)

boom [ENG] 1. A row of joined floating timbers
that extend across a river or enclose an area of
water for the purpose of keeping saw logs

See boom dog. {ˈbʊmˌˈræt)

boomerang sediment corer [ENG] A device, de-
signed for nighttime recovery of a sediment core,
which automatically returns to the surface after
taking the sample. {ˈbuːˈmɑrəŋ ˈsed-ə-mənt,
ˌˈkɔr-ər)

boom ratchet See boom dog. {ˈbʊmˌˈræt-
ət}

boom stop [MECH ENG] A steel projection on
a crane that will be struck by the boom if it is
raised or lowered too great a distance. {ˈbʊmˌˈstæp}

Boord synthesis [CHEM ENG] A method of pro-
ducing alpha olefins by the reduction of alpha
bromo ethers with zinc. {ˈboʊrdˌsin-ˈθa-səs)

boost [ELECTR] To augment in relative inten-
sity, as to boost the bass response in an audio

system. [ENG] To bring about a more potent
explosion of the main charge of an explosive by
using an additional charge to set it off. (ˈbʊst)

booster [ELEC] A small generator inserted in
series or parallel with a larger generator to main-
tain normal voltage output under heavy loads.
[ELECTR] 1. A separate radio-frequency ampli-
der connected between an antenna and a tele-
vision receiver to amplify weak signals. 2. A
radio-frequency amplifier that amplifies and re-
broadcasts a received television or communica-
tion radio carrier frequency for reception by the
general public. [MECH ENG] A compressor
that is used as the first stage in a cascade refrig-
erating system. (ˈbʊs-ˈtɑr)

booster brake [MECH ENG] An auxiliary air
chamber, operated from the intake manifold vac-
uum, and connected to the regular brake pedal,
so that less pedal pressure is required for brak-
ing. (ˈbʊs-ˈtɑrˌbrɑk)

booster ejector [MECH ENG] A nozzle-shaped
apparatus from which a high-velocity jet of steam
is discharged to produce a continuous-flow vac-
uum for process equipment. (ˈbʊs-ˈtɑrˌˈeɪ-
ˈdər)

booster fan [MECH ENG] A fan used to increase
either the total pressure or the volume of flow.
(ˈbʊs-ˈtɑrˌˈfæn)

booster pump [MECH ENG] A machine used to
increase pressure in a water or compressed-air
pipe. (ˈbʊs-ˈtɑrˌˈpʌmp)

booster stations [ENG] Booster pumps or com-
pressors located at intervals along a liquid-prod-
ucts or gas pipeline to boost the pressure of the
flowing fluid to keep it moving toward its

destination. (ˈbʊs-ˈtɑrˌˈsteɪ-
ˈʃɑnəz)

bootjack [ENG] A fishing tool used in drilling
wells. {ˈbʊtˌˈdək}

bootstrap [ENG] A technique or device de-
signed to bring itself into a desired state by
means of its own action. (ˈbʊtˌˈstræp)

bootstrap circuit [ELECTR] A single-stage am-
plifier in which the output load is connected
between the negative end of the anode supply
and the cathode, while signal voltage is applied
between grid and cathode; a change in grid volt-
age changes the input signal voltage with respect
to ground by an amount equal to the output
signal voltage. (ˈbʊtˌˈstræpˌˈsɔr-ˈkɑt)

bootstrap driver [ELECTR] Electronic circuit
used to produce a square pulse to drive the mod-
ulator tube, the duration of the square pulse is
determined by a pulse-forming line. (ˈbʊtˌˈstræpˌˈdrɪv-ər)

bootstrap integrator [ELECTR] A bootstrap
sawtooth generator in which an integrating am-
pplier is used in the circuit. Also known as
Miller generator. (ˈbʊtˌˈstræpˌˈɪn-ˈtər,
ˈgræd-ər)

bootstrap strapping [ELECTR] A technique for lifting
a generator circuit above ground by a voltage
value derived from its own output signal. (ˈbʊtˌˈstræpˌˈɪŋ)

bootstrap sawtooth generator [ELECTR] A cir-
cuit capable of generating a highly linear positive
sawtooth waveform through the use of boot-
strapping. (ˈbʊtˌˈstræpˌˈsoʊˌˈtʊfˌˈjen-
ə,ˈræd-ər)

bore [DES ENG] Inside diameter of a pipe or
tube. [MECH ENG] 1. The diameter of a pis-
ton-cylinder mechanism as found in reciprocating
engines, pumps, and compressors. 2. To
penetrate or pierce with a rotary tool. 3. To
machine a workpiece to increase the size of an
existing hole in it. {ˈbɔr}

borehole See drill hole. {ˈbɔrˌˈhol}
borehole bit [ENG] See nondrilling bit. { ‘bɔːr,holə ,bit } 
borehole logging [ENG] The technique of investigatable recording and recording the character of the formation penetrated by a drill hole in mineral exploration and exploitation work. Also known as drill-hole logging. { ‘bɔːr,holə ,lɔːdʒ-ɪŋ } 
borehole survey [ENG] Also known as drill-hole survey. 1. Determining the course of and the target point reached by a borehole, using an azimuth-and-dip recording apparatus small enough to be lowered into a borehole. 2. The record of the information thereby obtained. { ‘bɔːr,holə ,sər-va } 
borer [MECH ENG] An apparatus used to bore openings into the earth up to about 8 feet (2.4 meters) in diameter. { ‘bɔːr-ər } 
borescope [ENG] A straight-tube telescope using a mirror or prism, used to visually inspect a cylindrical cavity, such as the cannon bore of artillery weapons for defects of manufacture and erosion caused by firing. { ‘bɔːr,kɔp } 
boresighting [ENG] Initial alignment of a directional microwave or radar antenna system by using an optical procedure or a fixed target at a known location. { ‘bɔːr,sɪd-ɪŋ } 
boring bar [MECH ENG] A rigid tool holder used to machine internal surfaces. { ‘bɔːr-ɪŋ ,bɑːr } 
boring log See drill log. { ‘bɔːr-ɪŋ ,lɑːg } 
boring machine [MECH ENG] A machine tool designed to machine internal work such as cylinders, holes in castings, and dies. Types are horizontal, vertical, jig, and single. { ‘bɔːr-ɪŋ mə ′ʃen } 
boring mill [MECH ENG] A boring machine tool used particularly for large workpieces, types are horizontal and vertical. { ‘bɔːr-ɪŋ ,mɪl } 
borrow [CIV ENG] Earth material such as sand and gravel that is taken from one location to be used as fill at another. { ‘bɑːr-əʊ } 
borrow pit [CIV ENG] An excavation dug to provide material (borrow) for fill elsewhere. { ‘bɑːr-əʊ ,pɪt } 
bort bit See diamond bit. { ‘bɔːrt ,pɪt } 
Bosch fuel injection pump [MECH ENG] A pump in the fuel injection system of an internal combustion engine, whose pump plunger and barrel are a very close lapped fit to minimize leakage. { ‘bɔʃ ,fjuˈlɪn ɪnˈjɛkʃən ,pʌmp } 
Bosch metering system [MECH ENG] A system having a helical groove in the plunger which covers or uncovers openings in the barrel of the pump; most usually applied in diesel engine fuel-injection systems. { ‘bɔʃ ,ˈmed-ə-riŋ ,sɪs-tən } 
boss [DES ENG] Protuberance on a cast metal or plastic part to add strength, facilitate assembly, provide for fastenings, or so forth. { ‘bɒs } 
Boston ridge [BUILD] A method of applying shingles to the ridge of a house by which the shingles alternate in overlap from one side of the ridge to the other. { ‘bɒs-tən ,riː } 
bottle [ENG] A container made from pipe or plate with drawn, forged, or spun end closures, and used for storing or transporting gas. { ‘bɒdəl-əl } 
bottle centrifuge [ENG] A centrifuge in which the mixture to be separated is poured into small bottles or test tubes, they are then placed in a rotor assembly which is spun rapidly. { ‘bɒdəl-əl sen-trə ,fjuːl } 
bottleneck assignment problem [IND ENG] A linear programming problem in which it is required to assign machines to jobs (or vice versa) so that the efficiency of the least efficient operation is maximized. { ‘bɒdəl-əl nɛk səˈsaɪn-ənt prəb-ləm } 
bottle thermometer [ENG] A thermoelectric thermometer used for measuring air temperature, the name is derived from the fact that the reference thermocouple is placed in an insulated bottle. { ‘bɒdəl-əl ˈθɑrˌmɛm-əl-ər } 
bottom blow [ENG] A type of plastics blow molding machine in which air is injected into the parison from the bottom of the mold. { ‘bɒdəl-əm ,bloʊ } 
bottom chord [CIV ENG] Any of the bottom series of truss members parallel to the roadway of a bridge. { ‘bɒdəl-əm ,kɔrd } 
bottom dead center [MECH ENG] The position of the crank of a vertical reciprocating engine, compressor, or pump when the piston is at the end of its downstroke. Abbreviated BDC. { ‘bɒdəl-əm ,ded sen-ˈtɑːr } 
bottom dump [ENG] A construction wagon with movable gates in the bottom to allow vertical discharge of its contents. { ‘bɒdəl-əm ,dʌmp } 
bottomed hole [ENG] A completed borehole, or borehole in which drilling operations have been discontinued. { ‘bɒdəl-əm həʊl } 
bottom flow [ENG] A molding apparatus that forms hollow plastic articles by injecting the blowing air at the bottom of the mold. { ‘bɒdəl-əm ,fləʊ } 
bottoming drill [DES ENG] A flat-ended twist drill designed to convert a cone at the bottom of a drilled hole into a cylinder. { ‘bɒdəl-əm ,drɪl } 
bottoms [CHEM ENG] Residual fractions that remain at the bottom of a fractionating tower following distillation of the lighter components. { ‘bɒdəl-əmz } 
bottler sampler [ENG] Any instrument used to obtain a sample from the bottom of a body of water. { ‘bɒdəl-əm ,sæm-pələr } 
bottom tap [DES ENG] A tap with a chamfer 1 to 1/2 threads in length. { ‘bɒdəl-əm ,tæp } 
boulder buster [ENG] A heavy, pyramidal- or conical-point steel tool which may be attached to the bottom end of a string of drill rods and used to break, by impact, a boulder encountered in a borehole. Also known as boulder cracker. { ‘bʊlər-ˈdɑr ,bɒs-ˌtɑːr } 
boulder cracker See boulder cracker. { ‘bol-ˈdɑr ,krak-ər } 
bounce table [MECH ENG] A testing device which subjects devices and components to impacts such as might be encountered in accidental dropping. { ‘bɒnəs təb-lə } 
boundary [ELECTR] An interface between p- and n-type semiconductor materials, at which
boundary friction
donor and acceptor concentrations are equal. \( \{ \text{baun-dré} \} \)

boundary friction [MECH] Friction between surfaces that are neither completely dry nor completely separated by a lubricant. \( \{ \text{baun-dré frik-shan} \} \)

boundary lubrication [ENG] A lubricating condition that is a combination of solid-to-solid surface contact and liquid-film shear. \( \{ \text{baun-dré lü-bräk-kä-shan} \} \)

boundary monument [ENG] A material object placed on or near a boundary line to preserve and identify the location of the boundary line on the ground. \( \{ \text{baun-dré man-yo-mant} \} \)

boundary survey [ENG] A survey made to establish or to reestablish a boundary line on the ground or to obtain data for constructing a map or plat showing a boundary line. \( \{ \text{baun-dré sar-vä} \} \)

bound vector [MECH] A vector whose line of application and point of application are both prescribed in addition to its direction. \( \{ \text{baund vek-tar} \} \)

Bourdon pressure gage [ENG] A mechanical pressure-measuring instrument employing as its sensing element a curved or twisted metal tube, flattened in cross section and closed. Also known as Bourdon tube. \( \{ \text{bür-dan presh-ar gä} \} \)

Bourdon tube See Bourdon pressure gage. \( \{ \text{bür-dan tüb} \} \)

Boussinesq equation [ENG] A relation used to calculate the influence of a concentrated load on the backfill behind a retaining wall. \( \{ \text{bü-si-nesk ikvä-shan} \} \)

Boussinesq's problem [MECH] The problem of determining the stresses and strains in an infinite elastic body, initially occupying all the space on one side of an infinite plane, and indented by a rigid punch having the form of a surface of revolution with axis of revolution perpendicular to the plane. Also known as Cerruti's problem. \( \{ \text{bü-si-nesk späb-lam} \} \)

Bowden cable [MECH ENG] A wire made of spring steel which is enclosed in a helical casing and used to transmit longitudinal motions over distances, particularly around corners. \( \{ \text{böd-an kä-bal} \} \)

bowl classifier [CHEM ENG] A shallow bowl with a concave bottom so that a liquid-solid suspension can be fed to the center, coarse particles fall to the bottom, where they are raked to a central discharge point, and liquid and fine particles overflow the edges and are collected. \( \{ \text{böl kläs-a-fi-ar} \} \)

bowl mill See bowl-mill pulverizer. \( \{ \text{böl mil} \} \)

bowl-mill pulverizer [MECH ENG] A type of pulverizer which directly feeds a coal-fired furnace, in which springs press pivoted stationary rolls against a rotating bowl grinding ring, crushing the coal between them. Also known as a bowl mill. \( \{ \text{böl mil pal-vä-ri-zar} \} \)

bowl scraper [MECH ENG] A towed steel bowl hung within a fabricated steel frame, running on four or two wheels, transports soil, in addition to spreading and leveling it. \( \{ \text{böl skrap-ar} \} \)

Bow's notation [MECH] A graphical method of representing coplanar forces and stresses, using alphabetical letters, in the solution of stresses or in determining the resultant of a system of concurrent forces. \( \{ \text{böz nó-tä-shan} \} \)

bowstring beam [CIV ENG] A steel, concrete, or timber beam or girder shaped in the form of a bow and string; the string resists the horizontal forces caused by loads on the arch. \( \{ \text{bö bön, bëm} \} \)

box [DES ENG] See boxing. [ENG] A protective covering or housing. \( \{ \text{baks} \} \)

box beam See box girder. \( \{ \text{baks ,bëm} \} \)

box caisson [CIV ENG] A floating steel or concrete box with an open top which will be filled and sunk at a foundation site in a river or seaway. Also known as American caisson; stranded caisson. \( \{ \text{baks ka-san} \} \)

boxcar [ENG] A railroad car with a flat roof and vertical sides, usually with sliding doors, which carries freight that needs to be protected from weather and theft. \( \{ \text{baks kär} \} \)

box-coking test [ENG] A laboratory test which forecasts the quality of coke producible in commercial practice; uses a specially designed sheet-steel box containing about 60 pounds (27 kilograms) of coal in a commercial coke oven. \( \{ \text{baks ,kör-in test} \} \)

box girder [CIV ENG] A hollow girder or beam with a square or rectangular cross section. Also known as box beam \( \{ \text{baks gard-ar} \} \)

box-girder bridge [CIV ENG] A fixed bridge consisting of steel girders fabricated by welding four plates into a box section. \( \{ \text{baks gard-ar ,brij} \} \)

box header boiler [MECH ENG] A horizontal boiler with a front header and rear inclined rectangular header connected by tubes. \( \{ \text{baks ,häd-ar ,boil-ar} \} \)

boxing [DES ENG] The threaded nut for the screw of a mounted auger drill. Also known as box. [ENG] A method of securing shafts solely by slabs and wooden pegs. \( \{ \text{baks in} \} \)

boxing shutter [BUILD] A window shutter which can be folded into a boxlike enclosure or recess at the side of the window frame. \( \{ \text{baks shad-ar} \} \)

box piles [CIV ENG] Pile foundations made by welding together two sections of steel sheet piling or combinations of beams, channels, and plates. \( \{ \text{baks pliz} \} \)

boxplot [IND ENG] In quality control, a graph summarizing the distribution, central value, and variability of a set of data values, used to identify problems (or potential problems) that affect the quality of processes and products. \( \{ \text{baks ,plät} \} \)

box wrench [ENG] A closed-end wrench designed to fit a variety of sizes and shapes of bolt heads and nuts. \( \{ \text{baks rench} \} \)

Boyle's temperature [THERMO] For a given gas, the temperature at which the virial coefficient B in the equation of state \( P = RT [1 + (B/n) + (C/n^2) + ... ] \) vanishes. \( \{ \text{bölz tem-pra-char} \} \)
branch transmittance

branch transmittance [CONT SYS] The amplification of current or voltage in a branch of a network containing nonlinear elements. In nonlinear circuits, some sets of feasible solutions are divided into subsets, and others having bounds inferior to others are rejected. {'branch \land \text{tek\'nēk}'}

branch [ELEC] A portion of a network consisting of one or more two-terminal elements in series. Also known as arm. {'branch \lvert \text{fish\-'an-sē}'}

branch gain See branch transmittance. {'branch \land \text{gān}'}

branch line [CIV ENG] A secondary line in a railroad system that connects to the main line. {'branch \land \text{lin}'}

branch sewer [CIV ENG] A part of a sewer system that is larger in diameter than the lateral sewer system, receives sewage from both house connections and lateral sewers. {'branch \lvert \text{šū\-'ar}'}

branch transmittance [CONT SYS] The amplification of current or voltage in a branch of an electrical network, used in the representation of

bpd See barrels per day

bpm See barrels per month

brace [DES ENG] A cranklike device used for turning a bit. {'bräsk\'ən\'bit'}

braced framing [CIV ENG] Framing a building with post and braces for stiffness. {'bräsk\'frām\-'ing}

bracing motion [CONT SYS] A type of robotic motion that employs legs or other equipment to help the manipulator move in its working environment. {'brāsk\'kē\-'dād\-'ing \mō\-'shan'}

brachial arch [CIV ENG] A type of steel arch, usually used in bridge construction, which has a system of diagonal bracing. {'bräsk\'rib\-'arch'}

bracket [ENG] A cross handle attached at the top of a column of drill rods by means of which the rods and attached bit are turned after each drop in chop-and-wash operations while sinking a borehole through overburden. Also known as brace key. {'bräsk\'hēd'}

brake key See brace head.

brake pile See batter pile.

brachiating robot [CONT SYS] A robot that is capable of moving over the surface of an object. {'brāsk\'kē\-'dād\-'ing \rō\-'bāt'}

brachistochrone [MECH ENG] The curve along which a smooth sliding particle, under the influence of gravity alone, will fall from one point to another in the minimum time. {'bräsk\'kis\-'tā \kron'}

bracing [ENG] The act or process of strengthening or making rigid. {'bräsk\-'ing}

bracket [BUILD] A vertical board to support the tread of a stair. {'bräsk\-'st̩'}

brad [DES ENG] A small finishing nail whose body either is of uniform thickness or is tapered. {'brād'}

bradding [ENG] A distortion of a bit tooth caused by the application of excessive weight, causing the tooth to become dull so that its softer inner portion caves over the harder case area. {'brād\-'ing'}

Bragg spectrometer [ENG] An instrument for x-ray analysis of crystal structure and measuring wavelengths of x-rays and gamma rays, in which a homogeneous beam of x-rays is directed on the known face of a crystal and the reflected beam is detected in a suitably placed ionization chamber. Also known as crystal spectrometer, crystal-diffraction spectrometer, ionization spectrometer. {'bräsk spek\'trām\-'dār}
such a network by a signal-flow graph. Also known as branch gain.  {branch trans'mit-ans}

**brandy**  [CHEM ENG] A potable alcoholic beverage distilled from wine or fermented fruit juice, usually after the aging of the wine in wooden casks; cognac is a brandy distilled from wines made from grapes from the Cognac region of France.  {ˈbrændi}

**Brayton cycle**  [THERMO] A thermodynamic cycle consisting of two constant-pressure processes interspersed with two constant-entropy processes. Also known as complete-expansion diesel cycle, Joule cycle.  {ˈbreɪtən, ˈbreɪ-}

**braze**  [MECH ENG] A metal cutting tool made of a material different from the shank to which it is brazed.  {ˈbræz}  [ˈbreɪzd ŋ ˈʃæŋk ˈtʊl]

**breathing**  [MECH ENG] The space between the end of the tubing and the jacket of a hot-water or steam boiler.  {ˈbreɪðɪŋ}

**breadboard model**  [ENG] Uncased assembly of an instrument or other piece of equipment, such as a radio set, having its parts laid out on a flat surface and connected together to permit a check or demonstration of its operation.  {ˈbreɪd, bɔrd ˌmæd-əl}

**breakaway wrist**  [CONT SYS] A robotic wrist that has a safety feature that guarantees its protection from damage if too much force is exerted on the wrist or end effector.  {ˈbreɪk-əˌwɔd, ˈrist}

**break-bulk cargo**  [IND ENG] Miscellaneous goods packed in boxes, bales, crates, cases, bags, cartons, barrels, or drums, may also include lumber, motor vehicles, pipe, steel, and machinery.  {ˈbrækˌbɑkˌkɔrəˌɡoʊ}

**breakdown**  [ELEC] A large, usually abrupt rise in electric current in the presence of a small increase in voltage; can occur in a confined gas or steam boiler.  {ˈbreɪkˌdɔrn}

**breakdown diode**  [ELEC] A semiconductor diode in which the reverse-voltage breakdown mechanism is based either on the Zener effect or the avalanche effect.  {ˈbreɪkˌdɔrnˌdɪJoʊd}

**breakdown impedance**  [ELECTR] Of a semiconductor, the small-signal-impedance at a specified direct current in the breakdown region.  {ˈbreɪkˌdoʊkˌɪmpɛd-əns}

**breakdown potential**  See breakdown voltage.  {ˈbreɪkˌdoʊkˌpɑtˈen-ʃəl}

**breakdown region**  [ELECTR] Of a semiconductor diode, the entire region of the volt-ampere characteristic beyond the initiation of breakdown for increasing magnitude of bias.  {ˈbreɪkˌdoʊkˌrēˈɪən}

**breakdown voltage**  [ELEC] 1. The voltage measured at a specified current in the electrical breakdown region of a semiconductor diode. Also known as Zener voltage.  2. The voltage at which an electrical breakdown occurs in a dielectric.  3. The voltage at which an electrical breakdown occurs in a gas. Also known as breakdown potential; sparking potential; sparking voltage.  {ˈbreɪkˌdoʊkˌvɑlˈtɪəj}

**breaker cam**  [MECH ENG] A rotating, engine-driven device in the ignition system of an internal combustion engine which causes the breaker points to open, leading to a rapid fall in the primary current.  {ˈbreɪkˌkɔrˌkæm}

**breaker plate**  [ENG] In plastics die forming, a perforated plate at the end of an extruder head, often used to support a screen to keep foreign particles out of the die.  {ˈbreɪkˌkɔrˌpleɪt}

**break-even analysis**  [IND ENG] Determination of the break-even point.  {ˈbreɪkˌevnˈænalɪsɪs}

**break-even point**  [IND ENG] The point at which a company neither makes a profit nor suffers a loss from the operations of the business, and at which total costs are equal to total sales volume.  {ˈbreɪkˌevnˌpɔɪnt}

**break frequency**  [CONT SYS] The frequency at which a graph of the logarithm of the amplitude of the frequency response versus the logarithm of the frequency has an abrupt change in slope. Also known as corner frequency, knee frequency.  {ˈbreɪkˌfriˈkwɔn-seɪ}

**breaking load**  [MECH] The stress which, when steadily applied to a structural member, is just sufficient to break or rupture it. Also known as ultimate load.  {ˈbreɪkˌɪŋˌləd}

**breaking pin device**  [ENG] A device designed to relieve pressure resulting from inlet static pressure by the fracture of a loaded part of a pin.  {ˈbreɪkˌɪŋˌpinˌdɪˈvɪs}

**breaking strength**  [MECH] The ability of a material to resist breaking or rupture from a tension force.  {ˈbreɪkˌɪŋˌstreŋkθ}

**breaking stress**  [MECH] The stress required to fracture a material whether by compression, tension, or shear.  {ˈbreɪkˌɪŋˌstres}

**breakout**  [ELEC] A joint at which one or more conductors are brought out from a multiconductor cable.  [ENG] Failure or collapse of a borehole wall due to stress anisotropy.  {ˈbrækˌkɔɪt}

**breakout schedule**  [IND ENG] A schedule for a construction job site, generally in the form of a bar chart, that communicates detailed day-to-day activities to all working levels on the project.  {ˈbrækˌauˌskjēˈəl}

**breakover**  [ELECTR] In a silicon controlled rectifier or related device, a transition into forward conduction caused by the application of an excessively high anode voltage.  {ˈbrækˌkɔˌvɔr}

**breakover voltage**  [ELECTR] The positive anode voltage at which a silicon controlled rectifier switches into the conductive state with gate circuit open.  {ˈbrækˌkɔˌvɔrˌvɑlˈtɪəj}

**breakpoint**  [CHEM ENG] See breakthrough.  [IND ENG] In a time study, the end of an element in a work cycle and the point at which a reading is made. Also known as end point; reading point.  {ˈbreɪkˌpɔɪnt}

**breakthrough**  [CHEM ENG] 1. A localized break in a filter cake or precoat that permits fluid to pass through without being filtered. Also known as breakpoint.  2. In an ion-exchange system, the first appearance of unadsorbed ions of the type which deplete the activity of the resin.
bridge vibration
bridgewall

bridgewall  [MECH ENG] A wall in a furnace over which the products of combustion flow. \(\text{["brɪd-wɔːl"]}\)

bridging amplifier  [ELECTR] Amplifier with an input impedance sufficiently high so that its input may be bridged across a circuit without substantially affecting the signal level of the circuit across which it is bridged. \(\text{["brɪd-ɪŋ əm-plə-fi-ər"]}\)

bridging connection  [ELECTR] Parallel connection by means of which some of the signal energy in a circuit may be withdrawn frequently, with imperceptible effect on the normal operation of the circuit. \(\text{["brɪd-ɪŋ ək-ər-ni-kən-shən"]}\)

bridging loss  [ELECTR] Loss resulting from bridging an impedance across a transmission system; quantitatively, the ratio of the signal power delivered to that part of the system following the bridging point, and measured before the bridging, to the signal power delivered to the same part after the bridging. \(\text{["brɪd-ɪŋ əlʊs"]}\)

bridle  [ENG] A pumping unit cable that is looped over the horse head and then connected to the carrier bar, supports the polished-rod clamp. \(\text{["brɪd-əl"]}\)

bridled-cup anemometer  [ENG] A combination cup anemometer and pressure-plate anemometer, consisting of an array of cups about a vertical axis of rotation, the free rotation of which is restricted by a spring arrangement; adjustment of the force constant of the spring, an angular displacement, can be obtained which is proportional to wind velocity. \(\text{["brɪd-əld ˌkæp əˌməm-əd-ər"]}\)

Briggs equalizer  [ENG] A breathing device consisting of head harness, mouthpiece, nose clip, corrugated breathing tube, an equalizing device, 120 feet (37 meters) of reinforced air tubes, and a strainer and spike. \(\text{["brɪgz əˈkwəˌlɪz-ər"]}\)

Briggs pipe thread  [ENG] See American standard pipe thread. \(\text{["brɪgz əˌpɪp ˈθrɛd"]}\)

brightness temperature  [ENG] blackbody temperature. \(\text{["brɪt-nəs ˌtem-prə-ʃər"]}\)

brine cooler  [MECH ENG] The unit for cooling brine in a refrigeration system; the brine usually flows through tubes or pipes surrounded by evaporating refrigerant. \(\text{["brɪn ˌkɪl-ər"]}\)

Brinell number  [ENG] A hardness rating obtained from the Brinell test; expressed in kilograms per square millimeter. \(\text{["brəˈnɛl ˌnɔm-ˈbar"]}\)

Brinell test  [ENG] A test to determine the hardness of a material, in which a steel ball 1 centimeter in diameter is pressed into the material with a standard force (usually 3000 kilograms); the spherical surface area of indentation is measured and divided into the load; the results are expressed as Brinell number. \(\text{["brəˈnɛl ˌtɛst"]}\)

briquetting  [ENG] 1. The process of binding together pulverized minerals, such as coal dust, into briquets under pressure, often with the aid of a binder, such as asphalt. 2. A process or method of mounting mineral core, rock, or metal fragments in an embedding or casting material, such as natural or artificial resins, waxes, metals, or alloys, to facilitate handling during grinding, polishing, and microscopic examination. \(\text{["brɪˈkɛt-ɪŋ"]}\)

brisance index  [ENG] The ratio of an explosive's power to shatter a weight of graded sand as compared to the weight of sand shattered by TNT. \(\text{["brɔzənz ɪnˈdɛks"]}\)

British imperial pound  [MECH] The British standard of mass, of which a standard is preserved by the government. \(\text{["brɪd-ɪʃ imˈpɪr-əl ˈpaʊnd"]}\)

British thermal unit  [THERMO] Abbreviated Btu. 1. A unit of heat energy equal to the heat needed to raise the temperature of 1 pound of air-free water from 60° to 61°F at a constant pressure of 1 standard atmosphere; it is found experimentally to be equal to 1054.1 joules. Also known as sixty degrees Fahrenheit British thermal unit (Btu₆₀/₆₁). 2. A unit of heat energy that is equal to 1/180 of the heat needed to raise 1 pound of air-free water from 32°F (0°C) to 212°F (100°C) at a constant pressure of 1 standard atmosphere; it is found experimentally to be equal to 1055.79 joules. Also known as mean British thermal unit (Btuₚ₉). 3. A unit of heat energy whose magnitude is such that 1 British thermal unit per pound equals 2326 joules per kilogram; it is equal to exactly 1055.05585262 joules. Also known as international table British thermal unit (Btuᵢ). \(\text{["brɪd-ɪʃ ˈθɑr-məl ˌjuːˌnɪ-ˈkæl ˌpaʊnd"]}\)

brittleness  [MECH] That property of a material manifested by fracture without appreciable prior plastic deformation. \(\text{["brɪd-əl-ˈnæs"]}\)

brittle temperature  [THERMO] The temperature point below which a material, especially metal, is brittle; that is, the critical normal stress for fracture is reached before the critical shear stress for plastic deformation. \(\text{["brɪd-əl ˌtem-prə-ʃər"]}\)

Brix degree  [CHEM ENG] A unit of the Brix scale. \(\text{["brɪks dəˈɡriː"]}\)

Brix scale  [CHEM ENG] A hydrometer scale for sugar solutions indicating the percentage by weight of sugar in the solution at a specified temperature. \(\text{["brɪks ˈskæl"]}\)

broach  [MECH ENG] A multiple-tooth, barlike cutting tool; the teeth are shaped to give a desired surface or contour, and cutting results from each tooth projecting farther than the preceding one. \(\text{["brəˈch̩"]}\)

broaching  [ENG] 1. The restoration of the diameter of a borehole by reaming. 2. The breaking down of the walls between two contiguous drill holes. [MECH ENG] The machine-shaping of metal or plastic by pushing or pulling a broach across a surface or through an existing hole in a workpiece. \(\text{["brəˈch̩-ɪŋ"]}\)

broaching bit  [ENG] See reaming bit. \(\text{["brəˈch̩-ɪŋ biːt"]}\)

broken-color work  [ENG] antiquing. \(\text{["brəˈkɑn ˌkal-ər-work"]}\)

bromine test  [CHEM ENG] A laboratory test in which the unsaturated hydrocarbons present in a crude oil are determined by mixing a sample
with bromine, the lower the rate of bromine absorption, the more paraffinic the test sample. (‘brō,mēn’tēst)

bromine value [CHEM ENG] An expression representing the number of centigrams of bromine absorbed by 1 gram of oil under test conditions; an indication of the degree of unsaturation of a given oil. (‘brō,mēn,‘val-yū)

brooming [CIV ENG] A method of finishing uniform concrete surfaces, such as the tops of pavement slabs or floor slabs, by dragging a broom over the surface to produce a grooved texture. (‘brō-ming)

brown acid [CHEM ENG] Oil-soluble petroleum sulfonate found in sludge following sulfuric acid treatment of petroleum products. (‘braʊn‘æ-sd)

brown smoke [ENG] Smoke with less particulates than black smoke; comes from burning fossil fuel, usually fuel oil. (‘braʊn‘smōk)

Brunton See Brunton compass. (‘brʌntən)

Brunton compass [ENG] A compact field compass, with sights and reflector attached, used for geological mapping and surveying. Also known as Brunton; Brunton pocket transit. (‘brʌntən‘kæmp-as)

Brunton pocket transit See Brunton compass. (‘brʌntən‘pæk-ət‘træn-zət)

brush [ELEC] A conductive metal or carbon block used to make sliding electrical contact with a moving part. (‘brəsh)

brush hopper [IND ENG] A rotating brush that wipes quantities of eyelets, rivets, and other small special parts past shaped openings in a chute. (‘brəsh‘hʌp-ər)

brush rake [MECH ENG] A device with heavy-duty tines that is fixed to the front of a tractor or other prime mover for use in land clearing. (‘brəsh‘ræk)

brush-shifting motor [ENG] A category of alternating-current motor in which the brush contacts shift to modify operating speed and power factor. (‘brəsh‘ʃif-tər‘məd-ər)

BSD See barrels per stream day.

B size [ENG] 1. One of a series of sizes to which trimmed paper and board are manufactured, for size BN, with N equal to any integer from 0 to 10, the length of the shorter side is $2^{-N/2}$ meters, and the length of the longer side is $2^{1-N/2}$ meters, with both lengths rounded off to the nearest millimeter. 2. Of a sheet of paper, the dimensions 11 inches by 17 inches (279 millimeters by 432 millimeters). (‘be‘stiz)

BT See bathythermograph.

Btu See British thermal unit.

bu See bushel.

bubble cap [CHEM ENG] A metal cap covering a hole in the plate within a distillation tower, designed to permit vapors to rise from below the plate, pass through the cap, and make contact with liquid on the plate. (‘bəb-əl‘kap)

bubble-cap plate [CHEM ENG] One of the devices in large-diameter fractional distillation columns that are designed to produce a bubbling action to exchange the vapor bubbles flowing up the column. (‘bəb-əl‘kæp‘plæt)

bubble-cap tray See bubble tray. (‘bəb-əl‘træ)

bubble mold cooling [ENG] In plastics injection molding, cooling by means of a continuous liquid stream flowing into a cavity equipped with an outlet at the end opposite the inlet. (‘bəb-əl‘məld‘kəl-ən)

bubble test [ENG] Measurement of the largest opening in a mesh of filter screen, determined by the pressure needed to force air or gas through the screen while it is submerged in a liquid. (‘bəb-əl‘tɛst)

bubble tower [CHEM ENG] A plate tower used in distillation, with plates containing bubble caps. (‘bəb-əl‘tər)

bubble tray [CHEM ENG] A perforated, circular plate placed within a distillation tower at specific places to collect the fractions of petroleum produced in fractional distillation. Also known as bubble-cap tray. (‘bəb-əl‘træ)

bubble-tray column [CHEM ENG] A fractionating column whose plates are formed from bubble caps. (‘bəb-əl‘træ‘kəl-ən)

bubble tube [ENG] The glass tube in a spirit level containing the liquid and bubble. (‘bəb-əl‘tʊb)

buck [BUILD] The frame into which the finished door fits. (‘bæk)

bucket [ENG] 1. A cup on the rim of a Pelton wheel against which water impinges. 2. A reversed curve at the toe of a spillway to deflect the water horizontally and reduce erosiveness. 3. A container on a lift pump or chain pump. 4. A container on some bulk-handling equipment, such as a bucket elevator, bucket dredge, or bucket conveyor. 5. A water outlet in a turbine. 6. See calyx. (‘bæk-ət)

bucket carrier See bucket conveyor. (‘bæk-ət‘kær-ər)

bucket conveyor [MECH ENG] A continuous bulk conveyor constructed of a series of buckets attached to one or two strands of chain or in some instances to a belt. Also called bucket carrier. (‘bæk-ət‘kæn-vər)

bucket dredge [MECH ENG] A floating mechanical excavator equipped with a bucket elevator. (‘bæk-ət‘dri)

bucket elevator [MECH ENG] A bucket conveyor operating on a steep incline or vertical path. Also known as elevating conveyor. (‘bæk-ət‘el-ə,vəd-ər)

bucket excavator [MECH ENG] An elevating scraper, that is, one that does the work of a conventional scraper but has a bucket elevator mounted in front of the bowl. (‘bæk-ət‘el-ə,vəd-ər)

bucket ladder See bucket-ladder dredge. (‘bæk-ət‘ləd-ər)

bucket-ladder dredge [MECH ENG] A dredge whose digging mechanism consists of a ladderlike truss on the periphery of which is attached an endless chain riding on sprocket wheels and carrying attached buckets. Also
bucket-ladder excavator

known as bucket ladder, bucket-line dredge, ladder-bucket dredge, ladder dredge. {ˈbæk-ət ˈlæd-ər, dred-ər}

bucket-ladder excavator See trench excavator. {ˈbæk-ət ˈlæd-ər ˈek-ər-

bucket-line dredge See bucket-ladder dredge. {ˈbæk-ət ˈlæn\-drid\-ər}

bucket loader [MECH ENG] A form of portable, self-feeding, inclined bucket elevator for loading bulk materials into cars, trucks, or other conveyors. {ˈbæk-ət ˈloʊdər}

bucket temperature [ENG] The surface temperature of ocean water as measured by a bucket thermometer. {ˈbæk-ət ˈtem-prə-ˌchar}

bucket thermistor [MECH ENG] A thermometer mounted in a bucket and used to measure the temperature of water drawn into the bucket from the surface of the ocean. {ˈbæk-ət ˈθər-ˌmi-stər}

bucket-wheel excavator [MECH ENG] A continuous digging machine used extensively in large-scale stripping and mining. Abbreviated BWE. Also known as rotary excavator. {ˈbæk-ət ˈwel ˈek-ər-

Buckingham’s equations [MECH ENG] Equations which give the durability of gears and the dynamic loads to which they are subjected in terms of their dimensions, hardness, surface endurance, and composition. {ˈbæk-əm-ən \ˈkwə-ˌzhən\}

buckle plate [ENG] A steel floor plate which is slightly arched to increase rigidity. {ˈbæk-əl \ˈplæt}

Buckley gage [ENG] A device that measures very low gas pressures by sensing the amount of ionization produced in the gas by a predetermined electric current. {ˈbæk-əl \ˈgæ}\n
buckling [ENG] Wrinkling or warping of fibers in a composite material. [MECH] Bending of a sheet, plate, or column supporting a compressive load. {ˈbæk-əl\-ɪən}

buckling stress [MECH] Force exerted by the crippling load. {ˈbæk-əl\-ɪən \ˈstrəs}\n
buckstay [MECH ENG] A structural support for a furnace wall. {ˈbæk-stər}

buffer [ELEC] An electric circuit or component that prevents undesirable electrical interaction between two circuits or components. [ELECTR] 1. An isolating circuit in an electronic computer used to prevent the action of a driven circuit from affecting the corresponding driving circuit. 2. See buffer amplifier. [ENG] A device, apparatus, or piece of material designed to reduce mechanical shock due to impact. {ˈbər\-ər}

buffered FET logic [ELECTR] A logic gate configuration used with gallium-arsenide field-effect transistors operating in the depletion mode, in which the level shifting required to make the input and output voltage levels compatible is achieved with Schottky barrier diodes. Abbreviated BFL. {ˈbər-ərd \ˈfɛlt\-

buffering [ENG] The smoothing and brightening of a surface by an abrasive compound pressed against it by a soft wheel or belt. {ˈbər-əŋ}

buffing wheel [DES ENG] A flexible wheel with a surface of fine abrasive particles for buffing operations. {ˈbər-əŋ \ˈwel\}

bug [ELECTR] 1. A semiautomatic code-send-

buggy See concrete buggy. {ˈbɔg\-ə\-t}

buhrstone mill [MECH ENG] A mill for grinding or pulverizing grain in which a flat siliceous rock (buhrstone), generally of cellular quartz, rotates against a stationary stone of the same material. {ˈbɔr-\ˈstən\ ˈmɪl\}

build [ELECTR] To increase in received signal strength. {ˈbɪld\}

building [CIV ENG] A fixed structure for human occupancy and use. {ˈbɪl\-diŋ\}

building-block approach [IND ENG] A technique for development of a set of standard data by creating fixed groups or modules of work elements that may be added together to obtain time values for elements and entire operations. {ˈbɪld-

building code [CIV ENG] Local building laws to promote safe practices in the design and construction of a building. {ˈbɪl\-diŋ \ˈkəd\}

building dock [CIV ENG] A type of graving dock or basin, usually built of concrete, in which ships are constructed and then floated out through a caisson gate after flooding the dock. {ˈbɪl\-diŋ \ˈdæk\}

building envelope [CIV ENG] The interior, enclosed space of a building. {ˈbɪl\-diŋ \ˈen\-

building footprint See footprint. {ˈbɪl\-diŋ \ˈfʊtˌprɪnt\}

building line [CIV ENG] A designated line beyond which a building cannot extend. {ˈbɪl\-diŋ \ˈlɪn\}

building index See fire-danger meter. {ˈbɪl\-dəp \ˈɪn\-dəks\}

built-in beam See fixed-end beam. {ˈbɪlt\-n \ˈbɛm\}

built-up beam [ENG] A structural steel member that is fabricated by welding or riveting rather than being rolled. {ˈbɪlt\-p \ˈbɛm\}

built-up edge [ENG] Chip material adhering to the tool face adjacent to a cutting edge during cutting. {ˈbɪlt\-p \ˈe\-j}

built-up roof [BUILD] A roof constructed of several layers of felt and asphalt. {ˈbɪlt\-p \ˈrɪf\}

bulb angle [DES ENG] A steel angle iron enlarged to a bulbous thickening at one end. {ˈbʊlb \ˈæŋ-

bulge forming [ENG] A process by which contours are formed on the sides of tubular workpieces by exerting pressure inside the tube to force expansion into a die clamped around the exterior. {ˈbʊln \ˈfɔrm\-\ɪŋ\}

bulk cargo [IND ENG] Cargo which is loaded into a ship’s hold without being boxed, bagged,
or hand stowed, or is transported in large tank spaces. (baulk 'karə,goʊ)  
bulk density [ENG] The mass of powdered or granulated solid material per unit of volume. (baulk 'den-sad-ə)  
bulk diode [ELECTR] A semiconductor microwave diode that uses the bulk effect, such as Gunn diodes and diodes operating in limited space-charge-accumulation modes. (baulk 'di'oʊ)  
bulk effect [ELECTR] An effect that occurs within the entire bulk of a semiconductor material rather than in a localized region or junction. (baulk 'ef-əkt)  
bulk-effect device [ELECTR] A semiconductor device that depends on a bulk effect, as in Gunn and avalanche devices. (baulk 'ef-əkt di'vis)  
bulk factor [ENG] The ratio of the volume of loose powdered or granulated solids to the volume of an equal weight of the material after consolidation into a voidless solid. (baulk 'fæk-tər)  
bulk-handling machine [MECH ENG] Any of a diversified group of materials-handling machines designed for handling unpackaged, divided materials. (baulk 'hend-ə-lin)  
bulkhead line [CIV ENG] The farthest offshore line to which a structure may be constructed without interfering with navigation. (baulk 'hed-'lin)  
bulkhead wharf [CIV ENG] A bulkhead that may be used as a wharf by addition of mooring appurtenances, paving, and cargo-handling facilities. (baulk 'hed-found)  
bulkling value [CHEM ENG] The relative ability of a pigment or other substance to increase the volume of paint. (baulk'ki-g, 'val-yə)  
bulk insulation [ENG] A type of insulation that retards the flow of heat by the interposition of many air spaces and, in most cases, by opacity to radiant heat. (baulk 'in-sa'la-shən)  
bulk material [IND ENG] Material purchased in uniform lots and in quantity for distribution as required for a project. (baulk 'mət-ər-ən)  
bulk micromachining [ENG] A set of processes that enable the three-dimensional sculpting of single-crystal silicon to make small structures that serve as components of microsensors. (baulk 'mɪ-kro-'ma-shən-ən)  
bulk modulus See bulk modulus of elasticity. (baulk 'məd-ə-ləs)  
bulk modulus of elasticity [MECH] The ratio of the compressive or tensile force applied to a substance per unit surface area to the change in volume of the substance per unit volume. Also known as bulk modulus, compression modulus; hydrostatic modulus, modulus of compression; modulus of volume elasticity. (baulk 'məd-ə-ləs 'ələt-ər)  
bulk rheology [MECH] The branch of rheology wherein study of the behavior of matter neglects effects due to the surface of a system. (baulk 'rəl-ə-jə)  
bulk photoconductor [ELECTR] A photoconductor having high power-handling capability and other unique properties that depend on the semiconductor and doping materials used. (baulk 'fə-lo-kən-dək-tər)  
bulk resistor [ELECTR] An integrated-circuit resistor in which the n-type epitaxial layer of a semiconducting substrate is used as a noncritical high-value resistor; the spacing between the attached terminals and the sheet resistivity of the material together determine the resistance value. (baulk 'ris-ə-zər)  
bulk strain [MECH] The ratio of the change in the volume of a body that occurs when the body is placed under pressure, to the original volume of the body. (baulk 'strän)  
bulk strength [MECH] The strength per unit volume of a solid. (baulk 'strəŋθ)  
bulk transport [MECH ENG] Conveying, hoisting, or elevating systems for movement of solids such as grain, sand, gravel, coal, or wood chips. (baulk 'tranz-pərt)  
bulldozer [MECH ENG] A wheeled or crawler tractor equipped with a reinforced, curved steel plate mounted in front, perpendicular to the ground, for pushing excavated materials. (baulk 'dəz-ər)  
bullet [ENG] 1. A conical-nosed cylindrical weight, attached to a wire rope or line, either notched or seated to engage and attach itself to the upper end of a wire line core barrel or other retrievable or retractable device that has been placed in a borehole. Also known as bug: go-devil, overshoot. 2. A scraper with self-adjusting spring blades, inserted in a pipeline and carried forward by the fluid pressure, clearing away accumulations or debris from the walls of a pipe. Also known as go-devil. 3. A bullet-shaped weight or small explosive charge dropped to explode a charge of nitroglycerin placed in a borehole. Also known as go-devil. 4. An electric lamp covered by a conical metal case, usually at the end of a flexible metal shaft. 5. See torpedo. (baulk 'bul-ət)  
bullet drop [MECH] The vertical drop of a bullet. (baulk 'drap)  
bull gear [DES ENG] A bull wheel with gear teeth. (baulk 'gir)  
bulling bar [ENG] A bar for ramming clay into cracks containing blasting charges which are about to be exploded. (baulk 'bär)  
bull nose [BUILD] A rounded external angle, as one used at window returns and doorframes. (baulk 'nəz)  
bull-nose bit See wedge bit. (baulk 'nəz-'bit)  
bull-nose plane [DES ENG] A small rabbet plane used to smooth or shape joints or other places that cannot be reached by larger planes. (baulk 'nəz-'plæn)  
bull wheel [MECH ENG] 1. The main wheel or gear of a machine, which is usually the largest and strongest. 2. A cylinder which has a rope wound about it for lifting or hauling. 3. A wheel attached to the base of a derrick boom which swings the derrick in a vertical plane. (baulk 'wêl)  
Bulygen number [THERMO] A dimensionless
bump contact

number used in the study of heat transfer during evaporation. {ˈbɒɪənˈsɛnˌsoʊnsər}

bump contact [ELECTR] A large-area contact used for allowing directly to the substrate of a transistor for mounting or interconnecting purposes. {ˈbɒmpˌkænt, takt}

bump[ENG] 1. A metal bar attached to one or both ends of a powered transportation vehicle, especially an automobile, to prevent damage to the body. 2. In a drilling operation, the supporting stay between the main foundation sill and the engine block. 3. In drilling, a fishing tool for loosening jammed cable tools. {ˈbɒmpˌpar}

bumping See chugging. {ˈbɒmpˌpiɡ}

bund [CIV ENG] An embankment or embanked thoroughfare along a body of water; particularly for such structures in the Far East. {ˈbaʊnd}

bundling machine [MECH ENG] A device that automatically accumulates cans, cartons, or glass containers for semiautomatic or automatic loading or for shipping cartons by assembling the packages into units of predetermined count and pattern which are then machine-wrapped in paper, film paperboard, or corrugated board. {ˈbaʊndɪŋ məˈʃɛn}

bund wall [ENG] A retaining wall designed to contain the contents of a tank or a storage vessel in the event of a rupture or other emergency. {ˈbændˌwʊl}

bunker [CIV ENG] A bin, often elevated, that is divided into compartments for storing material such as coal or sand. [MECH ENG] A space in a refrigerator designed to hold a cooling element. {ˈbaʊnˌkɑr}

bunkering [ENG] Storage of solid or liquid fuel in containers from which the fuel can be continuously or intermittently withdrawn to feed a furnace, internal combustion engine, or fuel tank, for example, coal bunkering and fuel-oil bunkering. {ˈbaʊnˌkɑrɪŋ}

bunny suit [ENG] Protective clothing worn by an individual who works in a clean room to prevent contamination of equipment and materials. {ˈbaʊnəˌsuːt}

Bunsen burner [ENG] A type of gas burner with an adjustable air supply. {ˈbaʊnˌsɛnˌbaʊnər}

Bunsen ice calorimeter [ENG] Apparatus to gage heat released during the melting of a compound by measuring the increase in volume of the surrounding ice-water solution caused by the melting of the ice. Also known as ice calorimeter. {ˈbaʊnˌsɛn lˈɪksəlˈɑrmədər}

buoy [ENG] An anchored or moored floating object, other than a lightship, intended as an aid to navigation, to attach or suspend measuring instruments, or to mark the position of something beneath the water. {ˈbɔɪ}

buoyancy-type density transmitter [ENG] An instrument which records the specific gravity of a flowing stream of a liquid or gas, using the principle of hydrostatic weighing. {ˈbɔɪənˈsɛnˌtɪpˈdɛnsətiˈtranzˌmaʊstrɪˌtɜrnər}

buoy sensor [ENG ACOUS] A hydrophone used as a sensor in buoy projects; some hydrophone arrays are designed for telemetering. {ˈbɔɪˌsenˈsɔr}

burden [ELEC] The amount of power drawn from the circuit connecting the secondary terminals of an instrument transformer, usually expressed in volt-amperes. [ENG] 1. The distance from a drill hole to the more or less vertical surface of rock that has already been exposed by blasting or excavating. 2. The volume of the rock to be removed by blasting in a drill hole. {ˈbɑrdən}

burglar alarm [ENG] An alarm in which interruption of electrical current to a relay, caused, for example, by the breaking of a metallic tape placed at an entrance to a building, deenergizes the relay and causes the relay contacts to operate the alarm indicator. Also known as intrusion alarm. {ˈbɑrˌglərəˈlɑrm}

buried set-point method [CONT SYS] A procedure for guiding a robot manipulator along a template, in which low-gain servomechanisms apply a force along the edge of the template, while the manipulator's tool is parallel to, and buried below, the template surface. {ˈbɜrdˌsetˌpɔintˌmethˌəd}

burn [ENG] To consume fuel. {ˈbɔrn}

burn cut See parallel cut. {ˈbɔrnˌkɔt}

burner [CHEM ENG] A furnace where sulfur or sulfide ore are burned to produce sulfur dioxide and other gases. [ENG] 1. The part of a fluid-burning device at which the flame is produced. 2. Any burning device used to soften old paint to aid in its removal. 3. A worker who operates a kiln which burns brick or tile. 4. A worker who alters the properties of a mineral substance by burning. 5. A worker who uses a flame-cutting torch to cut metals. [MECH ENG] A unit of a steam boiler which mixes and directs the flow of fuel and air so as to ensure rapid ignition and complete combustion. {ˈbɔrnˌnɔr}

burner windbox [ENG] A chamber surrounding a burner, under positive air pressure, for proper distribution and discharge of secondary air. {ˈbɔrnˌnɔrˌwɪndˈbɒks}

burnettize [ENG] To saturate fabric or wood with a solution of zinc chloride under pressure to keep it from decaying. {ˈboʊrnˌnɛdˌlɛz}

burn-in [ELECTR] Operation of electronic components before they are applied in order to stabilize their characteristics and reveal defects. [ENG] See freeze. {ˈbɔrnˌɪn}

burning [ENG] The firing of clay products placed in a kiln. {ˈbɔrnˌnɪŋ}

burning index See fire-danger meter. {ˈbɔrnˌnɪŋˌɪnˌdɛks}

burning point [ENG] The lowest temperature at which a volatile oil in an open vessel will continue to burn when ignited by a flame held close to its surface, used to test safety of kerosine and other illuminating oils. {ˈbɔrnˌnɪŋˌpɔint}

burning quality [ENG] Rated performance for a burning oil as determined by specified ASTM (American Society for Testing and Materials) tests. {ˈbɔrnˌnɪŋˌkwɔlˌtʃiˈrəŋˌædˌeɪ}

80
burnish [ENG] To polish or make shiny. (‘bar-nish )
burnisher [ENG] A tool with a hard, smooth rounded edge or surface; used for finishing the edges of scraper blades, for smoothing or polishing plastic or metal surfaces, or for other applications requiring manipulation by rubbing. (‘bar-na-shar )
burnout [ELEC] Failure of a device due to excessive heat produced by excessive current. [ENG] An instance of a device or a part overheating so as to result in destruction or damage. (‘bar,naút )
Burnside boring machine [MECH ENG] A machine for boring in all types of ground with the feature of controlling water immediately if it is tapped. (‘bar,ni,st|‘bo,ri-ni ma’shan )
bursting strength [MECH] A measure of the ability of a material to withstand pressure without rupture; it is the hydraulic pressure required to burst a vessel of given thickness. (‘bar-stin|‘strenjikth )
burst pressure [MECH] The maximum inside pressure that a process vessel can safely withstand. (‘bar,t|‘presh-ar )
burton [MECH ENG] A small hoisting tackle with two blocks, usually a single block and a double block, with a hook block in the running part of the rope. (‘bar-tän )
bus [ELEC] 1. A set of two or more electric conductors that serve as common connections between load circuits and each of the polarities (in direct-current systems) or phases (in alternating-current systems) of the source of electric power. 2. See busbar. [ELECTR] One or more conductors in a computer along which information is transmitted from any of several sources to any of several destinations. [ENG] A motor vehicle for carrying a large number of passengers. (‘baß )
bus cable [ELECTR] An electrical conductor that can be attached to a bus to extend it outside the computer housing or join it to another bus within the same computer. (‘bàs ,kà-bal )
bushel [MECH] Abbreviated bu. 1. A unit of volume (dry measure) used in the United States, equal to 2150.42 cubic inches or approximately 35.239 liters. 2. A unit of volume (liquid and dry measure) used in Britain, equal to 2219.36 cubic inches or 8 imperial gallons (approximately 36.369 liters). (‘bush-el )
bush hammer [MECH ENG] A hand-held or power-driven hammer that has a serrated face containing pyramid-shaped points and is used to dress a concrete or stone surface. (‘bush,ham-ar )
bushing [DES ENG] See nipple [ELECTR] See sleeve. [MECH ENG] A removable piece of soft metal or graphite-filled sintered metal, usually in the form of a bearing, that lines a support for a shaft. (‘bush-iij )
Butamer process [CHEM ENG] A method of isomerizing normal butane into isobutane in the presence of hydrogen and a solid, noble-metal catalyst; used to prepare raw material in a gasoline alkyla tion process. (‘byu-də-mər |prəz-əs )
butane dehydrogenation [CHEM ENG] A process to remove hydrogen from butane to produce butene or butadiene. (‘byu-tän ’və-par ,faz tsəm-ə‘ro-zə-shən )
butane vapor-phase isomerization [CHEM ENG] A process to isomerize normal butane into isobutane in the presence of aluminum chloride catalyst and hydrogen chloride promoter. (‘byu-tän ’və-par ,faz tsəm-ə‘ro-zə-shən )
butt [BUILD] The bottom or cover edge of a shingle. [DES ENG] The enlarged and squared-off end of a connecting rod or similar link in a machine. (‘bat )
butterfly damper See butterfly valve. (‘bad-ar|fli |dam-par )
butterfly nut See wing nut. (‘bad-ar|fli ,nät )
butterfly valve [ENG] A valve that utilizes a turnable disk element to regulate flow in a pipe or duct system, such as a hydraulic turbine or a ventilating system. Also known as butterfly damper. (‘bad-ar|fli|valv )
Butterworth filter [ELECTR] An electric filter whose pass band (graph of transmission versus frequency) has a maximally flat shape. (‘bad-ar|warch ’fil-tər )
Butterworth head [MECH ENG] A mechanical hose head with revolving nozzles; used to wash down shipboard storage tanks. (‘bad-ar|warch ,hed )
butt fusion [ENG] The joining of two pieces of plastic or metal pipes or sheets by heating the ends until they are molten and then pressing them together to form a homogeneous bond. (‘bat ,fyu-zhan )
butt gage [ENG] A tool used to mark the outline for the hinges on a door. (‘bat |gā )
butt joint [ELEC] A connection formed by placing the ends of two conductors together and joining them by welding, brazing, or soldering. [ENG] A joint in which the parts to be joined are fastened end to end or edge to edge with one or more cover plates (or other strengthening) generally used to accomplish the joining. (‘bat ,jɔint )
buttock lines [ENG] The lines of intersection of the surface of an aircraft or its float, or of the hull of a ship, with its longitudinal vertical planes. Also known as buttocks. (‘bad-ak|linz )
buttocks See buttoc lines. (‘bad-oks )
button [ELECTR] 1. A small, round piece of metal alloyed to the base wafer of an alloy-junction transistor. Also known as dot. 2. The container that holds the carbon granules of a carbon microphone. Also known as carbon button. (‘bat-an )
button bit  [DES ENG] A drilling bit made with button-shaped tungsten carbide inserts. {ˈbat-ənˌbit}

button die  [DES ENG] A mating member, usually replaceable, for a piercing punch. Also known as die bushing. {ˈbat-ənˌdī}

buttonhead  [DES ENG] A screw, bolt, or rivet with a hemispherical head. {ˈbat-ənˌhēd}

button thread  [DES ENG] A screw thread whose forward face is perpendicular to the screw axis and whose back face is at an angle to the axis, so that the thread is both efficient in transmitting power and strong. {ˈbat-ərəsˌθrēd}

BWE  See bucket-wheel excavator.

BX cable  [ELEC] Insulated wires in flexible metal tubing used for bringing electric power to electronic equipment. {ˈbeks ˈkāˈbal}

bypass  [CIV ENG] A road which carries traffic around a congested district or temporary obstruction. [ENG] A shunt path around some element or elements of a circuit. [ELEC] A shunt path around some element or elements of a circuit. [ENG] An alternating, usually smaller, diversionary flow path in a fluid dynamic system to avoid some device, fixture, or obstruction. {ˈbīˌpās}

bypass channel  [CIV ENG] 1. A channel built to carry excess water from a stream. Also known as flood relief channel; floodway. 2. A channel constructed to divert water from a main channel. {ˈbīˌpāsˌchan-əl}

bypass filter  [ELECTR] Filter which provides a low-attenuation path around some other equipment, such as a carrier frequency filter used to bypass a physical telephone repeater station. {ˈbīˌpāsˌfɪlˈtər}

bypass valve  [ENG] A valve that opens to direct fluid elsewhere when a pressure limit is exceeded. {ˈbīˌpāsˌvalv}

by-product  [ENG] A product from a manufacturing process that is not considered the principal material. {ˈbīˌpräd-əkt}
C

See calorie.  
C[ See capacitance; capacitor, coulomb.  
C² See command and control.  
C³ See command, control, and communications.  
Cab [ENG] In a locomotive, truck, tractor, or hoisting apparatus, a compartment for the operator.  
Cabinet file [DES ENG] A coarse-toothed file with flat and convex faces used for woodworking.  
Cabinet hardware [DES ENG] Parts for the final trim of a cabinet, such as fastening hinges, drawer pulls, and knobs.  
Cabinet saw [DES ENG] A short saw, one edge used for ripping, the other for crosscutting.  
Cabinet scraper [DES ENG] A steel tool with a contoured edge used to remove irregularities on a wood surface.  
Cable [DES ENG] A stranded, ropelike assembly consisting of a cable extended between two or more towers.  
Cable conduit [ENG] A pipe, either earthenware or a bearing. Also known as separator.  
Cable drilling [ENG] A drilling procedure in which a sharply pointed bit attached to a cable is repeatedly picked up and dropped on the bottom of the hole.  
Cable vault [CIV ENG] A manhole containing electrical cables.  
Cableway [MECH ENG] A transporting system consisting of a cable extended between two or more points on which cars are propelled to transport bulk materials for construction operations.  
Cableway carriage [MECH ENG] A trolley that runs on main load cables stretched between two or more towers.  
Cable release [ENG] A wire plunger to actuate the shutter of a camera, thus avoiding undesirable camera movement.  
Cable-stayed bridge [CIV ENG] A modification of the cantilever bridge consisting of girders or trusses cantilevered both ways from a central tower and supported by inclined cables attached to the tower at top or sometimes at several levels.  
Cable system drill [CIV ENG] A trolley that informs the engine operator about conditions affecting train movement.  
Cable tool drilling [ENG] A trolley used for ripping, the other for crosscutting.  
Cable duct [ENG] A pipe, either earthenware or concrete, through which prestressing wires or electric cable are pulled.  
Cable-laid [DES ENG] Consisting of three ropes with a left-hand twist, each rope having three twisted strands.  
Cableman [ENG] A person who installs, repairs, or otherwise works with cables.  
Cable railway [MECH ENG] An inclined track on which rail cars travel, with the cars fixed to an endless steel-wire rope at equal spaces; the rope is driven by a stationary engine.
caisson  [CIV ENG] 1. A watertight, cylindrical or rectangular chamber used in underwater construction to protect workers from water pressure and soil collapse. 2. A float used to raise a sunken vessel. 3. See dry-dock caisson.  ('kā,sān )

caisson foundation  [CIV ENG] A shaft of concrete placed under a building column or wall and extending down to hardpan or rock. Also known as pier foundation.  ('kā,sān fon’dā,shon )

caking  [ENG] Changing of a powder into a solid mass by heat, pressure, or water.  ('kāk’iŋ )
cal  See calorie.

Call  See kilocalorie.

calandria  [CHEM ENG] One of the tubes through which the heating fluid circulates in an evaporator.  [kə,lan’drē,a ]
calendria evaporator  See short-tube vertical evaporator.  [kə,lan’drē,vap’ə,rad-ar ]
calciometer  [ENG] An instrument for estimating the amount of lime in soils.  (kal’sim’əd-ar )
calcination  [CHEM ENG] A process in which a material is heated to a temperature below its melting point to effect a thermal decomposition or a phase transition other than melting.  ('kal’sə’nən )
calcine  [ENG] 1. To heat to a high temperature without fusing, as to heat unformed ceramic materials in a kiln, or to heat ores, precipitates, concentrates, or residues so that hydrates, carbonates, or other compounds are decomposed and the volatile material is expelled. 2. To heat under oxidizing conditions.  ('kal,sin )
calcining furnace  [ENG] A heating device, such as a vertical-shaft kiln, that raises the temperature (but not to the melting point) of a substance such as limestone to make lime. Also known as calciner.  ('kal,sin,iŋ ,far-nəs )

calefaction  [ENG] 1. Warming. 2. The condition of being warmed.  ('kal,əfək’shan )
calendar  [ENG] 1. To pass a material between rollers or plates to thin it into sheets or to make it smooth and glossy. 2. The machine which performs this operation.  ('kal,ən-dar )
calibrating tank  [ENG] A tank having known capacity used to check the volumetric accuracy of liquid delivery by positive-displacement meters. Also known as meter-proving tank.  ('kal,a,bra’d-ing ,tank )
calibration curve  [ENG] A plot of calibration data, giving the correct value for each indicated reading of a meter or control dial.  ('kal,a,brā,shan ,kərv )
calibration markers  [ENG] On a radar display, electronically generated marks which provide numerical values for the navigational parameters such as bearing, distance, height, or time.  ('kal,a,brā,shan ,mär-karz )

California polymerization  [CHEM ENG] A polymerization process for converting C2=C2 olefins to motor fuel by utilizing a catalyst of phosphoric acid on quartz chips.  [kal,a,for’niə pa,lim,a,ra’zā,shan ]
caliper  [DES ENG] An instrument with two legs or jaws that can be adjusted for measuring linear dimensions, thickness, or diameter.  ('kal,a,par )
calipers  [DES ENG] An instrument, such as a micrometer, of fixed size for caliperimg.  ('kal,a,par,gāl )
calik  See caulk.  ('kōk )

Callendar and Barnes’ continuous-flow calorimeter  [ENG] A calorimeter in which the heat to be measured is absorbed by water flowing through a tube at a constant rate, and the quantity of heat is determined by the rate of flow and the temperature difference between water at ends of the tube.  ('kal’an-dar on ’barnz kōn’tin,ya-was ’lō kal,’a-rım-ad-ar )

Callendar’s compensated air thermometer  [ENG] A type of constant-pressure gas thermometer in which errors resulting from temperature differences between the thermometer bulb and the connecting tubes and manometer used to maintain constant pressure are eliminated by the configuration of the connecting tubes.  ('kal’an-dar kām’ən,son,ad-ar ’thar ,məm-ad-ar )

Callendar’s equation  [THERMO] 1. An equation of state for steam whose temperature is well above the boiling point at the existing pressure, but is less than the critical temperature:  

\[ (V - \delta) = (RT/p) - (a/T) \]

where \( V \) is the volume, \( R \) is the gas constant, \( T \) is the temperature, \( p \) is the pressure, \( n \) equals 10/3, and \( a \) and \( \delta \) are constants. 2. A very accurate equation relating temperature and resistance of platinum, according to which the temperature is the sum of a linear function of the resistance of platinum and a small correction term, which is a quadratic function of temperature.  ('kal’an-dar ik’wä,shan )

Callendar’s thermometer  See platinum resistance thermometer.  ('kal’an-dar thar’məm-ad-ar )

calorie  [THERMO] Abbreviated cal; often designated as k. 1. A unit of heat energy, equal to 4.1868 joules. Also known as International Table calorie (IT calorie). 2. A unit of energy, equal to the heat required to raise the temperature of 1 gram of water from 14.5° to 15.5°C at a constant pressure of 1 standard atmosphere; equal to 4.1855 ± 0.0005 joules. Also known as fifteen-degrees calorie, gram-calorie (g-cal); small calorie. 3. A unit of heat energy equal to 4.184 joules; used in thermochemistry. Also known as thermochemical calorie.  ('kal,’ərē )

calorific value  [ENG] Quantity of heat liberated on the complete combustion of a unit weight or unit volume of fuel.  ('kal,’ərific ’val-yū )

calorifier  [ENG] A device that heats fluids by circulating them over heating coils.  (kal,’for,ə,fi-r )

calorimeter  [ENG] An apparatus for measuring heat quantities generated in or emitted by materials in processes such as chemical reactions, changes of state, or formation of solutions.  (kal,’a-rım-ad-ar )

calorimetric test  [ENG] The use of a calorimeter to determine the thermochemical characteristics
of propellants and explosives, properties normally determined are heat of combustion, heat of explosion, heat of formation, and heat of reaction. (kel-sor-am-try 'kerm-test"

calorimetry [ENG] The measurement of the quantity of heat involved in various processes, such as chemical reactions, changes of state, and formations of solutions, or in the determination of the heat capacities of substances; fundamental unit of measurement is the joule or the calorie (4.184 joules). (kal-ə-rim-ə-tərē'

calx [ENG] A steel tube that is a guide rod and is also used to catch cuttings from a drill rod. Also known as bucket; sludge barrel; slug bucket. (ˈkāˌliks

calx drill [ENG] A rotary core drill with hardened steel shank for cutting rock. Also known as shot drill. (ˈkāˌliks ˈdril

cam [MECH] A plate or cylinder which communicates motion to a follower by means of its edge or a groove cut in its surface. (ˈkām

cam acceleration [MECH] The acceleration of the cam follower. (ˈkām ək-sel-ə-rā-shan

camber [DES ENG] Deviation from a straight line; the term is applied to a convex, edgewise sweep or curve, or to the increase in diameter at the center of rolled materials. (ˈkām-bər

camber angle [MECH ENG] The inclination from the vertical of the steerable wheels of an automobile. (ˈkām-bər əp-ə-gal

cam cutter [MECH] A semiautomatic or automatic machine that produces the cam contour by swinging the work as it revolves, uses a master cam in contact with a roller. (ˈkām ˈkād-ər

cam dwell [DES ENG] That part of a cam surface between the opening and closing acceleration sections. (ˈkām ˈdwel

cam engine [MECH ENG] A piston engine in which a cam-and-roller mechanism seems to convert reciprocating motion into rotary motion. (ˈkām ən-jän

camera study (See memomotion study. (ˈkām-ə ˈstād-ə

cam follower [MECH ENG] The output link of a cam mechanism. (ˈkām ə-fāl-ə-wɔr

cam mechanism [MECH] A mechanical linkage whose purpose is to produce, by means of a contoured cam surface, a prescribed motion of the output link. (ˈkām əmek-əniz-əm

cam nose [MECH ENG] The high point of a cam, which in a reciprocating engine holds valves open or closed. (ˈkām ənz

cam pawl [MECH ENG] A pawl which prevents a wheel from turning in one direction by a wedging action, while permitting it to rotate in the other direction. (ˈkām əpohl

Campbell-Stokes recorder [ENG] A sunshine recorder in which the time scale is supplied by the motion of the sun and which has a spherical lens that burns an image of the sun upon a specially prepared card. (ˈkām əl ˈstōks rī ˈkord-ər

camp ceiling [BUILD] A ceiling that is flat in the center portion and sloping at the sides. (ˈkāmp əˌsē-lîŋ

cam profile [DES ENG] The shape of the contoured cam surface by means of which motion is communicated to the follower. Also known as pitch line. (ˈkām ˈprō-fil

camshaft [MECH ENG] A rotating shaft to which a cam is attached. (ˈkām-ʃaft

can [DES ENG] A cylindrical metal vessel or container, usually with an open top or a removable cover. (kan

canal [CIV ENG] An artificial open waterway used for transportation, waterpower, or irrigation. (DES ENG] A groove on the underside of a corona. (ˈkoʊnəl

cancellation circuit [ELECTR] A circuit used in providing moving-target indication on a plan position indicator scope, cancels constant-amplitude fixed-target pulses by subtraction of successive pulse trains. (ˈkān-səl-ə-ˈshan ˌsār-ˌkōt

canister See charcoal canister. (ˈkān-əˈstər

canned motor [MECH ENG] A motor enclosed within a casing along with the driven element (that is, a pump) so that the motor bearings are lubricated by the same liquid that is being pumped. (ˈkænd ˈmōd-ər

canned pump [MECH ENG] A watertight pump that can operate under water. (ˈkænd ˈpamp

cannibalize [ENG] To remove parts from one piece of equipment and use them to replace like, defective parts in a similar piece of equipment in order to keep the latter operational. (ˈkān-ə-ˈbāl-iz

canonical equations of motion See Hamilton’s equations of motion. (ˈkān-əl-nər-ə-ˈkōl ɪkˈwən-tənz əv ˈmō-ˌshən

canonical form [CONT SYS] A specific type of dynamical system representation in which the associated matrices possess specific row-column structures. (ˈkān-əl-nər-ə-ˈkōl ˈfɔrm


canonical momentum See conjugate momentum. (ˈkān-ən-ə-ˈkōl ˈmən-ət-əm

canonical transformation [MECH] A transformation which occurs among the coordinates and momenta describing the state of a classical dynamical system and which leaves the form of Hamilton’s equations of motion unchanged. Also known as contact transformation. (ˈkān-ən-ə-ˈkōl ˌtranz-ˌfərˈmən-tən

cant file [DES ENG] A fine-tapered file with a triangular cross section, used for sharpening saw teeth. (ˈkant ˈfīl

cant hook [DES ENG] A lever with a hooklike attachment at one end, used in lumbering. (ˈkant ˈhāk

cantilever [ENG] 1. A beam or member securely fixed at one end and hanging free at the other end. 2. In particular, in an atomic force microscope a very small beam that has a tip attached to its free end, the deflection of the beam is used
c introduc ing capacitance-operated intrusion detector [ENG] A boundary alarm system in which the approach of an intruder to an antenna wire encircling the protected area a few feet above ground changes the antenna-ground capacitance and sets off the alarm. (kapas·ə·tans l̂p·ə·rad·əd in·trú·zhən diˈtek·tər)

capacitance standard See standard capacitor. (kapas·ə·tans ,stər-dard)

capacitive coupling [ELEC] Use of a capacitor to transfer energy from one circuit to another. (kapas·ə·tans kap·liŋ)

capacitive electrometer [ENG] An instrument for measuring small voltages; the voltage is applied to the plates of a capacitor when they are close together, then the voltage source is removed and the plates are separated, increasing the potential difference between them to a measurable value. Also known as condensing electrometer (kapas·ə·tans ,l̂k·lekˈtrəm·əd·ər)

capacitive pressure transducer [ENG] A measurement device in which variations in pressure upon a capacitive element proportionately change the element's capacitive rating and thus the strength of the measured electric signal from the device. (kapas·ə·tans ˈpresh·ər tranz·də·sər)

capacitor [ELEC] A device which consists essentially of two conductors (such as parallel metal plates) insulated from each other by a dielectric and which introduces capacitance into a circuit, stores electrical energy, blocks the flow of direct current, and permits the flow of alternating current to a degree dependent on the capacitor's capacitance and the current frequency. Symbolized C. Also known as condenser, electric condenser. (kapas·ə·tər)

capacitor bank [ELEC] A number of capacitors connected in series or in parallel. (kapas·ə·tər ,bank)

capacitor color code [ELEC] A method of marking the value on a capacitor by means of dots or bands of colors as specified in the Electronic Industry Association color code. (kapas·ə·tər ˈkəl·ər ,kŏd)

capacitor hydrophone [ENG ACOUS] A capacitor microphone that responds to waterborne sound waves. (kapas·ə·tər ˈhi·draˌfôn)

capacitor loudspeaker See electrostatic loudspeaker. (kapas·ə·tər lədˌspēk·ər)

capacitor microphone [ENG ACOUS] A microphone consisting essentially of a flexible metal diaphragm and a rigid metal plate that together form a two-plate air capacitor; sound waves set the diaphragm in vibration, producing capacitance variations that are converted into audio-frequency signals by a suitable amplifier circuit. Also known as condenser microphone, electrostatic microphone. (kapas·ə·tər ˈmi·krəˌfôn)

capacitor pickup [ENG ACOUS] A phonograph pickup in which movements of the stylus in a record groove cause variations in the capacitance of the pickup. (kapas·ə·tər ˈpik·əp)

capacity See capacitance. (kapas·ə·təs)

capacity correction [ENG] The correction applied to a mercury barometer with a nonadjustable cistern in order to compensate for the
change in the level of the cistern as the atmos-
pheric pressure changes. {kapas-ød-ø kaørk-
shan}
capacity factor [IND ENG] The ratio of average
actual use to the available capacity of an appara-
tus or industrial plant to store, process, treat,
manufacture, or produce. {kapas-ød-ø faktør}
cap crimper [ENG] A tool resembling a pliers
that is used to press the open end of a blasting
cap onto the safety fuse before placing the cap
in the primer. {kap_krim-par}
cape chisel [DES ENG] A chisel that tapers to a
flat, narrow cutting end; used to cut flat grooves.
{kap_chiz-al}
cape foot [MECH] A unit of length equal to
1.033 feet or 0.3148584 meter. {kap_føt}
capillarity correction [ENG] As applied to the
mercusius barometer, that part of the instrument
correction which is required by the shape of the
meniscus of the mercury. {kølar-ød-ø kaørk-shan}
capillary collector [ENG] An instrument for col-
lecting liquid water from the atmosphere; the
collecting head is fabricated of a porous material
having a pore size of the order of 30 micrometers;
the pressure difference across the water-air inter-
face prevents air from entering the capillary sys-
tem while allowing free flow of water. {kap_
øler-ø kaørk-tør}
capillary drying [ENG] Progressive removal of
moisture from a porous solid mass by surface
evaporation followed by capillary movement of
more moisture to the drying surface from the
moist inner region, until the surface and core
stabilize at the same moisture concentration.
{kø-øler-ø dørt-iøn}
capillary electrometer [ENG] An electrometer
designed to measure a small potential difference
between mercury and an electrolytic solution in
a capillary tube by measuring the effect of this
potential difference on the surface tension be-
 tween the liquids. Also known as Lippmann
electrometer. {kap-øler-ø lektromønt-ød-ør}
capillary fitting [ENG] A pipe fitting having a
socket-type end so that when the fitting is sol-
dered to a pipe end, the solder flows by capillary-
ity along the annular space between the pipe
exterior and the socket within it, forming a tight
fit. {kap-øler-ø fid-iøn}
capillary tube [ENG] A tube sufficiently fine so
that capillary attraction of a liquid into the tube
is significant. {kap-øler-ø tøb}
capillary viscometer [ENG] A long, narrow tube
that is used to measure the laminar flow of fluids.
{kø-øler-ø vis-køm-ød-ør}
capital amount factor [IND ENG] Any of 20 com-
mon compound interest formulas used to calcu-
late the equivalent uniform annual cost of all
cash flows. {kap-at-ø saumønt faktør}
capital budgeting [IND ENG] Planning the most
effective use of resources to obtain the highest
effective level of sustained profits. {kap-at-ø
bøj-ød-øin}
capital expenditure [IND ENG] Money spent for
long-term additions or improvements and charged
to a capital assets account. {kap-at-ø ilkøpen-diøchar}
capped fuse [ENG] A length of safety fuse with
the cap or detonator crimped on before it is
taken to the place of use. {kap_fyçu}
capping [ENG] Preparation of a capped fuse.
{kap-iøn}
cap screw [DES ENG] A screw which passes
through a clear hole in the part to be joined,
screws into a threaded hole in the other part,
and has a head which holds the parts together.
{kø-skru-ø}
capstan [DES ENG] A shaft which pulls magnetic
tape through a machine at constant speed.
{kap-støn}
capstan nut [DES ENG] A nut whose edge has
several holes, in one of which a bar can be in-
serted for turning it. {kap-støn, nat}
capstan screw [DES ENG] A screw whose head
has several radial holes, in one of which a bar
can be inserted for turning it. {kap-støn, skru-ø}
capsule [ENG] A boxlike component or unit,
often sealed. {kap-søl}
captive fastener [DES ENG] A screw-type fast-
tener that does not drop out after it has been
unscrewed. {kap-tiv fas-on-ør}
captive test [ENG] A hold-down test of a pro-
 propulsion subsystem, rocket engine, or motor.
{kap-tiv, tøst}
capture area [ENG ACOUS] The effective area of
the receiving surface of a hydrophone, or the
available power of the acoustic energy divided
by its equivalent plane-wave intensity. {kap-
øchar, øer-eøø}
capturing [ENG] The use of a torquor to restrain
the spin axis of a gyro to a specified position
relative to the spin reference axis. {kap-chø-
øn}
car See automobile. {kør}
Carlthédory’s principle [THERMO] An expres-
sion of the second law of thermodynamics which
says that in the neighborhood of any equilibri-
um state of a system, there are states which are not
accessible by a reversible or irreversible adia-
batic process. Also known as principle of inac-
cessibility. {kø-lør-tøødrør-ø, prin-søø-pøl}
carbide tool [DES ENG] A cutting tool made of
tungsten, titanium, or tantalum carbides, having
high heat and wear resistance. {kør-bid, tøl}
carbometer [ENG] An instrument for measuring
the carbon content of steel by measuring mag-
netic properties of the steel in a known magnetic
field. {kørbøm-ød-ør}
carbonation [CHEM ENG] The process by which
a fluid, especially a beverage, is impregnated
with carbon dioxide. {kør-bøøhø-øøøn}
carbon bit [DES ENG] A diamond bit in which
the cutting medium is inset carbon. {kør-
øn hit}
carbon burning rate [CHEM ENG] The weight of
carbon burned per unit time from the catalytic-
cracking catalyst in the regenerator. {kør-bøø-
bømøn, røt}

87
carbon canister

See charcoal canister. (ˈkär-ban ˈkær-ə-stər)

carbon dioxide fire extinguisher [CHEM ENG] A type of chemical fire extinguisher in which the extinguishing agent is liquid carbon dioxide, stored under 800–900 pounds per square inch (5.5–6.2 megapascals) at normal room temperature. (ˈkär-ban diˈækˌsid ˈfīr ikˈsting gwish-ər)
carbon hydrophone [ENG ACOUS] A microphone that responds to waterborne sound waves. (ˈkär-ban ˈhi-dra fon)
carbon knock [MECH ENG] Premature ignition resulting in knocking or pinging in an internal combustion engine caused when the accumulation of carbon produces overheating in the cylinder. (ˈkär-ban ˈnāk)
carbon microphone [ENG ACOUS] A microphone in which a flexible diaphragm moves in response to sound waves and applies a varying pressure to a container filled with carbon granules, causing the resistance of the microphone to vary correspondingly. (ˈkär-ban ˈmē-krə fon)
carbon-pile pressure transducer [ENG] A measurement device in which variations in pressure upon a conductive carbon core proportionately change the core’s electrical resistance, and thus the strength of the measured electric signal from the device. (ˈkär-ban ˈpi l ˈprēsh-ər tranz dō-sär)
carbon residue [CHEM ENG] The quantity of carbon produced from a lubricating oil heated in a closed container under standard conditions. (ˈkär-ban ˈrez ə dō)
carbon-residue test [CHEM ENG] A destructive-distillation method for estimation of carbon residues in fuels and lubricating oils. Also known as Conradson carbon test. (ˈkär-ban ˈrez ə dō ˈtest)
carbon resistance thermometer [ENG] A highly sensitive resistance thermometer for measuring temperatures in the range 0.05–20 K, capable of measuring temperature changes of the order 10⁻³ degree. (ˈkär-ban niжiz-tōns thərˌmād-ər)
carbon transducer [ENG] A transducer consisting of carbon granules in contact with a fixed electrode and a movable electrode, so that motion of the movable electrode varies the resistance of the granules. (ˈkär-ban tranzˈdō-sär)
carburetion [CHEM ENG] The process of enriching a gas by adding volatile carbon compounds, such as hydrocarbons, to it, as in the manufacture of carbureted water gas. [MECH ENG] The process of mixing fuel with air in a carburetor. (ˈkär-ˈba rə-thon)
carburetor [CHEM ENG] An apparatus for vaporizing, cracking, and enriching oils in the manufacture of carbureted water gas. [MECH ENG] A device that makes and controls the proportions and quantity of fuel-air mixture fed to a spark-ignition internal combustion engine. (ˈkär-ˈba red-ər)
carburetor icing [MECH ENG] The formation of ice in an engine carburetor as a consequence of expansive cooling and evaporation of gasoline. (ˈkär-ˈba red-ərˌiŋ)

card [ELECTR] A printed circuit board or other arrangement of miniaturized components that can be plugged into a computer or peripheral device. (ˈkärd)
Cardan joint [MECH ENG] See Hooke’s joint. (ˈkär,dan ˈjoint)
Cardan motion [MECH ENG] The straight-line path followed by a moving centroid in a four-bar centroid linkage. (ˈkär,dan ˈmō-shan)
Cardan shaft [MECH ENG] A shaft with a universal joint at its end to accommodate a varying shaft angle. (ˈkär,dan ˈshaft)
Cardan’s suspension [DES ENG] An arrangement of rings in which a heavy body is mounted so that the body is fixed at one point; generally used in a gyroscope. (ˈkär,dan səsˈpen-shan)
card-edge connector [ELEC] A connector that mates with printed-wiring leads running to the edge of a printed circuit board on one or both sides. Also known as edgeboard connector. (ˈkär,d ˈed ˈeɪn ket-

cardiod microphone [ENG ACOUS] A microphone having a heart-shaped, or cardioid, response pattern, so it has nearly uniform response for a range of about 180° in one direction and minimum response in the opposite direction. (ˈkär-d ˈo i dˌpad-

cardioïd pattern [ENG] Heart-shaped pattern obtained as the response or radiation characteristic of certain directional antennas, or as the response characteristic of certain types of microphones. (ˈkär-d ˈo i dˌpad-

card key access [ENG] A physical security system in which doors are unlocked by placing a badge that contains magnetically coded information in proximity to a reading device, some systems also require the typing of this information on a keyboard. (ˈkärdˌkiˌe ˈakˈses)
car dump [MECH ENG] Any one of several devices for unloading industrial or railroad cars by rotating or tilting the car. (ˈkärˌdamp)
car-following theory [ENG] A mathematical model of the interactions between motor vehicles in terms of relative speed, absolute speed, and separation. (ˈkärˌfolˈwərˌtheˌərē)
cargo boom [MECH ENG] A long spar extending from the mast of a derrick to support or guide objects lifted or suspended. (ˈkär-gōˌbōm)
cargo mill [IND ENG] A sawmill equipped with docks so the product can be loaded directly onto ships. (ˈkärˌgōˌmil)
cargo winch [MECH ENG] A motor-driven hoisting machine for cargo having a drum around which a chain or rope winds as the load is lifted. (ˈkär-gōˌwinch)
carillon [ENG] A musical instrument played from a keyboard with two or more full chromatic octaves of fine bells shaped for homogeneity of timbre. (ˈkärˌələn)

Carnot-Clausius equation [THERMO] For any system executing a closed cycle of reversible changes, the integral over the cycle of the infinitesimal amount of heat transferred to the system divided by its temperature equals 0. Also
known as Clausius theorem. {kær'no t 'klóz-ə
as i'kwá-zhán}  

Carrier line [MECH ENG] A device that moves in a pre-
determined path in a machine and carries some other
part, such as a recorder head. 2. A mecha-
nism designed to hold a paper in the active por-
tion of a printing or typing device, for example,
a typewriter carriage. [MECH ENG] A structure
on an industrial truck or stacker that supports
forks or other attached equipment and travels
vertically within the mast.  {kar'ij}  

Carriage bolt [DES ENG] A round-head type of
bolt with a square neck, used with a nut as a
through bolt.  {kar'ij 'bolt}  

Carriage stop [MECH ENG] A device added to
the outer way of a lathe bed for accurately spac-
ing grooves, turning multiple diameters and
lengths, and cutting off pieces of specified thick-
ness.  {kar'ij 'stáp}  

Carrier [MECH ENG] Any machine for trans-
porting materials or people.  {kar'ër}  

Carrier line [ELEC] Any transmission line used
for multiple-channel carrier communication.  {kar'ër 'lín}  

Carrier pipe [ENG] Pipe used to carry or conduct
fluids, as contrasted with an exterior protective
or casing pipe.  {kar'ër 'pár}  

Carrousel [ENG] In an assembly-line opera-
tion, a conveyor that moves objects in a com-
plete circuit on a horizontal plane.  {kar'ra-'sal}  

Carrying capacity [ELEC] The maximum
amount of current or power that can be safely
handled by a wire or other component.  {kar-
ër 'i-j' kápas-'ad-ə}  

Carry-over [CHEM ENG] Unwanted liquid or
solid material carried by the overhead effluent
from a fractionating column, absorber, or reac-
tion vessel.  {kar'ë 'o-var}  

Car shaker [MECH ENG] A device consisting of
a heavy yoke on an open-top car's sides that
actively vibrates and rapidly discharges a load,
such as coal, gravel, or sand, when an unbal-
anced pulley attached to the yoke is rotated fast.  

{kar 'shák-ər}  

Car stop [ENG] An appliance used to arrest the
movement of a mine or railroad car.  {kar
'stáp}  

Cartesian-coordinate robot [CONTSYS] A robot
having orthogonal, sliding joints and supported
by a nonrotary base as the axis.  {kár'té-
zhan kók'ord-ən-'ató 'rò-'bát}  

Cartesian diver manostat [ENG] Preset, on-off-
control manometer arrangement by which a
specified low pressure (high vacuum) is main-
tained via the rise or submergence of a margin-
ally buoyant float within a liquid mercury reser-
voir.  {kár'té-zhan 'dpil'-ə 'mán-ə 'stát}  

Cartridge [ENG] A cylindrical, waterproof, paper
shell filled with high explosive and closed at
both ends; used in blasting. [ENGACOUS] See
phonograph pickup, tape cartridge.  {kar-'trij}  

Cartridge filter [ENG] A filter for the clarifica-
tion of process liquids containing small amounts
of solids; turbid liquid flows between thin metal
disks, assembled in a vertical stack, to openings
in a central shaft supporting the disks, and solids
are trapped between the disks.  {kar-'trij 'fil-
'tar}  

Cartridge starter [MECH ENG] An explosive
device which, when placed in an engine and det-
oneated, moves a piston, thereby starting the
engine.  {kar-'trij 'stár-'dér}  

Car tunnel kiln [ENG] A long kiln with the fire
located near the midpoint; ceramic ware is fired
by loading it onto cars which are pushed through
the kiln.  {kar 'tán-'al 'kil}  

Casale process [CHEM ENG] A process that
employs promoted iron oxide catalyst for synthe-
sis of ammonia from nitrogen and hydrogen.  

{ká'léz, prás-'as}  

Cascade [ELEC] An electric-power circuit ar-
range ment in which circuit breakers of reduced
interrupting ratings are used in the branches, the
circuit breakers being assisted in their protection
function by other circuit breakers which operate
almost instantaneously. Also known as backup
arrangement. [ELECTR] See avalanche.  [ENG] An arrangement of separation devices,
such as isotope separators, connected in series
cascade compensation

so that they multiply the effect of each individual device.  (ka'skād')
cascade compensation  [CONT SYS] Compensation in which the compensator is placed in series with the forward transfer function. Also known as series compensation, tandem compensation.  (ka'skād-kān-pan-sā-shān')
cascade control  [CONT SYS] An automatic control system in which various control units are linked in sequence, each control unit regulating the operation of the next control unit in line.  (ka'skād-kōn-trōl')
cascade cooler  [CHEM ENG] Fluid-cooling device through which the fluid flows in a series of horizontal tubes, one above the other; cooling water from a trough drips over each tube, then to a drain. Also known as serpentine cooler, trickle cooler.  (ka'skād-kū-lār')
cascaded  [ENG] Of a series of elements or devices, arranged so that the output of one feeds directly into the input of another, as a series of dynodes or a series of airfoils.  (ka'skād-ād')
cascade impactor  [ENG] A low-speed impactor device for use in sampling both solid and liquid atmospheric suspensions; consists of four pairs of jets (each of progressively smaller size) and sampling plates working in series and designed so that each plate collects particles of one size range.  (ka'skād-im-pāk-tōr')
cascade limiter  [ELECTR] A limiter circuit that uses two vacuum tubes in series to give improved limiter operation for both weak and strong signals in a frequency-modulation receiver. Also known as double limiter.  (ka'skād-līm-ād-ār')
cascade mixer-settler  [CHEM ENG] Series of liquid-holding vessels with stirrers, each connected to an unstirred vessel in which solids or heavy immiscible liquids settle out of suspension; light liquid moves through the mixer-settler units, countercurrent; to heavy material, in such a manner that fresh liquid contacts treated heavy material, and spent (used) liquid contacts fresh (untreated) heavy material.  (ka'skād-mīk-sār-set-lār')
cascade pulzzerizer  [MECH ENG] A form of tumbling pulzzerizer that uses large lumps to do the pulzzerizing.  (ka'skād-pōl-vār-rīz-ār')
cascade system  [MECH ENG] A combination of two or more refrigeration systems connected in series to produce extremely low temperatures, with the evaporator of one machine used to cool the condenser of another.  (ka'skād-sīs-əm-tām')
cascade tray  [CHEM ENG] A fractionating apparatus that consists of a series of parallel troughs arranged in stairstep fashion.  (ka'skād-trā')
cascading  [ELEC] An effect in which a failure of an electrical power system causes this system to draw excessive amounts of power from power systems which are interconnected with it, causing them to fail, and these systems cause adjacent systems to fail in a similar manner, and so forth.  [MECH ENG] An effect in ball-mill rotating devices when the upper level of crushing bodies breaks clear and falls to the top of the crop load.  (ka'skād-īg')
cascading orate  [MECH ENG] A flow of water into the closed shell of a feedwater heater from a water source maintained at a higher pressure.  (ka'skād-īg-drān')
case  [ENG] An item designed to hold a specific item in a fixed position by virtue of conforming dimensions or attachments; the item which it contains is complete in itself for removal and use outside the container.  (kās')
case bay  [BUILD] A division of a roof or floor, consisting of two principal rafters and the joists between them.  (kās-bā')
casement window  [BUILD] A window hinged on the side that opens to the outside.  (kās-mānt-win-do')
casing  [BUILD] A finishing member around the opening of a door or window.  [DES ENG] The outer portion of a tire assembly consisting of fabric or cord to which rubber is vulcanized.  [MECH ENG] A fire-resistant covering used to protect part or all of a steam generating unit.  (kāsi')
casing nail  [DES ENG] A nail about half a gage thinner than a common wire nail of the same length.  (kāsi-nāl')
casing shoe  [ENG] A ring with a cutting edge on the bottom of a well casing.  (kāsi-shū')
cassette  [ENG] A light-tight container designed to hold photographic film or plates.  [ENG ACOUS] A small, compact container that holds a magnetic tape and can be readily inserted into a matching tape recorder for recording or playback; the tape passes from one hub within the container to the other hub.  (kā'se't')
cast  [ENG] 1. To form a liquid or plastic substance into a fixed shape by letting it cool in the mold.  2. Any object which is formed by placing a castable substance in a mold or form and allowing it to solidify. Also known as casting.  (kast')
Casting-Slodzian mass analyzer  See direct-imaging mass analyzer.  (kas-tāg-słō-shānmas-an-ō-līz-ār')
castellated bit  [DES ENG] 1. A long-tooth, saw-tooth bit.  2. A diamond-set coring bit with a few large diamonds or hard metal cutting points set in the face of each of several upstanding prongs separated from each other by deep waterways. Also known as padded bit.  (kas-tō-lad-ōd'bīt')
castellated nut  [DES ENG] A type of hexagonal nut with a cylindrical portion above through which slots are cut so that a cotter pin or safety wire can hold it in place.  (kas-tō-lad-ōd'nāt')
caster  [ENG] 1. The inclination of the kingpin or its equivalent in automotive steering, which is positive if the kingpin inclines forward, negative if it inclines backward, and zero if it is vertical as viewed along the axis of the front wheels.  2. A wheel which is free to swivel about an axis at right angles to the axis of the wheel, used to support trucks, machinery, or furniture.  (kast-ōr')
catforming

cast-film extrusion  See chill-roll extrusion.  { 'kast_film_ik'tri-strən'han} 

Castiglione’s principle  See Castiglione’s theorem.  { 'kas-til-yä-nôz_prin-sâ-pal} 

Castiglione’s theorem  [MECH]  The theorem that the component in a given direction of the deflection of the point of application of an external force on an elastic body is equal to the partial derivative of the work of deformation with respect to the component of the force in that direction.  Also known as Castiglione’s principle.  { 'kas-til-yä-nôz_thir-sm} 

casting  See cast.  { 'kast-ij} 

casting area  [ENG]  In plastics injection molding, the moldable area of a thermoplastic material for a given thickness and under given conditions of molding.  { 'kast-ij _er-é-ə} 

casting strain  [MECH]  Any strain that results from the cooling of a casting, causing casting stress.  { 'kast-ij_strän} 

casting stress  [MECH]  Any stress that develops in a casting due to geometry and casting shrinkage.  { 'kast-ij_strän} 

Castner cell  [CHEM ENG]  A type of mercury cell used in the commercial production of chlorine and sodium.  { 'kast-nor, sel} 

Castner process  [CHEM ENG]  A process used industrially to make high-test sodium cyanide by reacting sodium, glowed charcoal, and dry ammonia gas to form sodamide, which is converted to cyanamide immediately, the cyanamide is converted to cyanide with charcoal.  { 'kast-nor_prás-os} 

cast setting  See mechanical setting.  { 'kast_sed-ij} 

catalyst stripping  [CHEM ENG]  Introduction of steam to remove hydrocarbons retained on the catalyst, the steam is introduced where the spent catalyst leaves the reactor.  { 'kad-əl-ast, strip-ij} 

catalytic activity  [CHEM ENG]  The ratio of the space velocity of a catalyst being tested, to the space velocity required for a standard catalyst to give the same conversion as the catalyst under test.  { 'kad-əl-id-ik akt'iv-ad-ē} 

catalytic converter  [CHEM ENG]  A device that is fitted to the exhaust system of an automotive vehicle and contains a catalyst capable of converting potentially polluting exhaust gases into harmless or less harmful products.  { 'kad-əl-id-ik kan'vərd-ar} 

catalytic cracker  See catalytic cracking unit.  { 'kad-əl-id-ik 'krak-ar} 

catalytic cracking  [CHEM ENG]  Conversion of high-boiling hydrocarbons into lower-boiling types by a catalyst.  { 'kad-əl-id-ik 'krak-ij} 

catalytic cracking unit  [CHEM ENG]  A unit in a petroleum refinery in which a catalyst is used to carry out cracking of hydrocarbons.  Also known as catalytic cracker.  { 'kad-əl-id-ik 'krak-ij_yù-nat} 

catalytic hydrogenation  [CHEM ENG]  Hydrogenating by means of catalysts such as nickel or palladium.  { 'kad-əl-id-ik_hi-dra-ja'nä-shan} 

catalytic polymerization  [CHEM ENG]  Polymerization of monomers to form high-molecular-weight molecules in the presence of catalysts.  { 'kad-əl-id-ik pa,lım-ə-rə-ə-zə-shan} 

catalytic reforming  [CHEM ENG]  Rearranging of hydrocarbon molecules in a gasoline boiling-range feedstock to form hydrocarbons having a higher antiknock quality.  Abbreviated CR.  { 'kad-əl-id-ik reťor-min} 

cat-and-mouse engine  [MECH ENG]  A type of rotary engine, typified by the Tschudi engine, which is an analog of the reciprocating piston engine, except that the pistons travel in a circular motion.  Also known as scissor engine.  { 'kat on 'mäus, en-jan} 

catastrophic failure  [ENG]  1.  A sudden failure without warning, as opposed to degradation failure.  2.  A failure whose occurrence can prevent the satisfactory performance of an entire assembly or system.  { 'kad-ə-strâf-ik fal-yar} 

catch  [DES ENG]  A device used for fastening a door or gate and usually operated manually from only one side, for example, a latch.  { 'kach} 

catch basin  [CIV ENG]  1.  A basin at the point where a street gutter empties into a sewer, built to catch matter that would not easily pass through the sewer.  2.  A well or reservoir into which surface water may drain off.  { 'kach,ba-san} 

catching diode  [ELECTR]  Diode connected to act as a short circuit when its anode becomes positive; the diode then prevents the voltage of a circuit terminal from rising above the diode cathode voltage.  { 'kach-ij,dl,od} 

catchwater  [CIV ENG]  A ditch for catching water on sloping land.  { 'kach,əd-ər} 

cat cracker  [CHEM ENG]  A refinery unit where catalytic cracking is done.  { 'kat,krak-ar} 

catenary suspension  [ENG]  Holding a flexible wire or chain aloft by its end points, the wire or chain takes the shape of a catenary.  { 'kat-a-nər-ə-sas'pen-shan} 

caterpillar  [MECH ENG]  A vehicle, such as a tractor or army tank, which runs on two endless belts, one on each side, consisting of flat treads and kept in motion by toothed driving wheels.  { 'kad-ar,pil-ər} 

caterpillar chain  [DES ENG]  A short, endless chain on which dogs (grippers) or teeth are arranged to mesh with a conveyor.  { 'kad-ar,pil-ər, chän} 

caterpillar gate  [CIV ENG]  A steel gate carried on crawler tracks that is used to control water flow through a spillway.  { 'kad-ar,pil-ər,gat} 

catforming  [CHEM ENG]  A naphtha-reforming process with a catalyst of platinum-silica-alumina which results in very high hydrogen purity.  { 'kat,för-min}
cathometer

**cathometer**  [ENG] An instrument for measuring small differences in height, for example, between two columns of mercury. (ˈkath-ə-tēm-ad-ər)

cathode  [ELEC] The terminal at which current leaves a primary cell or storage battery, it is negative with respect to the device, and positive with respect to the external circuit.  [ELECTR] 1. The primary source of electrons in an electron tube, in directly heated tubes the filament is the cathode, and in indirectly heated tubes a coated metal cathode surrounds a heater. Designated K. Also known as negative electrode. 2. The terminal of a semiconductor diode that is negative with respect to the other terminal when the diode is biased in the forward direction. (ˈkath-əd)

cathode efficiency  [CHEM ENG] The proportion of current used for completion of a given process at the cathode. (ˈkath-əd-i-ʃən-

Cathode-ray tube  [ELECTR] An electron tube in which a beam of electrons can be focused to a small area and varied in position and intensity on a surface. Abbreviated CRT. Originally known as Braun tube, also known as electron-ray tube. (ˈkath-əd-ray-

cathodic inhibitor  [CHEM ENG] A compound, such as calcium bicarbonate or sodium phosphate, which is deposited on a metal surface in a thin film that operates at the cathodes to provide physical protection of the entire surface against corrosive attack in a conducting medium. (ˈkath-əd-ik-

catwalk  [ENG] A narrow, raised platform or pathway used for passage to otherwise inaccessible areas, such as a raised walkway on a ship permitting fore and aft passage when the main deck is awash, a walkway on the roof of a freight car, or a walkway along a vehicular bridge. (ˈkät-wōk)

caul  [ENG] A sheet of metal or other material that is heated and used to equalize pressure during fabricating plywood, shaping surface veneer, and hot-pressing composite materials. (ˈkōl)

caulk  [ENG] To make a seam or point airtight, watertight, or steamtight by driving in caulking compound, dry pack, lead wool, or other material. Also spelled calk. (ˈkōk)

caulking iron  [DES ENG] A tool for applying caulking to a seam. (ˈkōk-ən-ˌi-)m-n)

causality  [MECH] In classical mechanics, the principle that the specification of the dynamical variables of a system at a given time, and of the external forces acting on the system, completely determines the values of dynamical variables at later times. Also known as determinism. (ˈkō-ˈzal-əd-ə-

causal system  [CONT SYS] A system whose response to an input does not depend on values of the input at later times. Also known as non-anticipatory system, physical system. (ˈkō-ˈzal-

cauticism  [CHEM ENG] A process for converting an alkaline carbonate into lime. (ˈkōs-

cautistic treater  [CHEM ENG] A vessel containing a strong alkali through which solutions are passed for removal of undesirable substances, for example, sulfides, mercaptans, or acids. (ˈkō-stik-

cautious control  [CONT SYS] A control law for a stochastic adaptive control system which hedges and uses lower gain when the estimates are uncertain. (ˈkōs-ˈshōs-

cave  [ENG] A pit or tunnel under a glass furnace for collecting ashes or raking the fire. (ˈkāv)

cavendish balance  [ENG] An instrument for determining the constant of gravitation, in which one measures the displacement of two small spheres of mass m, which are connected by a light rod suspended in the middle by a thin wire, caused by bringing two large spheres of mass M near them. (ˈkāv-

cavities  [ENG] Slough. (ˈkāv-

cavitation  [ENG] Pitting of a solid surface such as metal or concrete. (ˈkāv-

cavitation resistance inducer  [MECH ENG] In liquid flows through rotating machinery, an axial flow pump with high-solidity blades that is used in front of a main pump in order to increase the inlet head and thereby prevent cavitation in the downstream impeller. (ˈkāv-

cavity frequency meter  [ENG] A device that employs a cavity resonator to measure microwave frequencies. (ˈkāv-

cavity impedance  [ELECTR] The impedance of the cavity of a microwave tube which appears across the gap between the cathode and the anode. (ˈkāv-

cavity magnetron  [ELECTR] A magnetron having a number of resonant cavities forming the anode, used as a microwave oscillator. (ˈkāv-

cavity radiator  [THERMO] A heated enclosure with a small opening which allows some radiation to escape or enter, the escaping radiation approximates that of a blackbody. (ˈkāv-

cavity resonance  [ENG ACOUS] The natural resonant vibration of a loudspeaker baffle, if in the audio range, it is evident as unpleasant emphasis of sounds at that frequency. (ˈkāv-

cavity wall  [BUILD] A wall constructed in two separate thicknesses with an air space between; provides thermal insulation. Also known as hollow wall. (ˈkāv-

c axis  [MECH ENG] The angle that specifies the rotation of a machine tool about the z axis. (ˈsē-

CCD  See charge-coupled device.

Chart  [IND ENG] A quality-control chart showing number of defects in subgroups of constant size, gives information concerning quality level, its variability, and evidence of assignable causes of variation. (ˈsē-

92
center of force

CCR process See cyclic catalytic reforming process.

CD-4 sound See compatible discrete four-channel sound.

cement gun [MECH ENG] A piston device used to move concrete through pipes. { sɪˈment ,pʌmp }
cement kiln [ENG] A kiln used to fire cement to less than complete melting. { sɪˈment ,kil }
cement mill [MECH ENG] A mill for grinding rock to a powder for cement. { sɪˈment ,mɪl }
cement pump [MECH ENG] A piston device used to move concrete through pipes. { sɪˈment ,pʌmp }
cement silo [ENG] A silo used to store dry, bulk cement. { sɪˈment ,ˈʃɪloʊ }
cement valve [MECH ENG] A ball-, flapper-, or clack-type valve placed at the bottom of a string of casing, through which cement is pumped, so that when pumping ceases, the valve closes and prevents return of cement into the casing. { sɪˈment ,ˈvalv }
centare See centiare. { ˈsenˌtər }
center [IND ENG] A manufacturing unit containing a number of interconnected cells. { ˈsenˌtər }
center-bearing swing bridge [CIV ENG] A type of swinging bridge that has a single large bearing on a pier, called the pivot pier, in the waterway. { ˈsenˌtər ,ˈber-ɪŋ ˈswɪŋˌbriŋ }
center drill [ENG] A two-fluted tool consisting of a twist drill with a 60° countersink; used to drill countersink center holes in a workpiece to be mounted between centers for turning or grinding. { ˈsenˌtər ,ˈdril }
center gage [DES ENG] A gage used to check angles; for example, the angles of cutting tool points or screw threads, or the angular position of cutting tools. { ˈsenˌtər ,ɡeɪj }
center-gated mold [ENG] A plastics injection mold with the filling orifice interconnected to the nozzle and the center of the cavity area. { ˈsenˌtər ,ɡeɪt-əd ˈmɑld }
centering [CIV ENG] A curved, temporary support for an arch or dome during a casting or laying operations. { ˈsenˌtərɪŋ }
centering machine [MECH ENG] A machine for drilling and countersinking work to be turned on a lathe. { ˈsenˌtərɪŋ ˈmeɪʃən }
centerless grinder [MECH ENG] A cylindrical metal-grinding machine that carries the work on a support or blade between two abrasive wheels. { ˈsenˌtərəs ˈgrɪnˌdər }
center line [ENG] A line that represents an axis of symmetry on a plane figure such as a plan for a structure or a machine. { ˈsenˌtərˌlɪn }
center of attraction [MECH] A point toward which a force acts. {ɪn tɔ dʒə rɪst ˈfɔsər }
center of gravity

**center of gravity**  [MECH] A fixed point in a material body through which the resultant force of gravitational attraction acts. \( \text{sen-tar} \text{ av 'grav-} \text{at-or'-shun} \)

**center of inertia**  See center of mass. \( \text{sen-tar} \text{ av 'nar-sha'} \)

**center of mass**  [MECH] That point of a material body or system of bodies which moves as though the system's total mass existed at the point and all external forces were applied at the point. Also known as center of inertia, centroid. \( \text{sen-tar} \text{ av 'mas'} \)

**center-of-mass coordinate system**  [MECH] A reference frame which moves with the velocity of the center of mass, so that the center of mass is at rest in this system, and the total momentum of the system is zero. Also known as center of momentum coordinate system. \( \text{sen-tar} \text{ av 'mas kòr-mô-nat'sis-tom} \)

**center-of-momentum coordinate system**  See center-of-mass coordinate system. \( \text{sen-tar} \text{ av 'mas kòr-mô-nat'sis-tom} \)

**center of oscillation**  [MECH] Point in a physical pendulum, on the line through the point of suspension and the center of mass, which moves as if all the mass of the pendulum were concentrated there. \( \text{sen-tar} \text{ av 'ás-o-là-shan} \)

**center of percussion**  [MECH] If a rigid body, free to move in a plane, is struck a blow at a point O, and the line of force is perpendicular to the line from O to the center of mass, then the initial motion of the body is a rotation about the center of percussion relative to O, it can be shown to coincide with the center of oscillation relative to O. \( \text{sen-tar} \text{ av par'kash-an} \)

**center of suspension**  [MECH] The intersection of the axis of rotation of a pendulum with a plane perpendicular to the axis that passes through the center of mass. \( \text{sen-tar} \text{ av 'sa'spen-shàn} \)

**center of twist**  [MECH] A point on a line parallel to the axis of a beam through which any transverse force must be applied to avoid twisting of the section. Also known as shear center. \( \text{sen-tar} \text{ av 'twist'} \)

**center plug**  [DES ENG] A small diamond-set circular plug, designed to be inserted into the annular opening in a core bit, thus converting it to a noncoring bit. \( \text{sen-tar} \text{ plag} \)

**center punch**  [DES ENG] A tool similar to a prick punch but having the point ground to an angle of about 90°, used to enlarge prick-punch marks or holes. \( \text{sen-tar} \text{ panch} \)

**center square**  [DES ENG] A straight edge with a sliding square, used to locate the center of a circle. \( \text{sen-tar} \text{ skwer} \)

**centiare**  [MECH] Unit of area equal to 1 square meter. Also spelled centare. \( \text{sen-teər} \)

**centilbar**  [MECH] A unit of pressure equal to 0.01 bar or to 1000 pascals. \( \text{sen-tə'bar} \)

**centigrade temperature scale**  See Celsius temperature scale. \( \text{sen-tə'græd 'tem-prə-char, skəl} \)

**centigram**  [MECH] Unit of mass equal to 0.01 gram or \( 10^{-5} \) kilogram. Abbreviated cg. \( \text{sen-tə'gram} \)

**centiling**  See centimeter of mercury. \( \text{sen-tig or 'sent-e,ə'hē} \)

**centiliter**  [MECH] A unit of volume equal to 0.01 liter or to \( 10^{-5} \) cubic meter. \( \text{sen-tə,léd-ər} \)

**centimeter**  [MECH] A unit of length equal to 0.01 meter. Abbreviated cm. \( \text{sen-tə,méd-ər} \)

**centimeter of mercury**  [MECH] A unit of pressure equal to the pressure that would support a column of mercury 1 centimeter high, having a density of 13.5991 grams per cubic centimeter, when the acceleration of gravity is equal to its standard value (980.665 centimeters per second per second), it is equal to 1333.22874153 pascals; it differs from the dekatorr by less than 1 part in 7,000,000. Abbreviated cmHg. Also known as centihg. \( \text{sen-tə,méd-ər av 'mar-kya-re} \)

**central control**  [SYS ENG] Control exercised over an extensive and complicated system from a single center. \( \text{sen-tral kan'tröl} \)

**central force**  [MECH] A force whose line of action is always directed toward a fixed point, the force may attract or repel. \( \text{sen-tral 'fors} \)

**central gear**  [MECH ENG] The gear on the central axis of a planetary gear train, about which a pinion rotates. Also known as sun gear. \( \text{sen-tral 'gir} \)

**central heating**  [CIV ENG] The use of a single steam or hot-water heating plant to serve a group of buildings, facilities, or even a complete community through a system of distribution pipes. \( \text{sen-tral 'héd-iŋ} \)

**centralized traffic control**  [CIV ENG] Control of train movements by signal indications given by a train director at a central control point. Abbreviated CTC. \( \text{sen-tral 'trafl'ik kan'tröl} \)

**central orbit**  [MECH] The path followed by a body moving under the action of a central force. \( \text{sen-tral 'or-bat} \)

**centrifugal**  [MECH] Acting or moving in a direction away from the axis of rotation or the center of a circle along which a body is moving. \( \text{sen 'tri-fí-gal} \)

**centrifugal atomizer**  [MECH ENG] Device that atomizes liquids with a spinning disk, liquid is fed onto the center of the disk, and the whirliging motion (3000 to 50,000 revolutions per minute) forces the liquid outward in thin sheets to cause atomization. \( \text{sen 'tri-fí-gal 'lad-ə,míz-ər} \)

**centrifugal barrier**  [MECH] A steep rise, located around the center of force, in the effective potential governing the radial motion of a particle of nonvanishing angular momentum in a central force field, which results from the centrifugal force and prevents the particle from reaching the center of force, or causes its Schrödinger wave function to vanish there in a quantum-mechanical system. \( \text{sen 'tri-fí-gal 'bar-ə-ər} \)
centrifugal brake [MECH ENG] A safety device on a hoist drum that applies the brake if the drum speed is greater than a set limit. 

centrifugal casting [ENG] A method for casting metals or forming thermoplastic resins in which the molten material solidifies in and conforms to the shape of the inner surface of a heated, rapidly rotating container.

centrifugal clarification [MECH ENG] The removal of solids from a liquid by centrifugal action which decreases the settling time of the particles from hours to minutes.

centrifugal collector [MECH ENG] A machine that separates particles into size groups by centrifugal force.

centrifugal clutch [MECH ENG] A clutch operated by centrifugal force from the speed of rotation of a shaft, as when heavy expanding friction shoes act on the internal surface of a rim clutch, or a flyball-type mechanism is used to activate clutching surfaces on cones and disks.

centrifugal compressor [MECH ENG] A machine in which a gas or vapor is compressed by radial acceleration in an impeller with a surrounding casing, and can be arranged multitstage for high ratios of compression.

centrifugal discharge elevator [MECH ENG] A high-speed bucket elevator from which free-flowing materials are discharged by centrifugal force at the top of the loop.

centrifugal extractor [CHEM ENG] A device for separating components of a liquid solution, consisting of a series of perforated concentric rings in a cylindrical drum that rotates at 2000–5000 revolutions per minute around a cylindrical shaft. Liquids enter and leave through the shaft; they flow radially and concurrently in the rotating drum.

centrifugal fan [MECH ENG] A machine for moving a gas, such as air, by accelerating it radially outward in an impeller to a surrounding casing, generally of scroll shape.

centrifugal filter [ENG] An adaptation of the centrifugal settler, centrifugal action of a spinning container segregates heavy and light materials but heavy materials escape through nozzles as a thick slurry.

centrifugal filtration [MECH ENG] The removal of a liquid from a slurry by introducing the slurry into a rapidly rotating basket, where the solids are retained on a porous screen and the liquid is forced out of the cake by the centrifugal action.

centrifugal force [MECH ENG] 1. An outward pseudo-force, in a reference frame that is rotating with respect to an inertial reference frame, which is equal and opposite to the centripetal force that must act on a particle stationary in the rotating frame. 2. The reaction force to a centripetal force.

centrifugal governor [MECH ENG] A governor whose flyweights respond to centrifugal force to sense speed.

centrifugal molecular still [CHEM ENG] A device used for molecular distillation, material is fed to the center of a hot, rapidly rotating cone housed in a chamber at a high vacuum; centrifugal force spreads the material rapidly over the hot surface, where the evaporable material goes off as a vapor to the condenser.

centrifugal moment [MECH ENG] The product of the magnitude of centrifugal force acting on a body and the distance to the center of rotation.

centrifugal pump [MECH ENG] A machine for moving a liquid, such as water, by accelerating it radially outward in an impeller to a surrounding volute casing.

centrifugal sedimentation [CHEM ENG] Removing solids from liquids by causing particles to settle through the liquid radially toward or away from the center of rotation (depending on the solid-liquid relative densities) by use of a centrifuge.

centrifugal separation [MECH ENG] The separation of two immiscible liquids in a centrifuge within a much shorter period of time than could be accomplished solely by gravity.

centrifugal settler [CHEM ENG] Spinning container that separates solid particles from liquids; centrifugal force causes suspended solids to move toward or away from the center of rotation, thus concentrating them in one area for removal.

centrifugal switch [MECH ENG] A switch opened or closed by centrifugal force, used on some induction motors to open the starting winding when the motor has almost reached synchronous speed.

centrifugal tachometer [MECH ENG] An instrument which measures the instantaneous angular speed of a shaft by measuring the centrifugal force on a mass rotating with it.

centrifuge [MECH ENG] 1. A rotating device for separating liquids of different specific gravities or for separating suspended colloidal particles, such as clay particles in an aqueous suspension, according to particle-size fractions by centrifugal force. 2. A large motor-driven apparatus with a long arm, at the end of which human and animal subjects or equipment can be revolved
and rotated at various speeds to simulate the prolonged accelerations encountered in rockets and spacecraft. { 'sen·tra·fyūj ·centrifuge refining [CHEM ENG] The use of centrifuges for liquids processing, such as separation of solids or immiscible droplets from liquid carriers, or for liquid-liquid solvent extraction. { 'sen·tra·fyūj·rīt·mǐn·iŋ ·centripetal [MECH] Acting or moving in a direction toward the axis of rotation or the center of a circle along which a body is moving. { 'sen·trip·ād·al ·centripetal acceleration [MECH] The radial component of the acceleration of a particle or object moving around a circle, which can be shown to be directed toward the center of the circle. Also known as radial acceleration. { 'sen·trip·ād·al ·centripetal force [MECH] The radial force required to keep a particle or object moving in a circular path, which can be shown to be directed toward the center of the circle. { 'sen·trip·ād·al ·centrobaric [MECH] 1. Pertaining to the center of gravity, or to some method of locating it. 2. Possessing a center of gravity. { 'sen·trō·bā·rik ·centrode [MECH] The path traced by the instantaneous center of a plane figure when it undergoes plane motion. { 'sen·trō·dē ·centroid [MECH] See center of mass. { 'sen·trōid ·centroïd of asymptotes [CONT SYS] The intersection of asymptotes in a root-locus diagram. { 'sen·trō·īd ·cepstrum vocoder [ENG ACOUS] A digital device for reproducing speech in which samples of the cepstrum of speech, together with pitch information, are transmitted to the receiver, and are then converted into an impulse response that is convolved with an impulse train generated from the pitch information. { 'sep·trām ·čep·stru·mǔ·vo·kō·du·rər ·ceramic capacitor [ELEC] A capacitor whose dielectric is a ceramic material such as barium titanate, the composition of which can be varied to give a wide range of temperature coefficients. { 'sa·rəm·ik ·kā·pas·ād·ər ·ceramic cartridge [ENG ACOUS] A device containing a piezoelectric ceramic element, used in phonograph pickups and microphones. { 'sa·rəm·ik ·kā·pās·ad·ər ·ceramic earphones See crystal headphones. { 'sa·rəm·ik ·kē·rā·trē ·ceramic glaze [ENG] A glossy finish on a clay body obtained by spraying with metallic oxides, chemicals, and clays and firing at high temperatures. { 'sa·rəm·ik ·kla·zə ·ceramic microphone [ENG ACOUS] A microphone using a ceramic cartridge. { 'sa·rəm·ik ·mī·kraˌtōn ·ceramic pickup [ENG ACOUS] A phonograph pickup using a ceramic cartridge. { 'sa·rəm·ik ·pīk·uρ ·ceramic radiant [ENG] A baked-clay component of a gas heating unit which radiates heat when incandescent from the gas flame. { 'sa·rəm·ik ·tād·ě·ōnt ·ceramics [ENG] The art and science of making ceramic products. { 'sa·rəm·ik ·sā·məs ·ceramic tool [DES ENG] A cutting tool made from metallic oxides. { 'sa·rəm·ik ·jǔl ·ceramic transducer See electrostriction transducer. { 'sa·rəm·ik ·trans·dū·sər ·ceraunograph [ENG] An instrument that detects radio waves generated by lightning discharges and records their occurrence. { 'sa·rən·o·nəˌgrāf ·Cermak-Spierk furnace [ENG] An automatic reverberatory furnace of rectangular form divided into two sections by a wall; used for refining zinc and quicksilver ores. { 'sa·rəˌmēkˌspir·e·k ·tār·nas ·cermet resistor [ELEC] A metal-glaze resistor, consisting of a mixture of finely powdered precious metals and insulating materials fired onto a ceramic substrate. { 'sarˌmētˌnīz·tār ·Cerruti’s problem See Boussinesq’s problem. { 'serˌtāˌprōblem ·certainty equivalence control [CONT SYS] An optimal control law for a stochastic adaptive control system which is obtained by solving the control problem in the case of known parameters and substituting the known parameters with their estimates. { 'sərt·ən·tēˌ iˌkiv·əˌlōns ·kar·tōl ·cesium magnetometer [ENG] A magnetometer that uses a cesium atomic-beam resonator as a frequency standard in a circuit that detects very small variations in magnetic fields. { 'se·zēˌəˌməˌməˌtāˌtōd·ər ·cesspit See cesspool. { 'ses·pit ·cesspool [CIV ENG] An underground tank for raw sewage collection; used where there is no sewage system. Also known as cesspit. { 'ses·pūl ·cetane index [CHEM ENG] An empirical method for finding the cetane number of a fuel based on API gravity and the mid boiling point. { 'se·tāˌnəˌjēˌdēks ·cetane number [CHEM ENG] The percentage by volume of cetane (cetane number 100) in a blend with α-methyl-naphthalene (cetane number 0); indicates the ability of a fuel to ignite quickly after being injected into the cylinder of an engine. { 'seˌtāˌnəˌnēˌděks ·CFLA See component-failure-impact analysis. ·cfs See cusec. ·cg See centigram. chain [CIV ENG] See engineer’s chain; Gunter’s chain. [DES ENG] 1. A flexible series of metal links or rings fitted into one another, used for supporting, restraining, dragging, or lifting objects or transmitting power. 2. A mesh of rods or plates connected together, used to convey objects or transmit power. { 'chān ·chain belt [DES ENG] Belt of flat links to transmit power. { ‘chānˌbelt ·chain block [MECH ENG] A tackle which uses an endless chain rather than a rope, often operated 96
from an overhead track to lift heavy weights especially in workshops. Also known as chain fall, chain hoist. • chain bond [CIV ENG] A masonry bond formed with a chain or bar. • chain conveyer [MECH ENG] A machine for moving materials that carries the product on one or two endless linked chains with crossbars; allows smaller parts to be added as the work progresses. • chain course [CIV ENG] A course of stone held together by iron clamps. • chain drive [MECH ENG] A flexible device for power transmission, hoisting, or conveying, consisting of an endless chain whose links mesh with toothed wheels fastened to the driving and driven shafts. • chain fall See chain block. • chain-float liquid-level gage [ENG] Float device to measure the level of liquid in a vessel; the float, suspended from a counterweighted chain draped over a toothed sprocket, rises or falls with the liquid level, and the chain movement turns the sprocket to position a calibrated depth-indicator. • chain fit [ENG] Likewad [lev-al, gaj] • chain gear [MECH ENG] A gear that transmits motion from one wheel to another by means of a chain. • chain grate stoker [MECH ENG] A wide, endless chain used to feed, carry, and burn a noncooking coal in a furnace, control the air for combustion, and discharge the ash. • chain hoist See chain block. • chain hoisting [CIV ENG] In land surveying, measuring distance by means of a chain or tape. • chain pump [MECH ENG] A pump containing an endless chain that is fitted at intervals with disks and moves through a pipe and raises sludge. • chain riveting system [ENG] A number of radar stations located at various sites on a missile range to enable complete radar coverage during a missile flight, the stations are linked by data and communication lines for target acquisition, target positioning, or data-recording purposes. • chain saw [MECH ENG] A gasoline-powered saw for felling and bucking timber, operated by one person; has cutting teeth inserted in a sprocket chain that moves rapidly around the edge of an oval-shaped blade. • chain tongs [DES ENG] A tool for turning pipe, using a chain to encircle and grasp the pipe. • chain vise [DES ENG] A vise in which the work is encircled and held tightly by a chain. • chaldron [MECH] 1. A unit of volume in common use in the United Kingdom, equal to 36 bushels, or approximately 1.30927 cubic meters. 2. A unit of volume, formerly used for measuring solid substances in the United States, equal to 36 bushels, or approximately 1.26861 cubic meters. • chamber [CIV ENG] The space in a canal lock between the upper and lower gates. • chamber kiln [ENG] A kiln consisting of a series of adjacent chambers in a ring or oval through which the fire moves, taking several days to make a circuit, waste gas from the fire preheats ware in chambers toward which the fire is moving, while combustion air is preheated by ware in chambers already fired. • chamber process [CHEM ENG] An obsolete method of manufacturing sulfuric acid in which sulfur dioxide, air, and steam are reacted in a lead chamber with oxides of nitrogen as the catalyst. • chamber test [ENG] A fire test developed specifically for floor coverings that measures the speed and distance of the spread of flames under specified conditions. • chamfer [ENG] To bevel a sharp edge on a machine part. • chamfer angle [DES ENG] The angle that a beveled surface makes with one of the original surfaces. • chamfering [MECH ENG] Machining operations to produce a beveled edge. Also known as beveling. • chamfer plane [DES ENG] A plane for chamfering edges of woodwork. • change gear [MECH ENG] A gear used to change the speed of a driven shaft while the speed of the driving remains constant. • changing bag [ENG] An enclosure of lightproof material used for operations such as loading of film holders in daylight. • channel [CHEM ENG] In percolation filtration, a portion of the clay bed where there is a preponderance of flow. • channeling machine [MECH ENG] An electrically powered machine that operates by a chipping action of three to five chisels while traveling
channel iron

back and forth on a track, used for primary separation from the rock ledge in marble, limestone, and soft sandstone quarries. Also known as channelizer. ['chænəl-iz ˈmeɪʃən] channel iron [DES ENG] A metal strip or beam with a U-shape. ['chan-əl ˈjɔrn] channel process [CHEM ENG] A carbon-black process in which iron channel beams are used as depositing surfaces for carbon black. ['chan-əl ˈpræs-əs]

charge [chɑːr/) charcoal canister [MECH] A convenient reference length (usually constant) of a given configuration, such as overall length of an aircraft, the maximum diameter or radius of a body of revolution, or a chord or span of a lifting surface. ['kar-ik-ˈtɒr-is-tik]

characterization factor [CHEM ENG] A number which expresses the variations in physical properties with change in character of the paraffinic stock, ranges from 12.5 for paraffinic stocks to 10.0 for the highly aromatic stocks. Also known as Watson factor. ['kar-ik-ˈtɒr-əz-ən ˈfæktər]

charcoal canister [MECH ENG] In an evaporative control system, a container filled with activated charcoal that traps gasoline vapors emitted by the fuel system. Also known as carbon canister. ['ʊtʃ ˈkoʊl ˈkæn-ər] charcoal test [CHEM ENG] A determination of the natural gasoline content of natural gas by adsorbing the gasoline on activated charcoal and then recovering it by distillation. ['ʊtʃ ˈkoʊl ˈtest]

charge [ELEC] 1. A basic property of elementary particles of matter; the charge of an object may be a positive or negative number or zero; only integral multiples of the proton charge occur, and the charge of a body is the algebraic sum of the charges of its constituents; the value of the charge may be inferred from the Coulomb force between charged objects. Also known as electric charge, quantity of electricity. 2. To convert electrical energy to chemical energy in a secondary battery. 3. To feed electrical energy to a capacitor or other device that can store it. [ENG] 1. A unit of an explosive, either by itself or contained in a bomb, projectile, mine, or the like, or used as the propellant for a bullet or projectile. 2. To load a borehole with an explosive. 3. The material or part to be heated by induction or dielectric heating. 4. The measurement or weight of material, either liquid, preformed, or powdered, used to load a mold at one time during one cycle in the manufacture of plastics or metal. [MECH ENG] 1. In refrigeration, the quantity of refrigerant contained in a system. 2. To introduce the refrigerant into a refrigeration system. ['char] charge collector [ELEC] The structure within a battery electrode that provides a path for the electric current to or from the active material. Also known as current collector. ['ʊtʃ ˈkoʊl ˈlektər]

charge conservation See conservation of charge. ['ʊtʃ ˈkoʊl-ən ˈsər-vəns] charge-coupled device [ELECTR] A semiconductor device wherein minority charge is stored in a spatially defined depletion region (potential well) at the surface of a semiconductor and is moved about the surface by transferring this charge to similar adjacent wells. Abbreviated CCD. ['ʊtʃ ˈkoʊl-əd dəˈvɪs] charge-coupled image sensor [ELECTR] A device in which charges are introduced when light from a scene is focused on the surface of the device; image points are accessed sequentially to produce a television-type output signal. Also known as solid-state image sensor. ['ʊtʃ ˈkoʊl-əd ˈɪm-əd ˈsɛn-sər] charge density [ELEC] The charge per unit area on a surface or per unit volume in space. ['ʊtʃ ˈkoʊl ˈden-sətɪ] charge-mass ratio [ELEC] The ratio of the electric charge of a particle to its mass. ['ʊtʃ ˈkoʊl ˈmaς ˈræ-ʃoʊ] charge quantization [ELEC] The principle that the electric charge of an object must equal an integral multiple of a universal basic charge. ['ʊtʃ ˈkoʊl ˈkwɒn-ətər] charge-transfer device [ELECTR] A semiconductor device that depends upon movements of stored charges between predetermined locations, as in charge-coupled and charge-injection devices. ['ʊtʃ ˈkoʊl-ən ˈtræn-fər] charging current [ELEC] The current that flows into a capacitor when a voltage is first applied. ['ʊtʃ ˈkoʊl-ən ˈtræn-ənt] charging pump [CHEM ENG] Pump that provides pressurized fluid flow for the input of another unit, such as to a triplex pump that requires positive pressure. ['ʊtʃ ˈkoʊl-ən ˈpʌmp] chart comparison unit [ENG] A device that permits simultaneous viewing of a radar plan position indicator display and a navigation chart so that one appears superimposed on the other.
Also known as autoradar plot. \(\text{'chart kəm'par-ə-siən, yu'nat}\)

**chart datum** A datum plane. \(\text{'chart, dād-əm}\)

**chart recorder** [ENG] A recorder in which a dependent variable is plotted against an independent variable by an ink-filled pen moving on plain paper, a heated stylus on heat-sensitive paper, a light beam or electron beam on photosensitive paper, or an electrode on electrosensitive paper. The plot may be linear or curvilinear on a strip chart recorder, or polar on a circular chart recorder. \(\text{'chart ri'kōrd-ar}\)

**chart table** [ENG] A flat surface on which charts are spread out, usually with storage space for charts and other navigating equipment below the plotting surface. \(\text{'chart, dēsk}\)

**chase** [BUILD] A vertical passage for ducts, pipes, or wires in a building. [DES ENG] A series of cuts, each having a path that follows the path of the cut before it; an example is a screw thread. [ENG] 1. The main body of the mold which contains the molding cavity or cavities. 2. The enclosure used to shrink-fit parts of a mold cavity in place to prevent spreading or distortion, or to enclose an assembly of two or more parts of a split-cavity block. 3. To straighten and clean threads on screws or pipes. \(\text{'chas}\)

**chase mortise** [DES ENG] A mortise with a sloping edge from bottom to surface so that a tenon can be inserted when the outside clearance is small. \(\text{'chas mōr-tiz\}'s}\)

**chaser** [ENG] A thread-cutting tool with many teeth. \(\text{'chas-ar}\)

**chase ring** [MECH ENG] In hobbing, the ring which restrains the blank from spreading during hob sinking. \(\text{'chas rīŋ}\)

**chasing tool** [DES ENG] A hammer or chisel used to decorate metal surfaces. \(\text{'chas-ing, tīl\}'l}\)

**chassis** [ENG] 1. A frame on which the body of an automobile or airplane is mounted. 2. A frame for mounting the working parts of a radio or other electronic device. \(\text{'chas-ə}\)

**chassis ground** [ELEC] A connection made to the metal chassis on which the components of a circuit are mounted, to serve as a common return path to the power source. \(\text{'chas-e, grōnd}'\)

**chassis punch** [DES ENG] A hand tool used to make round or square holes in sheet metal. \(\text{'chas-e, pənch}\)

**chatter** [ELEC] Prolonged undesirable opening and closing of electric contacts, as on a relay. Also known as contact chatter. [ENG] An irregular alternating motion of the parts of a relief valve due to the application of pressure where contact is made between the valve disk and the seat. [ENG ACOUS] Vibration of a disk-recorder cutting stylus in a direction other than that in which it is driven. \(\text{'chad-ar}\)

**chattering** [CONT SYS] A mode of operation of a relay-type control system in which the relay switches back and forth infinitely fast. \(\text{'chad-ər}\)

**Chattock gage** [ENG] A form of micromanometer in which observation of the interface between two immiscible liquids is used to determine when the pressure to be measured has been balanced by the pressure head resulting from tilting of the entire apparatus. \(\text{'chad-ək, ɡāj}'\)

**check** [ENG] A device attached to something in order to limit the movement, such as a door check. \(\text{'chek}\)

**check dam** [CIV ENG] A low, fixed structure, constructed of timber, loose rock, masonry, or concrete, to control water flow in an erodable channel or irrigation canal. \(\text{'chek, dam}\)

**checkerboard regenerator** [ENG] An open-checkerwork arrangement of firebrick in a high-temperature chamber that absorbs heat during a batch processing cycle, then releases it to preheat fresh combustion air during the down cycle; used, for example, in the steel industry with open-hearth and heat-treating furnaces. \(\text{'chek-ar, börd ri'jən-ar, rād-ar}'\)

**checker plate** [ENG] A type of slip-resistant floor plate with a distinctive raised pattern that is used for walkways and platforms. \(\text{'chek-ar, plät}'\)

**checkers** [ENG] Open brickwork in a checkerboard regenerator allowing for the passage of hot spent gases. \(\text{'chek-arz}'\)

**check fillet** [BUILD] A curb set into a roof to divert or control the flow of rainwater. \(\text{'chek fil-at}'\)

**checkout** [ENG] A sequence of actions to test or examine a thing as to its readiness for incorporation into a new phase of use or as to the performance of its intended function. \(\text{'chek, aut}'\)

**check rail** [BUILD] A rail, thicker than the window, that spans the opening between the top and bottom sash, usually beveled and rabbeded. See guardrail. \(\text{'chek, rāl}'\)

**check stop** [BUILD] A narrow length of wood or metal that is installed to hold a sliding element in place, such as the lower part of a sash of a double-hung window. \(\text{'chek, stāp}'\)

**check study** [IND ENG] A review of a job or operation in part or in its entirety to evaluate the validity of a standard time. \(\text{'chek, stād-ə}'\)

**check valve** [MECH ENG] A device for automatically limiting flow in a piping system to a single direction. Also known as nonreturn valve. \(\text{'chek, válv}'\)

**cheesebox still** [CHEM ENG] One of the first types of vertical cylindrical stills designed with a vapor dome. \(\text{'chez, bāks, stil}'\)

**cheese head** [DES ENG] A raised cylindrical head on a screw or bolt. \(\text{'chez, hed}'\)

**chemical engineering** [ENG] That branch of engineering serving those industries that chemically convert basic raw materials into a variety of products, and dealing with the design and operation of plants and equipment to perform
chemical film dielectric

such work; all products are formed in chemical processes involving chemical reactions carried out under a wide range of conditions and frequently accompanied by changes in physical state or form. {kem-i-kal, en-i-a'nik-ad}

chemical film dielectric [ELEC] An extremely thin layer of material on one or both electrodes of an electrolytic capacitor, which conducts electric current in only one direction and thereby constitutes the insulating element of the capacitor. {kem-i-kal, film, di-a-lek-trik}

chemical fire extinguisher [CHEM ENG] Any of three types of fire extinguishers (vaporizing liquid, carbon dioxide, and dry chemical) which expel chemicals in solid, liquid, or gaseous form to blanket or smother a fire. {kem-i-kal, fir i-k'isini-gwish-ar}

chemical force microscope [ENG] A modification of the atomic force microscope in which an organic monolayer on the probe tip that terminates with specific chemical functional groups is sensitive to specific molecular interactions between these groups and those on the sample surface. {kem-a-kal, furs, 'mi-kra,skop}

chemical hygrometer See absorption hygrometer. {kem-i-kal, hi-graym-ad-ar}

chemical ion pump [CHEM ENG] A vacuum pump whose pumping action is based on evaporation of a metal whose vapor then reacts with the chemically active molecules in the gas to be evacuated. {kem-i-kal, 'ion, pump}

chemically sensitive field-effect transistor [ELECTR] A field-effect transistor in which the ordinary gate electrode is replaced by a chemically sensitive membrane so that the gain of the transistor depends on the concentration of chemical substances. {kem-i-klek, 'sen-sad-iw, feld, iekt, tran,zi-s-tor}

chemical process industry [CHEM ENG] An industry in which the raw materials undergo chemical conversion during their processing into finished products, as well as (or instead of) the physical conversions common to industry in general, includes the traditional chemical, petroleum, and petrochemical industries. {kem-i-kal, 'pra-sas, in-da-str"e}

chemical pulping [CHEM ENG] Separation of wood fiber for paper pulp by chemical treatment of wood chips to dissolve the lignin that cements the fibers together. {kem-i-kal, 'pulp-in}

chemical reactor [CHEM ENG] Vessel, tube, pipe, or other container within which a chemical reaction is made to take place, may be batch or continuous, open or packed, and can use thermal, catalytic, or irradiation actuation. {kem-i-kal, re-ak-tor}

chemical simitlitude [CHEM ENG] A procedure used to ensure satisfactory operation of a full-scale chemical process by comparison with pilot plant data. {kem-i-kal, sa'mil-a-tud}

chemical sterilization [ENG] The use of bactericidal chemicals to sterilize solutions, air, or solid surfaces. {kem-i-kal, ster-a-la'z-ad-on}

chemical thermometer [ENG] A filled-system temperature-measurement device in which gas or liquid enclosed within the device responds to heat by a volume change (rising or falling of mercury column) or by a pressure change (opening or closing of spiral coil). {kem-i-kal, that, 'nam-ad-ar}

chemurgy [CHEM ENG] A branch of chemistry concerned with the profitable utilization of organic raw materials, especially agricultural products, for nonfood purposes such as for paints and varnishes. {ke-mar-j"e}

cherry picker [MECH ENG] Any of several small traveling cranes, especially one used to hoist a passenger on the end of a boom. {cher-e, pik-ar}

Chicago boom [MECH ENG] A hoisting device that is supported on the structure being erected. {sha-k'ak-g"o, bu"m}

Chicago caisson [CIV ENG] A caisson that is supported on the structure being erected. {sha-k'ak, kan}


Child's law [ELECTR] A law stating that the current in a thermionic diode varies directly with the three-halves power of anode voltage and inversely with the square of the distance between the electrodes, provided the operating conditions are such that the current is limited only by the space charge. Also known as Child-Langmuir equation, Child-Langmuir-Schottky equation, Langmuir-Child equation. {ch'tdz, lo}

Chile mill [MECH ENG] A crushing mill having vertical rollers running in a circular enclosure with a stone or iron base or die. Also known as edge runner. {chil-e, mil}

chiller [CHEM ENG] Oil-refining apparatus in which the temperature of paraffin distillates is lowered preparatory to filtering out the solid wax components. {chil-ar}

chill roll [ENG] A cored roll used in chill-roll extrusion of plastics. {chil rol}

chill-roll extrusion [ENG] Method of extruding plastic film in which the film is cooled while being drawn around two or more highly polished chill rolls, inside of which there is cooling water. Also known as cast-film extrusion. {chil, rol ek'stri-zhan}

chimney [BUILD] A vertical, hollow structure of masonry, steel, or concrete, built to convey gaseous products of combustion from a building. [ELECTR] A pipelike enclosure that is placed over a heat sink to improve natural upward convection of heat and thereby increase the dissipating ability of the sink. {chim-ne}

chimney apron [BUILD] A flashing made of a nonferrous metal, such as copper, that is built into the masonry of the chimney and the roofing material at the place where the roof is penetrated by the chimney. {chim-ne, a-pron}

chimney bar [BUILD] A wrought-iron or steel lintel which is supported by the sidewalls and
carries the masonry above the fireplace opening. Also known as turning bar. (ˈchim,nɛ, ˈbär)

chimney cap [CIV ENG] A rotary device fitted to a chimney and moved by the wind so that the chimney is turned away from the wind to permit the escape of smoke while rain or snow is prevented from entering the chimney. (ˈchim-nɛˌkap)

chimney core [MECH ENG] The inner section of a double-walled chimney which is separated from the outer section by an air space. (ˈchim-nɛˌkor)

chip [ELECTR] 1. The shaped and processed semiconductor die that is mounted on a substrate to form a transistor, diode, or other semiconductor device. 2. An integrated microcircuit performing a significant number of functions and constituting a subsystem. Also known as microchip. (ˈchip)

chip breaker [DES ENG] An irregularity or channel cut into the face of a lathe tool behind the cutting edge to cause removed stock to break into small chips or curls. (ˈchipˌbræk-ər)

chip cap [DES ENG] A plate or cap on the upper part of the cutting iron of a carpenter’s plane specified frequency range without appreciably breaking up the wood shavings. (ˈchipˌkap)

chip capacitor [ELECTR] A single-layer or multilayer monolithic capacitor constructed in chip form, with metallized terminations to facilitate direct bonding on hybrid integrated circuits. (ˈchip kəˈpədər-ər)

chip log [ENG] A line, marked at intervals (commonly 50 feet or 15 meters), that is paid out over the stern of a moving ship and is pulled out by a drag (the chip), to determine the ship’s speed. (ˈchipˌlɔj)

chipper [ENG] A tool such as a chipping hammer used for chipping. [MECH ENG] A machine with revolving knives for reducing large pieces of wood to chips. (ˈchîp-ər)

chipping hammer [ENG] A hand or pneumatic hammer with chisel-shaped or pointed faces used to remove rust and scale from metal surfaces. (ˈchip-ɪŋˌham-ər-ər)

chip resistor [ELECTR] A thick-film resistor constructed in chip form, with metallized terminations to facilitate direct bonding on hybrid integrated circuits. (ˈchip rɪˈzɪsˌtɑr)

chip radar [ENG] Radar in which a swept-frequency signal is transmitted, received from a target, then compressed in time to give a narrow pulse called the chip signal. (ˈchîpˌræ,dɑr)

chisel [DES ENG] A tool for working the surface of various materials, consisting of a metal bar with a sharp edge at one end and often driven by a mallet. (ˈchîz-əl)

chisel bit See chipping bit. (ˈchîz-əlˌbit)

chisel bond [ENG] A thermocompression bond in which a contact wire is attached to a contact pad on a semiconductor chip by applying pressure with a chisel-shaped tool. (ˈchîz-əlˌbɑnd)

chisel-edge angle [DES ENG] The angle included between the chisel edge and the cutting edge, as seen from the end of the drill. Also known as web angle. (ˈchîz-əlˌˌeijˌæŋ-gəl)

chisel-tooth saw [DES ENG] A circular saw with chisel-shaped cutting edges. (ˈchîz-əlˌˈtūtˌsaw)

Chladni’s figures [MECH] Figures produced by sprinkling sand or similar material on a horizontal plate and then vibrating the plate while holding it rigid at its center or along its periphery; indicate the nodal lines of vibration. (ˈklɑdˌnɛzˌfiːtəriz)

chloralkali [CHEM ENG] Either of the products of the industrial electrolysis of sodium chloride, that is, sodium hydroxide or chlorine. (ˈkloʊrˌəl-kəˌlɪ)

chloralkali process [CHEM ENG] An industrial chemical process based on the electrolysis of sodium chloride for the production of sodium hydroxide and chlorine. (ˌkloʊrˌəl-kəˌlɪˌpɹəsəs)

chlorinator [CHEM ENG] The apparatus used in chlorinating. (ˈkloʊr-əˌnədər)

choke [ELEC] An inductance used in a circuit to present a high impedance to frequencies above a specified frequency range without appreciably limiting the flow of direct current. Also known as choke coil. [MECH ENG] To increase the fuel feed to an internal combustion engine through the action of a choke valve. See choke valve. (ˈchɒk)

choke coil See choke. (ˈchɒkˌˌkɔɪl)

choked neck [MECH] The neck which choking. (ˈchɒktˌˌnek)

choke valve [MECH ENG] A valve which supplies the higher suction necessary to give the excess fuel feed required for starting a cold internal combustion engine. Also known as choke. (ˈchɒkˌˌvæl)

chopper [ENG] Any knife, axe, or mechanical device for chopping or cutting an object into segments. (ˈchɒp-ər)

chopper amplifier [ELECTR] A carrier amplifier in which the direct-current input is filtered by a low-pass filter, then converted into a square-wave alternating-current signal by either one or two choppers. (ˈchɒp-ərˌˌæmˈpləˌfiˈɔr)

chopper-stabilized amplifier [ELECTR] A direct-current amplifier in which a direct-coupled amplifier is in parallel with a chopper amplifier. (ˈkʰɔp-əˌˈstɑɪˌbæˌlizdˌˌæmˈpləˌfiˈɔr)

chopper transistor [ELECTR] A bipolar or field-effect transistor operated as a repetitive “on/off” switch to produce square-wave modulation of an input signal. (ˈkʰɔp-əˌˌtrænˈzɪtsˌtɑr)

chopping [ELECTR] The removal, by electronic means, of one or both extremities of a wave at a predetermined level. (ˈkʰɔp-ɪŋ)

chopping bit [MECH ENG] A steel bit with a chisel-shaped cutting edge, attached to a string of drill rods to break up, by impact, boulders, hardpan, and a lost core in a drill hole. Also known as chisel bit. (ˈkʰɔp-ɪŋˌbit)

chop-type feeder [MECH ENG] Device for semi-continuous feed of solid materials to a process
chord

unit, with intermittent opening and closing of a hopper gate (bottom closure) by a control arm actuated by an eccentric cam. {chāp,tip

chord [CIV ENG] The top or bottom, generally horizontal member of a truss. {kōrd}

chordal thickness [DES ENG] The tangential thickness of a tooth on a circular gear, as measured along a chord of the pitch circle. {kōrd-əl thīk-ənas}

chrome tanning [CHEM ENG] Tanning treatment of animal skin with chromium salts. {krōm 'tan-ing}

chromometer [ENG] A radiation meter that uses a substance whose color changes with x-ray dosage. {krō-mō-räd-ē-am-ad-ər}

chronocyclegraph [IND ENG] A device used in micromotion studies to record a complete work cycle by taking still pictures with long exposures, the motion paths being traced by small electric lamps fastened to the worker’s hands or fingers; time is obtained by interrupting the light circuits with a controlled frequency which produces dots on the film. {krān-o'st-kra graf}

chronograph [ENG] An instrument used to register the time of an event or graphically record time intervals such as the duration of an event. {krān-əgraf}

chronometric data [ENG] Data in which the desired quantity is the time of occurrence of an event or the time interval between two or more events. {krān-ə me-trik 'dād-ə-ar}

chronometric radiosonde [ENG] A radiosonde whose carrier wave is switched on and off in such a manner that the interval of time between the transmission of signals is a function of the magnitude of the meteorological elements being measured. {krān-ə me-trik rād-ē-o-sānd}

chronometric tachometer [ENG] A tachometer which repeatedly counts the revolutions during a fixed interval of time and presents the average speed during the last timed interval. {krān-ə me-tək tā kām-ad-ər}

chronometer [ENG] A thermometer consisting of a clock mechanism whose speed is a function of temperature, automatically calculates the mean temperature. {krān-ə-thər'mām-ad-ər}

CHU [CIV ENG] Centigrade heat unit.

CHU, mean Centigrade heat unit.

chuck [DES ENG] A device for holding a component of an instrument rigid, usually by means of adjustable jaws or set screws, such as the workpiece in a metalworking or woodworking machine, or the stylus or needle of a phonograph pickup. {chak}

chucking [MECH ENG] The grasping of an outsize workpiece in a chuck or jawed device in a lathe. {chahk-in}

chucking machine [MECH ENG] A lathe or grinder in which the outsize workpiece is grasped in a chuck or jawed device. {chahk-in ma'shən}

churn drill [MECH ENG] Portable drilling equipment, with drilling performed by a heavy string of tools tipped with a blunt-edge chisel bit suspended from a flexible cable, to which a reciprocating motion is imparted by its suspension from an oscillating beam or sheave, causing the bit to be raised and dropped. Also known as American system drill, cable-system drill. {chɔrn dril}

churn shot drill [MECH ENG] A boring rig with both churn and shot drillings. {chɔrn 'shät dril}

chute [ENG] A conduit for conveying free-flowing materials at high velocity to lower levels. {shüt}

chute spillway [CIV ENG] A spillway in which the water flow passes over a crest into a sloping, open channel, used for earth and rock-fill dams. {shüt 'spil,wa}

C4I See command, control, communications, and intelligence. {sē 'thrē 'tè}

cinetheodolite [ENG] A surveying theodolite in which 35-millimeter motion picture cameras with lenses of 60- to 240-inch (1.5- to 6.1-meter) focal length are substituted for the surveyor’s eye and telescope; used for precise time-correlated observation of distant airplanes, missiles, and artificial satellites. {sin-ə-thē-am-ad-lit}

Cipolletti weir [CIV ENG] Trapezoidal weir in which the sides of the notch slope are one horizontal to four vertical, used to measure water flow in open channels, especially streams and rivers. {chip-əl-ed wēr}

circle shear [MECH ENG] A shearing machine that cuts circular disks from a metal sheet rolling between the cutting wheels. {sər-kal,shēr}

circuit [ELECTR] See electric circuit. {sər-kat}

circuit analyzer [ELECTR] Volt-ohm-milliammeter. {sər-kat 'vəlt-əm-ˌmil-aməməter}

circuit board [ELECTR] See printed circuit board. {sər-kat bōrd}

circuit breaker [ELECTR] An electromagnetic device that opens a circuit automatically when the current exceeds a predetermined value. {sər-kat brāk-ər}

circuit conditioning [ELECTR] Test, analysis, engineering, and installation actions to upgrade a communications circuit to meet an operational requirement, includes the reduction of noise, the equalization of phase and level stability and frequency response, and the correction of impedance discontinuities, but does not include normal maintenance and repair activities. {sər-kat kan’dish-ə-nip}

circuit diagram [ELECTR] A drawing, using standardized symbols, of the arrangement and interconnections of the conductors and components of an electrical or electronic device or installation. Also known as schematic circuit diagram; wiring diagram. {sər-kat 'di-ə-grəm}

circuit element [ELECTR] See component. {sər-kat 'klə-mənt}

circuit Interrupter [ELECTR] A device in a circuit breaker to remove energy from an arc in order to extinguish it. {sər-kat in-tə-rəp-tər}

circuit loading [ELECTR] Power drawn from a circuit by an electric measuring instrument, which
may alter appreciably the quantity being measured. (săr-kat, lōd-ĕj)
circular scanning [ENG] Radar scanning in a circular plane

circular pitch [MECH] The linear measure in circular motion

circular mil [MECH] A unit equal to the area of a circle whose diameter is 1 mil (0.001 inch), used especially in specifying cross-sectional areas of round conductors. Abbreviated cir mil. (săr-kya-lar ‘mil)

circular motion [MECH] 1. Motion of a particle in a circular path. 2. Motion of a rigid body in which all its particles move in circles about a common axis, fixed with respect to the body, with a common angular velocity. (săr-kya-lar ‘mó-šan)
circular pitch [DES ENG] The linear measure in inches along the pitch circle of a gear between corresponding points of adjacent teeth. (săr-kya-lar ‘pich)
circular plane [DES ENG] A plane that can be adjusted for convex or concave surfaces. (săr-kya-lar ‘plăn)
circular saw [MECH ENG] Any of several power tools for cutting wood or metal, having a thin steel disk with a toothed edge that rotates on a spindle. (săr-kya-lar ‘sō)
circular scanning [ENG] Radar scanning in which the direction of maximum radiation describes a right circular cone. (săr-kya-lar ‘skan-ĕj)
circular spike [ENG] A metal timber connector fitted with a circular series of sharp teeth that dig into the wood, preventing lateral motion, as a bolt is tightened through the wood and the spike. (săr-kya-lar ‘spik)
circular velocity [MECH] At any specific distance from the primary, the orbital velocity required to maintain a constant-radius orbit. (săr-kya-lar vōl-lás-ăd-ĕ)
circulating fluid [ENG] A fluid pumped into a borehole through the drill stem, the flow of which cools the bit and transports the cuttings out of the borehole. (săr-kya-lăd-ĕ fī-lū-ăd)
circulating pump [CHEM ENG] Pump used to circulate process liquid out of and back into a process system, as in the circulation of distillation column bottoms through an external heater, or the circulation of storage tank bottoms to mix tank contents. (săr-kya-lăd-ĕ ūm-pamp)
circulating system [CHEM ENG] Fluid system in which the process fluid is taken from and pumped back into the system, as in the circulation of distillation column bottoms through an external heater. (săr-kya-lăd-ĕ sís-törn)
circulation area [BUILD] The area required for human traffic in a building, including permanent corridors, stairways, elevators, escalators, and lobbies. (săr-kya-lă-šan er-e-ō)
circumferentor [ENG] A horizontal compass used in surveying that has arms diametrically placed with vertical slit sights in them. (săr-kam-fær-en-tor)
cir mil See circular mil.
cistern [CIV ENG] A tank for storing water or other liquid. (sís-törn)
cistern barometer [ENG] A pressure-measuring device in which pressure is read by the liquid rise in a vertical, closed-top tube as a result of system pressure on a liquid reservoir (cistern) into which the bottom, open end of the tube is immersed. (sís-törn bă-răm-ăd-ŏr)
civil engineering [ENG] The planning, design, construction, and maintenance of fixed structures and ground facilities for industry, transportation, use and control of water, or occupancy. (siv-ŏl en-pān-ĕr-ĭj)
cladding [ENG] Process of covering one material with another and bonding them together under high pressure and temperature. Also known as bonding. (klad-ĭj)
clamp [DES ENG] A tool for binding or pressing two or more parts together, by holding them firmly in their relative positions. See clamping circuit. (klamp)
clamping coupling [MECH ENG] A coupling with a split cylindrical element which clamps the shaft ends together by direct compression, through bolts or rings, and by the wedge action of conical sections; not considered a permanent part of the shaft. (klamp-ĕj, kăp-ĕj)
clamping gripper [CONT SYS] A robot element that uses two-link movements, parallel-jaw movements, and combination movements to grasp and handle objects. (klamp-ĕj ‘grip-ŏr)
clamping plate [ENG] A plate on a mold which
attaches the mold to a machine. \{ 'klamp\-i\-\plåt\} 

**clamping pressure** \[^{ENG}\] In injection and transfer-molding of plastics, the pressure applied to keep the mold closed in opposition to the fluid pressure of the molding material. \{ 'klamp\-i\-\prem\-\or\-\ar'\} 

**clamp screw** \[^{DES\ ENG}\] A screw that holds a part by forcing it against another part. \{ 'klamp\ \s\-\kr\-\u\-\ar\} 

**clamp-screw sextant** \[^{ENG}\] A marine sextant having a clamp screw for controlling the position of the tangent screw. \{ 'klamp\ \s\-\kr\-\u\-\ar\ \seks\-\tang\} 

**clamshell bucket** \[^{MECH\ ENG}\] A two-sided bucket used in a type of excavator to dig in a vertical direction; the bucket is dropped while its leaves are open and digs as they close. Also known as clamshell grab. \{ 'klam\_shel \_grab\} 

**clamshell grab** \[^{SER}\] clamshell bucket. \{ 'klam\_shel \_grab\} 

**clamshell snapper** \[^{MECH\ ENG}\] A marine sediment sampler consisting of snapper jaws and a footlike projection which, upon striking the bottom, causes a spring mechanism to close the jaws, thus trapping a sediment sample. \{ 'klam\_shel \_snap\-ar\} 

**Clapeyron-Clausius equation** \[^{SER}\] Clapeyron-Clausius equation. \{ kla\-p\-\r\-\ön \ 'klö\-\ë\-\as\} 

**Clapeyron's equation** \[^{MECH}\] The theorem that the strain energy of a deformed body is equal to one-half the sum over three perpendicular directions of the displacement component times the corresponding force component, including deforming loads and body forces, but not the six constraining forces required to hold the body in equilibrium. \{ kla\-p\-\r\-\ön \ 'thr\-\am\} 

**clapper box** \[^{MECH\ ENG}\] A hinged device that permits a reciprocating cutting tool (as in a planer or shaper) to clear the work on the return stroke. \{ 'klap\-ar\ \båk\} 

**clarification** \[^{CHEM\ ENG}\] The removal of small amounts (usually less than 0.2%) of fine particulate solids from liquids (such as drinking water) by methods such as gravity sedimentation, centrifugal sedimentation, filtration, and magnetic separation. \{ kla\-\or\ 'få\-\kå\-\shån\} 

**clarifier** \[^{ENG}\] A device for filtering a liquid. \{ 'klär\-\or\ 'fi\-\ar\} 

**clarifying agent** \[^{SER}\] clarifying agent. \{ 'klär\-\or\ 'fi\-\i\-\å\-\jönt\} 

**clarifying centrifuge** \[^{MECH\ ENG}\] A device that clears liquid of foreign matter by centrifugation. \{ 'klär\-\or\ 'fi\-\i\-\å\-\sen\-\fo\-\lyû\} 

**clarifying filter** \[^{ENG}\] Any filter, such as a sand filter or a cartridge filter, used to purify liquids with a low solid-liquid ratio; in some instances color may be removed as well. \{ 'klär\-\or\ 'fi\-\i\-\å\ 'fil\-\tar\} 

**clarity** \[^{CHEM\ ENG}\] Measure of the amount of opaque suspended solids in a liquid, determined by visual or optical methods. \{ 'klär\-\or\-\å\-\ë\} 

**Clark process** \[^{CHEM\ ENG}\] Softening of water by adding alkaline solutions of calcium hydroxide so that the acid carbonates are converted to normal carbonates. \{ 'klär\-\prå\-\as\} 

**class** \[^{DES\ ENG}\] A releasable catch which holds two or more objects together. \{ 'klasp\} 

**class lock** \[^{DES\ ENG}\] A spring lock with a self-locking feature. \{ 'klasp\ 'låk\} 

**class nut** \[^{DES\ ENG}\] A split nut that clasps a screw when closed around it. \{ 'klasp\ 'nåt\} 

**class A push-pull sound track** \[^{ENG\ ACOUS}\] Two single photographic sound tracks side by side, the transmission of one being 180° out of phase with the transmission of the other; both positive and negative halves of the sound wave are linearly recorded on each of the two tracks. \{ 'klå\ 'på\ 'på\ 'so\-\ån\ 'trak\} 

**class B push-pull sound track** \[^{ENG\ ACOUS}\] Two photographic sound tracks side by side, one of which carries the positive half of the signal only, and the other the negative half; during the inoperative half-cycle, each track transmits little or no light. \{ 'klas\ 'be\ 'på\ 'so\-\ån\ 'trak\} 

**classical mechanics** \[^{MECH}\] Mechanics based on Newton's laws of motion. \{ kla\-\or\ 'kal\ 'må\-\kán\-\iks\} 

**classification** \[^{ENG}\] 1. Sorting out or categorizing of particles or objects by established criteria, such as size, function, or color. 2. Stratification of a mixture of various-sized particles (that is, sand and gravel), with the larger particles migrating to the bottom. See grading. \{ kla\-\or\ 'få\-\kå\-\shån\} 

**classification track** \[^{CIV\ ENG}\] A railroad track used to separate cars from a train according to destination. \{ kla\-\or\ 'få\-\kå\-\shån\ 'trak\} 

**classification yard** \[^{CIV\ ENG}\] A railroad yard for separating trains according to car destination. \{ kla\-\or\ 'få\-\kå\-\shån\ 'yård\} 

**classifier** \[^{MECH\ ENG}\] Any apparatus for separating mixtures of materials into their constituents according to size and density. \{ kla\-\or\ 'fi\-\ar\} 

**Claude process** \[^{CHEM\ ENG}\] A process of ammonia synthesis which uses high operating pressures and a train of converters. \{ 'klöd\ 'prå\-\as\} 

**clausius** \[^{THERMO}\] A unit of entropy equal to the increase in entropy associated with the absorption of 1000 international table calories of heat at a temperature of 1 K, or to 4186.8 joules per kelvin. \{ kla\-ë\-\as\} 

**Clausius-Clapeyron equation** \[^{THERMO}\] An equation governing phase transitions of a substance, \( \Delta H/\Delta T \), in which \( \Delta H \) is the change in enthalpy, \( \Delta T \) is the change in temperature during the transition. Also known as Clapeyron-Clausius equation; Clapeyron equation. \{ kla\-ë\-\as\ kla\-p\-\r\-\ön \ 'kwå\-\shån\} 

**Clausius-Dickel column** \[^{SER}\] Clausius-Dickel column. \{ kla\-ë\-\as\ 'dik\-\or\ 'kå\-\am\} 

**Clausius equation** \[^{THERMO}\] An equation of state in reference to gases which applies a correction to the van der Waals equation.
(P + (n^2a/|T|v + c^2)) \cdot (v - nh) = nRT,

where P is the pressure, T the temperature, V the volume of the gas, n the number of moles in the gas, R the gas constant, a constant only on temperature, b is a constant, and c is a function of a and b. \{ 'kloz\-\-e\-as i\-kwa\-\-zhan \}

Clausius inequality \[ \text{[THERMO]} \] The principle that for any system executing a cyclical process, the integral over the cycle of the infinitesimal amount of heat transferred to the system divided by its temperature is equal to or less than zero. Also known as Clausius theorem, inequality of Clausius. \{ 'kloz\-\-e\-as \text{in}\-i\-kwa\-\-zad\-\-\-e' \}

Clausius law \[ \text{[THERMO]} \] The law that an ideal gas's specific heat at constant volume does not depend on the temperature. \{ 'kloz\-\-e\-as \jlo \} \[ \text{[MECH ENG]} \] A dimensionless number used in the study of heat conduction in forced fluid flow, equal to V^Lp/\Delta T, where V is the fluid velocity, p is its density, L is a characteristic dimension, k is the thermal conductivity, and \Delta T is the temperature difference. \{ 'kloz\-\-e\-as \_n\-am\-ba\-r' \}

Clausius' statement \[ \text{[THERMO]} \] A formulation of the second law of thermodynamics, stating it is not possible that, at the end of a cycle of changes, heat has been transferred from a colder to a hotter body without producing some other effect. \{ 'kloz\-\-e\-as \text{st\-\-at\-\-munt} \}

Clausius theorem See Clausius inequality. \{ 'kloz\-\-e\-as \text{th\-\-ir\-\-munt} \}

Claus method \[ \text{[CHEM ENG]} \] Industrial method of obtaining sulfur by a partial oxidation of gaseous hydrogen sulfide in the air to give water and sulfur. \{ 'klau\-s, meth\-\-ad' \}

claw \[ \text{[DES ENG]} \] A fork for removing nails or spikes. \{ 'kle\-n' \}

claw bar See ripping bar. \{ 'kle\-n, b\-\-ar' \}

claw clutch \[ \text{[MECH ENG]} \] A clutch consisting of claws that interlock when pushed together. \{ 'kle\-n, klo\-\-ch' \}

claw cleaning \[ \text{[CHEM ENG]} \] Cleaning coarse-grained absorbent clays for reuse in percolation processes by deoiling them with naphtha, steaming out excess naphtha, and roasting in a stream of air to remove carbonaceous matter. \{ 'kle\-n, \j\-\-en\-\-\-\-y\-\-ra\-\-shan' \}

cleaning eye See cleanout. \{ 'kle\-n, i\-\-j, \i' \}

cleaning lane \[ \text{[ENG]} \] A space that is located between adjacent rows of tubes in a heat exchanger and allows passage of a cleaning device. \{ 'kle\-n, i\-\-l\-\-an' \}

cleaning turbine \[ \text{[MECH ENG]} \] A tool for cleaning the interior surfaces of heat exchangers and boiler tubes, consists of a drive motor, a flexible drive cable or hose, and a head that is an arrangement of blades, modified drill bits, or brushes. \{ 'kle\-n, i\-\-j, t\-\-ar\-\-ban' \}

cleanout \[ \text{[ENG]} \] A pipe fitting containing a removable plug that provides access for inspection or cleaning of the pipe run. Also known as access eye, cleaning eye. \{ 'kle\-n, aut' \}

cleanout auger See cleanout jet auger. \{ 'kle\-n, aut, \_og\-\-or' \}

cleanout door \[ \text{[ENG]} \] An opening in the side of a tank usually at ground level and covered by a plate to provide access for removal of sediments from the bottom of the tank. \{ 'kle\-n, aut, d\-\-or' \}

cleanout jet auger \[ \text{[ENG]} \] An auger equipped with water-jet orifices designed to clean out collected material inside a driven pipe or casing before taking soil samples from strata below the bottom of the casing. Also known as cleanout auger. \{ 'kle\-n, aut, j\-\-et, \_og\-\-or' \}

clean room \[ \text{[ENG]} \] A room in which elaborate precautions are employed to reduce dust particles and other contaminants in the air, as required for assembly of delicate equipment. \{ 'kle\-n, \text{\-r\-um}' \}

clean track \[ \text{[ENG ACOUS]} \] A sound track having no leakage from other tracks. \{ 'kle\-n, trak' \}

cleanup \[ \text{[ELECTR]} \] Gradual disappearance of gases from an electron tube during operation, due to absorption by getter material or the tube structure. \[ \text{[ENG]} \] The time required for a leak-testing system to reduce its signal output to 37% of the signal transmitted at the instant when tracer gases enter the system. \{ 'kle\-n, nap' \}

clearance \[ \text{[ENG]} \] Unobstructed space required for occasional removal of parts of equipment. \[ \text{[MECH ENG]} \] 1. In a piston-and-cylinder mechanism, the space at the end of the cylinder when the piston is at dead-center position toward the end of the cylinder. 2. The ratio of the volume of this space to the piston displacement during a stroke. \{ 'kle\-n, \_an' \}

clearance angle \[ \text{[MECH ENG]} \] The angle between a plane containing the end surface of a cutting tool and a plane passing through the cutting edge in the direction of cutting motion. \{ 'kle\-n, \_an' \}

clearance volume \[ \text{[MECH ENG]} \] The volume remaining between piston and cylinder when the
piston is at top dead center. { 'klir-ons ,väl-yam }

clear octane [ENG] The octane number of a particular gasoline before it has been blended with antiknock additives. { 'klir 'ak, tän }
cleft [CIV ENG] A strip of wood, metal, or other material fastened across something to serve as a batten or to provide strength or support. [DES ENG] A fitting having two horizontally projecting horns around which a rope may be made fast. { 'klet }
cleat See cleat. { 'klet }
clevis [DES ENG] A U-shaped metal fitting with holes in the open ends to receive a bolt or pin; used for attaching or suspending parts. { 'klev-as }
clevis pin [DES ENG] A fastener with a head at one end, used to join the ends of a clevis. { 'klev-as ,pin }
click [ENG ACOUS] A perforation in a sound track which produces a clicking sound when passed over the projector sound head. { 'klik }
click filter [ELECTR] A capacitor connected across a switch, relay, or key to lengthen the decay time from the closed to the open condition when the device is opened or closed. { 'klik ,fil-tar }
click track [ENG ACOUS] A sound track containing a series of clicks, which may be spaced regularly (uniform click track) or irregularly (variable click track). { 'klik ,trak }
climatic control See air conditioning. { 'kli-mät kan'trol }
climbing crane [MECH ENG] A crane used on top of a high-rise construction that ascends with the building as work progresses. { 'klim-inj 'krân }
climbing irons [DES ENG] Spikes attached to a steel framework worn on shoes to climb wooden utility poles and trees. { 'klim-inj 'fr-anz }
climate control thermometer [ENG] A thermometer used to accurately determine the temperature of the human body; the most common type is a mercury-in-glass thermometer, in which the mercury expands from a bulb into a capillary tube past a constriction that prevents the mercury from receding back into the bulb, so that the thermometer registers the maximum temperature attained. { 'klim-ö-kal thar'mäm-öd-a-r }
clinker building [DES ENG] A method of building ships and boilers in which the edge of the wooden planks or steel plates used for the outside covering overlap the edge of the plank or plate next to it; clinched nails fasten the planks together, and rivets fasten the steel plates. { 'klip-kar ,bil-dig }
clinograph [ENG] A type of directional surveying instrument that records photographically the direction and magnitude of deviations from the vertical of a borehole, well, or shaft; the information is obtained by the instrument in one trip into and out of the well. { 'kli-nə-graf }
clinometer [ENG] 1. A hand-held surveying device for measuring vertical angles; consists of a sighting tube surmounted by a graduated vertical arc with an attached level bubble; used in meteorology to measure cloud height at night, in conjunction with a ceiling light, and in ordinance for boresighting. Also known as Abney level. 2. A device for measuring the amount of roll aboard ship. { 'klān-näm-öd-ar }
clip [DES ENG] A device that fastens by gripping, clamping, or hooking one part to another. { 'klip }
clip bond [CIV ENG] A bond in which the inner edge of face brick is cut off so that bricks laid diagonal to a wall can be joined to those laid parallel to it. { 'klip ,bānd }
clip lead [ELEC] A short piece of flexible wire with an alligator clip or similar temporary connector at one or both ends. { 'klip ,led }
clipper See limiter. { 'klip-ar }
clipper diode [ELECTR] A bidirectional breakdown diode that clips signal voltage peaks of either polarity when they exceed a predetermined amplitude. { 'klip-ar ,dr',öd }
clipper-limiter [ELECTR] A device whose output is a function of the instantaneous input amplitude for a range of values lying between two predetermined limits but is approximately constant, at another level, for input values above the range. { 'klip-ar ,lamin-ad-ar }
clivey See clevis. { 'kli-vē }
clo [ENG] The amount of insulation which will maintain normal skin temperature of the human body when heat production is 50 kilogram-calories per meter squared per hour, air temperature is 70°F (21°C), and the air is still. { 'klō }
clock [ELECTR] A source of accurately timed pulses, used for synchronization in a digital computer or as a time base in a transmission system. { 'klak }
clock control system [CONT SYS] A system in which a timing device is used to generate the control function. Also known as time-controlled system. { 'klak kan'trol ,sis-tom }
clock drive [ENG] The mechanism that causes an equatorial telescope to revolve about its polar axis so that it keeps the same star in its field of view. { 'klak ,drift }
clocked flip-flop [ELECTR] A flip-flop circuit that is set and reset at specific times by adding clock pulses to the input so that the circuit is triggered only if both trigger and clock pulses are present simultaneously. { 'klak't fliphłap }
clocked logic [ELECTR] A logic circuit in which the switching action is controlled by repetitive pulses from a clock. { 'klak't flaip }
clock frequency [ELECTR] The master frequency of the periodic pulses that schedule the operation of a digital computer. Also known as clock rate, clock speed. { 'klak ,frē-kwan-sē }
clock motor See timing motor. { 'klak ,mööd-ar }
clock oscillator [ELECTR] An oscillator that controls an electronic clock. { 'klak 'äs-a-läd-ar }
clock rate See clock frequency. { 'klak ,rät }
clock speed See clock frequency. { 'klak ,spēd }
close-control radar [ENG] Ground radar used
with radio to position an aircraft over a target that is normally difficult to locate or is invisible to the pilot. \( \text{'klöz } \text{kan'\text{tröl } 'rådär} \)

**close-coupled pump** [MECH ENG] Pump with built-in electric motor (sometimes a steam turbine), with the motor drive and pump impeller on the same shaft. \( \text{\{'klöz \text{kap-\text{äld } 'pump} \}\} \)

**closed system** \( \text{'ploozd } \text{'sis-tam} \) was well neutral to commercial shutoff 2. The maximum allowable pressure drop between the outlet of a three-way valve and either of the two inlets, or between the inlet and either of the two outlets. \( \text{\{'klöz_1 \text{of ,råd-\text{inj} }\}\} \)

**closer** [CIV ENG] 1. In masonry work, the last brick or other masonry component that is laid in a horizontal course. Also known as closure. 2. A stone course that extends from one window-sill to another. \( \text{\{'klöz-zar} \}\)

**close-talking microphone** [ENG ACOUS] A microphone designed for use close to the mouth, so noise from more distant points is suppressed. Also known as noise-canceling microphone. \( \text{\{'klöz-tok'kin'mikrarna\}\}

**closing line** [MECH] The vector required to complete a polygon consisting of a set of vectors whose sum is zero (such as the forces acting on a body in equilibrium). \( \text{\{'klöz-inj }\text{lin}\}\)

**closing machine** [ENG] A machine for manufacturing wire rope by braiding wire into strands, and strands into rope. Also known as stranding machine. \( \text{\{'klöz-inj }\text{ma\text{shen}} \)
coastal berm See berm. \(\text{\`kôst\-tal \ `barm}\) coastal engineering \[CHEM ENG\] A branch of civil engineering pertaining to the study of the action of the seas on shorelines and to the design of structures to protect against this action. \(\text{\`kôst\-tal \ `en\-jô\-nir\-in}\) coat hanger die \[ENG\] A plastics-sheet slot die shaped like a coat hanger on the inside. \(\text{\`kôt\ ,\ `hän\-ar\ , \ `dî}\) coaxial \[MECH\] Sharing the same axes. \[MECH ENG\] Mounted on independent concentric shafts. \(\text{\`kô\-ák\-se\-ô\-al}\) coaxial speaker \[ENG ACOUS\] A loudspeaker system comprising two or less commonly three speaker units mounted on substantially the same axis in an integrated mechanical assembly, with an acoustic-radiation-controlling structure. \(\text{\`kô\-ák\-se\-ô\-al \ `spêk\-ar}\) coaxial wavemeter \[ENG\] A device for measuring frequencies above about 100 megahertz, consisting of a rigid metal cylinder that has an inner conductor along its central axis, and a sliding disk that shorts the inner conductor and the cylinder. \(\text{\`kô\-ák\-se\-ô\-al \ `wâ\-vë\-ô\-med\-ar}\) cobalt glance See cobaltite. \(\text{\`kô\-bô\-t \ `glans}\) cobalt-molybdate desulfurization \[CHEM ENG\] A process for desulfurization of petroleum by using cobalt molybdate as a catalyst. \(\text{\`kô\-bô\-t \ `mä\-lë\-bå\-då\-t \ `de\-sô\-lë\-rë\-lë\-zë\-shan}\) cock \[ENG\] Any mechanism which starts, stops, or regulates the flow of liquid, such as a valve, faucet, or tap. \(\text{\`kâk}\) Coddington shape factor See shape factor. \(\text{\`käd\-i\-nön \ `shap\ , \ `fak\-tar}\) coded mask \[ENG\] A pattern of tungsten blocks that absorb gamma-ray photons in a gamma-ray telescope, and are arranged so that an astronomical gamma-ray source projects on a position-sensitive detector a pattern that is characteristic of the direction of arrival of the photons. \(\text{\`kôd\-i\-dä \ `mask}\) code-sending radiosonde \[ENG\] A radiosonde which transmits the indications of the meteorological sensing elements in the form of a code consisting of combinations of dots and dashes. Also known as code-type radiosonde; contracted code sonde. \(\text{\`kôd\ ,\ `send\-in\ `räd\-ë\-ô\-sänd}\) code-type radiosonde See code-sending radiosonde. \(\text{\`kôd\ ,\ `típ \ `räd\-ë\-ô\-sänd}\) codistor \[ELECTR\] A multijunction semiconductor device which provides noise rejection and voltage regulation functions. \(\text{\`kô\-dis\-tar}\) coefficient of capacitance \[ELECT\] One of the coefficients which appears in the linear equations giving the charges on a set of conductors in terms of the potentials of the conductors; a coefficient is equal to the ratio of the charge on a given conductor to the potential of the same conductor when the potentials of all the other conductors are 0. \(\text{\`kô\-ô\-fish\-a\-nt \ a\ `kô\-pas\-a\-tans}\) coefficient of compressibility \[MECH\] The decrease in volume per unit volume of a substance
resulting from a unit increase in pressure, it is the reciprocal of the bulk modulus. (ko-afish-ant av ko-med-ik frik-shan)

coefficient of conductivity See thermal conductivity (ko-afish-ant av kan-daktiv-ad-ê)

coefficient of cubical expansion [THERMO] The increment in volume of a unit volume of solid, liquid, or gas for a rise of temperature of 1° at constant pressure. Also known as coefficient of expansion; coefficient of thermal expansion; coefficient of volumetric expansion; expansion coefficient; expansivity. (ko-afish-ant av kyub-ê koi ikspan-shan)

coefficient of elasticity See modulus of elasticity. (ko-afish-ant av las'tis-ad-ê)

coefficient of expansion See coefficient of cubical expansion. (ko-afish-ant av ikspan-shan)

coefficient of friction [MECH] The ratio of the frictional force between two bodies in contact, parallel to the surface of contact, to the force, normal to the surface of contact, with which the bodies press against each other. Also known as friction coefficient. (ko-afish-ant av frik-shan)

coefficient of friction of rest See coefficient of static friction. (ko-afish-ant av frik-shan av 'rest')

coefficient of induction [ELEC] One of the coefficients which appears in the linear equations giving the charges on a set of conductors in terms of the potentials of the conductors; a coefficient is equal to the ratio of the charge on a given conductor to the potential on another conductor when the potentials of all the other conductors equal 0. (ko-afish-ant av indak-shan)

coefficient of kinetic friction [MECH] The ratio of the frictional force, parallel to the surface of contact, that opposes the motion of a body which is sliding or rolling over another, to the force, normal to the surface of contact, with which the bodies press against each other. (ko-afish-ant av ko-med-ik frik-shan)

coefficient of linear expansion [THERMO] The increment of length of a solid in a unit of length for a rise in temperature of 1° at constant pressure. Also known as linear expansivity. (ko-afish-ant av lin-ê-ar ikspan-shan)

coefficient of performance [THERMO] In a re-frigeration cycle, the ratio of the heat energy extracted by the heat engine at the low temperature to the work supplied to operate the cycle; when used as a heating device, it is the ratio of the heat delivered in the high-temperature coils to the work supplied. (ko-afish-ant av par'for-mans)

coefficient of potential [ELEC] One of the coefficients which appears in the linear equations giving the potentials of a set of conductors in terms of the charges on the conductors. (ko-afish-ant av pa'ten-chal)

coefficient of restitution [MECH] The constant ɛ, which is the ratio of the relative velocity of two elastic spheres after direct impact to that before impact; ɛ can vary from 0 to 1, with 1 equivalent to an elastic collision and 0 equivalent to a perfectly elastic collision. Also known as restitution coefficient. (ko-afish-ant av tes-ta-tu-shan)

coefficient of rigidity See modulus of elasticity in shear. (ko-afish-ant av ko-ad-ê)

coefficient of rolling friction [MECH] The ratio of the frictional force, parallel to the surface of contact, opposing the motion of a body rolling over another, to the force, normal to the surface of contact, with which the bodies press against each other. (ko-afish-ant av rol-in frik-shan)

coefficient of sliding friction [MECH] The ratio of the frictional force, parallel to the surface of contact, opposing the motion of a body sliding over another, to the force, normal to the surface of contact, with which the bodies press against each other. (ko-afish-ant av 'slid-in frik-shan)

coefficient of static friction [MECH] The ratio of the maximum possible frictional force, parallel to the surface of contact, which acts to prevent two bodies in contact, and at rest with respect to each other, from sliding or rolling over each other, to the force, normal to the surface of contact, with which the bodies press against each other. Also known as coefficient of friction of rest. (ko-afish-ant av 'stadi-k frik-shan)

coefficient of strain [MECH] For a substance undergoing a one-dimensional strain, the ratio of the distance along the strain axis between two points in the body, to the distance between the same points when the body is undeformed. (ko-afish-ant av 'stran)

coefficient of superficial expansion [THERMO] The increment in area of a solid surface per unit of area for a rise in temperature of 1° at constant pressure. Also known as superficial expansivity. (ko-afish-ant av 'sû-par'fish-al ikspan-shan)

coefficient of thermal expansion See coefficient of cubical expansion. (ko-afish-ant av 'thar-mal ikspan-shan)

coefficient of volumetric expansion See coefficient of cubical expansion. (ko-afish-ant av vâl-yûme-trik ikspan-shan)

coelest [ENG] A device consisting of a clockwork-driven mirror that enables a fixed telescope to continuously keep the same region of the sky in its field of view. (šè-la-stat)

coercimeter [ENG] An instrument that measures the magnetic intensity of a natural magnet or electromagnet. (ko,ar'sim-ad-ar)

coextrusion [ENG] Extrusion-forming of plastic or metal products in which two or more compatible feed materials are used in physical admixture through the same extrusion die. (ko,ikstru-zhan)

coffer dam [CIV ENG] A temporary dam like structure constructed around an excavation to exclude water. (ko-far,dam)

cofferred ceiling [BUILD] An ornamental ceiling constructed of panels that are sunken or recessed. (ko-fard 'sel-in)

cog [DES ENG] A tooth on the edge of a wheel. (ELEC) A fluctuation in the torque delivered by
a motor when it runs at low speed, due to electro-
mechanical effects. Also known as torque rip-
ple. { 'käg', 'belt' }
cog belt [MECH ENG] A flexible device used for
timing and for slip-free power transmission. { 'käg', 'belt' }
cogeneration [MECH ENG] The simultaneous
on-site generation of electric energy and process
steam or heat from the same plant. { 'kö', 'ener-
vräshan' }
cogged belt See timing belt. { 'kägd', 'belt' }
cog railway [CIV ENG] A steep railway that em-
ployes a cograil that meshes with a cogwheel on
the locomotive to ensure traction. { 'käg', 'ral', 'wå' }
cogwheel [DES ENG] A wheel with teeth around
its edge. { 'käg', 'wel' }
coherent moving-target indicator [ENG] A ra-
dar system in which the Doppler frequency of
the target echo is compared to a local reference
frequency generated by a coherent oscillator. 
{ 'kölhir-, 'ant', 'mýv', 'ij', 'tär', 'gat', 'in', 'da', 'kad', 'är' }
coherent noise [ENG] Noise that affects all
tracks across a magnetic tape equally and simul-
taneously. { 'kölhir-', 'noiz' }
cohesive strength [MECH] 1. Strength corre-
ponding to cohesive forces between atoms.
2. Hypothetically, the stress causing tensile frac-
ture without plastic deformation. { 'köh', 'siv',
'strenght' }
coil [CONT SYS] Any discrete and logical result
that can be transmitted as output by a program-
nable controller. { 'köl' }
coil spring [DES ENG] A helical or spiral spring,
such as one of the helical springs used over the
front wheels in an automotive suspension.
{ 'köl', 'spring' }
coiler [ENG] A manual or motor-driven
mechanism for winding coils individually or in
groups. { 'köl', 'win', 'dar' }
coincidence amplifier [ELECTR] An electronic
circuit that amplifies only that portion of a signal
present when an enabling or controlling signal
is simultaneously applied. { 'köin', 'sá',
'dans', 'ampla', 'fr', 'är' }
coincidence circuit [ELECTR] A circuit that pro-
duces a specified output pulse only when a spe-
cified number or combination of two or more
input terminals receives pulses within an as-
signed time interval. Also known as coinci-
dence counter; coincidence gate. { 'köin', 'sá',
'dans', 'sar', 'kat' }
coincidence correction See dead-time correction.
{ 'köin', 'sá', 'dans', 'körrek', 'shån' }
coincidence counter See coincidence circuit.
{ 'köin', 'sá', 'dans', 'kaut', 'ör' }
coincidence gate See coincidence circuit. 
{ 'köin',
'sá', 'dans', 'gät' }
coinjection molding [ENG] A technique used in
polymer processing whereby two or more materi-
als are simultaneously injected into the cavity
of a mold. Also known as sandwich molding.
{ 'köin', 'körrek', 'shån', 'mold', 'ig' }
coke breeze [MECH ENG] Undersized coke
screenings passing through a screen opening of
approximately 5/8 inch (16 millimeters). 
{ 'kök', 'bréj' }
coke drum [CHEM ENG] A vessel in which coke
is produced. { 'kök', 'drum' }
coke knocker [MECH ENG] A mechanical device
used to break loose coke within a drum or tower.
{ 'kök', 'nåk', 'är' }
coke number [CHEM ENG] A number used to rep-
ort the results of the Ramsbottom carbon
residue test. { 'kök', 'nåm', 'bar' }
coke oven [CHEM ENG] A retort in which coal
is converted to coke by carbonization. 
{ 'kök', 'ov', 'än' }
coke-oven regenerator [CHEM ENG] Arrange-
ment of refractory blocks in the flue system of a
coke oven to recover waste heat from hot, exiting
combustion gases; the blocks, in turn, release
heat to warm, incoming fuel gas. 
{ 'kök', 'ov-en', 'ri', 'jen', 'är', 'råd', 'är' }
coker [CHEM ENG] The processing unit in which
coking occurs. { 'kök', 'är' }
coking [CHEM ENG] 1. Destructive distillation
of coal to make coke 2. A process for thermally
converting the heavy residual bottoms of crude
oil entirely to lower-boiling petroleum products
and by-product petroleum coke. { 'kök', 'ig' }
coking still [CHEM ENG] A still in which coking
is done; usually, it is a batch still. { 'kök-', 'stil' }
Colburn factor equation [THERMO] Dimen-
sionless heat-transfer equation to calculate the
natural convection movement of heat from verti-
cal surfaces or horizontal cylinders to fluids
(gases or liquids) flowing past these surfaces.
{ 'kol', 'fær', 'jä', 'fak-tar', 'kva', 'zhan' }
Colburn method [CHEM ENG] Graphical
method, and equations to calculate the theoreti-
cal number of plates (trays) needed to separate
light and heavy liquids in a distillation column.
{ 'kol', 'barm', 'meth', 'åd' }
cold-air machine [MECH ENG] A refrigeration
system in which air serves as the refrigerant in
a cycle of adiabatic compression, cooling to am-
bient temperature, and adiabatic expansion to
refrigeration temperature; the air is customarily
reused in a closed superatmospheric pressure
system. Also known as dense-air system. 
{ 'kol', 'fär', 'må', 'shén' }
cold-chamber die casting [ENG] A die-casting
process in which molten metal is ladled either
manually or mechanically into a relatively cold
cylinder from which it is forced into the die cavity.
{ 'köld', 'cham', 'bär', 'dr', 'kast', 'ig' }
cold chisel [DES ENG] A chisel specifically de-
signed to cut or chip cold metal; made of spe-
cially tempered tool steel machined into various
cutting edges. Also known as cold cutter. 
{ 'köld', 'chiz', 'ål' }
cold cure [CHEM ENG] Vulcanization of rubber
at nonelevated temperatures with a solution of
a sulfur compound. { 'köld', 'kyur' }
cold cutter See cold chisel. { 'köld', 'kad', 'är' }
cold differential test pressure [ENG] The inlet
pressure of a pressure-relief valve at which the
valve is set to open during testing. 
{ 'köld', 'dif', 'aren', 'chel', 'test', 'pres', 'år' }
cold flow [MECH] Creep in polymer plastics.  (ˈkôld,floʊ)
cold joint [ENG] A soldered connection which was inadequately heated, with the result that the wire is held in place by rosin flux, not solder.  (ˈkôldˌjɔnt)
cold lime-soda process [CHEM ENG] A water-softening process in which water is treated with hydrated lime (sometimes in combination with soda ash), which reacts with dissolved calcium and magnesium compounds to form precipitates that can be removed as sludge.  (ˈkôldˌlɪmˌsôdəˌplôsəˈmônt)
cold molding [ENG] Shaping of an unheated compound in a mold under pressure, followed by heating the article to cure it.  (ˈkôldˌmôldˌing)
cold plasma [CHEM ENG] Low-energy ionized gas.  (ˈkôldˈplôzəˈmônt)
cold plate [MECH ENG] An aluminum or other plate containing internal tubing through which a liquid coolant is forced, to absorb heat transferred to the plate by transistors and other components mounted on it. Also known as liquid-cooled dissipator.  (ˈkôldˌplät)
cold saw [MECH ENG] 1. Any saw for cutting cold metal, as opposed to a hot saw.  2. A disk made of soft steel or iron which rotates at a speed such that a point on its edge has a tangential velocity of about 15,000 feet per minute (75 meters per second), and which grinds metal by friction.  (ˈkôldˌsôd)
cold setting [CHEM ENG] A process that removes wax from high-viscosity stocks.  (ˈkôldˌsiːtn)
cold slug [ENG] The first material to enter an injection mold in plastics manufacturing.  (ˈkôldˌsloog)
cold-slug well [ENG] The area in a plastic injection mold which receives the cold slug from the sprue opening.  (ˈkôldˌsloogˈwel)
cold-spot hygrometer See dew-point hygrometer.  (ˈkôldˌspôtˌhīˌgrəmˈədˌær)
cold storage [ENG] The storage of perishables at low temperatures produced by refrigeration, whereas an anode receives electrons whose use-usually above freezing, to increase storage life.  (ˈkôldˌstôrˌiˈʒi)
cold-storage locker plant [ENG] A plant with many rental steel lockers, each with a capacity of about 6 cubic feet (0.17 cubic meter) and generally for food storage by an individual family, placed in refrigerated rooms, at about 0°F  (−18°C).  (ˈkôldˌstoʊrˌiˈjôkˌlərˌplônt)
cold stress [MECH] Forces tending to deform steel, cement, and other materials, resulting from low temperatures.  (ˈkôldˌstriʃər̩)
cold stretch [ENG] A pulling operation on extruded plastic filaments in which little or no heat is used; improves tensile properties.  (ˈkôldˌstrɛʃt)
cold test [CHEM ENG] A test to determine the temperature at which clouding or coagulation is first visible in a sample of oil, as the temperature of the sample is reduced.  (ˈkôldˌtest)
cold trap [MECH ENG] A tube whose walls are cooled with liquid nitrogen or some other liquid to condense vapors passing through it, used with diffusion pumps and to keep vapors from entering a McLeod gage.  (ˈkôldˌtrôp)
collapse [ENG] Contraction of plastic container walls during cooling, produces permanent indentation.  (ˈkôləpˌlôks)
collapse properties [MECH] Strength and dimensional attributes of piping, tubing, or process vessels, related to the ability to resist collapse from exterior pressure or internal vacuum.  (ˈkôləpˌlôksˌprəprətēzˌiːz)
collapsing pressure [MECH] The minimum external pressure which causes a thin-walled body or structure to collapse.  (ˈkôləpˌsîŋˌpreshəˈör)
collar [DES ENG] A ring placed around an object to restrict its motion, hold it in place, or cover an opening.  (ˈkôlərˌbôm)
collar beam [BUILD] A tie beam in a roof truss connecting the rafters well above the wall plate.  (ˈkôlərˌbômˌbêm)
collar bearing [MECH ENG] A bearing that resists the axial force of a collar on a rotating shaft.  (ˈkôlərˌberˌbîŋ)
collared hole [ENG] A started hole drilled sufficiently deep to confine the drill bit and prevent slippage of the bit from normal position.  (ˈkôlərdˌhôl)
collect [DES ENG] A sleeve or flange that can be removed as sludge.  (ˈkôləkt)
collective bargaining [IND ENG] The negotiation for mutual agreement in the settlement of a labor contract between an employer or his representatives and a labor union or its representatives.  (ˈkôləktivˌbôrˈgərəŋˌiŋ)
collector [ELECTR] 1. A semiconductive region through which a primary flow of charge carriers leaves the base of a transistor, the electrode or terminal connected to this region is also called the collector.  2. An electrode that collects electrons or ions which have completed their functions within an electron tube, a collector receives electrons after they have done useful work, whereas an anode receives electrons whose useful work is to be done outside the tube. Also known as electron collector.  (ˈkôləktərˌbôrˌgərəŋˌiŋ)
collective capacitance [ELECTR] The depletion-layer capacitance associated with the collector junction of a transistor.  (ˈkôləktərˌkôləˈpədərənts)
collector current [ELECTR] The direct current that passes through the collector of a transistor.  (ˈkôləktərˌkôləˈpərənts)
collector cutoff

collector cutoff  [ELECTR] The reverse saturation current of the collector-base junction.  
   {kəˈlek-tər ‘kəd-əf}

collector junction  [ELECTR] A semiconductor junction located between the base and collector electrodes of a transistor.  
   {kəˈlek-tər ˌlæk-shən}

collector modulation  [ELECTR] Amplitude modulation in which the modulator varies the collector voltage of a transistor.  
   {kəˈlek-tər ˈmāj-əl-ˈlə-shən}

   {kəˈlek-tər rɪˈzɪs-ˈtəns}

collector voltage  [ELECTR] The direct-current voltage, obtained from a power supply, that is applied between the base and collector of a transistor.  
   {kəˈlek-tər ˈvol-tɪj}

collect  [DES ENG] A split, coned sleeve to hold column.  
   {kəˈlɛkt-

collimation error  [ENG] 1. Angular error in magnitude and direction between two nominally parallel lines of sight.  
   2. Specifically, the angle by which the line of sight of a radar differs from what it should be.  
   {ˌkɔl-əˈmā-ˈshən ˌer-ər}

collimation tower  [ENG] Tower on which a visual and a radio target are mounted to check the electrical axis of an antenna.  
   {ˌkɔl-əˈmā-ˈshən ˌtɔu-ər}

collision-avoidance radar  [ENG] Radar equipment utilized in a collision-avoidance system.  
   {kəˈlɪzh-ən ˈɔv-ˈvaid-əns, rəˌdār}

collision-avoidance system  [ENG] Electronic devices and equipment used by a pilot to perform the functions of conflict detection and avoidance.  
   {kəˈlɪzh-ən ˈɔv-ˈvaid-əns ˌsɪz-ˈtəm}

collision blasting  [ENG] The blasting out of different sections of rocks against each other.  
   {kəˈlɪzh-ən ˈblæst-ər}

collioder  [CIV ENG] A device that removes colloids from sewage.  
   {kəˈliōd-ər}

collloid mill  [MECH ENG] A grinding mill for the making of very fine dispersions of liquids or solids by breaking down particles in an emulsion or paste.  
   {ˌkəl-əˈid, mɪl}

color-bar code  [IND ENG] A code that uses one or more different colors of bars in combination with black bars and white spaces, to increase the density of binary coding of data printed on merchandise tags or directly on products for inventory control and other purposes.  
   {ˌkəl-ər ˌbɑr, ˈkəd-ər}

color code  [ELEC] A system of colors used to indicate the electrical value of a component or to identify terminals and leads.  
   [ENG] 1. Any system of colors used for purposes of identification, such as to identify dangerous areas of a factory.  
   2. A system of colors used to identify the type of material carried by a pipe, for example, dangerous materials, protective materials, extra valuable materials.  
   {ˌkəl-ər ˌkəd-ər}

color decoder  [ELEC] See matrix.  
   {ˌkəl-ər ˌdɛkˈkɔd-ər}

color Doppler flow imaging scanner  [ENG] A device that obtains B-mode images and Doppler blood flow data simultaneously, and superimposes a color Doppler image on the gray-scale B-mode image.  
   {ˌkəl-ər ˈdɒplər ˌflɔ̀ ɪmˈɪ-ər-ij ˌskən-ər}

color emissivity  [ELECTR] See monochromatic emissivity.  
   {ˌkəl-ər ˌmiˌnəsˈkra-ə}

color encoder  [ELEC] See matrix.  
   {ˌkəl-ər ˌɛnˈkɔd-ər}

column  [ENG] A vertical shaft designed to bear axial loads in compression.  
   {ˌkəl-əm}

column crane  [MECH ENG] A jib crane whose boom pivots about a post attached to a building column.  
   {ˌkəl-əm ˈkræn}

column drill  [MECH ENG] A tunnel rock drill supported by a vertical steel column.  
   {ˌkəl-əm ˈdrɪl}

column splice  [CIV ENG] A connection between two lengths of a compression member (column), an erection device rather than a stress-carrying element.  
   {ˌkəl-əm ˈspɪs-ə}

comb  [SEES] See drap.  
   {koʊm}

combination chuck  [DES ENG] A chuck used in a lathe whose jaws either move independently or simultaneously.  
   {ˌkəm-bəˈnæn-ˌʃən ˈtʃɔk}

combination collar  [DES ENG] A collar that has left-hand threads at one end and right-hand threads at the other.  
   {ˌkəm-bəˈnæn-ˌʃən ˌkɔl-ər}

combination cycle  [SEES] See mixed cycle.  
   {ˌkəm-bəˈnæn-ˌʃən ˈʃɪk-əl}

combination lock  [ENG] A lock that can be opened only when its dial has been set to the proper combination of symbols, in the proper sequence.  
   {ˌkəm-bəˈnæn-ˌʃən ˈlɑk}

combination pliers  [DES ENG] Pliers that can be used either for holding objects or for cutting and bending wire.  
   {ˌkəm-bəˈnæn-ˌʃən ˈplɪər-ər}

combination saw  [MECH ENG] A saw made in various tooth arrangement combinations suitable for ripping and crosscut mitering.  
   {ˌkəm-bəˈnæn-ˌʃən ˈsəʊ}

combination square  [DES ENG] A square head and steel rule that when used together have both a 45° and 90° face to allow the testing of the accuracy of two surfaces intended to have these angles.  
   {ˌkəm-bəˈnæn-ˌʃən ˈsکwaters}

combination unit  [CHEM ENG] A processing unit that combines more than one process, such as straight-run distillation together with selective cracking.  
   {ˌkəm-bəˈnæn-ˌʃən ˈjʊ̀ːn-ət}

combination wrench  [DES ENG] A wrench that is an open-end wrench at one end and a socket wrench at the other.  
   {ˌkəm-bəˈnæn-ˌʃən ˈwɛŋkər}

combined flexure  [MECH] The flexure of a beam under a combination of transverse and longitudinal loads.  
   {ˌkəmˈbind ˈfleks-ər}

combined footing  [CIV ENG] A footing, either rectangular or trapezoidal, that supports two columns.  
   {ˌkəmˈbind ˈfud-n}
combined sewers  [CIV ENG] A drainage system that receives both surface runoff and sewage.  [ˈkom-bidendz]-ˌbew-2]  
combined stresses  [MECH] Bending or twisting stresses in a structural member combined with direct tension or compression.  [ˈkəm-bindy-ˈstres-ˌoz]  
combing  [BUILD] In roofing, the topmost row and effectively shortening a length of cable, wire, rope, or chain by means of two jaws which close when one pulls on a ring. See puller.  [ˈkəm-iŋ]  
comb nephoscope  [ENG] A direct-vision nephoscope constructed with a comb (a crosspiece containing equispaced vertical rods) attached to the end of a column 8–10 feet (2.4–3 meters) long and supported on a mounting that is free to rotate about its vertical axis; in use, the comb is turned so that the cloud appears to move parallel to the tips of the vertical rods.  [ˈkəm-ˈnɛf-ə-ˌskɔp]  
complate  [MECH ENG] The toothed portion of the stationary threshold plate that is set into both ends of an escalator or moving sidewalk and meshes with the grooved surface of the moving steps or treadmill.  [ˈkəm-ˌplæt]  
combustible loss  [ENG] Thermal loss resulting from incomplete combustion of fuel.  [ˈkəm-bas-tə-balˌloʊs]  
combustion chamber  [ENG] Any chamber in which a fuel such as oil, coal, or kerosine is burned to provide heat.  [ˈkəm-bəʃənˌchæm-ər]  
combustion-chamber volume  [MECH ENG] The volume of the combustion chamber when the piston is at top dead center.  [ˈkəm-bəʃənˌchæm-ər-ˌvəl-yəm]  
combustion deposit  [ENG] A layer of ash on the heat-exchange surfaces of a combustion chamber, resulting from the burning of a fuel.  [ˈkəm-bəʃənˌdæˈpiz-ət]  
combustion engine  [MECH ENG] An engine that operates by the energy of combustion of a fuel.  [ˈkəm-bəʃənˌɛnˈdʒiːn]  
combustion engineering  [MECH ENG] The design of combustion furnaces for a given performance and thermal efficiency, involving study of the heat liberated in the combustion process, the amount of heat absorbed by heat elements, and heat-transfer rates.  [ˈkəm-bəʃənˌɛnˈdʒiːnər-iŋ]  
combustion furnace  [ENG] A furnace whose source of heat is the energy released in the oxidation of fossil fuel.  [ˈkəm-bəʃənˌfərns]  
combustion knock  See engine knock.  [ˈkəm-bəʃənˌknɔk]  
combustion shock  [ENG] Shock resulting from abnormal burning of fuel in an internal combustion engine, caused by preignition or fuel-air detonation, or in a diesel engine, the uncontrollable burning of fuel accumulated in the combustion chamber.  [ˈkəm-bəʃənˌʃək]  
combustion turbine  See gas turbine.  [ˈkəm-bəʃənˌˈtɜr-bən]  
combustor  [MECH ENG] The combustion chamber together with burners, igniters, and injection devices in a gas turbine or jet engine.  [ˈkəm-ˈbus-tər]  
come-along  [DES ENG] A device for gripping and effectively shortening a length of cable, wire, rope, or chain by means of two jaws which close when one pulls on a ring.  [ˈkəm-əˌlɔŋ]  
comfort chart  [ENG] A diagram showing curves of relative humidity and effective temperature superimposed upon rectangular coordinates of wet-bulb temperature and dry-bulb temperature.  [ˈkəm-ˌfɑrtˌchɑrt]  
comfort control  [ENG] Control of temperature, humidity, flow, and composition of air by using heating and air-conditioning systems, ventilators, or other systems to increase the comfort of people in an enclosure.  [ˈkəm-ˌfɑrtˌkənˈtərl]  
comfort curve  [ENG] A line drawn on a graph of air temperature versus some function of humidity (usually wet-bulb temperature or relative humidity) to show the varying conditions under which the average sedentary person feels the same degree of comfort, a curve of constant comfort.  [ˈkəm-ˌfɑrtˌkər]  
comfort standard  See comfort zone.  [ˈkəm-ˌfɑrtˌstændərd]  
comfort temperature  [MECH ENG] Any one of the indexes in which air temperatures have been adjusted to represent human comfort or discomfort under prevailing conditions of temperature, humidity, radiation, and wind.  [ˈkəm-ˌfɑrtˌtem-ˈpraʊr]  
comfort zone  [ENG] The ranges of indoor temperature, humidity, and air movement, under which most persons enjoy mental and physical well-being. Also known as comfort standard.  [ˈkəm-ˌfɑrtˌzoʊn]  
command  [CONT SYS] An independent signal in a feedback control system, from which the dependent signals are controlled in a predetermined manner.  [ˈkəm-ənd]  
command and control  [SYS ENG] The process of military commanders and civilian managers identifying, prioritizing, and achieving strategic and tactical objectives by exercising authority and direction over human and material resources by utilizing a variety of computer-based and computer-controlled systems, many driven by decision-theoretic methods, tools, and techniques. Abbreviated C 2.  [ˈkəm-ənd ˌkənˈtrol an ˌkəˌmyüˈnəˌkənˈtrol]  
command, control, and communications  [SYS ENG] A version of command and control in which the role of communications equipment is emphasized. Abbreviated C 3.  [ˈkəm-ənd ˌkənˈtrol ən ˌkəˌmjuˌˈenkəˌʃæn]  
command, control, communications, and intelligence  [SYS ENG] A version of command and control in which the roles of communications equipment and intelligence are emphasized.
command destruct

Abbreviated C'I. (ka'mand kan'tröl ka,myü-na'kä-shan an in'tel-ə-əns)

command destruct [CONT SYS] A command control system that destroys a flightborne test rocket or a guided missile, actuated by the safety officer whenever the vehicle's performance indicates a safety hazard. (ka'mand di'strakt)

command guidance [ENG] A type of electronic guidance of guided missiles or other guided aircraft wherein signals or pulses sent out by an operator cause the guided object to fly a directed path. Also known as command control. (ka'mand əid-əns)

commercial diesel cycle See mixed cycle. (ka'mar-shal 'dē-zal ə-kəl)

commercial harbor [CIV ENG] A harbor in which docks are provided with cargo-handling facilities. (ka'mar-shal ə-här-bər)

commutation [MECH ENG] Breaking up or grinding into small fragments. Also known as pulverization. (ka'm-ən'-uʃən)

commutator [MECH ENG] A machine that breaks up solids. (ka'm-ə,niid-ər)

common-base connection See grounded-base connection. (ka'm-ən 'bās ka'nek-ən)

common-base feedback oscillator [ELECTR] A bipolar transistor amplifier with a common-base connection and a positive feedback network between the collector (output) and the emitter (input). (ka'm-ən 'bās 'fēd,bak əs-ə,lād-ər)

common bond See American bond. (ka'm-ən ən'band)

common carrier [IND ENG] A company recognized by an appropriate regulatory agency as having a vested interest in furnishing communications services or in transporting commodities or people. (ka'm-ən 'kær-ər)

common-collector connection See grounded-collector connection. (ka'm-ən ka'lek-tər ka'nek-ən)

common-drain amplifier [ELECTR] An amplifier using a field-effect transistor so that the input signal is injected between gate and drain, while the output is taken between the source and drain. Also known as source-follower amplifier. (ka'm-ən 'drān 'əm-plə,fr-ər)

common-emitter connection See grounded-emitter connection. (ka'm-ən 'im⁻ədər ka'nek-ən)

common-gate amplifier [ELECTR] An amplifier using a field-effect transistor in which the gate is common to both the input circuit and the output circuit. (ka'm-ən 'gāt 'əm-plə,fr-ər)

common joist [BUILD] An ordinary floor beam to which floor boards are attached. (ka'm-ən əjəst)

common labor [IND ENG] Unskilled workers. (ka'm-ən ələ-bər)

common mode [ELECTR] Having signals that are identical in amplitude and phase at both inputs, as in a differential operational amplifier. (ka'm-ən əm-duhr)

common-mode error [ELECTR] The error voltage that exists at the output terminals of an operational amplifier due to the common-mode voltage at the input. (ka'm-ən əm-duhr 'er-ər)

common-mode gain [ELECTR] The ratio of the output voltage of a differential amplifier to the common-mode input voltage. (ka'm-ən əm-gan)

common-mode input capacitance [ELECTR] The equivalent capacitance of both inverting and noninverting inputs of an operational amplifier with respect to ground. (ka'm-ən əm-in,put ka'pas-əd-ən)

common-mode input impedance [ELECTR] The open-loop input impedance of both inverting and noninverting inputs of an operational amplifier with respect to ground. (ka'm-ən əm-in,put əi-pəd-ən)

common-mode input resistance [ELECTR] The equivalent resistance of both inverting and noninverting inputs of an operational amplifier with respect to ground or reference. (ka'm-ən əm-in,put ri'zi-zən)

common-mode rejection [ELECTR] The ability of an amplifier to cancel a common-mode signal while responding to an out-of-phase signal. Also known as in-phase rejection. (ka'm-ən əm-rən əm-ni,put ri'jek-ən)

common-mode rejection ratio [ELECTR] The ratio of the gain of an amplifier for difference signals between the input terminals, to the gain for the average or common-mode signal component. Abbreviated CMRR. (ka'm-ən əm-rən ri'jek-ən)  

common-mode signal [ELECTR] A signal applied equally to both ungrounded inputs of a balanced amplifier stage or other differential device. Also known as in-phase signal. (ka'm-ən əm-ni,put 'si-gnal)

common-mode voltage [ELECTR] A voltage that appears in common at both input terminals of a device with respect to the output reference (usually ground). (ka'm-ən əm-vōl-'tii)

common rafter [BUILD] A rafter which extends from the plate of the roof to the ridge board at right angles to both members, and to which roofing is attached. (ka'm-ən əfər)

common-rail injection [MECH ENG] A type of diesel engine fuel-injection system in which one rail maintains the fuel at a specified pressure while feed lines run from the rail to each fuel injector. (ka'm-ən əl in'injek-ən)

common return [ELECTR] A return conductor that serves two or more circuits. (ka'm-ən ri'tarn)

common wall [BUILD] A wall that is shared by two dwelling units. (ka'm-ən əwəl)

communications [ENG] The science and technology by which information is collected from an originating source, transformed into electric currents or fields, transmitted over electrical networks or space to another point, and reconverted into a form suitable for interpretation by a receiver. (ka,myü-na'kä-shan)

compaction [ENG] Increasing the dry density of a granular material, particularly soil, by means such as impact or by rolling the surface layers. (kam'pək-ən)

compactor [MECH ENG] 1. Machine designed
to consolidate earth and paving materials by kneading, weight, vibration, or impact, to sustain loads greater than those sustained in an uncompacted state. 2. A machine that compresses solid waste material for convenience in disposal.

companion flange  [DES ENG] A pipe flange that can be bolted to a similar flange on another pipe.

comparative rabal  [ENG] A rabal observation (that is, a radioondes balloon tracked by theodolite) taken simultaneously with the usual rawin observation (tracking by radar or radio direction-finder), to provide a rough check on the alignment and operating accuracy of the electronic tracking equipment.

comparator  [CONT SYS] A device which detects the value of the quantity to be controlled by a feedback control system and compares it continuously with the desired value of that quantity.  [ENG] A device used to inspect a gaged part for channel is maintained from each of the four sets of microphones at the recording studio or other input location to the four sets of loudspeakers that serve as the output of the system. Abbreviated CD-4 sound.  

compatible discrete four-channel sound  [ENG ACOUS] A sound system in which a separate channel is maintained from each of the four sets of microphones at the recording studio or other input location to the four sets of loudspeakers that serve as the output of the system. 

compatible monolithic integrated circuit  [ELECTR] Device in which passive components are deposited by thin-film techniques on top of a basic silicon-substrate circuit containing the active components and some passive parts.

compensated pendulum  [ENG] A pendulum made of two materials with different coefficients of expansion so that the distance between the point of suspension and center of oscillation remains nearly constant when the temperature changes.

compensated neutron logging  [ENG] Neutron well logging using one source and two detectors; the apparent limestone porosity is calculated by computer from the ratio of the count rate of one detector to that of the other.

compensated semiconductor  [ELECTR] Semiconductor in which one type of impurity or imperfection (for example, donor) partially cancels the electrical effects on the other type of impurity or imperfection (for example, acceptor).

compensating network  [CONT SYS] A network used in a low-energy-level method for suppression of excessive oscillations in a control system.

compensating leads  [ENG] A pair of wires, similar to the working leads of a resistance thermometer or thermocouple, which are run alongside the working leads and are connected in such a way that they balance the effects of temperature changes in the working leads.

compensating network  [ENG] A network used in a low-energy-level method for suppression of excessive oscillations in a control system.
compensation

compensation [CONT SYS] Introduction of additional equipment into a control system in order to reshape its root locus so as to improve system performance. Also known as stabilization.

[ELCTR] The modification of the amplitude-frequency response of an amplifier to broaden the bandwidth or to make the response more nearly uniform over the existing bandwidth. Also known as frequency compensation.

[ELCTR] A circuit complementary symmetry complementary metal oxide semiconductor device. Also known as frequency compensation.

compensation signals [ENG] In telemetry, signals recorded on a tape, along with the data and in the same track as the data, used during the playback of data to correct electrically the effects of tape-speed errors.

comparator [CONT SYS] A device introduced into a feedback control system to improve performance and achieve stability. Also known as filter. [ELCTR] A component that offsets an error or other undesired effect.

complementary [ELCTR] Having pnp and npn or p- and n-channel semiconductor elements on or within the same integrated-circuit substrate or working together in the same functional amplifier state.

complementary constant-current logic [ELCTR] A type of large-scale integration used in digital integrated circuits and characterized by high density and very fast switching times. Abbreviated CCL; CL. [kâm-pla' men-trê kân-stant ˈlā-ik]

complementary logic switch [ELCTR] A complementary transistor pair which has a common input and interconnections such that one transistor is on when the other is off, and vice versa.

complementary metal oxide semiconductor device See CMOS device.

complementary symmetry [ELCTR] A circuit using both pnp and npn transistors in a symmetrical arrangement that permits push-pull operation without an input transformer or other form of phase inverter.

complementary transistors [ELCTR] Two transistors of opposite conductivity (pnp and npn) in the same functional unit.

complete-expansion diesel cycle See Brayton cycle.

[kom'plēt ˈlub-ˈrā-kā-shan] complex frequency [ENG] A complex number used to characterize exponential and damped sinusoidal motion in the same way that an ordinary frequency characterizes simple harmonic motion, designated by the constant s corresponding to a motion whose amplitude is given by Ae^it, where A is a constant and t is time.

complex impedance [See electrical impedance, impedance.]

complex permittivity [ELEC] A property of a dielectric, equal to εr(C/C0), where C is the complex capacitance of a capacitor in which the dielectric is the insulating material when the capacitor is connected to a sinusoidal voltage source, and C0 is the vacuum capacitance of the capacitor.

complex reflector [ENG] A structure or group of structures having many radar-reflecting surfaces facing in different directions.

complex relative attenuation [ELCTR] The ratio of the peak output voltage, in complex notation, of an electric filter to the output voltage at the frequency being considered.

complex target [ENG] A radar target composed of a number of reflecting surfaces that, in the aggregate, are smaller in all dimensions than the resolution capabilities of the radar.

compliance [MECH] The displacement of a linear mechanical system under a unit force.

compliance constant [MECH] Any one of the coefficients of the relations in the generalized Hooke’s law used to express strain components as linear functions of the stress components. Also known as elastic constant.

compliant substrate [ELCTR] A semiconductor substrate into which an artificially formed interface is introduced near the surface which makes the substrate more readily deformable and allows it to support a defect-free semiconductor film of essentially any lattice constant, with dislocations forming in the substrate instead of in the film. Also known as sacrificial compliant substrate.

component [ELEC] Any electric device, such as a coil, resistor, capacitor, generator, line, or electron tube, having distinct electrical characteristics and having terminals at which it may be connected to other components to form a circuit. Also known as circuit element, element.

component distillation [CHEM ENG] A distillation process in which a fraction that cannot normally be separated by distillation is removed by forming an azeotropic mixture.

component-failure-impact analysis [SYS ENG] A study that attempts to predict the consequences of failures of the major components of a system. Abbreviated CFIA.

composite [ENG ACOUS] A re-recording consisting of at least two elements.

composite beam [CIV ENG] A structural member composed of two or more dissimilar materials joined together to act as a unit in which the
The system is stronger than the sum of its parts. An example in civil structures is the steel-concrete composite beam in which a steel wide-flange shape (I or W shape) is attached to a concrete floor slab.

**Composite column** [CIV ENG] A concrete column having a structural-steel or cast-iron core with a maximum core area of 20.

**Composite filter** [ELECTR] A filter constructed by linking filters of different kinds in series.

**Composite I-beam bridge** [CIV ENG] A beam bridge in which the concrete roadway is mechanistically bonded to the I beams by means of shear connectors.

**Composite macromechanics** [ENG] The study of composite material behavior wherein the material is presumed homogeneous and the effects of the constituent materials are detected only as averaged apparent properties of the composite.

**Composite material** See composite.

**Composite micromechanics** [ENG] The study of composite material behavior wherein the constituent materials are studied on a microscopic scale with specific properties being assigned to each constituent; the interaction of the constituent materials is used to determine the properties of the composite.

**Composite pile** [CIV ENG] A pile in which the upper and lower portions consist of different types of piles.

**Composite sampler** [ENG] A hydrometer cylinder equipped with sample cocks at regular intervals along its vertical height, used to take representative (vertical composite) samples of oil from storage tanks.

**Composite truss** [CIV ENG] A truss having compressive members and tension members.

**Composition** [MECH] The determination of a force whose effect is the same as that of two or more given forces acting simultaneously; all forces are considered acting at the same point.

**Composition diagram** [CHEM ENG] Graphical plots to show the solvent-solute concentration relationships during various stages of extraction operations (leaching, or solid-liquid extraction; and liquid-liquid extraction).

**Composition-of-velocities law** [MECH] A law relating the velocities of an object in two references frames which are moving relative to each other with a specified velocity.

**Compound angle** [ENG] The angle formed by two mitered angles.

**Compound column** [MECH ENG] A multicylinder type displacement engine, using steam, air, or hot gas, where expansion proceeds successively (sequentially).

**Compound lever** [MECH ENG] A train of levers in which motion or force is transmitted from the arm of one lever to that of the next.

**Compound rest** [MECH ENG] A principal component of a lathe consisting of a base and an upper part dovetailed together; the base is graduated in degrees and can be swiveled to any angle, the upper part includes the tool post and tool holder.

**Compound screw** [DES ENG] A screw having different or opposite pitches on opposite ends of the shank.

**Compregate** [ENG] Compression of materials into a dense, hard substance with the aid of heat.

**Compressadensity function** [MECH] A function used in the acoustic levitation technique to determine either the density or the adiabatic compressibility of a submicroliter droplet suspended in another liquid, if the other property is known.

**Compressed air** [MECH] Air whose density is increased by subjecting it to a pressure greater than atmospheric pressure.

**Compressed-air diving** [ENG] Any form of diving in which air is supplied under high pressure to prevent lung collapse.

**Compressed-air loudspeaker** [ENG ACOUS] A loudspeaker having an electrically actuated valve that modulates a stream of compressed air.

**Compressibility** [MECH] The property of a substance capable of being reduced in volume by application of pressure, quantitatively, the reciprocal of the bulk modulus.

**Compressibility factor** [THERMO] The product of the pressure and the volume of a gas, divided by the product of the temperature of the gas and the gas constant; this factor may be inserted in the ideal gas law to take into account the departure of true gases from ideal gas behavior. Also known as deviation factor, gas-deviation factor, supercompressibility factor.

**Compressible fluid flow** [CHEM ENG] Gas flow when the pressure drop due to the flow of a gas through a system is large enough, compared with the inlet pressure, to cause a 10% or greater decrease in gas density.

**Compression** [ELECTR] 1. Reduction of the effective gain of a device at one level of signal with respect to the gain at a lower level of signal, so...
that weak signal components will not be lost in background and strong signals will not overload the system. 2. See compression ratio. [MECH] Reduction in the volume of a substance due to pressure; for example in building, the type of stress which causes shortening of the fibers of a wooden member. [MECH ENG] See compression ratio.  

**compression coupling** [MECH ENG] 1. A means of connecting two perfectly aligned shafts in which a slotted tapered sleeve is placed over the junction and two flanges are drawn over the sleeve so that they automatically center the shafts and provide sufficient contact pressure to transmit medium loads. 2. A type of tubing fitting.  

**compression cup** [ENG] A cup from which lubricant is forced to a bearing by compression.  

**compression failure** [ENG] Buckling or collapse caused by compression, as of a steel or concrete column or of wood fibers.  

**compression fitting** [ENG] A leak-resistant pipe joint designed with a tight-fitting sleeve that exerts a large inward pressure on the exterior of the pipe.  

**compression gage** [ENG] An instrument that measures pressures greater than atmospheric pressure.  

**compression ignition** [MECH ENG] Ignition produced by compression of the air in a cylinder of an internal combustion engine before fuel is admitted.  

**compression-ignition engine** See diesel engine.  

**compression member** [ENG] A beam or other structural member which is subject to compressive stress.  

**compression modulus** See bulk modulus of elasticity.  

**compression mold** [ENG] A mold for plastics which is open when the material is introduced and which shapes the material by heat and by the pressure of closing.  

**compression pressure** [MECH ENG] That pressure developed in a reciprocating piston engine at the end of the compression stroke without combustion of fuel.  

**compression ratio** [MECH] The ratio of gain of a device at a low power level to the gain at some higher level, usually expressed in decibels. Also known as compression. [MECH ENG] The ratio in internal combustion engines between the volume displaced by the piston plus the clearance space, to the volume of the clearance space. Also known as compression.  

**compression refrigeration** [MECH ENG] The cooling of a gaseous refrigerant by first compressing it to liquid form with resultant heat buildup, cooling the liquid by heat exchange, then releasing pressure to allow the liquid to vaporize (with resultant absorption of latent heat of vaporization and a refrigerative effect).  

**compression release** [MECH ENG] Release of compressed gas resulting from incomplete closure of intake or exhaust valves.  

**compression ring** [MECH ENG] A ring located at the upper part of a piston to hold the burning fuel charge above the piston in the combustion chamber, thus preventing blowby.  

**compression spring** [ENG] A spring, usually a coil spring, which resists a force tending to compress it.  

**compression strength** [MECH] Property of a material to resist rupture under compression.  

**compression stroke** [MECH ENG] The phase of a positive displacement engine or compressor in which the motion of the piston compresses the fluid trapped in the cylinder.  

**compression test** [ENG] A test to determine compression strength, usually applied to materials of high compression but low tensile strength, in which the specimen is subjected to increasing compressive forces until failure occurs.  

**compressive member** [CIV ENG] A structural member subject to tension.  

**compressive strength** [MECH] The maximum compressive stress a material can withstand without failure.  

**compressive stress** [MECH] A stress which causes an elastic body to shorten in the direction of the applied force.  

**compressor** [ELECTR] The part of a compandor that is used to compress the intensity range of signals at the transmitting or recording end of a circuit. [MECH ENG] A machine used for increasing the pressure of a gas or vapor. Also known as compression machine.  

**compressor blade** [MECH ENG] The vane components of a centrifugal or axial-flow, air or gas compressor.  

**compressor station** [MECH ENG] A permanent facility which increases the pressure on gas to move it in transmission lines or into storage.  

**compressor valve** [MECH ENG] A valve in a compressor, usually automatic, which operates by pressure difference (less than 5 pounds per square inch or 35 kilopascals) on the two sides of a movable, single-loaded member and which has no mechanical linkage with the moving parts of the compressor mechanism.  

**compromise joint** [CIV ENG] 1. A joint bar used for joining rails of different height or section.  

**buildup** cooling the liquid by heat exchange, then releasing pressure to allow the liquid to vaporize (with resultant absorption of latent heat of vaporization and a refrigerative effect).
2. A rail that has different joint drillings from that of the same section. (kəmˈpraˌmɪzˌjoint) compromise rail [CIV ENG] A short rail having different sections at the ends to correspond with the rail ends to be joined, thus providing a transition between rails of different sections. (kəmˈpraˌmɪzlˌræl) compromise rail

computational numerical control See computer numerical control.

computer-integrated manufacturing [IND ENG] computer-integrated manufacturing

computed path control [CONT SYS] A control system designed to follow a path calculated to be the optimal one to achieve a desired result. (kəmˈpjuːdθədˌpaθkənˈtrɔrl) computed path control

computer-aided design [CONT SYS] The use of computers in converting the initial idea for a product into a detailed engineering design. Computer models and graphics replace the sketches and engineering drawings traditionally used to visualize products and communicate design information. Abbreviated CAD. (kəmˈpjuːdrədˌɑdˌkənˈtrɔl) computer-aided design

computer-aided engineering [ENG] The use of computer-based tools to assist in solution of engineering problems. (kəmˈpjuːdrədˌɑdˌenˈjaːnɪrɪŋ) computer-aided engineering

computer-aided manufacturing [CONT SYS] The use of computers in converting engineering designs into finished products. Computers assist managers, manufacturing engineers, and production workers in automating many production tasks, such as developing process plans, ordering and tracking materials, and monitoring production schedules, as well as controlling the machines, industrial robots, test equipment, and systems that move and store materials in the factory. Abbreviated CAM. (kəmˈpjuːdrədˌɑdˌmənˈɔʃəkˈʃaːrɪŋ) computer-aided manufacturing

computer control [CONT SYS] Process control in which the process variables are fed into a computer and the output of the computer is used to control the process. (kəmˈpjuːdrədˌkənˈtrɔl) computer control

calendar-controlled system [CONT SYS] A feedback control system in which a computer operates on both the input signal and the feedback signal to effect control. (kəmˈpjuːdrədˌkənˈtrɔldˌsɪsˈtɒm) computer-controlled system

calculator-integrated manufacturing [IND ENG] A computer-automated system in which individual engineering, production, marketing, and support functions of a manufacturing enterprise are organized; functional areas such as design, analysis, planning, purchasing, cost accounting, inventory control, and distribution are linked through the computer with factory floor functions such as materials handling and management, providing direct control and monitoring of all process operations. Abbreviated CIM. (kəmˈpjuːdrədˌʃɪntˌgrədˌɑdˌmənˈɔfəkˈʃaːrɪŋ) computer-aided numerical control

computer numerical control [CONT SYS] A control system in which numerical values corresponding to desired tool or control positions are generated by a computer. Abbreviated CNC. Also known as computational numerical control; soft-wired numerical control; stored-program numerical control. (kəmˈpjuːdrədˌørˈnjuːmərɪkˌɪkˈkɑl kənˈtrɔl) computer numerical control

computer part programming [CONT SYS] The use of computers to program numerical control systems. (kəmˈpjuːdrədˌpɑrtˈpɑrtˈprəˌgræmˈɪŋ) computer part programming

concatenation [ELEC] A method of speed control of induction motors in which the rotors of two wound-rotor motors are mechanically coupled together and the stator of the second motor is supplied with power from the rotor slip rings of the first motor. (ɛnˈkɑkˈtrənˌəˈbærənˈkɑl) concatenation

concentrate [DES ENG] Concentrate the number of trunks required. (kənˈsentrət) concentrate

concentrate load [MECH] A force that is negligible because of a small contact area; a beam supported on a girder represents a concentrated load on the girder. (kənˈsentrətˌləd) concentrate load

concentric load [MECH] A force that is negligible because of a small contact area; a beam supported on a girder represents a concentrated load on the girder. (kənˈsentrətˌləd) concentrate load

concentric groove [ENG] A groove concentric around an inner, bottom-discharging feedback control system in which a computer monitors and controls system operations, as well as controlling them as necessary. (kənˈsentrətˈgroʊv) concentric groove

concentric locating [DES ENG] The process of making the axis of a tooling device coincide with the axis of the workpiece. (kənˈsentrətˈlədɪŋ) concentric locating

concentric orifice plate [DES ENG] A fluid-meter orifice plate whose edges have a circular shape and whose center coincides with the center of the pipe. (kənˈsentrətˈɔrɪˌfəsˌplæt) concentric orifice plate

concentric reducer [ENG] A threaded or butt-welded pipe fitting whose ends are of different sizes but are concentric about a common axis. (kənˈsentrətˈrɪdˈdʊsrər) concentric reducer

concentric tube column [CHEM ENG] A careful concentration of materials. (kənˈsentrətˈtjuːbˈkɑləm) concentric tube column

concrete bridge [CIV ENG] A bridge constructed of prestressed or reinforced concrete. (kənˈkriːtˌbrɪdʒ) concrete bridge

concrete bucket [ENG] A container with movable gates at the bottom that is attached to a power crane or cables to transport concrete. (kənˈkriːtbʌkˈɪt) concrete bucket

concrete buggy [ENG] A cart which carries up to 6 cubic feet (0.17 cubic meter) of concrete from the mixer or hopper to the forms. Also known as buggy; concrete cart. (kənˈkriːtbɪˈkɪtˌbɪŋˈeɪ) concrete buggy

concrete caisson sinking [CIV ENG] A shaft-sinking method similar to caisson sinking except that reinforced concrete rings are used and an airtight working chamber is not adopted. (kənˈkriːtkrɛtˌkənˈtənˌsɪŋˈɪŋ) concrete caisson sinking

concrete caisson sinking [CIV ENG] A shaft-sinking method similar to caisson sinking except that reinforced concrete rings are used and an airtight working chamber is not adopted. (kənˈkriːtkrɛtˌkənˈtənˌsɪŋˈɪŋ) concrete caisson sinking
condensate well [MECH ENG] A chamber into which condensed vapor falls for convenient accumulation prior to removal. { 'kän-dän-sät,wel }

condensation [ELEC] An increase of electric charge on a capacitor conductor. { MECH } An increase in density. { 'kän-dän'sä-shän }

condenser [ELEC] See capacitor. { MECH ENG } A heat-transfer device that reduces a thermodynamic fluid from its vapor phase to its liquid phase, such as in a vapor-compression refrigeration plant or in a condensing steam power plant. { 'kän-den-sar }

condenser-discharge anemometer [ELEC] A contact anemometer connected to an electrical circuit which is so arranged that the average wind speed is indicated. { 'kan-dän-sär,dis,chärn an-mäm-əd-ər }

condenser microphone See capacitor microphone. { 'kan-dän-sär,mi-kra,lön }

condenser transducer See electrostatic transducer. { 'kan-dän-sär,trans'dyü-sar }

condenser tubes [MECH ENG] Metal tubes used in a heat-transfer device, with condenser vapor as the heat source and flowing liquid such as water as the receiver. { 'kan-dän-sär,tübš }

condensing electrometer See capacitive electrometer. { 'kan-dän-sënz-ej,lëk'tram-əd-ər }

condensing engine [MECH ENG] A steam engine in which the steam exhausts from the cylinder to a vacuum space, where the steam is liquefied. { 'kan-dän-sënz,jen-ən }

conditionally periodic motion [MECH] Motion of a system in which each of the coordinates undergoes simple periodic motion, but the associated frequencies are not all rational fractions of each other so that the complete motion is not simply periodic. { 'kan-dish-an-əl-e,pir-ej-ad-ək,mō-shən }

conditionally stable circuit [ELECTR] A circuit which is stable for certain values of input signal and gain, and unstable for other values. { 'kan-dish-an-əl-e,sta-bal,sar-kat }

conductance [ELEC] The real part of the admittance of a circuit, when the impedance contains no reactance, as in a direct-current circuit, it is the reciprocal of resistance, and is thus a measure of the ability of the circuit to conduct electricity. Also known as electrical conductance. Designated G. { 'the-rəm-o } See thermal conductance. { 'kan-dæk-tans }

conduction [ELEC] The passage of electric charge, which can occur by a variety of processes, such as the passage of electrons or ionized atoms. Also known as electrical conduction. { 'kan-dæk-shən }

conduction cooling [ELECTR] Cooling of electronic components by carrying heat from the device through a thermally conducting material to a large piece of metal with cooling fins. { 'kan-dæk-shən,kü-lə-nər }

conduction pump [ENG] A pump in which liquid metal or some other conductive liquid is moved through a pipe by sending a current across the liquid and applying a magnetic field at right angles to the current flow. { 'kan-dæk-shən,pump }

conductive coupling [ELEC] Electric connection of two electric circuits by their sharing the same resistor. { 'kan-dæk-tiv,kop-lən }

concrete cart See concrete buggy. { 'kän-kret ,kärnt }

concrete chute [ENG] A long metal trough with rounded bottom and open ends used for conveying concrete to a lower elevation. { 'kän,kret,shui-t }

concrete column [CIV ENG] A vertical structural member made of reinforced or unreinforced concrete. { 'kän-kret,käl-ən }

concrete dam [CIV ENG] A dam that is built of concrete. { 'kän-kret,'dam }

concrete mixer [MECH ENG] A machine with a rotating drum in which the components of concrete are mixed. { 'kän-kret,mik-sar }

concrete nail [DES ENG] A hardened-steel nail that has a flat countersunk head and a tapered point and is used for nailing various materials to concrete or masonry. { 'kän-kret,näl }

concrete pile [CIV ENG] A reinforced pile made of concrete, either precast and driven into the ground, or cast in place in a hole bored into the ground. { 'kän-kret,'päl }

concrete pipe [CIV ENG] A porous pipe made of concrete and used principally for subsoil drainage. diameters over 15 inches (38 centimeters) are usually reinforced. { 'kän-kret,'pip }

concrete pump [MECH ENG] A device which drives concrete to the placing position through a pipeline of 6-inch (15-centimeter) diameter or more, using a special type of reciprocating pump. { 'kän-kret,'pump }

concrete slab [CIV ENG] A flat, reinforced-concrete structural member, relatively sizable in length and width, but shallow in depth; used for floors, roofs, and bridge decks. { 'kän-kret,'slab }

concrete vibrator [MECH ENG] Vibrating device used to achieve proper consolidation of concrete; the three types are internal, surface, and form vibrators. { 'kän-kret,vi,bräd-ər }

concurrent engineering [ENG] The simultaneous design of products and related processes, including all product life-cycle aspects such as manufacturing, assembly, test, support, disposal, and recycling. { 'kan-kjær-ənt,en-ja-niŋ }

concussion [ENG] Shock waves in the air caused by an explosion underground or at the surface or by a heavy blow directly to the ground surface during excavation, quarrying, or blasting operations. { 'kan-kash-an }

condensate flash [CHEM ENG] Partial evaporation (flash) of hot condensed liquid by a stepwise reduction in system pressure, the hot vapor supplying heat to a cooler evaporator step (stage). { 'kän-dän-sät,flesh }

condensate strainer [MECH ENG] A screen used to remove solid particles from the condensate prior to its being pumped back to the boiler. { 'kän-dän-sät,stri-nər }

condensate well [MECH ENG] A chamber into which condensed vapor falls for convenient accumulation prior to removal. { 'kän-dän-sät,wel }

120
conductivity [ELEC] The ratio of the electric current density to the electric field in a material. Also known as electrical conductivity. 

conductivity bridge [ELEC] A modified Kelvin bridge for measuring very low resistances. 

conductivity cell [ELEC] A glass vessel with two electrodes at a definite distance apart and filled with a solution whose conductivity is to be measured. 

conductivity modulation [ELECTR] Of a semiconductor, the variation of the conductivity of a semiconductor through variation of the charge carrier density. 

conductivity modulation transistor [ELECTR] Transistor in which the active properties are derived from minority carrier modulation of the bulk resistivity of the semiconductor. 

conductometer [ENG] An instrument designed to measure thermal conductivity, in particular, one that compares the rates at which different rods transmit heat. 

conductor [ELEC] A wire, cable, or other body or medium that is suitable for carrying electric current. Also known as electric conductor. 

conductor pipe [BUILD] A metal pipe through which water is drained from the roof. 

conduit [ELEC] Solid or flexible metal or other tubing through which insulated electric wires are run. [ENG] Any channel or pipe for conducting the flow of water or other fluid. 

cone [ENG ACOUS] The cone-shaped paper or fiber diaphragm of a loudspeaker. 


cone-bottom tank [ENG] Liquids-storage tank with downward-pointing conical bottom to facilitate drainage of bottom, as of water or sludge. 

cone brake [MECH ENG] A type of friction brake whose rubbing parts are cone-shaped. 

cone classifier [MECH ENG] Inverted-cone device for the separation of heavy particulates (such as sand, ore, or other mineral matter) from a liquid stream, feed enters the top of the cone, heavy particles settle to the bottom where they can be withdrawn, and liquid overflows the top edge, carrying the smaller particles or those of lower gravity over the rim, used in the mining and chemical industries. 

cone clutch [MECH ENG] A clutch which uses the wedging action of mating conical surfaces to transmit friction torque. 

cone crusher [MECH ENG] A machine that reduces the size of materials such as rock by crushing in the tapered space between a truncated revolving cone and an outer chamber. 

conehead rivet [DES ENG] A rivet with a head shaped like a truncated cone. 

cone key [DES ENG] A taper saddle key placed on a shaft to adapt it to a pulley with a too-large hole. 

cone loudspeaker [ENG ACOUS] A loudspeaker employing a magnetic driving unit that is mechanically coupled to a paper or fiber cone. Also known as cone speaker. 

cone mandrel [DES ENG] A mandrel in which the diameter can be changed by moving conical sleeves. 

cone nozzle [DES ENG] A cone-shaped nozzle that disperses fluid in an atomized mist. 

cone of friction [MECH] A cone in which the resultant force exerted by one flat horizontal surface on another must be located when both surfaces are at rest, as determined by the coefficient of static friction. 

cone pulley See step pulley. 

cone rock bit [MECH ENG] A rotary drill with two hardened knurled cones which cut the rock as they roll. Also known as roller bit. 

cone-roof tank [ENG] Liquids-storage tank with flattened conical roof to allow a vapor reservoir at the top for filling operations. 

cone speaker See cone loudspeaker. 

cone valve [CIV ENG] A divergent valve whose cone-shaped head in a fixed cylinder spreads water around the wide, downstream end of the cone in spillways of dams or hydroelectric facilities. Also known as Howell-Bunger valve. 

confidence level [IND ENG] The probability in acceptance sampling that the quality of accepted lots manufactured will be better than the rejectable quality level (ROL). 90% level indicates that accepted lots will be better than the ROL 90 times in 100. 

configuration [ELEC] A group of components interconnected to perform a desired circuit function. 

confined flow [ENG] The flow of any fluid (liquid or gas) through a continuous container (process vessel) or conduit (piping or tubing). 

confined wave [ENG] Physical restriction, or degree of such restriction, to passage of detonation wave or reaction zone, for example, that of a
resistant container which holds an explosive charge.  

**confining liquid**  
**[CHEM ENG]** A liquid seal (most often mercury or sodium sulfate brine) that is displaced during the no-loss transfer of a gas sample from one container to another.  

**congrent melting point**  
**[THERMO]** A point on a temperature composition plot of a nonstoichiometric compound at which the one solid phase and one liquid phase are adjacent.  

**conical ball mill**  
**[MECH ENG]** A cone-shaped tumbling pulverizer in which the steel balls are classified, with the larger balls at the feed end where larger lumps are crushed, and the smaller balls at the discharge end where the material is finer.  

**conical bearing**  
**[MECH ENG]** An antifriction bearing employing tapered rollers.  

**conical pendulum**  
**[MECH]** A weight suspended from a cord or light rod and made to rotate in a horizontal circle about a vertical axis with a constant angular velocity.  

**conical refiner**  
**[MECH ENG]** In paper manufacture, a cone-shaped continuous refiner having two sets of bars mounted on the rotating plug and fixed shell for beating unmodified cellulose fibers.  

**conical roll**  
See batten roll.  

**consicope**  
See koniscope.  

**conjugate momentum**  
**[MECH]** If $q_i (i = 1, 2, \ldots)$ are generalized coordinates of a classical dynamical system, and $L$ is its Lagrangian, the momentum conjugate to $q_i$, $p_i = \partial L/\partial q_i$. Also known as canonical momentum, generalized momentum.  

**connecting rod**  
**[MECH ENG]** Any straight link that transmits motion or power from one linkage to another within a mechanism, especially linear to rotary motion, as in a reciprocating engine or compressor.  

**connector**  
**[ELECTR]** A switch, or relay group cies having the same intensity are recorded at.

**constant**  
A principle governing the motion of a body moving under the action of a central force, according to which a line joining the body with the center of force sweeps out equal areas in equal times.  

**constant areas**  
**[MECH]** A principle governing the motion of a body moving under the action of a central force, according to which a line joining the body with the center of force sweeps out equal areas in equal times.

**constant charge**  
**[ELECTR]** A law which states that the total charge of an isolated system is constant; no violation of this law has been discovered. Also known as charge conservation.  

**constant of momentum**  
**[MECH]** The principle that, when a system of masses is subject only to internal forces that masses of the system exert on one another, the total vector momentum of the system is constant; no violation of this principle has been found. Also known as momentum conservation.  

**conservative force field**  
**[MECH]** A field of force in which the work done on a particle in moving from one point to another depends only on the particle’s initial and final positions.  

**conservative property**  
**[THERMO]** A property of a system whose value remains constant during a series of events.  

**console**  
**[ENG]** 1. A main control desk for electronic equipment, as at a radar station, radio or television station, or airport control tower. Also known as control desk. 2. A large cabinet for a radio or television receiver, standing on the floor rather than on a table. 3. A grouping of controls, indicators, and similar items contained in a specially designed model cabinet for floor mounting; constitutes an operator’s permanent working position.  

**consolote temperature**  
**[THERMO]** The upper temperature of immiscibility for a two-component liquid system. Also known as upper consolute temperature, upper critical solution temperature.  

**constant-amplitude recording**  
**[ENG ACOUS]** A sound-recording method in which all frequencies having the same intensity are recorded at the same amplitude.  

**constant-distance sphere**  
**[ENG ACOUS]** The relative response of a sonar projector to variations in acoustic intensity, or intensity per unit band, over the surface of a sphere concentric with its center.  

**constant element**  
**[MECH]** A grouping of conditions, an element for which the standard time allowance should always be the same.  

**constant-force spring**  
**[MECH ENG]** A spring which has a constant restoring force, regardless of displacement.  

**constant-head meter**  
**[ENG]** A flow meter which maintains a constant pressure differential but varies the orifice area with flow, such as a rotometer or piston meter.  

**constant-load balance**  
**[ENG]** An instrument for measuring weight or mass which consists of a
single pan (together with a set of weights that can be suspended from a counterpoised beam) that has a constant load (200 grams for the microbalance). (kän·stant·lad 'bal·ans)  
constant-load support [ENG] A spring-loaded support designed to maintain a constant and balanced load on a pipe in the event of vertical movement. (kän·stant·löd sa·port)  
constant of gravitation See gravitational constant. (kän·stant·av grav·ə•tä•shän)  
constant of motion [MECH] A dynamical variable of a system which remains constant in time. (kän·stant·av 'mō•shän)  
constant-pressure combustion [MECH ENG] Combustion occurring without a pressure change. (kän·stant·prē•shən kän•bas•chän)  
constant-pressure gas thermometer [ENG] A thermometer in which the volume occupied by a given mass of gas at a constant pressure is used to determine the temperature. (kän·stant·presh•ən 'gas thör, mäm•əd•ər)  
constant-speed drive [MECH ENG] A mechanism transmitting motion from one shaft to another that does not allow the velocity ratio of the shafts to be varied, or allows it to be varied only in steps. (kän·stant•spēd•dēv)  
constant-velocity recording [ENG ACOUS] A sound-recording method in which, for input signals of a given amplitude, the resulting recorded amplitude is inversely proportional to the frequency, the velocity of the cutting stylus is then constant for all input frequencies having that given amplitude. (kän·stant•və•lās•əd•ē •kōrd•ēp)  
constant-velocity universal joint [MECH ENG] A universal joint that transmits constant angular velocity from the driving to the driven shaft, such as the Bendix-Weiss universal joint. (kän·stant•və•lās•əd•e •yū•nə•və•rəl•jöint)  
constant-volume gas thermometer See gas thermometer. (kän·stant•vāl•yam• 'gas thör, mäm•əd•ər)  
constrained mechanism [MECH ENG] A mechanism in which all members move only in prescribed paths. (kän•stränd•mek•ə niz•əm)  
constraint [ENG] Anything that restricts the transverse contraction which normally occurs in a solid under longitudinal tension. [MECH] A restriction on the natural degrees of freedom of a system; the number of constraints is the difference between the number of natural degrees of freedom and the number of actual degrees of freedom. (kän•stränt)  
construction [DES ENG] The number of strands in a wire rope and the number of wires in a strand, expressed as two numbers separated by a multiplication sign. [ENG] 1. Putting parts together to form an integrated object. 2. The manner in which something is put together. (kän•sträk•shän)  
construction area [BUILD] The area of exterior walls and permanent interior walls and partitions. (kän•sträk•shän•ər•ē•z)  
construction cost [IND ENG] The total costs, direct and indirect, associated with transforming a design plan for material and equipment into a project ready for operation. (kän•sträk•shän•kast)  
construction engineering [CIV ENG] A specialized branch of civil engineering concerned with the planning, execution, and control of construction operations for projects such as highways, dams, utility lines, and buildings. (kän•sträk•shän•ən•ja•nər•i•n•iŋ)  
construction equipment [MECH ENG] Heavy power machines which perform specific construction or demolition functions. (kän•sträk•shän•kry•wp•mənt)  
construction joint [CIV ENG] A vertical or horizontal surface in reinforced concrete where creting was stopped and continued later. (kän•sträk•shän•jöint)  
construction survey [CIV ENG] A survey that gives locations for construction work. (kän•sträk•shän•sərv•y)  
construction wrench [DES ENG] An open-end wrench with a long handle; the handle is used to align matching rivet or bolt holes. (kän•sträk•shän•rənch)  
consumer’s risk [IND ENG] The probability that a lot whose quality equals the poorest quality that a consumer is willing to tolerate in an individual lot will be accepted by a sampling plan. (kän•sūm•ər•risk)  
contact [ELEC] See electric contact. [ENG] Initial detection of an aircraft, ship, submarine, or other object on a radarscope or other detecting equipment. (kän•takt)  
contact adsorption [CHEM ENG] Process for removal of minor constituents from fluids by stirring in direct contact with powdered or granulated adsorbents, or by passing the fluid through fixed-position adsorbent beds (activated carbon or ion-exchange resin); used to decolorize petroleum lubricating oils and to remove solvent vapors from air. (kän•takt•ad•sərp•shän)  
contact aerator [CIV ENG] A tank in which sewage that is settled on a bed of stone, cement-asbestos, or other surfaces is treated by aeration with compressed air. (kän•takt•ad•sərp•shän)  
contact bed [CIV ENG] A bed of coarse material such as coke, used to purify sewage. (kän•takt•bed)  
contact catalysis [CHEM ENG] Process of change in the structure of gas molecules adsorbed onto solid surfaces, the basis of many industrial processes. (kän•takt•kat•ə l•əs•əs)  
contact ceiling [BUILD] A ceiling in which the lath and construction are in direct contact, without use of furring or runner channels. (kän•takt•səl•iŋ)  
contact condenser [MECH ENG] A device in which a vapor, such as steam, is brought into direct contact with a cooling liquid, such as water, and is condensed by giving up its latent
contact-cup anemometer

heat to the liquid. Also known as direct-contact condenser. ['kán,takt kán-den-sár] 
contact-cup anemometer See contact anemometer. ['kán,takt,kán-an-em-nér-mèt]
contact electricity [ELEC] An electric charge at the surface of contact of two different materials. ['kán,takt,jl,elek-trís-ád-e]
contact electromotive force See contact potential difference. ['kán,takt jílekt-tra'mód-ív 'fór̩s]
contact filtration [CHEM ENG] A process in which finely divided adsorbent clay is mixed with oil to remove color bodies and to improve the oil’s stability. ['kán,takt fil'trá-shán]
contact gear ratio See contact ratio. ['kán,takt ɡir,raj-ʃo]
contact grasp [IND ENG] A basic grasp that is used to push an object over a surface, such as using the index finger to push a coin over a flat surface. ['kán,takt,grasp]
contact-initiated discharge machining [MECH ENG] An electromachining process in which the discharge is initiated by allowing the tool and workpiece to come into contact, after which the tool is withdrawn and an arc forms. ['kán,takt ɡnǐsh-e,ád-ád;dis,ʃãɾí mã,ʃẹn-ɪj]
contact inspection [ENG] A method by which an ultrasonic search unit scans a test piece in direct contact with a thin layer of couplant for transmission between the search unit and entry surface. ['kán,takt in'spek-shan]
contact microphone [ENG ACOUS] A microphone designed to pick up mechanical vibrations directly and convert them into corresponding electric currents or voltages. ['kán,takt 'mi-kra,fón]
contactor [CHEM ENG] A vessel designed to bring two or more substances into contact. [ELEC] A heavy-duty relay used to control electrical power circuits. Also known as electric contactor. ['kán,takt,ka̱n-tør]
contactor control system [CONT SYS] A feedback control system in which the control signal is a discontinuous function of the sensed error and may therefore assume one of a limited number of discrete values. ['kán,takt ka̱n-tröl,síp-tam]
contact potential See contact potential difference. ['kán,takt pa'ten-chal]
contact potential difference [ELEC] The potential difference that exists across the space between two electrically connected materials. Also known as contact electromotive force; contact potential. Volta effect. ['kán,takt pa'ten-chal 'dif-ráns]
contact process [CHEM ENG] Catalytic manufacture of sulfuric acid from sulfur dioxide and oxygen. ['kán,takt,prás-os]
contact ratio [DES ENG] The ratio of the length of the path of contact of two gears to the base pitch, equal to approximately the average number of pairs of teeth in contact. Also known as contact gear ratio. ['kán,takt,raj-ʃo]
contact rectifier See metallic rectifier. ['kán,takt rek-ta,fir-ar]
contact resistance [ELEC] The resistance in ohms between the contacts of a relay, switch, or other device when the contacts are touching each other. ['kán,takt níz'-tın]
contact sensor [ENG] A device that senses mechanical contact and gives out signals when it does so. ['kán,takt ʃen-sár]
contact thermography [ENG] A method of measuring surface temperature in which a thin layer of luminescent material is spread on the surface of an object and is excited by ultraviolet radiation in a darkened room; the brightness of the coating indicates the surface temperature. ['kán,takt ʃa̱m-mág-ro-fê]
contact time [ENG] The length of time a substance is held in direct contact with a treating agent. ['kán,takt,ta̱m]
container [IND ENG] A portable compartment of standard, uniform size, used to hold cargo for air, sea, or ground transport. ['kán-ta̱n-ár]
container car [ENG] A railroad car designed specifically to hold containers. ['kán-ta̱n-ár,ka̱r]
containerization [IND ENG] The practice of placing cargo in large containers such as truck trailers to facilitate loading on and off ships and railroad flat cars. ['kán,tá-na-'tał-zá-shán]
containment [ENG] An enclosed space or facility to contain and prevent the escape of hazardous material. ['kán-tán-mañ]
continuous-type furnace [MECH ENG] A furnace used for heat treatment of materials, with or without direct firing; pieces are loaded through one door, progress continuously through the furnace, and are discharged from another door. ['kán-tʃi̱n-yə-was,tip 'fá-rə-nás]
continuity [CIV ENG] Joining of structural members to each other, such as floors to beams, and beams to beams and to columns, so they bend together and strengthen each other when loaded. Also known as fixity. [ELEC] Continuous effective contact of all components of an electric circuit to give it high conductance by providing low resistance. ['kán-tʃi̱n-yə'
continuous-type furnace [MECH ENG] A furnace used for heat treatment of materials, with or without direct firing; pieces are loaded through one door, progress continuously through the furnace, and are discharged from another door. ['kán-tʃi̱n-yə-was,tip 'fá-rə-nás]
continuity of state [THERMO] Property of a transition between two states of matter, as between gas and liquid, during which there are no abrupt changes in physical properties. ['kán-tʃi̱n-yə'
continuous test [ELEC] An electrical test used to determine the presence and location of a broken connection. ['kán-tʃi̱n-yə',tʃi̱n-yə,te̱s]
continuous beam [CIV ENG] 1. A beam resting upon several supports, which may be in the same horizontal plane. 2. A beam having several spans in one straight line, generally has at least three supports. ['kán-tʃi̱n-yə-was,be̱m]
continuous brake [MECH ENG] A train brake that operates on all cars but is controlled from a single point. ['kán-tʃi̱n-yə-was,be̱ræk]
continuous bridge [CIV ENG] A fixed bridge supported at three or more points and capable of resisting bending and shearing forces at all sections throughout its length. ['kán-tʃi̱n-yə'
continuous bucket elevator [MECH ENG] A
contracted code sonde

contour machining

contour turning

contraction crack

contraction crack

contraction crack

continuous bucket elevator on an endless chain or belt. (kan'tin-yā-waš 'bak-ət 'el-ə-yād-ər)

continuous bucket excavator [MECH ENG] A bucket excavator with a continuous bucket elevator mounted in front of the bowl. (kan'tin-yā-waš 'bak-ət 'ek-ska-yād-ər)

continuous contact coking [CHEM ENG] A thermal conversion process using the mass-flow lift principle to give continuous coke circulation, oil-wetted particles of coke move downward into the reactor in which cracking, coking, and drying take place, pelletted coke, gas, gasoline, and gas oil are products of the process. (kan'tin-yā-waš ḳān, takt 'kōk-ɪŋ)

continuous control [CONT SYS] Automatic control in which the controlled quantity is measured continuously and corrections are a continuous function of the deviation. (kan'tin-yā-waš ḳān'trōl)

continuous countercurrent leaching [CHEM ENG] Process of leaching by the use of continuous equipment in which the solid and liquid are both moved mechanically, and by the use of a series of leach tanks and the countercurrent flow of solvent through the tanks in reverse order to the flow of solid. (kan'tin-yā-waš ḳaunt-ər-kōn't lēch-ɪŋ)

continuous distillation [CHEM ENG] Separation by boiling of a liquid mixture with different component boiling points; feed is introduced continuously, with continuous removal of overhead vapors and high-boiling bottoms liquids. (kan'tin-yā-waš dis-to'lā-shan)

continuous dryer [ENG] An apparatus in which drying is accomplished by passing wet material through without interruption. (kan'tin-yā-waš df-ər)

continuous equilibrium vaporization See equilibrium flash vaporization. (kan'tin-yā-waš ē-kwałlīf-ré-am vā-pə-rə-shan)

continuous-flow conveyor [MECH ENG] A totally enclosed, continuous-belt conveyor pulled transversely through a mass of granular, powdered or small-lump material fed from an overhead hopper. (kan'tin-yā-waš ḳīlo 'kəν'vā-ər)

continuous footing [CIV ENG] A footing that supports a wall. (kan'tin-yā-waš 'fūd-ɪŋ)

continuous industry [IND ENG] An industry in which raw material is subjected to successive operations, turning it into a finished product. (kan'tin-yā-waš 'in-dəs-tər)

continuous kiln [ENG] 1. A long kiln through which ware travels on a moving device, such as a conveyor. 2. A kiln through which the fire travels progressively. (kan'tin-yā-waš 'kîln)

continuous mixer [MECH ENG] A mixer in which materials are introduced, mixed, and discharged in a continuous flow. (kan'tin-yā-waš 'mīk-sər)

continuous operation [ENG] A process that operates on a continuous flow (materials or time) basis, in contract to batch, intermittent, or sequence-operation. (kan'tin-yā-waš āp-ə-rə-shan)

continuous production [IND ENG] Manufacture of products, such as chemicals or paper, involving a sequence of processes performed by a series of machines receiving the materials through a closed channel of flow. (kan'tin-yā-waš prə'dak-shan)

continuous-rail frog [ENG] A metal fitting that holds continuous welded rail sections to railroad ties. (kan'tin-yā-waš rāl 'frąg)

continuous rating [ENG] The rating of a component or equipment which defines the substantially constant conditions which can be tolerated for an indefinite time without significant reduction of service life. (kan'tin-yā-waš rād-ɪŋ)

continuous record [ENG] A recorder whose record sheet is a continuous strip or web rather than individual sheets. (kan'tin-yā-waš ri 'kōrd-ər)

continuous system [CONT SYS] A system whose inputs and outputs are capable of changing at any instant of time. Also known as continuous-time signal system. (kan'tin-yā-waš 'sıs-təm)

continuous task [IND ENG] A task that requires a continuously changing response by a worker to a continuously changing stimulus. (kan'tin-yā-waš 'təsk)

continuous-time signal system See continuous system. (kan'tin-yā-waš tīm 'sɪg-nəl 'sıs-təm)

continuous tube process [ENG] Plastics blow-molding process that uses a continuous extrusion of plastic tubing as feed to a series of blow molds as they clamp in sequence. (kan'tin-yā-waš tūb, prās-əs)

continuous-wave Doppler radar See continuous-wave radar. (kan'tin-yā-waš ḳwāv 'dāp-lər, rā 'dār)

continuous-wave radar [ENG] A radar system in which a transmitter sends out a continuous flow of radio energy, the target retransmits a small fraction of this energy to a separate receiving antenna. Also known as continuous-wave Doppler radar. (kan'tin-yā-waš ḳwāv 'rə, dār)

continuous work [IND ENG] A sustained and uninterrupted work activity, for example, exertion of a muscular force. (kan'tin-yā-waš wərk)

contouring temperature recorder [ENG] A device that records data from temperature sensors towed behind a ship and then plots the vertical distribution of isotherms on a continuous basis. (kān'tūr, tūn 'tem-prə-şar rī, kōr-dər)

contour machining [MECH ENG] Machining of an irregular surface. (kān'tūr mə'shən-ɪŋ)

contour turning [MECH ENG] Making a three-dimensional reproduction of the shape of a template by controlling the cutting tool with a follower that moves over the surface of a template. (kān'tūr, tām-ɪŋ)

contracted code sonde See code-sending radio-sonde. (kān'trək-kəd ʒōd, sənd)

contraction [MECH] The action or process of becoming smaller or pressed together, as a gas on cooling. (kān'trək-ʃən)

contraction crack [ENG] A crack resulting from restriction of metal in a mold while contracting. (kān'trak-ʃan ək krak)
contraction joint  [CIV ENG] A break designed in a structure to allow for drying and temperature shrinkage of concrete, brickwork, or masonry, thereby preventing the formation of cracks.  { kan'trōl, el-a-mant }

current hierarchy  See hierarchical control.  { kan'trōl, bi-ar-ər-kə }

current joint  [CIV ENG] An expansion joint in masonry to allow movement due to expansion and contraction.  { kan'trōl, joioint }

current liability  [CONT SYS] Property of a system for which, given any initial state and any desired state, there exists a time interval and an input signal which brings the system from the initial state to the desired state during the time interval.  { kan'trōl, a-bal-əd-ə }

currentable-pitch propeller  [MECH ENG] An aircraft or ship propeller in which the pitch of the blades can be changed during use; five types used for aircraft are two-position, variable-pitch, constant-speed, feathering, and reversible-pitch. Abbreviated CP propeller.  { kan'trōl, a-bal 'pich pral-pəl-ər }

currented avalanche device  [ELECTR] A semiconductor device that has rigidly specified maximum and minimum avalanche voltage characteristics and is able to operate and absorb momentary power surges in this avalanche region indefinitely without damage.  { kan'trōld 'av-ə, lanche d'Iv'ldiʃəs }

currented avalanche rectifier  [ELECTR] A silicon rectifier in which carefully controlled, nondestructive internal avalanche breakdown across the entire junction area protects the junction surface, thereby eliminating local heating that would impair or destroy the reverse blocking ability of the rectifier.  { kan'trōld 'av-ə, lanche 'rek-tə-flər }

currented avalanche transit-time triode  [ELECTR] A solid-state microwave device that uses a combination of IMPATT diode and npn bipolar transistor technologies; avalanche and drift zones are located between the base and collector regions. Abbreviated CATT.  { kan', trōld 'av-ə, lanche 'tranz-tim, ələm, əd-ər }

currented controlled medium  [CHEM ENG] In process automatic-control work, material or energy within a process system in which a variable (for example, concentration) is controlled.  { kan'trōld 'mēd-e-a-mon }  
currented controlled parameter  [ENG] In the formulation of an optimization problem, one of the parameters whose values determine the value of the criterion parameter.  { kan'trōld pa'ram-əd-ər }

currented controlled variable  [CONT SYS] In process automatic-control work, that quantity or condition of a controlled system that is directly measured or controlled.  { kan'trōld 'ver-e'a-bal }

currenter See automatic controller.  { kan'trōl-ər }

current-structure interaction  [CONT SYS] Feedback of an active control algorithm in the process of model reduction; this occurs through observation spillover and control spillover.  { kan'trōl-ər, strak-kər in-tər-ər-kə-shən }

current limits  [ELECTR] In radar evaluation, upper and lower control limits are established at those performance figures within which it is expected that 95% of quality-control samples will fall when the radar is performing normally.

contraction joint  [CIV ENG] A break designed in a structure to allow for drying and temperature shrinkage of concrete, brickwork, or masonry, thereby preventing the formation of cracks.  { kan'trōl, el-a-mant }

current hierarchy  See hierarchical control.  { kan'trōl, bi-ar-ər-kə }

current joint  [CIV ENG] An expansion joint in masonry to allow movement due to expansion and contraction.  { kan'trōl, joioint }

current liability  [CONT SYS] Property of a system for which, given any initial state and any desired state, there exists a time interval and an input signal which brings the system from the initial state to the desired state during the time interval.  { kan'trōl, a-bal-əd-ə }

currentable-pitch propeller  [MECH ENG] An aircraft or ship propeller in which the pitch of the blades can be changed during use; five types used for aircraft are two-position, variable-pitch, constant-speed, feathering, and reversible-pitch. Abbreviated CP propeller.  { kan'trōl, a-bal 'pich pral-pəl-ər }

currented avalanche device  [ELECTR] A semiconductor device that has rigidly specified maximum and minimum avalanche voltage characteristics and is able to operate and absorb momentary power surges in this avalanche region indefinitely without damage.  { kan'trōld 'av-ə, lanche d'Iv'ldiʃəs }

currented avalanche rectifier  [ELECTR] A silicon rectifier in which carefully controlled, nondestructive internal avalanche breakdown across the entire junction area protects the junction surface, thereby eliminating local heating that would impair or destroy the reverse blocking ability of the rectifier.  { kan'trōld 'av-ə, lanche 'rek-tə-flər }

currented avalanche transit-time triode  [ELECTR] A solid-state microwave device that uses a combination of IMPATT diode and npn bipolar transistor technologies; avalanche and drift zones are located between the base and collector regions. Abbreviated CATT.  { kan', trōld 'av-ə, lanche 'tranz-tim, ələm, əd-ər }

currented controlled medium  [CHEM ENG] In process automatic-control work, material or energy within a process system in which a variable (for example, concentration) is controlled.  { kan'trōld 'mēd-e-a-mon }  
currented controlled parameter  [ENG] In the formulation of an optimization problem, one of the parameters whose values determine the value of the criterion parameter.  { kan'trōld pa'ram-əd-ər }

currented controlled variable  [CONT SYS] In process automatic-control work, that quantity or condition of a controlled system that is directly measured or controlled.  { kan'trōld 'ver-e'a-bal }

currenter See automatic controller.  { kan'trōl-ər }

current-structure interaction  [CONT SYS] Feedback of an active control algorithm in the process of model reduction; this occurs through observation spillover and control spillover.  { kan'trōl-ər, strak-kər in-tər-ər-kə-shən }

current limits  [ELECTR] In radar evaluation, upper and lower control limits are established at those performance figures within which it is expected that 95% of quality-control samples will fall when the radar is performing normally.

contraction joint  [CIV ENG] A break designed in a structure to allow for drying and temperature shrinkage of concrete, brickwork, or masonry, thereby preventing the formation of cracks.  { kan'trōl, el-a-mant }

current hierarchy  See hierarchical control.  { kan'trōl, bi-ar-ər-kə }

current joint  [CIV ENG] An expansion joint in masonry to allow movement due to expansion and contraction.  { kan'trōl, joioint }

current liability  [CONT SYS] Property of a system for which, given any initial state and any desired state, there exists a time interval and an input signal which brings the system from the initial state to the desired state during the time interval.  { kan'trōl, a-bal-əd-ə }

currentable-pitch propeller  [MECH ENG] An aircraft or ship propeller in which the pitch of the blades can be changed during use; five types used for aircraft are two-position, variable-pitch, constant-speed, feathering, and reversible-pitch. Abbreviated CP propeller.  { kan'trōl, a-bal 'pich pral-pəl-ər }

currented avalanche device  [ELECTR] A semiconductor device that has rigidly specified maximum and minimum avalanche voltage characteristics and is able to operate and absorb momentary power surges in this avalanche region indefinitely without damage.  { kan'trōld 'av-ə, lanche d'Iv'ldiʃəs }

currented avalanche rectifier  [ELECTR] A silicon rectifier in which carefully controlled, nondestructive internal avalanche breakdown across the entire junction area protects the junction surface, thereby eliminating local heating that would impair or destroy the reverse blocking ability of the rectifier.  { kan'trōld 'av-ə, lanche 'rek-tə-flər }

currented avalanche transit-time triode  [ELECTR] A solid-state microwave device that uses a combination of IMPATT diode and npn bipolar transistor technologies; avalanche and drift zones are located between the base and collector regions. Abbreviated CATT.  { kan', trōld 'av-ə, lanche 'tranz-tim, ələm, əd-ər }

currented controlled medium  [CHEM ENG] In process automatic-control work, material or energy within a process system in which a variable (for example, concentration) is controlled.  { kan'trōld 'mēd-e-a-mon }  
currented controlled parameter  [ENG] In the formulation of an optimization problem, one of the parameters whose values determine the value of the criterion parameter.  { kan'trōld pa'ram-əd-ər }

currented controlled variable  [CONT SYS] In process automatic-control work, that quantity or condition of a controlled system that is directly measured or controlled.  { kan'trōld 'ver-e'a-bal }

currenter See automatic controller.  { kan'trōl-ər }

current-structure interaction  [CONT SYS] Feedback of an active control algorithm in the process of model reduction; this occurs through observation spillover and control spillover.  { kan'trōl-ər, strak-kər in-tər-ər-kə-shən }

current limits  [ELECTR] In radar evaluation, upper and lower control limits are established at those performance figures within which it is expected that 95% of quality-control samples will fall when the radar is performing normally.
cooling correction

[IND ENG] In statistical quality control, the limits of acceptability placed on control charts; parts outside the limits are defective. (kan'trōl lim'ats)

controlling magnet [ENG] An auxiliary magnet used with a galvanometer to cancel the effect of the earth's magnetic field. (kan'trōl, mag'nat)

control panel [ENG] See control board; panel. (kan'trōl, pan'āl)

control room [ENG] A room from which space flights are directed. (kan'trōl, rūm)

control signal [CONT SYS] The signal applied to the device that makes corrective changes in a controlled process or machine. (kan'trōl sig'nal)

control spillover [CONT SYS] The excitation by current as the transfer of positive charge, so that its direction of flow is opposite to that of electrons which are negatively charged. (kan'ven·chan'ol kar'ant)

conventional current [ELEC] The concept of current as the transfer of positive charge, so that its direction of flow is opposite to that of electrons which are negatively charged. (kan'ven·chan'ol kar'ant)

convergent die [ENG] A die having internal channels which converge. (kan'var'jan't di')

convergent-divergent nozzle [DES ENG] A nozzle in which supersonic velocities are attained; has a divergent portion downstream of the contracting section. Also known as supersonic nozzle. (kan'var'jan't dā'var'jan't nāz'-ol)

conversion [CHEM ENG] The chemical change from reactants to products in an industrial chemical process. Also known as chemical conversion. (kan'var'zhan)

converted water See product water. (kan'vārd-ad 'wōd-or)

conveyor [MECH ENG] Any materials-handling machine designed to move individual articles such as solids or free-flowing bulk materials over a horizontal, inclined, declined, or vertical path of travel with continuous motion. (kan'va-r)

conveyor belt balance [ENG] A balance used for weighing unpackaged, loose, continuously transported material on a conveyor belt by weighing the load being moved and measuring the belt speed. (kan'va-r belt, bal'-ans)

cooled-tube pyrometer [ENG] A thermometer for high-temperature flowing gases that uses a liquid-cooled tube inserted in the flowing gas. Gas temperature is deduced from the law of convective heat transfer to the outside of the tube and from measurement of the mass flow rate and temperature rise of the cooling liquid. (kůld, tūb p'tram-ad-or)

cooler nail [DES ENG] A thin, cement-coated wire nail. (kūl-or, nāl)

cooling channel [ENG] A channel in the body of mold through which a cooling liquid is circulated. (kūl-in'j, chan'-ol)

cooling coil [MECH ENG] A coiled arrangement of pipe or tubing for the transfer of heat between two fluids. (kūl-in'j kööl)

cooling correction [THERMO] A correction that must be employed in calorimetry to allow for heat transfer between a body and its surroundings. Also known as radiation correction. (kūl-in'j ka'trek-shan)
cooling curve [THERMO] A curve obtained by plotting time against temperature for a solid-liquid mixture cooling under constant conditions. \[ 'kəʊlɪŋ\ 'kjuːə\ ]

cooling degree day [MECH ENG] A unit for estimating the energy needed for cooling a building. One unit is given for each degree Fahrenheit that the daily mean temperature exceeds 75°F (24°C). \[ 'kəʊlɪŋ\ 'dɪˌɡreɪ\ 'dæ\ ]

cooling fin [MECH ENG] The extended element of a heat-transfer device that effectively increases the surface area. \[ 'kəʊlɪŋ\ 'fɪn\ ]

cooling fixture [ENG] A wooden or metal block used to hold the shape or dimensional accuracy of a molding until it cools enough to retain its shape. \[ 'kəʊlɪŋ\ 'fɪkʃə\ ]

cooling load [MECH ENG] The total amount of heat energy that must be removed from a system by a cooling mechanism in a unit time, equal to the rate at which heat is generated by people, machinery, and processes, plus the net flow of heat into the system not associated with the cooling machinery. \[ 'kəʊlɪŋ\ 'ləʊd\ ]

cooling method [THERMO] A method of determining the specific heat of a liquid in which the times taken by the liquid and an equal volume of water in an identical vessel to cool through the same range of temperature are compared. \[ 'kəʊlɪŋ\ 'mɛθ\-'dæd\ ]

cooling pond [CHEM ENG] Outdoor depression into which hot process water is pumped for purposes of cooling by evaporation, convection, and radiation. \[ 'kəʊlɪŋ\ 'pɒnd\ ]

cooling power [MECH ENG] A parameter devised to measure the air's cooling effect upon a human body, it is determined by the amount of heat required by a device to maintain the device at a constant temperature (usually 34°C), the entire system should be made to correspond, as closely as possible, to the external heat exchange mechanism of the human body. \[ 'kəʊlɪŋ\ 'pɔːr\ ]

cooling-power anemometer [ENG] Any anemometer operating on the principle that the heat transfer to air from an object at an elevated temperature is a function of airspeed. \[ 'kəʊlɪŋ\ 'pɔːr\ 'æn\-'mæm\-'dæd\-'ɔr\ ]

cooling process [ENG] Physical operation in which heat is removed from process fluids or solids, may be by evaporation of liquids, expansion of gases, radiation or heat exchange to a cooler fluid stream, and so on. \[ 'kəʊlɪŋ\ 'præs\-'əs\ ]

cooling range [MECH ENG] The difference in temperature between the hot water entering and the cold water leaving a cooling tower. \[ 'kəʊlɪŋ\ 'ræn\ ]

cooling stress [MECH] Stress resulting from uneven contraction during cooling of metals and ceramics due to uneven temperature distribution. \[ 'kəʊlɪŋ\ 'stres\ ]

cooling tower [ENG] A towerlike device in which atmospheric air circulates and cools warm water, generally by direct contact (evaporation). \[ 'kəʊlɪŋ\ 'tɔː\-'ɔr\ ]

coolometer [ENG] An instrument which measures the cooling power of the air, consisting of a metal cylinder electrically heated to maintain a constant temperature, the electrical heating power required is taken as a measure of the air's cooling power. \[ 'kəʊlɪmə\-'dɔr\ ]

cooperative system [ENG] A missile guidance system that requires transmission of information from a remote ground station to a missile in flight, processing of the information by the missile-borne equipment, and retransmission of the processed data to the originating or other remote ground stations, as in azusa and dovap. \[ 'kəʊpə\-'ræd\-'ɪv\ 'sɪs\-'tæm\ ]

coordinated-axis control [CONT SYS] Robotic control in which the robot axes reach their end points simultaneously, thus giving the robot's motion a smooth appearance. \[ 'kəʊrd\-'ɔrd\-'ɑn\-dʒæd\-'skæn\-'trɒl\ ]

coordinating holes [DES ENG] Holes in two parts of an assembly which form a single continuous hole when the parts are joined. \[ 'kəʊrd\-'ɔrd\-'ɑn\-'hid\ ]

cope chisel [DES ENG] A chisel used to cut grooves in metal. \[ 'kop\ ]

coping [BUILD] A covering course on a wall. \[ 'kəʊp\ ]

coplanar forces [MECH] Forces that act in a single plane; thus the forces are parallel to the plane and their points of application are in the plane. \[ 'kəʊplən\-'ɔːr\-'fɔːrs\-'əz\ ]
copper dish gum [CHEM ENG] The milligrams of gum found in 100 milliliters of gasoline when evaporated under controlled conditions in a polished copper dish. \[ 'kəʊpər\-'dɪʃ\-'gʌm\ ]
copper loss [ELEC] Power loss in a winding due to current flow through the resistance of the copper conductors. Also known as I²R loss. \[ 'kəʊpər\-'lɒs\ ]
copper-strip corrosion [ENG] A qualitative method of determining the corrosivity of a petroleum product by observing its effect on a strip of polished copper suspended or placed in the product. Also known as copper strip test. \[ 'kəʊpər\-'strɪp\ 'kɪ\-'rə-zən\ ]
copper-strip test See copper-strip corrosion. \[ 'kəʊpər\-'strɪp\ 'tɛst\ ]
copper sweetening [CHEM ENG] Those refining processes using cupric chloride to oxidize mercaptans in petroleum. \[ 'kəʊpər\-'swɛt\-'ɑn\-'ɪj\ ]
corbinotron [ENG] The combination of a corbin disk, made of high-mobility semiconductor material, and a coil arranged to produce a magnetic field perpendicular to the disk. \[ 'kəʊr\-bən\-'trɒn\ ]
cordage [ENG] Number of cords of lumber per given area. \[ 'kɔrd\-'ɪj\ ]
cord foot [ENG] A stack of wood measuring 16
cubic feet (approximately 0.45307 cubic meter). (ˈkɔrd ˈfyt)
cord tire [ENG] A pneumatic tire made with cords running parallel to the tread. (ˈkɔrd ˈtīr)
core [MECH] See magnetic core. [ENG] The inner material of a wall, column, veneered door, or similar structure. (ˈkɔr)
core array [ELECTR] A rectangular grid arrangement of magnetic cores. (ˈkɔr ɑrɛ)
core bank [ELECTR] A stack of core arrays and associated electronics, the stack containing a specific number of core arrays. (ˈkɔr ˈbaŋk)
core barrel [ENG] A hollow cylinder attached to a specially designed bit; used to obtain a continuous section of the rocks penetrated in drilling. (ˈkɔr ˈbærl)
core bit [DES ENG] The hollow, cylindrical cutting part of a core drill. (ˈkɔr ˈbit)
core catcher See split-ring core lifter (ˈkɔr ˈkætʃə)
core cutterhead [ENG] The cutting element in a core barrel unit. (ˈkɔr ˈkætərˌhed)
core drill [MECH ENG] A mechanism designed to rotate and to cause an annular-shaped rock-cutting bit to penetrate rock formations, produce cylindrical cores of the formations penetrated, and lift such cores to the surface, where they may be collected and examined. (ˈkɔr ˈdril)
core flow [ENG] A pattern of powder flow occurring in hoppers that is characterized by a central core of flowing powder with the powder near the hopper walls remaining stationary. (ˈkɔr ˈflɔ)
core gripper See split-ring core lifter. (ˈkɔr ˈgripər)
coreless-type induction heater [ENG] A device in which a charge is heated directly by induction, with no magnetic core material linking the charge. Also known as coreless-type induction furnace. (ˈkɔrˌlēsˌtīp ˈɪndəkʃən ˈfɜrnəs ˈhɛd-ər)
core lifter See split-ring core lifter. (ˈkɔr ˈlifˌtər)
core logic [ELECTR] Logic performed in ferrite cores that serve as inputs to diode and transistor circuits. (ˈkɔrˌlɔgik)
corer [ENG] An instrument used to obtain cylindrical samples of geological materials or ocean sediments. (ˈkɔrər)
core stack [ELECTR] A number of core arrays, next to one another and treated as a unit. (ˈkɔrˌstæk)
core wall See cutoff wall. (ˈkɔrˌwɔl)
coring reel See sand reel. (ˈkɔrˌɪŋ ˈrel)
Coriolis acceleration [MECH] 1. An acceleration which, when added to the acceleration of an object relative to a rotating coordinate system and to its centripetal acceleration, gives the acceleration of the object relative to a fixed coordinate system. 2. A vector which is equal in magnitude and opposite in direction to that of the first definition. (ˈkɔrˌɪləs ˈələs ˈiːkˌsɛlˌətərəˈʃən)
Coriolis deflection See Coriolis effect. (ˈkɔrˌɪləs ˈələs ˈdɪflɛktəˈʃən)
Coriolis effect [MECH] Also known as Coriolis deflection. 1. The deflection relative to the earth's surface of any object moving above the earth, caused by the Coriolis force; an object moving horizontally is deflected to the right in the Northern Hemisphere, to the left in the Southern. 2. The effect of the Coriolis force in any rotating system. (ˈkɔrˌɪləs ˈələs ˈɪflektə)
Coriolis force [MECH] A velocity-dependent pseudoforce in a reference frame which is rotating with respect to an inertial reference frame, it is equal and opposite to the product of the mass of the particle on which the force acts and its Coriolis acceleration. (ˈkɔrˌɪləsˌfɔrs)
Coriolis-type mass flowmeter [ENG] An instrument which determines mass flow rate from the torque on a ribbed disk that is rotated at constant speed when fluid is made to enter at the center of the disk and is accelerated radially. (ˈkɔrˌɪləsˌtīp ˈmeɪskˈflɔˌmedər)

Corliss valve [MECH ENG] An oscillating type of valve gear with a trip mechanism for the admission and exhaust of steam to and from an engine cylinder. (ˈkɔrˌlɪs ˈvælə)
corner bead [BUILD] 1. Any vertical molding used to protect the external angle of the intersecting surfaces. 2. A strip of formed galvanized iron, sometimes combined with a strip of metal lath, placed on corners to reinforce them before plastering. (ˈkɔrˌnərˌbeid)
corner chisel [DES ENG] A chisel with two cutting edges at right angles. (ˈkɔrˌnərˌchizəl)
corner effect [ELECTR] The departure of the frequency-response curve of a band-pass filter from a perfect rectangular shape, so that the corners of the rectangle are rounded. [ENG] In ultrasonic testing, reflection of an ultrasonic beam directed perpendicular to the intersection of two surfaces 90° apart. (ˈkɔrˌnərˌɛfəkt)
corner frequency See break frequency. (ˈkɔrˌnərˌbriːkˈfrɛnʃi)
corner head [BUILD] A metal molding that is built into plaster in corners to prevent plaster from accidentally breaking off. (ˈkɔrˌnərˌhed)
cornering tool [BUILD ENG] A cutting tool with a curved edge, used to round off sharp corners. (ˈkɔrˌnərˌtəlˌwʊl)
cornerite [BUILD] A corner reinforcement for interior plastering. (ˈkɔrˌnərˌɪt)
corner joint [ENG] An L-shaped joint formed by two members positioned perpendicular to each other. (ˈkɔrˌnərˌjɔint)
cornerload test [ENG] A test to determine whether the display of an analytical balance is affected by the load distribution on the weighing pan. (ˈkɔrˌnərləʊdˌtɛst)
cornerstone [BUILD] An inscribed stone laid at the corner of a building, usually at a ceremony. (ˈkɔrˌnərˌstoʊn)
cornice brake [MECH ENG] A machine used to bend sheet metal into different forms. (ˈkɔrˌnɪsˌbrək)
corona [ELEC] The current of electricity equivalent to the rate of charge transferred to the air from an object experiencing corona discharge. (ˈkɔrənəˌdeɪk)
corona discharge

**corona discharge** [ELEC] A discharge of electricity appearing as a bluish-purple glow on the surface of and adjacent to a conductor when the voltage gradient exceeds a certain critical value, due to ionization of the surrounding air by the high voltage. Also known as aurora, corona; electric corona. { कॉरोना 'dīs,चार्ज्}

correction chamber [ENG] A closable cavity in a weight on an analytical balance; holds material to adjust weight to nominal value. { कारक-शन 'चाम-बार्}

correction time [CONT SYS] The time required for the controlled variable to reach and stay within a predetermined band about the control point following any change of the independent variable or operating condition in a control system. Also known as settling time. { कारक-शन 'टिम्}

corrective action [CONT SYS] The act of varying the manipulated process variable by the controlling means in order to modify overall process operating conditions. { काररत्विव 'कश-शन्}

corrective maintenance [ENG] A procedure of repairing components or equipment as necessary either by on-site repair or by replacing individual elements in order to keep the system in proper operating condition. { काररत्विव 'मांत्-योः}

corrective operation See remedial operation. { काररत्विव 'अप-कश-शन्}

corrector [ENG] A magnet, piece of soft iron, or device used in the adjustment or compensation of a magnetic compass. { काररत-तर्}

correlated orientation tracking and range See cotar. { 'कार-रत्वि-शाह 'रत्वी-अन्ताश-शान्त 'ट्रक-िअन 'रानि}

correlation detection [ENG] A method of detection of aircraft or space vehicles in which a signal is compared, point to point, with an internally generated reference. Also known as cross-correlation detection. { कारएश-शान्त 'दीत्रक-शन्}

correlation direction finder [ENG] Satellite station separated from a radar to receive jamming signals; by correlating the signals received from several such stations, range and azimuth of many jammers may be obtained. { कारएश-शान्त 'दीत्रक-शान्त 'फिन्द-अर्}

correlation tracking and triangulation See cotat. { कारएश-शान्त 'ट्रक-िअन 'ट्राइश-ग्याला-शान्त}

correlation tracking system [ENG] A trajectory-measuring system utilizing correlation techniques where signals derived from the same source are correlated to derive the phase difference between the signals. { कारएश-शान्त 'ट्रक-िअन 'सिस-टम्}

correlation ultrasonic flowmeter [ENG] An instrument for determining the velocity of a fluid flow from the time required for discontinuities in the fluid stream to pass between two pairs of transducers that generate and detect high-frequency sound. { कारएश-शान्त अत्रासंस्क एफलेएम-अर्}

correlative kinesiology [IND ENG] A field that involves determination of the quantitative relationship between the electrical potential generated by muscular activity and the resultant movement, used in developing a design for a workplace that minimizes fatigue. { कारील-अट्वि 'क नेऽ-एअ-अस्}

corrosion coupon See coupon. { कारोव़ा-शन 'कु,पान्}

corrosion number See acid number. { कारोव़ा-शन 'नाम-बार्}

corrosive product [CHEM ENG] In petroleum refining, a product that contains a quantity of corrosion-inducing compounds in excess of the limits specified for products classified as sweet. { कारवस-विव 'प्राद-अक्त्}

corrugated bar [DES ENG] Steel bar with transverse ridges; used in reinforced concrete. { 'कार-गड-वड 'बार्}

corrugated fastener [DES ENG] A thin corrugated strip of steel that can be hammered into a wood joint to fasten it. { 'कार-गड-वड 'फास-नार्}

corrugating [DES ENG] Forming straight, parallel, alternate ridges and grooves in sheet metal, cardboard, or other material. { 'कार-गड-विज्}

cosmic-ray telescope [ENG] Any device for detecting and determining the directions of either cosmic-ray primary protons and heavier-element nuclei, or the products produced when these particles interact with the atmosphere. { 'काजमिक,रातेल-सकोप्}

cosolvent [CHEM ENG] During chemical processing, a second solvent added to the original solvent, generally in small concentrations, to form a mixture that has greatly enhanced solvent powers due to synergism. { कोसवल-वंत्}

cost accounting [IND ENG] The branch of accounting in which one records, analyzes, and summarizes costs of material, labor, and burden, and compares these actual costs with predetermined budgets and standards. { 'कोस्त अकौंट-इन्}

cost analysis [IND ENG] Analysis of the factors contributing to the costs of operating a business and of the costs which will result from alternative procedures, and of their effects on profits. { 'कोस्त अनल-अस्}

cost control See industrial cost control. { 'कोस्त कन्ट्रोल्}

cost engineering [IND ENG] A branch of industrial engineering concerned with cost estimation, cost control, business planning and management, profitability analysis, and project management, planning, and scheduling. { 'कोस्त एनज़-नि-विज्}

cost function [SYS ENG] In decision theory, a loss function which does not depend upon the decision rule. { 'कोस्त फांस-शन्}

cost-plus contract [ENG] A contract under which a contractor furnishes all material, construction equipment, and labor at actual cost, plus an agreed-upon fee for his services. { 'कोस्त प्लास,कन्ट्राक्ट्}

cotar [ENG] A passive system used for tracking a vehicle in space by determining the line of
direction between a remote ground-based receiving antenna and a telemetering transmitter in the missile, using phase-comparison techniques. Derived from correlated orientation tracking and range. \( k_0 \text{t} \)

cotat \[ 
\text{ENG} \] A trajectory-measuring system using several antenna base lines, each separated by large distances, to measure direction cosines to an object, then the object’s space position is computed by triangulation. Derived from correlation tracking and triangulation. \( k_0 \text{t} \)
cotter \[ 
\text{ENG} \] A tapered piece that can be driven in a tapered hole to hold together an assembly of machine or structural parts. \( k_\text{d} \)
cottered joint \[ 
\text{MECH ENG} \] A joint in which a cotter, usually a flat bar tapered on one side to ensure a tight fit, transmits power by shear on an area at right angles to its length. \( k_\text{d} \)
cotter pin \[ 
\text{ENG} \] A split pin, inserted into a hole, to hold a nut or cotter securely to a bolt or shaft, or to hold a pair of hinge plates together. \( k_\text{d} \)

**Cotton balance** \[ 
\text{ENG} \] A device which employs a current-carrying conductor of special shape to determine the strength of a magnetic field. \( k_\text{t} \)

Cottrell precipitator \[ 
\text{ENG} \] A machine for removing dusts and mists from gases, in which the gas passes through a grounded pipe with a fine axial wire at a high negative voltage, and particles are ionized by the corona discharge of the wire and migrate to the pipe. \( k_\text{t} \)

Couette viscometer \[ 
\text{ENG} \] A viscometer in which the fluid whose viscosity is to be measured fills the space between two vertical coaxial cylinders, the inner one suspended by a torsion wire; the outer cylinder is rotated at a constant rate, and the resulting torque on the inner cylinder is measured by the twist of the wire. Also known as rotational viscometer. \( k_\text{c} \)

Coulomb friction \[ 
\text{MECH} \] Friction occurring between dry surfaces. \( k_\text{f} \)

Coulomb interactions \[ 
\text{ELEC} \] Interactions of charged particles associated with the Coulomb forces they exert on one another. Also known as electrostatic interactions. \( k_\text{f} \)

Coulomb force \[ 
\text{ELEC} \] The electrostatic force of attraction or repulsion exerted by one charged particle on another, in accordance with Coulomb’s law. \( k_\text{f} \)

Coulomb potential \[ 
\text{ELEC} \] A scalar point function equal to the work per unit charge done against the Coulomb force in transferring a particle bearing an infinitesimal positive charge from infinity to a point in the field of a specific charge distribution. \( k_\text{p} \)

Coulomb repulsion \[ 
\text{ELEC} \] The electrostatic force of repulsion exerted by one charged particle on another charged particle of the same sign. Also known as electrostatic repulsion. \( k_\text{r} \)

Coulomb’s law \[ 
\text{ELEC} \] The law that the attraction or repulsion between two electric charges acts along the line between them, is proportional to the product of their magnitudes, and is inversely proportional to the square of the distance between them. Also known as law of electrostatic attraction. \( k_\text{l} \)

Coulomb’s theorem \[ 
\text{ELEC} \] The proposition that the intensity of an electric field near the surface of a conductor is equal to the surface charge density on the nearby conductor surface divided by the absolute permittivity of the surrounding medium. \( k_\text{l} \)

count \[ 
\text{DES ENG} \] The number of openings per linear inch in a wire cloth. \( k_\text{n} \)

countdown \[ 
\text{ENG} \] A step-by-step process that culminates in a climatic event, each step being performed in accordance with a schedule marked by a count in inverse numerical order. \( k_\text{n} \)

counter \[ 
\text{ELECTR} \] See scaler \[ 
\text{ENG} \] A complete instrument for detecting, totaling, and indicating a sequence of events. \( k_\text{a} \)

counterbalance \[ 
\text{ENG} \] See counterweight. \( k_\text{a} \)

counterbalanced truck \[ 
\text{MECH ENG} \] An industrial truck configured so that all of its load during a normal transporting operation is external to the polygon formed by the points where the wheels contact the surface. \( k_\text{a} \)

counterbalance system \[ 
\text{ENG} \] See two-step grooving system. \( k_\text{a} \)

counterblow hammer \[ 
\text{MECH ENG} \] A forging hammer in which the ram and anvil are driven toward each other by compressed air or steam. \( k_\text{d} \)
counterbore  [DES ENG] A flat-bottom enlargement of the mouth of a cylindrical bore to enlarge a borehole and give it a flat bottom. [ENG] To enlarge a borehole by means of a counterbore. (‘känt-ər,bör)  

counter circuit See counting circuit. (‘känt-ər,ɪˈsɑr-kɑt)  
counterdistribution  [CHEM ENG] A profile of a compound's concentration in different ratios of two immiscible liquids. (‘känt-ər, kar-ənt diˈstr-oʊ,ˈbyʊə-ʃən)  
counter current extraction  [CHEM ENG] A liquid-liquid extraction process in which the solvent and the process stream come in contact with each other fluid in opposite directions. Also known as countercurrent separation. (‘känt-ər,kar-ənt,ɪˈkstrək-shən)  
counter current flow  [MECH ENG] A sensible heat-transfer system in which the two fluids flow in opposite directions. (‘känt-ər,kar-ənt fˈloʊ)  
counter current leaching  [CHEM ENG] A process utilizing a series of leach tanks and counter current flow of solvent through them in reverse order to the flow of solid. (‘känt-ər,kar-ənt lˈɛtʃ-ɪŋ)  
counter current separation  See countercurrent extraction. (‘känt-ər,kar-ənt ˌsep-ər-əˌrɑːʃən)  
counter spray dryer  [ENG] A dryer in which drying gases flow in a direction opposite to that of the spray. (‘känt-ər,kar-ənt ˈsprɑː dˈraɪər)  
counter floor  See subfloor. (‘känt-tərˌflɔr)  
counterflow  [ENG] Fluid flow in opposite directions in adjacent parts of an apparatus, as in a heat exchanger. (‘känt-ərˌfLOʊ)  
counter fort  [CIV ENG] A strengthening pier perpendicular and bonded to a retaining wall. (‘känt-ərˌfɔrt)  
counter fort wall  [CIV ENG] A type of retaining wall that resembles a cantilever wall but has braces at the back, the toe slab is a cantilever and the main steel is placed horizontally. (‘känt-ərˌfɔrtˌwɔl)  
counter/frequency meter  [ENG] An instrument that contains a frequency standard and can be used to measure the number of events or the number of cycles of a periodic quantity that occurs in a specified time, or the time between two events. (‘känt-ərˌfɪrˈtriːk-wənˌsēˌmedər)  
counter latch  [BUILD] 1. A strip placed between two rafters to support crosswise laths. 2. A lath placed between a timber and a sheet lath. 3. A lath nailed at a more or less random spacing between two precisely spaced laths. 4. A lath put on one side of a partition after the other side has been finished. (‘känt-ərˌlɑt)  
counterpoise  [ELEC] A system of wires or other conductors that is elevated above and insulated from the ground to form a lower system of conductors for an antenna. Also known as antenna counterpoise. [MECH ENG] See counterweight. (‘känt-ərˌpɔɪz)  
counterpoise method  See substitution weighing. (‘känt-tərˌpɔɪzˌmeth-əd)  
countershaft  [MECH ENG] A secondary shaft that is driven by a main shaft and from which power is supplied to a machine part. (‘känt-ərˌʃaft)  
countersink  [DES ENG] The tapered and relieved cutting portion in a twist drill, situated between the pilot drill and the body. (‘känt-ərˌsɪŋk)  
countersinking  [MECH ENG] Drilling operation to form a flaring depression around the rim of a hole. (‘känt-ərˌsɪŋkɪŋ)  
countersunk bolt  [DES ENG] A bolt that has a circular head, a flat top, and a conical bearing surface tapering in from the top; in place, the head is flush-mounted. (‘känt-ərˌsʊŋk bolt)  
counterweight  [MECH ENG] 1. A device which counterbalances the original load in elevators and skip and mine hoists, going up when the load goes down, so that the engine must only drive against the unbalanced load and overcome friction. 2. Any weight placed on a mechanism which is out of balance so as to maintain static equilibrium. Also known as counterbalance, counterpoise. (‘känt-ərˌwɔt)  
counting circuit  [ELECT] A circuit that counts pulses by frequency-dividing techniques, by charging a capacitor in such a way as to produce a voltage proportional to the pulse count, or by other means. Also known as counter circuit. (‘känt-ingˌɪŋˌsərˈkɑt)  
coupplant  [ENG] A substance such as water, oil, grease, or paste used to avoid the retarding of friction. (‘kouˈpəl)  
couple  [ELEC] To connect two circuits so signals are transferred from one to the other. [ELECT] Two metals placed in contact, as in a thermocouple. [ENG] To connect with a coupling, such as of two belts or two pipes. [MECH] A system of two parallel forces of equal magnitude and opposite sense. (‘kəpəl)  
coupled circuits  [ELEC] Two or more electric circuits so arranged that energy can transfer electrically or magnetically from one to another. (‘kəpəld ˌsərˈkɑts)  
coupled engine  [MECH ENG] A locomotive engine having the driving wheels connected by a rod. (‘kəpəld ˈɛnˈdʒiːn)  
coupled oscillators  [MECH] A set of particles subject to elastic restoring forces and also to elastic interactions with each other. (‘kəpəld ˈɑsˌɒlˈɛdərˌz)  
coupler  [ELEC] A component used to transfer energy from one circuit to another. [ENG] A device that connects two railroad cars. (‘kəpˈlər)  
coupling  [ELEC] 1. A mutual relation between two circuits that permits energy transfer from one to another, through a wire, resistor, transformer, capacitor, or other device. 2. A hardware device used to make a temporary connection between two wires. [ENG] 1. Any device that serves to connect the ends of adjacent parts, as railroad cars. 2. A metal collar with internal threads used to connect two sections of threaded
pipe. [MECH ENG] The mechanical fastening that connects shafts together for power transmission. Also known as shaft coupling. 

**coupling capacitor** [ELECTR] A capacitor used to block the flow of direct current while allowing alternating or signal current to pass; widely used for joining two circuits or stages. Also known as blocking capacitor, stopping capacitor.

**coupon** [CHEM ENG] Polished metal strip of specified size and weight used to detect the corrosive action of liquid or gas products or to test the efficiency of corrosion-inhibitor additives. Also known as corrosion coupon. 

**course** [CIV ENG] A row of stone, block, or brick of uniform height. 

**coursed rubble** [CIV ENG] Masonry in which rough stones are fitted into approximately level courses. 

**course programmer** [CONT SYS] An item which initiates and processes signals in a manner to establish a vehicle in which it is installed along one or more projected courses. 

**coursing joint** [CIV ENG] A mortar joint connecting two courses of brick or pebble. 

**covering power** [ENG] The degree to which a coating obscures the underlying material.

**cover plate** [ENG] A pane of glass in a welding helmet or goggles which protects the colored lens excluding harmful light rays from damage by weld spatter.

**cowling** [ENG] A metal cover that houses an engine. 

**coyote hole** See gopher hole. 

**CPM** See critical path method. 

**CT propeller** See controllable-pitch propeller. 

**CR** See catalytic reforming. 

**crack** [ENG] To open something slightly, for instance, a valve. 

**cracked residue** [CHEM ENG] The residue of fuel resulting from decomposition of hydrocarbons during thermal or catalytic cracking. 

**cracking** [CHEM ENG] A process that is used to reduce the molecular weight of hydrocarbons by breaking the molecular bonds by various thermal, catalytic, or hydrocracking methods. [ENG] Presence of relatively large cracks extending into the interior of a structure, usually produced by overstressing the structural material. 

**cracking coil** [CHEM ENG] A coil used for cracking heavy petroleum products. 

**cracking still** [CHEM ENG] The furnace, reaction chamber, and fractionator for thermal conversion of heavier charging stock to gasoline. 

**cradle** [CIV ENG] A structure that moves along an inclined track on a riverbank and is equipped with a horizontal deck carrying tracks for transferring railroad cars to and from boats at different water elevations. [ENG] A framework or other resting place for supporting or restraining objects. 

**cramp** [DES ENG] A metal plate with bent ends used to hold blocks together. 

**crampoon** See crampoon. 

**crane** [MECH ENG] A hoisting machine with a power-operated inclined or horizontal boom and lifting tackle for moving loads vertically and horizontally. 

**crane hoist** [MECH ENG] A mobile construction machine built principally for lifting loads by means of cables and consisting of an undercarriage on which the unit moves, a cab or house which envelops the main frame and contains the power units and controls, and a movable boom over which the cables run. 

**crank** [MECH ENG] A link in a mechanical linkage or mechanism that can turn about a center of rotation. 

**crank angle** [MECH ENG] 1. The angle between a crank and some reference direction. 2. Specifically, the angle between the crank of a slider crank mechanism and a line from crankshaft to the piston. 

**crank arm** [MECH ENG] The arm of a crankshaft attached to a connecting rod and piston. 

**crank axle** [MECH ENG] 1. An axle containing a crank. 2. An axle bent at both ends so that it can accommodate a large body with large wheels. 

**crankcase** [MECH ENG] The housing for the crankshaft of an engine, where, in the case of an automobile, oil from hot engine parts is collected and cooled before returning to the engine by a pump. 

**crankcase breather** See breather pipe. 

**crankpin** [DES ENG] A cylindrical projection on a crank which holds the connecting rod. 

**crank press** [MECH ENG] A punch press that applies power to the slide by means of a crank. 

**crankshaft** [MECH ENG] The shaft about which a crank rotates. 

**crank throw** [MECH ENG] 1. The web or arm of a crank. 2. The displacement of a crankpin from the crankshaft.
crank web

**crank web** [MECH ENG] The arm of a crank connecting the crankshaft to crankpin, or connecting two adjacent crankpins. (ˈkrɑŋkˌweb)

**crasher bar** [ENG] A bar that is installed on a door to unlock it and, sometimes, to activate an alarm. (ˈkrɑʃərˌbɑr)

**crater** [MECH ENG] A depression in the face of a cutting tool worn down by chip contact. (ˈkrɑːtər)

**crawdad** [MECH ENG] One of a pair of an end adjacent crankpins. (ˈkrɔːlər)

**crawler crane** [MECH ENG] A self-propelled crane mounted on two endless tracks that revolve around wheels. (ˈkrɔːlərˌkrɑːnə)

**crawler tractor** [MECH ENG] A tractor that propels itself on two endless tracks revolving around wheels. (ˈkrɔːlərˌtrækˈtrɔːr)

**crawler wheel** [MECH ENG] A wheel that drives a continuous metal belt, as on a crawler tractor. (ˈkrɔːlərˌwɛl)

**crawl space** [BUILD] 1. A shallow space in a building which workers can enter to gain access to pipes, wires, and equipment. 2. A shallow space located below the ground floor of a house and surrounded by the foundation wall. (ˈkrɔːlˌspɛs)

**creaking** [ENG] A network of fine cracks on or under the surface of a material such as enamel, glaze, metal, or plastic. (ˈkrɛɪkɪŋ)

**creep** [ELECTR] A slow change in a characteristic with time or usage. [ENG] The tendency of wood to move while it is being cut, particularly when being mitered. [MECH] A time-dependent strain of solids caused by stress. (krɛp)

**creepage** [ELEC] The conduction of electricity across the surface of a dielectric. (ˈkrɛpˌɪdʒ)

**creep buckling** [MECH] Buckling that may occur when a compressive load is maintained on a member over a long period, leading to creep which eventually reduces the member’s bending stiffness. (ˈkrɛpˌbækˈlɪŋ)

**creep error** [ENG] The error that occurs during a mass determination with a digital analytical balance when a value is read, printed, or processed before the display has reached its final position. (ˈkrɛpˌɛrˈɔr)

**creep-feed grinding** Ser creep grinding. (ˈkrɛpˌfɛdˌgrɪndˌɛj)

**creep grinding** [MECH ENG] A grinding operation that uses slow feed rates and produces heavy stock removal. Also known as creep-feed grinding. (ˈkrɛpˌgrɪndˌɛj)

**creep limit** [MECH] The maximum stress a given material can withstand in a given time without exceeding a specified quantity of creep. (ˈkrɛpˌlɪmˈætər)

**creep recovery** [MECH] Strain developed in a period of time after release of load in a creep test. (ˈkrɛpˌrɪˈkævəˌrɛj)

**creep rupture strength** [MECH] The stress which, at a given temperature, will cause a material to rupture in a given time. (ˈkrɛpˌrəˈpɔːtˌstrɛŋkθ)

**creep strength** [MECH] The stress which, at a given temperature, will result in a creep rate of 1% deformation within 100,000 hours. (ˈkrɛpˌstrɛŋkθ)

**creep test** [ENG] Any one of a number of methods of measuring creep, for example, by subjecting a material to a constant stress or deforming it at a constant rate. (ˈkrɛpˌtɛst)

**cremone bolt** [DES ENG] A fastening for double doors or casement windows, employs vertical rods that move up and down to engage the top and bottom of the frame. (ˈkrɛmənˌbolt)

**crescent beam** [ENG] A beam bounded by arcs having different centers of curvature, with the central section the largest. (ˈkrɛsəntˌbɛm)

**crest** [DES ENG] The top of a screw thread. (ˈkrest)

**crest clearance** [DES ENG] The clearance, in a radial direction, between the crest of the thread of a screw and the root of the thread with which the screw mates. (ˈkrestˌkliˈrɛns)

**crest gate** [CIV ENG] A gate in the spillway of a dam which functions to maintain or change the water level. (ˈkrestˌgɑt)

**crib** [CIV ENG] The space between two successive ties along a railway track. [ENG] 1. Any structure composed of a layer of timber or steel joists laid on the ground, or two layers across each other, to spread a load. 2. Any structure composed of frames of timber placed horizontally on top of each other to form a wall. (ˈkrib)

**cricket** [BUILD] A device that is used to divert water at the intersections of roofs or at the intersection of a roof and chimney. (ˈkrikˈət)

**crimp** [ENG] 1. To cause something to become wavy, crinkled, or warped, such as lumber. 2. To pinch or press together, especially a tubular or cylindrical shape, in order to seal or unite. (ˈkrɪmp)

**crimp contact** [ELEC] A contact whose back portion is a hollow cylinder that will accept a wire; after a bared wire is inserted, a swaging tool is applied to crimp the contact metal firmly against the wire. Also known as solderless contact. (ˈkrɪmpˌkænˌtækt)

**crinial** [MECH] A unit of force equal to 0.1 newton. (ˈkrɪnəl)

**cripple** [BUILD] A structural member, such as a stud above a window, that is cut less than full length. (ˈkripˌəl)

**crith** [MECH] A unit of mass, used for gases, equal to the mass of 1 liter of hydrogen at standard pressure and temperature; it is found experimentally to equal 8.9885 × 10⁻⁵ kilogram. (ˈkrɪθ)

**critical compression ratio** [MECH ENG] The lowest compression ratio which allows compression ignition of a specific fuel. (ˈkrɪtɪklˌkroʊˈprɛʃənˌrəˌræˈshən)
critical density  [CIV ENG] For a highway, the density of traffic when the volume equals the capacity. [THERMO] The density of a substance at the liquid-vapor critical point. {ˈkrɪdər-əl \ˈdɛn-sæd-ə\}
critical exponent  [THERMO] A parameter \( n \) that characterizes the temperature dependence of a thermodynamic property of a substance near its critical point; the temperature dependence has the form \( T = T_c + \frac{\Delta T}{|n|} \), where \( T \) is the temperature and \( T_c \) is the critical temperature. {ˈkrɪdər-əl \ˈɪkˈspɔrnt\}
critical humidity  [CHEM ENG] The humidity of a system's atmosphere above which a crystal of a water-soluble salt will always become damp (absorb moisture from the atmosphere) and below which it will always stay dry (release moisture to the atmosphere). {ˈkrɪdər-əl \ˈjuːˈmɪd-ədə\}
critical isotherm  [THERMO] A curve showing the relationship between the pressure and volume of a gas at its critical temperature. {ˈkrɪdər-əl \ˈɪsə-ə\}
critical moisture content  [CHEM ENG] The average moisture throughout a solid material being dried, its value being related to drying rate, thickness of material, and the factors that influence the movement of moisture within the solid. {ˈkrɪdər-əl \ˈjuːˈmɪd-ədə\}
critical path method  [SYS ENG] A systematic procedure for detailed project planning and control. Abbreviated CPM. {ˈkrɪdər-əl \ˈpɑθ \ˈmethəd\}
critical pressure  [THERMO] The pressure of the liquid-vapor critical point. {ˈkrɪdər-əl \ˈprɛʃər\}
critical slope  [CIV ENG] The maximum angle with the horizontal at which a sloped bank of soil of a given height will remain undeformed without some form of support. {ˈkrɪdər-əl \ˈslɑp\}
critical speed  [MECH ENG] The angular speed at which a rotating shaft becomes dynamically unstable with large lateral amplitudes, due to resonance with the natural frequencies of lateral vibration of the shaft. {ˈkrɪdər-əl \ˈspɛd\}
critical vibration  [MECH ENG] A vibration that is significant and harmful to a structure. {ˈkrɪdər-əl \ˈvɪlˈbræʃən\}
critical weight  [ENG] In a drilling operation, the weight placed on a bit that will cause the drill string to become resonant with the angular speed at which the rotating shaft is operating. {ˈkrɪdər-əl \ˈwæt\}
CR law  [ELEC] A law which states that when a constant electromotive force is applied to a circuit consisting of a resistor and capacitor connected in series, the time taken for the potential on the plates of the capacitor to rise to any given fraction of its final value depends only on the product of capacitance and resistance. {ˈsɛʤət \ˈlo\}
crochet file  [DES ENG] A thin, flat, round-edged file that tapers to a point. {ˈkrɔʃər \ˈfil\}
crocodile shears  See lever shears. {ˈkrɔkəl \ˈʃɛrs\}
cross axle  [MECH ENG] 1. A shaft operated by levers at its ends. 2. An axle with cranks set at 90°. {ˈkrɔsəkəl\}
crossbar  [CIV ENG] In a grating, one of the connecting bars which extend across bearing bars, usually perpendicular to them. {ˈkrɔsəbær\}
crossbar micrometer  [ENG] An instrument consisting of two bars mounted perpendicular to each other in the focal plane of a telescope, and inclined to the east-west path of stars by 45°; used to measure differences in right ascension and declination of celestial objects. {ˈkrɔsəbær \ˈmɪkrəmə \ˈɔr\}
crossbeam  [BUILD] 1. Also known as trave. 2. A horizontal beam. 3. A beam that runs transversely to the center line of a structure. {ˈkrɔsəbəm\}
cross-belt drive  [DES ENG] A belt drive having parallel shafts rotating in opposite directions. {ˈkrɔsə \ˈbelt \ˈdrɪv\}
crossbolt  [DES ENG] A lock bolt with two parts which can be moved in opposite directions. {ˈkrɔsə \ˈbɔlt\}
cross bond  [CIV ENG] A masonry bond in which a course of alternating lengthwise and endwise bricks (Flemish bond) alternates with a course of bricks laid lengthwise. {ˈkrɔsə \ˈbænd\}
cross box  [MECH ENG] A boxlike structure for the connection of circulating tubes to the longitudinal drum of a header-type boiler. {ˈkrɔsə \ˈbæks\}
cross bracing  [BUILD] Boards which are nailed diagonally across studs or other boards so as to impart rigidity to a framework. {ˈkrɔsə \ˈbræs-in\}
cross-correlation detection  See correlation detection. {ˈkrɔsə \ˈkɑrərəl \ˈdɛkərərəl \ˈdɛkərərəl \ˈdɛkərərəl \ˈdɛkərərəl \ˈdɛkərərəl\}
crosscut  [ENG] A cut made through wood across the grain. {ˈkrɔsə \ˈkæt\}
crosscut file  [DES ENG] A file with a rounded end on one side and a thin edge on the other, used to sharpen straight-sided saw teeth with round gullets. {ˈkrɔsə \ˈkæt \ˈfɪl\}
crosscut saw  [DES ENG] A type of saw for cutting across the grain of the wood; designed with about eight teeth per inch. {ˈkrɔsə \ˈkæt \ˈso\}
cross drum boiler  [MECH ENG] A sectional header or box header type of boiler in which the axis of the horizontal drum is perpendicular to the axis of the main bank of tubes. {ˈkrɔsə \ˈdrəm \ˈbɔɪlər\}
crossed belt  [MECH ENG] A pulley belt arranged so that the sides cross, thereby making the pulleys rotate in opposite directions. {ˈkrɔsə \ˈbelt\}
crossed-field amplifier  [ELECTR] A forward-wave, beam-type microwave amplifier that uses crossed-field interaction to achieve good phase stability, high efficiency, high gain, and wide bandwidth for most of the microwave spectrum. {ˈkrɔsə \ˈfɛld \ˈæm-\ˈplə,\ˈfrə\}
crossed-field device  [ELECTR] Any instrument
crossed-needle meter

which uses the motion of electrons in perpendicular electric and magnetic fields to generate microwave radiation, either as an amplifier or oscillator. (‘kroʊst, fɛld diˈvɪs]}
crossed-needle meter  [ENG] A device consisting of two pointer-type analog meters inside a single enclosure with pointer movements centered at different positions so that their point of crossing indicates the value of some function of the two readings. (‘krɒst ˈnɛd-əl ˈmed-ər)}
cross-fade  [ENG ACOUS] In dubbing, the overlapping of two sound tracks, wherein the outgoing track fades out while the incoming track fades in. (‘krɒst, ˈfaɪd]}
cross-flow baffle  [ENG] A type of baffle in a shell-and-tube heat exchanger that directs shell-side fluid back and forth or up and down across the tubes. Also known as transverse baffle. (‘krɒst, ˈfl̩ə bəl-al]}
cross furring ceiling  [BUILD] A ceiling in which furring members are attached perpendicular to the main runners or other structural members. (‘krɒs, ˈfɔr-ɪŋ ˈsɛl-ɪŋ]}
cross hair  [ENG] An inscribed line or a strand of hair, wire, silk, or the like used in an optical sight, transit, or similar instrument for accurate sighting. (‘krɒs, ˈhɛr]}
crosshaul  [MECH ENG] A device for loading objects onto vehicles, consisting of a chain that is hooked on opposite sides of a vehicle, looped under the object, and connected to a power source and that rolls the object onto the vehicle. (‘krɒs, hɒl]}
crosshead  [MECH ENG] A block sliding between guides and containing a wrist pin for the conversion of reciprocating to rotary motion, as in an engine or compressor. (‘krɒs, ˈhɛd]}
crossing plates  [CIV ENG] Plates placed between a crossing and the ties to support the crossing and protect the ties. (‘krɒs-ing ˈplæts]}
crosspad joint  [BUILD] A joint in which two wood members cross each other; half the thickness of each is removed so that at the joint the thickness is the same as that of the individual members. (‘krɒs,pæd ˈjoɪnt]}
cross-level  [ENG] To level at an angle perpendicular to the principal line of sight. (‘krɒs ˈlev-əl]}
crossover  [CIV ENG] 1. An S-shaped section of railroad track joining two parallel tracks. 2. A connection between two pipes in the same water supply system or a connection between two water supply systems. [ELECTR] A point at which two conductors cross, with appropriate insulation between them to prevent contact. [ELECTR] The plane at which the cross section of a beam of electrons in an electron gun is a minimum. [ENG] The portion of a draw works’ drum containing grooves for angle control so that the wire rope can cross over to begin a new wrap. Also known as angle-control section. (‘krɒs, ˈɔvər]}
crossover distortion  [ELECTR] Amplitude distortion in a class B transistor power amplifier which occurs at low values of current, when input impedance becomes appreciable compared with driver impedance. (‘krɒs, ˈɔvər ˈdɪs-tɔr-ʃən]}
crossover flange  [ENG] Intermediate pipe flange used to connect flanges of different working pressures. (‘krɒs, ˈɔvər ˈflæn]}
crossover frequency  [ENG ACOUS] 1. The frequency at which a dividing network delivers equal power to the upper and lower frequency channels when both are terminated in specified loads. 2. See transition frequency. (‘krɒs, ˈɔvər, ˈfriː-kwɑn-ˌsɛ]}
crossover network  [ENG ACOUS] A selective network used to divide the audio-frequency output of an amplifier into two or more bands of frequencies. Also known as dividing network, loudspeaker dividing network. (‘krɒs, ˈɔvər nɪtˈwərk]}
crossover spiral  See lead-over groove. (‘krɒs, ˈɔvər ˈspɪr-əl]}
crossover voltage  [ELECTR] In a cathode-ray storage tube, the voltage of a secondary writing surface, with respect to cathode voltage, on which the secondary emission is unity. (‘krɒs, ˈɔvər ˈvɒl-ˈtɪj]}
cross-peen hammer  [ENG] A hammer with a wedge-shaped surface at one end of the head. (‘krɒs, ˈpɛn ˈhɑm-ər]}
cross slide  [MECH ENG] A part of a machine tool that allows the tool carriage to move at right angles to the main direction of travel. (‘krɒs, ˈslɪd]}
crostalk  See magnetic printing. (‘krɒs,tɔk]}
cross-thread  [ENG] To screw together two threaded pieces without aligning the threads correctly. (‘krɒs, ˈθred]}
crossstie  [ENG] A timber or metal sill placed transversely under the rails of a railroad, tramway, or mine-car track. (‘krɒs,tɪ]}
cross turret  [MECH ENG] A turret that moves horizontally and at right angles to the lathe guides. (‘krɒs, ˈtaʊt]}
cross ventilation  [ENG] The movement of air from one side of a building or room and out the other side or through a monitor. (‘krɒs, ˌvent-əl-ə-ˈʃən]}
crowbar  [DES ENG] An iron or steel bar that is usually bent and has a wedge-shaped working end, used as a lever and for prying. [ELECTR] A device or action that in effect places a high over-load on the actuating element of a circuit breaker or other protective device, thus triggering it. (‘krɒs, ˈtɔr-ər]}
crown  [CIV ENG] 1. Center of a roadway elevated above the sides. 2. In plumbing, that part of a trap where the direction of flow changes from upward to horizontal or downward. [ENG] 1. The part of a drill bit inset with diamonds. 2. The vertex of an arch or arched surface. 3. The top or dome of a furnace or kiln. 4. A high spot forming on a tool joint shoulder as the result of drill pipe wobbling. (‘kraʊn]}
crown post  [BUILD] Any upright member of a roof truss assembly, such as a king post. (‘kraʊn, ˈpɔst]}

136
crown saw [DES ENG] A saw consisting of a hollow cylinder with teeth around its edge, used for cutting round holes. Also known as hole saw. ['krain, 'so:]
crown sheet [MECH ENG] The structural element which forms the top of a furnace in a fire-tube boiler. ['krain, 'shet]
crown weir [CIV ENG] The highest point on the internal bottom surface of the crown of a pluming trap. ['krain, 'wer]
crown wheel [DES ENG] A gear that is light and crowns-shaped. ['krain, 'wel]
crow's nest [ENG] An elevated passageway for personnel located at the top of a derrick, refinery, or similar installation. ['krb2, 'nest]
CRT See cathode-ray tube.
crude assay [CHEM ENG] A procedure for determining the general distillation characteristics and other quality information of crude oil. ['krud 'eiz-a]
crude desalting [CHEM ENG] The washing of crude oil with water in order to remove materials such as dirt, silt, and water-soluble minerals. ['krud de'solt-iin]
crude material See raw material. ['krud me, 'tie-ral]
crude still [CHEM ENG] The distillation equipment in which crude oil is separated into various products. ['krud, 'stil]
crusher [MECH ENG] A machine for crushing rock and other bulk materials. ['krash-ar]
crushing-forming [ENG] Shaping the face of a grinding wheel by forcing a rotating metal roll into it. ['krash, for-'min]
crushing strain [MECH] Compression which causes the failure of a material. ['krash-in, 'stran]
crushing strength [MECH] The compressive stress required to cause a solid to fail by fracture; in essence, it is the resistance of the solid to vertical pressure placed upon it. ['krash-in, 'strenkth]
crushing test [ENG] A test of the suitability of stone that might be mined for roads or building use. ['krash-in, 'test]
cryochaem process [CHEM ENG] A freeze-drying technique involving conduction heat transfer to the frozen solid held on a metallic surface. ('kri-'ot, 'ksm, 'praiz-a-s)
cryoelectronics [ELECTR] A branch of electronics concerned with the study and application of superconductivity and other low-temperature phenomena to electronic devices and systems. Also known as cryoelectronics. {kri-'ot-i, 'lek 'trân-iks}
cryogenic engineering [ENG] A branch of engineering specializing in technical operations at very low temperatures (about 200 to 400°F, or −160 to −50°C). {kri-'ot-i, 'en-i-k en-'jae 'heir-iin}
cryogenic gyroscope [ENG] A gyroscope in which a spherical rotor of superconducting niobium spins while in levitation at cryogenic temperatures. Also known as superconducting gyroscope. {kri-'ot-i, 'en-i-k 'ji-'tia, 'skop}
cryogenic transformer [ELECTR] A transformer designed to operate in digital cryogenic circuits, such as a controlled-coupling transformer. {kri-'ot-i, 'en-i-k tranz'for-'mar}
cryoelectronics See cryoelectronics. {kri-'ot-i, 'lek 'trân-iks}
cryology [MECH ENG] The study of low-temperature (approximately 200°F or −160°C) refrigeration. {kri-'ot-i, 'al-'a-jé}
cryometer [ENG] A thermometer for measuring low temperatures. {kri-'ot-am-'a-a-r}
cryopreservation [ENG] Preservation of food, biologicals, and other materials at extremely low temperatures. {kri-'ot-ó, 'præz-'a-'və-ʃon}
cryosar [ELECTR] A cryogenic, two-terminal, negative-resistance semiconductor device, consisting essentially of two contacts on a germanium wafer operating in liquid helium. {kri-'ot-i, 'sär}
cryoscope [ENG] A device to determine the freezing point of a liquid. {kri-'ot-i, 'skop}
cryosistor [ELECTR] A cryogenic semiconductor device in which a reverse-biased pn junction is used to control the ionization between two ohmic contacts. {kri-'ot-i, 'zis-'tār}
cryosorption pump [MECH ENG] A high-vacuum pump that employs a sorbent such as activated charcoal or synthetic zeolite cooled by nitrogen or some other refrigerant, used to reduce pressure from atmospheric pressure to a few millitorr. {kri-'ot-i, 'sər-pə-ʃon, 'pump}
cryostat [ENG] An apparatus used to provide low-temperature environments in which operations may be carried out under controlled conditions. {kri-'ot-stat}
cryotron [ELECTR] A switch that operates at very low temperatures at which its components are superconducting, when current is sent through a control element to produce a magnetic field, a gate element changes from a superconductive zero-resistance state to its normal resistive state. {kri-'ot-tron}
cryotronics [ELECTR] The branch of electronics that deals with the design, construction, and use of cryogenic devices. {kri-'ot-trân-iks}
cryptoclimate [ENG] The climate of a confined space, such as inside a house, barn, or greenhouse, or in an artificial or natural cave, a form of microclimate. Also spelled kryptoclimate. {'kript-tō'kri-'mat}
crystal [ELECTR] A natural or synthetic piezoelectric or semiconductor material whose atoms are arranged with some degree of geometric regularity. {'krist-əl}
crystal activity [ELECTR] A measure of the amplitude of vibration of a piezoelectric crystal plate under specified conditions. {'krist-əl ak 'tiv-'a-d-e}
crystal calibrator [ELECTR] A crystal-controlled oscillator used as a reference standard to check frequencies. {'krist-əl 'kal-'ə, 'brad-ar}
crystal cartridge [ENG ACOUS] A piezoelectric unit used with a stylus in a phonograph pickup to convert disk recordings into audio-frequency signals, or used with a diaphragm in a crystal
microphone to convert sound waves into af signals. { krist-al 'kar-tri- }  

crystal control [ELECTR] Control of the frequency of an oscillator by means of a quartz crystal unit. { krist-al 'kan-tri- }  

crystal current [ELECTR] The actual alternating current flowing through a crystal unit. { krist-al 'kar-ant }  

crystal cutter [ENG ACOUS] A cutter in which the mechanical displacements of the recording stylus are derived from the deformations of a crystal having piezoelectric properties. { krist-al 'kad-ar }  

crystal-diffraction spectrometer See Bragg spectrometer. { krist-dif-frak-shan spek'tram-ad-ar }  

crystal headphones [ENG ACOUS] Headphones using Rochelle salt or other crystal elements to convert audio-frequency signals into sound waves. Also known as ceramic earphones. { krist-al 'hed,fonz }  

crystal holder [DES ENG] A housing designed to provide proper support, mechanical protection, and connections for a quartz crystal plate. { krist-al 'hol-dar }  

crystal hydrophone [ENG ACOUS] A crystal microphone that responds to waterborne sound waves. { krist-al 'hi-drə,fon }  

crystallizer [CHEM ENG] Process vessel within which dissolved solids in a supersaturated solution are forced out of solution by cooling or evaporation, and then recovered as solid crystals. { krist-ta,liz- }  

crystal loudspeaker [ENG ACOUS] A loudspeaker in which movements of the diaphragm are produced by a piezoelectric crystal unit that twists or bends under the influence of the applied audio-frequency signal voltage. Also known as piezoelectric loudspeaker. { krist-al 'lauid,spək'er }  

crystal microphone [ENG ACOUS] A microphone in which deformation of a piezoelectric bar by the action of sound waves or mechanical vibrations generates the output voltage between the faces of the bar. Also known as piezoelectric microphone. { krist-al 'mi-krə,fon }  

crystal oven [ENG] A temperature-controlled oven in which a crystal unit is operated to stabilize its temperature and thereby minimize frequency drift. { krist-al 'av-an }  

crystal pickup [ENG ACOUS] A phonograph pickup in which movements of the needle in the record groove cause deformation of a piezoelectric crystal, thereby generating an audio-frequency output voltage between opposite faces of the crystal. Also known as piezoelectric pickup. { krist-al 'pi-kəp }  

crystal spectrometer See Bragg spectrometer. { krist-al spek'tram-ad-ar }  

C size [ENG] One of a series of sizes to which trimmed paper and board are manufactured, for size CN, with N equal to any integer, the length of the longer side is $2^{1/8-N/2}$ meters, while the length of the shorter side is $2^{1/8-N/2}$ meters, with both lengths rounded off to the nearest millimeter. { sez 'sliz }  

CTC See centralized traffic control.  

CTD recorder See salinity-temperature-depth recorder. { seth-ged'el rik'o-red-ar }  

cube See cubic.  

cubic [MECH] Denoting a unit of volume, so that if x is a unit of length, a cubic x is the volume of a cube whose sides have length 1x; for example, a cubic meter, or a meter cubed, is the volume of a cube whose sides have a length of 1 meter. Abbreviated cu. { kyü-bik }  

cubical dilation [MECH] The isotropic part of the strain tensor describing the deformation of an elastic solid, equal to the fractional increase in volume. { kyü-ba-kal di'lə-shon }  

cubic boron nitride [MECH ENG] A synthetic material composed of boron and nitrogen (1:1) that is almost as hard as diamond, used as a superabrasive powder and for cutting and grinding applications. { kyü-bik-bo,ran 'ni-trid }  

cubic foot per minute [MECH] A unit of volume flow rate, equal to a uniform flow of 1 cubic foot in 1 minute; equal to 1/60 cubic. Abbreviated cfm. { kyü-bik 'fut pər 'min-at }  

cubic foot per second See cubic. { kyü-bik 'fut pər 'sek-end }  

cubicle [BUILD] Any small, approximately square room or compartment. [ENG] An enclosure for high-voltage equipment. { kyü-ba-kal }  

cubic measure [MECH] A unit or set of units to measure volume. { kyü-bik 'mezh-ar }  

cui-de-sac [ENG] A dead-end street with a circular area for turning around. { kal-da,skək }  

cull [CHEM ENG] In a plastics molding operation, material remaining in the transfer chamber after the mold has been filled. { kal }  

culliet See collet. { kal-at }  

cullis See coulisse. { kal-os }  

cullitation [ENG] Transferring a surveyed point from a high level (such as on overhang) to a lower level by dropping a marking pin. { kal-ta-lə-shon }  

culvert [ENG] A covered channel or a large-diameter pipe that takes a groundwater below ground level. { kal-vərt }  

cumec [MECH] A unit of volume flow rate equal to 1 cubic meter per second. { kyü-mek }  

cumulative compound motor [MECH ENG] A motor with operating characteristics between those of the constant-speed (shunt-wound) and the variable-speed (series-wound) types. { kyü-my-a-ləd-iv ,kəm,pəu-nəd 'məd-ar }  

cumulative sum chart [IND ENG] A statistical control chart on which the cumulative sum of deviations is plotted over a period of time and which often has a sliding V-shaped mask for comparing the plot with allowable limits. Also
known as cusum chart. ('kyū-mia-tsū-hī 'sām ,chā-rt )
cup [DES ENG] A cylindrical part with only one end open. [ENG] A low spot for forming on a tool joint shoulder as a result of wobbling ( 'kōp )
cup anemometer [ENG] A rotation anemometer, usually consisting of three or four hemispherical or conical cups mounted with their diametral planes vertical and distributed symmetrically about the axis of rotation; the rate of rotation of the cups, which is a measure of the wind speed, is determined by a counter. ( 'kōp an-i-mō-men-o-meter )
cup barometer [ENG] A barometer in which one end of a graduated glass tube is immersed in a cup, both cup and tube containing mercury. ( 'kōp ba'tām-ad-ər )
cup-case thermometer [ENG] Total-immersion type of thermometer with a cup container at the bulb end to hold a specified amount and depth of the material whose temperature is to be measured. ( 'kōp, kās thār'mām-ad-ar )
cup electrometer [ENG] An electrometer that has a metal cup attached to its plate so that a charged body touching the inside of the cup gives up its entire charge to the instrument. ( 'kōp i,lektr̥ām-ad-ar )
curb [CIV ENG] A border of concrete or row of joined stones forming part of a gutter along a street edge. ( 'kōrb )
curb weight [MECH ENG] The weight of a motor vehicle plus fuel and other components or equipment necessary for standard operation, does not include driver weight or payload. ( 'kōrb ,wāt )
cure [CHEM ENG] See vulcanization. [ENG] A process by which concrete is kept moist for its first week or month to provide enough water for the cement to harden. Also known as maturing. ( 'kyūr )
cure time [CHEM ENG] The amount of time required for a rubber compound to reach maximum viscosity or modulus at a given temperature. ( 'kyūr-tim )
Curie balance [ENG] An instrument for determining the susceptibility of weakly magnetic materials, in which the deflection produced by a strong permanent magnet on a suspended tube containing the specimen is measured. ( 'kyū-rē-bal-ans )
Curie principle [THERMO] The principle that a macroscopic cause never has more elements of symmetry than the effect it produces; for example, a scalar cause cannot produce a vectorial effect. ( 'kyūrē-prin-sā-pal )
Curie scale of temperature [THERMO] A temperature scale based on the susceptibility of a paramagnetic substance, assuming that it obeys Curie's law; used at temperatures below about 1 kelvin. ( 'kyūř-ē skāl av 'tem-pra-char )
curing [CHEM ENG] A process in which polymers or oligomers are chemically cross-linked to form polymer networks. [CIV ENG] A process for bringing freshly placed concrete to required strength and quality by maintaining the humidity and temperature at specified levels for a given period of time. Also known as seasoning. ( 'kyūr-ing )
curing time [ENG] Time interval between the stopping of moving parts during thermoplastics molding and the release of mold pressure. Also known as molding time. ( 'kyūr-tim )
curling [MECH ENG] A forming process in which the edge of a sheet-metal part is rolled over to produce a hollow tubular rim. ( 'karl-i-j )
curling dies [MECH ENG] A set of tools that shape the ends of a piece of work into a form with a circular cross section. ( 'karl-i-j, dēz )
curling machine [MECH ENG] A machine with curling dies; used to curl the ends of cans. ( 'karl-i-j ma'shēn )
current [ELEC] The net transfer of electric charge per unit time; a specialization of the physics definition. Also known as electric current. ( 'kōr-ant )
current amplification [ELECTR] The ratio of output-signal current to input-signal current for an electron tube, transistor, or magnetic amplifier, the multiplier section of a multiplier phototube, or any other amplifying device; often expressed in decibels by multiplying the common logarithm of the ratio by 20. ( 'kōr-ant am-plā-fak-sōn )
current amplifier [ELECTR] An amplifier capable of delivering considerably more signal current than is fed in. ( 'kōr-ant am-plā-fēr )
current attenuation [ELECTR] The ratio of input-signal current for a transistor to the current in a specified load impedance connected to the transistor, often expressed in decibels. ( 'kōr-ant ten-yā-wā-shan )
current collector [ELEC] See charge collector. ( 'kōr-ant kā-lek-tor )
current-controlled switch [ELECTR] A semiconductor device in which the controlling bias sets the resistance at either a very high or very low value, corresponding to the "off" and "on" conditions of a switch. ( 'kōr-ant kan-trōld 'swich )
current density [ELEC] The current per unit cross-sectional area of a conductor; a specialization of the physics definition. Also known as electric current density. ( 'kōr-ant den-sād-e ē )
current drain [ELEC] The current taken from a voltage source by a load. Also known as drain. ( 'kōr-ant dēn )
current drogue [ENG] A current-measuring as- semble consisting of a weighted current cross, sail, or parachute, and an attached surface buoy. ( 'kōr-ant dṳg-dō̤̄r )
current feedback [ELECTR] Feedback introduced in series with the input circuit of an amplifier. ( 'kōr-ant fēd-bāk )
current feedback circuit [ELECTR] A circuit used to eliminate effects of amplifier gain instability in an indirect-acting recording instrument, in which the voltage input (error signal) to an amplifier is the difference between the measured quantity and the voltage drop across a resistor. ( 'kōr-ant fēd-bāk vōl-kāt )
current gain [ELECTR] The fraction of the current flowing into the emitter of a transistor which
current generator

flows through the base region and out the collector. {\textipa{kar-an\_gan}}
current generator {\textbf{[ELECTR]}} A two-terminal circuit element whose terminal current is independent of the voltage between its terminals. {\textipa{kar-an\_jen-a\_rad-ar}}
current intensity {\textbf{[ELEC]}} The magnitude of an electric current. Also known as current strength. {\textipa{kar-an\_ten-sad-	extipa{e}}} current limiter {\textbf{[ELECTR]}} A device that restricts the flow of current to a certain amount, regardless of applied voltage. Also known as demand limiter. {\textipa{kar-an\_lim-ad-ar}}
current line {\textbf{[ENG]}} In marine operations, a graduated line attached to a current pole, used to measure the speed of a current; as the pole moves away with the current, the speed of the current is determined by the amount of line paid out in a specified time. Also known as log line. {\textipa{kar-an\_lin}}
current meter See ammeter, velocity-type flowmeter. {\textipa{kar-an\_med-ar}}
current mirror {\textbf{[ELECTR]}} An electronic circuit that generates, at a high-impedance output node, an inflowing or outflowing current that is a scaled replica of an input current flowing into or out of a low-impedance input node. {\textipa{kar-an\_mir-ar}}
current-mode filter {\textbf{[ELECTR]}} An integrated-circuit filter in which the signals are represented by current levels rather than voltage levels. {\textipa{kar-an\_mod-ar\_fil-tar}}
current-mode logic {\textbf{[ELECTR]}} Integrated-circuit logic in which transistors are paralleled so as to eliminate current hogging. Abbreviated CML. {\textipa{kar-an\_mod\_laj-ik}}
current noise {\textbf{[ELECTR]}} Electrical noise of uncertain origin which is observed in certain resistances when a direct current is present, and which increases with the square of this current. {\textipa{kar-an\_noiz}}
current pole {\textbf{[ENG]}} A pole used to determine the direction and speed of a current; the direction is determined by the direction of motion of the pole, and the speed by the amount of an attached current line paid out in a specified time. {\textipa{kar-an\_pol}}
current regulator {\textbf{[ELECTR]}} A device that maintains the output current of a constant voltage source at a predetermined, essentially constant value despite changes in load impedance. {\textipa{kar-an\_reg-ya\_laj-ad-ar}}
current saturation See anode saturation. {\textipa{kar-an\_sach-a-tr\_shon}}
current source {\textbf{[ELECTR]}} An electronic circuit that generates a constant direct current into or out of a high-impedance output node. {\textipa{kar-an\_sors}}
current strength See current intensity. {\textipa{kar-an\_strenght}}
current-type flowmeter {\textbf{[ENG]}} A mechanical device to measure liquid velocity in open and closed channels, similar to the vane anemometer (where moving liquid turns a small windmill-type vane), but more rugged. {\textipa{kar-an\_tip\_lo\_med-ar}}
cursor {\textbf{[DES ENG]}} A clear or amber-colored filter that can be placed over a radar screen and rotated until an etched diameter line on the filter passes through a target echo; the bearing from radar to target can then be read accurately on a stationary 360° scale surrounding the filter. {\textipa{kar-sar}}
curtain board {\textbf{[BUILD]}} A fire-retardant partition applied to a ceiling. {\textipa{kar-an\_bor}}
curtain coating {\textbf{[CHEM ENG]}} A method in which the substrate to be coated with low-viscosity resins or solutions is passed through, and is perpendicular to, a freely falling liquid curtain. {\textipa{kar-an\_kod-in}}
curtain wall {\textbf{[CIV ENG]}} An external wall that is not load-bearing. {\textipa{kar-an\_wol}}
curved beam {\textbf{[ENG]}} A beam bounded by circular arcs. {\textipa{karv\_bem}}
curve resistance {\textbf{[MECH]}} The force opposing the motion of a railway train along a track due to track curvature. {\textipa{karv\_riliz\_tans}}
curve tracer {\textbf{[ENG]}} An instrument that can produce a display of one voltage or current as a function of another voltage or current, with a third voltage or current as a parameter. {\textipa{karv\_tr\_sar}}
curvilinear motion {\textbf{[MECH]}} Motion along a curved path. {\textipa{kar\_va\_lin\_e\_ar\_mo\_shon}}
cusec {\textbf{[MECH]}} A unit of volume flow rate, used primarily to describe pumps, equal to a uniform flow of 1 cubic foot in 1 second. Also known as cubic foot per second (cf). {\textipa{kyu\_sek}}
cushion gas See blanket gas. {\textipa{kash\_gas}}
custodial area {\textbf{[BUILD]}} Area of a building designated for service and custodial personnel; includes rooms, closets, storage, toilets, and lockers. {\textipa{k\_stod\_e\_al\_ere\_e\_a}}
custom millwork See architectural millwork. {\textipa{kar\_tan\_mil\_work}}
cusum chart See cumulative sum chart. {\textipa{kyu\_sam\_chart}}
cut {\textbf{[CHEM ENG]}} A fraction obtained by a separation process. {\textipa{kat}}
cut and fill {\textbf{[CIV ENG]}} Construction of a road, a railway, or a canal which is partly embanked and partly below ground. {\textipa{kat\_an\_fil}}
cutback {\textbf{[CHEM ENG]}} Blending of heavier oils with lighter ones to bring the heavier to desired specifications. {\textipa{kat\_bak}}
cut constraint {\textbf{[SYS ENG]}} A condition sometimes imposed in an integer programming problem which excludes parts of the feasible solution space without excluding any integer points. {\textipa{kat\_kan\_str\_ant}}
cut-in {\textbf{[CONT SYS]}} A value of temperature or pressure at which a control circuit closes. {\textbf{[ELEC]}} An electrical device that allows current to flow through an electric circuit. {\textipa{kat\_in}}
cut methods {\textbf{[SYS ENG]}} Methods of solving integer programming problems that employ cut constraints derived from the original problem. {\textipa{kat\_meth-ads}}
cut nail  [DES ENG] A flat, tapered nail sheared from steel plate; it has greater holding power than a wire nail and is generally used for fastening flooring.  

cutoff  [CIV ENG] 1. A channel constructed to straighten a stream or to bypass large bends, thereby relieving an area normally subjected to flooding or channel erosion.  

2. An impermeable wall, collar, or other structure placed beneath the base or within the abutments of a dam to prevent or reduce losses by seepage along otherwise smooth surfaces or through porous strata.  

[cutoff trench]  [CIV ENG] A trench which is below the foundation base line of a dam or other structure and is filled with an impervious material, such as clay or concrete, to form a watertight barrier.  

cutoff valve  [MECH ENG] A valve used to stop the flow of steam to the cylinder of a steam engine.  

cutoff voltage  [ELECTR] 1. The electrode voltage value that reduces the dependent variable of an electron-tube characteristic to a specified lower value.  

2. See critical voltage.  

cutoff wall  [CIV ENG] A thin, watertight wall of clay or concrete built up from a cutoff trench to reduce seepage. Also known as core wall.  

cutoff wheel  [MECH ENG] A thin wheel impregnated with an abrasive used for severing or cutting slots in a material or part.  

cut-out  [CONT SYS] A value of temperature or pressure at which a control circuit opens.  

cutout angle  [ELECTR] The phase angle at which a semiconductor diode ceases to conduct; it is slightly less than 180° because the diode requires some forward bias to conduct.  

cover  [ENG] 1. To place equipment in active use.  

2. The time when testing of equipment is completed and regular usage begins.  

cut point  [CHEM ENG] The boiling-temperature division between cuts of a crude oil or base stock.  

cut score  [ENG] A knife used in die-cutting processes, designed to cut just partway into the paper or board so that it can be folded.  

cutter  [ENG ACOUS] An electromagnetic or piezoelectric device that converts an electric input to a mechanical output, used to drive the stylus that cuts a wavy groov in the highly polished wax surface of a recording disk. Also known as cutting head, head, phonograph cutter, recording head.  

[MECH ENG] See cutting tool.  

cutter bar  [MECH ENG] The bar that supports the cutting tool in a lathe or other machine.  

cutting in  [MECH ENG] An undesirable action occurring during loose-drum spooling in which a layer of wire rope spreads apart and forms  

141
grooves in which the next layer travels. {'kad-iŋ-in}  
cutting-off machine  [MECH ENG] A machine for cutting off metal bars and shapes. The lathe type uses single-point cutoff tools, and several types of saws. {'kad-iŋ ,ol ma'shen}  
cutting pliers  [DES ENG] Pliers with cutting blades on the jaws. {'kad-iŋ,pil-ar}  
cutting point  See cutting edge. {'kad-iŋ,point}  
cutting ratio  [ENG] As applied to metal cutting, the ratio of depth of cut to chip thickness for a given shear angle. {'kad-iŋ,rä-sh}  
cutting rule  [ENG] A sharp steel rule used in a machine for cutting paper or cardboard. {'kad-iŋ,rul}  
cutting speed  [MECH ENG] The speed of relative motion between the tool and workpiece in the main direction of cutting. Also known as feed rate. Peripheral speed. {'kad-iŋ,sped}  
cutting styli  [ENG ACOUS] A recording styli with a sharpened tip that removes material to produce a groove in the recording medium. {'kad-iŋ,si-las}  
cutting tip  [ENG] The end of the snout of a cutting torch from which gas flows. {'kad-iŋ,tip}  
cutting tool  [MECH ENG] The part of a machine tool which comes into contact with and removes material from the workpiece by the use of a cutting medium. Also known as cutter. {'kad-iŋ,tül}  
cutting torch  [ENG] A torch that preheats metal while the surface is rapidly oxidized by a jet of oxygen issuing through the flame from an additional feed line. {'kad-iŋ,törch}  
cutwater  [CIV ENG] A sharp-edged structure built around a bridge pier to protect it. {'kat,wod-ar}  
cybernation  [IND ENG] The use of computers in connection with automation. {'si-bär-nä-shan}  
cycle  [ENG] To run a machine through a single complete operation. {'si-kål}  
cyclegraph technique  [IND ENG] Recording a brief work cycle by attaching small lights to various parts of a worker and then exposing the work motions on a still-film time plate, motion will appear on the plate as superimposed streaks of light constituting a cyclegraph. {'si-klas,graf ,tek,nék}  
cycle plant  [CHEM ENG] A plant in which the liquid hydrocarbons are removed from natural gas and then the gas is put back into the earth to maintain pressure in the oil reservoir. {'si-kål ,plant}  
cycle skip  See skip logging. {'si-kål,skip}  
cycle stock  [CHEM ENG] The unfinished product taken from a stage of a refinery process and recharged to the process at an earlier stage in the operation. {'si-kål ,stäk}  
cycle timer  [ELECTR] A timer that opens or closes circuits according to a predetermined schedule. {'si-kål,tm-ar}  
cyclic catalytic reforming process  [CHEM ENG] A method for the production of low-Btu reformed gas consisting of the conversion of car- beurated water-gas sets by installing a bed of nickel catalyst in the superheater and using the carbureted water-gas in the superheater as a combustion chamber and process steam superheater. Abbreviated CCR process. {'sik-lik 'kad-qlid-ik 'för-mig,pres-ar}  
cyclic coordinate  [MECH] A generalized coordinate on which the Lagrangian of a system does not depend explicitly. Also known as ignorable coordinate. {'sik-liq 'kör-d-an-at}  
cyclic element  [IND ENG] An element of an operation or process that occurs in each of its cycles. {'sik-liq 'el-a-mant}  
cyclic testing  [ENG] The repeated testing of a device or system at regular intervals to be assured of its reliability. {'sik-liq 'tes-in}  
cyclic train  [MECH ENG] A set of gears, such as an epicyclic gear system, in which one or more of the gear axes rotates around a fixed axis. {'sik-liq 'trän}  
cyclinog  [CHEM ENG] A series of operations in petroleum refining or natural-gas processing in which the steps are repeated periodically in the same sequence. [CONT SYS] A periodic change of the controlled variable from one value to another in an automatic control system. {'sik-liq}  
cyclograph  [ENG] An electronic instrument that produces on a cathode-ray screen a pattern which changes in shape according to core hardness, carbon content, case depth, and other metallographic properties of a test sample of steel inserted in a sensing coil. {'sik-liq,graf}  
cycloidal gear teeth  [DES ENG] Gear teeth whose profile is formed by the trace of a point on a circle rolling without slippage on the outside or inside of the pitch circle of a gear. Now used only for clockwork and timer gears. {'sik-loíd-al 'gir ,thet}  
cycloidal pendulum  [MECH] A modification of a simple pendulum in which a weight is sus- pended from a cord which is slung between two pieces of metal shaped in the form of cycloids, as the bob swings, the cord wraps and unwraps on the cycloids; the pendulum has a period that does not depend explicitly. [CONT SYS] A periodic change of the controlled variable from one value to another in an automatic control system. {'sik-loíd,al 'pen-jar-lam}  
cyclone  [CHEM ENG] A static reaction vessel in which fluids under pressure form a vortex. [MECH ENG] Any cone-shaped air-cleaning apparatus operated by centrifugal separation that is used in particle collecting and fine grinding operations. {'sik-lön}  
cyclone cellar  [CIV ENG] An underground shelter, often built in areas frequented by tornadoes. Also known as storm cellar; tornado cellar. {'sik-lön ,sel-ar}  
cyclone classifier  See cyclone separator. {'sik-lön ,klas-ə-frar}  
cyclone furnace  [ENG] A water-cooled, hori- zontal cylinder in which fuel is fired cyclonically and heat is released at extremely high rates. {'sik-lön ,lar-mas}  
cyclone separator  [MECH ENG] A funnel- shaped device for removing particles from air or
other fluids by centrifugal means, used to remove dust from air or other fluids, steam from water, and water from steam, and in certain applications to separate particles into two or more size classes. Also known as cyclone classifier.

cylindrical grinder  [MECH ENG] A machine for doing work on the peripheries or shoulders of workpieces composed of concentric cylindrical or conical shapes, in which a rotating grinding wheel cuts a workpiece rotated from a power headstock and carried past the face of the wheel.

cylinder liner  [MECH ENG] A separate cylindrical sleeve inserted in an engine block which serves as the cylinder.

cylinder machine  [ENG] A paper-making machine consisting of one or a series of rotary cylindrical filters on which wet paper sheets are formed.

cylindrical cam  [MECH ENG] A cam mechanism in which the cam follower undergoes translational motion parallel to the camshaft as a roller attached to it rolls in a groove in a circular cylinder concentric with the camshaft.

cylindrical-coordinate robot  [CONT SYS] A robot in which the degrees of freedom of the manipulator arm are defined chiefly by cylindrical coordinates.

cylindrical cutter  [DES ENG] Any cutting tool with a cylindrical shape, such as a milling cutter.

cylindrical grinder  [MECH ENG] A machine for doing work on the peripheries or shoulders of workpieces composed of concentric cylindrical or conical shapes, in which a rotating grinding wheel cuts a workpiece rotated from a power headstock and carried past the face of the wheel.

cylinder block  [DES ENG] The metal casting comprising the piston chambers of a multicylinder internal combustion engine. Also known as block, engine block.

cylinder bore  [DES ENG] The internal diameter of the tube in which the piston of an engine or pump moves.

cylinder head  [MECH ENG] The cap that serves to close the end of the piston chamber of a reciprocating engine, pump, or compressor.
This page intentionally left blank.

dado head [MECH ENG] A machine consisting of two circular saws with one or more chippers in between; used for cutting flat-bottomed grooves in wood. (ˈdā-dō’ , hed)

dado joint [BUILD] A joint made by fitting the full thickness of the edge or the end of one board into a corresponding groove in another board. Also known as housed joint. (ˈdā-dō’ , joint)

dado plane [DES ENG] A narrow plane for cutting flat grooves in woodwork. (ˈdā-dō’ , plān)

Dahlin’s algorithm [CONT SYS] A digital control algorithm in which the requirement of minimum response time used in the deadbeat algorithm is relaxed to reduce ringing in the system response. (ˈdāl-tānz’ , al-ˈgā rīt-həm’)

d’Alembert’s principle [MECH] The principle that the resultant of the external forces and the kinetic reaction acting on a body equals zero. ([d’al-əm-bər’ , prīn-ˈsa-pəl’)

Dall tube [MECH ENG] Fluid-flow measurement device, similar to a venturi tube, inserted as a section of a fluid-carrying pipe, flow rate is measured by pressure drop across a restricted throat. (ˈdoł’ ,tūb)

Dalton’s temperature scale [THERMO] A scale for measuring temperature such that the absolute temperature T is given in terms of the temperature on the Dalton scale τ by $T = 273.15(373.15/273.15)^{100}$. ([ˈdol-tānz’ ,tem-pra-char’ ,skāl’)

dam [CIV ENG] 1. A barrier constructed to obstruct the flow of a watercourse. 2. A pair of cast-steel plates with interlocking fingers built over an expansion joint in the road surface of a bridge. (dam)

damage tolerance [ENG] The ability of a structure to maintain its load-carrying capability after exposure to a sudden increase in load. (ˈdamij’ ,tāl-ər-tāns’)

damaging stress [MECH] The minimum unit stress for a given material and use that will cause damage to the member and make it unfit for its expected length of service. (ˈdam-ə-sij’ , stres’)

damp [ENC] To reduce the fire in a boiler or a furnace by putting a layer of damp coals or ashes on the fire bed. (damp)

damp course [CIV ENG] A layer of impervious material placed horizontally in a wall to keep out water. (ˈdamp’ ,kōrs’)

dampener [ENG] A device for damping spring oscillations after abrupt removal or application of a load. (ˈdamp-ənər)

damper [ELECTR] A diode used in the horizontal deflection circuit of a television receiver to make the sawtooth deflection current decrease smoothly to zero instead of oscillating at zero; the diode conducts each time the polarity is reversed by a current swing below zero. ([MECH ENG] A valve or movable plate for regulating the flow of air or the draft in a stove, furnace, or fireplace. (ˈdamp’ ,pər)

damper loss [ENG] The reduction in rate of flow or of pressure of gas across a damper. (ˈdamp-par’ , lōs’)

damper pedal [ENG] A pedal that controls the damping of piano strings. (ˈdamp-par’ ,pēd-dəl’)

damping [ENG] Reducing or eliminating reverberation in a room by placing sound-absorbing materials on the walls and ceiling. Also known as soundproofing. (ˈdamp-piŋ’)

damping capacity [MECH] A material’s capability in absorbing vibrations. (ˈdamp-piŋ’ kə’pas-ə-də-lə)

damping coefficient See resistance. (ˈdamp-piŋ’ ,kō-əl-fish-ənt’)

damping constant See resistance. (ˈdamp-piŋ’ ,kän-stənt’)

damping resistor [ELEC] 1. A resistor that is placed across a parallel resonant circuit or in series with a series resonant circuit to decrease the Q factor and thereby eliminate ringing. 2. A noninductive resistor placed across an analog meter to increase damping. (ˈdamp-piŋ’ ri-tiz-tər’)

dancing step See balanced step. (ˈdan-siŋ’ step’)

dancing winder See balanced step. (ˈdan-siŋ’ ’wīn-dər)

Dankwerts model [CHEM ENG] Theory applied to liquid flow across packing in a liquid-gas absorption tower, allows for liquid eddies that bring fresh liquid from the interior of the liquid body to the surface, thus contacting the gas in the column. (ˈdānk-vərtz’ ,məd-əl’)

dandy roll [MECH ENG] A roll in a Fourdrinier paper-making machine, used to compact the sheet and sometimes to imprint a watermark. (ˈdan-de’ ,rōl’)

Danielli hygrometer [ENG] An instrument for measuring dew point, dew forms on the surface
Danjon prismatic astrolabe

of a bulb containing ether which is cooled by
evaporation into another bulb, the second bulb
being cooled by the evaporation of ether on its
outer surface. \{dän-yal hêr’grom-ad-ə\}

Danjon prismatic astrolabe \[ENG\] A type of ast-
rolabe in which a Wollaston prism just inside
the focus of the telescope converts converging
beams of light into parallel beams, permitting a
great increase in accuracy. \{dän-yən priz’mad-
ık ’as-tra,lâb\}

daraf \[ELEC\] The unit of elanstance, equal to the
reciprocal of 1 farad. \{d’ardaf\}
darby \[ENG\] A flat-surfaced tool for smoothing
plaster. \{d’ard-bê\}
d’Arsonval galvanometer \[ENG\] A galvanom-
eter in which a light coil of wire, suspended from
thin copper or gold ribbons, rotates in the field
of a permanent magnet when current is carried to
it through the ribsbons, the position of the coil
is indicated by a mirror carried on it, which
reflects a light beam onto a fixed scale. Also
known as light-beam galvanometer. \{d’ar-
son-vol gal-vô’n-môd-ar\}
dashpot \[MECH ENG\] A device used to dampen
and control motion, in which an attached pis-
toon is loosely fitted to move slowly in a cylinder
containing oil. \{dâsh,pât\}
datum \[ENG\] 1. A direction, level, or position
from which angles, heights, speeds or distances are
conveniently measured. 2. Any numerical or
geometric quantity or value that serves as a
base reference for other quantities or values
(such as a point, line, or surface in relation to
which others are determined). \{d’ad-əm, ’dăd-
əm, or ’dâd-əm\}
datum level \[ENG\] See datum plane. \{d’ad-əm ,lev’əl\}
datum plane \[ENG\] A permanently established
horizontal plane, surface, or level to which
soundings, ground elevations, water surface ele-
vations, and tidal data are referred. Also known
as chart datum, datum level, reference level, ref-
erence plane. \{d’ad-ən plân\}
daylight \[ENG\] See daylight opening. \{d’ad-əlt\}
daylight controls \[ENG\] Special devices which
automatically control the electric power to the
lamp, causing the light to operate during hours
of darkness and to be extinguished during day-
light hours. \{d’ad-əlt kan’trôlə\}
daylighting \[CIV ENG\] To light an area with day-
light. \{d’ad-lîng\}
daylight opening \[ENG\] The space between two
platten plates when open. Also known as day-
light. \{d’ad-lît, -ə-bən-ə\}
day wage \[IND ENG\] A fixed rate of pay per shift
or per daily hours of work, irrespective of the
amount of work completed. \{d’a, wâj\}
dc \[ENG\] See direct current.
dc-to-ac converter \[ENG\] See inverter. \{dë,së tû əs,ë kan’vârd-ə\}
dc-to-ac inverter \[ENG\] See inverter. \{dë,së tû əs,ë in’vârd-ə\}
dc-to-dc converter \[ELEC\] An electronic circuit
which converts one direct-current voltage into
another, consisting of an inverter followed by a
step-up or step-down transformer and rectifier.
\{dë,së tû əs,ë kan’vârd-ə\}

Deacon process \[CHEM ENG\] A method of
chlorine production by passing a hot mixture of
gaseous hydrochloric acid with oxygen over a
cuprous chloride catalyst. \{dék-an ,prâz-əs\}
dead-air space \[BUILD\] A sealed air space, such
as in a hollow wall. \{dëd ’er, spâs\}
dead area \[ENG\] See blind spot. \{dëd ’er-eə\}
dead axle \[MECH ENG\] An axle that carries a
wheel but does not drive it. \{dëd ’ak-səl\}
dead band \[ELEC\] The portion of a potentiom-
ter element that is shortened by a tap, when the
wiper traverses this area, there is no change in
output. \[ENG\] The range of values of the
measured variable to which an instrument will
not effectively respond. Also known as dead
zone, neutral zone. \{dëd ,bend\}
deadbeat \[MECH\] Coming to rest without vibra-
tion or oscillation, as when the pointer of a meter
moves to a new position without overshooting.
Also known as deadbeat response. \{dëd’bêt\}
deadbeat algorithm \[CONT SYS\] A digital con-
trol algorithm which attempts to follow set-point
changes in minimum time, assuming that the
controlled process can be modeled approxi-
mately as a first-order plus dead-time system.
\{dëd’bêt’ al-ga,r,ôth-əm\}
deadbeat response \[ENG\] See deadbeat. \{dëd’bêt
r’spâns\}
dead block \[ENG\] A device placed on the ends
of railroad passenger cars to absorb the shock
of impacts. \{dëd ,blâk\}
dead bolt \[DES ENG\] A lock bolt that is moved
directly by the turning of a knob or key, not by
spring action. \{dëd ’bôlt\}
dead center \[MECH ENG\] 1. A position of a
crank in which the turning force applied to it by
the connecting rod is zero; occurs when the crank
and rod are in a straight line. 2. A support for
the work on a lathe which does not turn with the
work. \{dëd ’sen-tôr\}
dead-end tower \[CIV ENG\] Antenna or transmis-
sion line tower designed to withstand unbal-
anced mechanical pull from all the conductors
in one direction together with the wind strain and
vertical loads. \{dëd ’end ,tôv-ər\}
dead load \[ENG\] See static load. \{dëd ,lôd\}
deadlocking latch bolt \[ENG\] See auxiliary dead latch. \{dëd ,lák ,lâch ,bôlt\}
deadman \[CIV ENG\] 1. A buried plate, wall, or
block atached at some distance from and form-
ing an anchorage for a retaining wall. Also
known as anchorage, anchor block, anchor wall.
2. See anchor log. \{dëd ,mân\}
deadman’s brake \[MECH ENG\] An emergency
device that is automatically activated to stop a
vehicle when the driver removes his or her foot
from the pedal. \{dëd ,mänz ’brâk\}
deadman’s handle \[MECH ENG\] A handle on a
machine designed so that the operator must con-
tinuously press on it in order to keep the
machine running. \{dëd ,mänz ’han-dal\}

146
dead rail [CIV ENG] One of two rails on a railroad weighing platform that permit an excessive load to leave the platform. {‘déd ’räl} 
dead rail [CIV ENG] One of two rails on a railroad weighing platform that permit an excessive load to leave the platform. {‘déd ’räl} 
dead room See anechoic chamber. {‘déd ’rüm} 
dead sheave [ENG] A grooved wheel on a crown block over which the deadline is fastened. {‘déd ’shév} 
dead space [THERMO] A space filled with gas whose temperature differs from that of the main body of gas, such as the gas in the capillary tube of a constant-volume gas thermometer. {‘déd ’spas} 
dead-stroke [MECH ENG] Having a recoiless or nearly recoiless stroke. {‘déd ’strök} 
dead-stroke hammer [MECH ENG] A power hammer provided with a spring on the hammer head to reduce recoil. {‘déd ’strök ’häm-ar} 
dead time [CONT SYS] The time interval between a change in the input signal to a process control system and the response to the signal. [ENG] The time interval, after a response to one signal or event, during which a system is unable to respond to another. Also known as insensitive time. {‘déd ’tım} 
dead-time compensation [CONT SYS] The modification of a controller to allow for time delays between the input to a control system and the response to the signal. {‘déd ’tım käm-pän ’sä-shan} 
dead-time correction [ENG] A correction applied to an observed counting rate to allow for the probability of the occurrence of events within the dead time. Also known as coincidence correction. {‘déd ’tım kä ’rek-shan} 
dead track [CIV ENG] 1. Railway track that is no longer used. 2. A section of railway track that is electrically isolated from the track signal circuits. {‘déd ’trak} 
deadweight gage [ENG] An instrument used as a standard for calibrating pressure gages in which known hydraulic pressures are generated by means of freely balanced (dead) weights loaded on a calibrated piston. {‘déd ’wät ’gäl} 
deaeeration [ENG] Removal of gas or air from a substance, as from feedwater or food. {dè ‘rä-ə-shan} 
deaeator [MECH ENG] A device in which oxygen, carbon dioxide, or other noncondensable gases are removed from boiler feedwater, steam condensate, or a process stream. {dè ’ær-əd-ar} 
deagglomeration [CHEM ENG] Size-reduction process in which loosely adhered clumps (agglomerates) of powders or crystals are broken apart without further disintegration of the powder or crystal particles themselves. {dè ’gələm-ə-rə-shan} 
deal [DES ENG] 1. A face on which numbers are registered by means of a pointer. 2. A disk usually with a series of markings around its border, which can be turned to regulate the operation of a machine or electrical device. {dèl} 
deasphalting [CHEM ENG] The process of removing asphalt from petroleum fractions. {dè ’as-fəl-təg} 
deblooming [CHEM ENG] The process by which the fluorescence, or bloom, is removed from petroleum oils by exposing them in shallow tanks to the sun and atmospheric conditions or by using chemicals. {dè ’bləm-ə-g} 

Deborah number [MECH] A dimensionless number used in rheology, equal to the relaxation time for some process divided by the time it is observed. Symbolized D. {dè ’bôr-ə, nām-bər} 
debris dam [CIV ENG] A fixed dam across a stream channel for the retention of sand, gravel, driftwood, or other debris. {dè ’brē ’däm} 
de bubblizer [ENG] A worker who removes bubbles from plastic rods and tubing. {dè ’bə ’ba- ’liz-ə} 
debug [ELECTR] To detect and remove secretly installed listening devices popularly known as bugs. [ENG] To eliminate from a newly designed system the components and circuits that cause early failures. {dè ’bg} 
debutanization [CHEM ENG] Removal of butane and lighter components in a natural-gasoline plant. {dè ’byūt-ən-ə-zə-shan} 
debutanizer [CHEM ENG] The fractionating column in a natural-gasoline plant in which butane and lighter components are removed. {dè ’byūt-ən-ə -liz-ə} 
debye [ELEC] A unit of electric dipole moment, equal to 10^-18 Franklin centimeter. {dè ’bī} 
debye theory [ELEC] The classical theory of the orientation polarization of polar molecules in which the molecules have a single relaxation time, and the plot of the imaginary part of the complex relative permittivity against the real part is a semicircle. {dè ’bī, thē-ə-rē} 
decade [ELEC] A group or assembly of 10 units; for example, a decade counter counts 10 in one column, and a decade box inserts resistance quantities in multiples of powers of 10. {dè ’kad} 
decade bridge [ELECTR] Electronic apparatus for measurement of unknown values of resistances or capacitances by comparison with known values (bridge); one secondary section of the oscillator-driven transformer is tapped in decade steps, the other in 10 uniform steps. {dè ’käd , brij} 
decaliter [MECH] A unit of volume, equal to 10 liters, or to 0.01 cubic meter. {dè ’kəl-ər} 
decameter [MECH] A unit of length in the metric system equal to 10 meters. {dè ’kə-mət-ər} 
decantation [ENG] A method for mechanical dewatering of a wet solid by pouring off the liquid without disturbing underlying sediment or precipitation. {dè ’kan-tə-shan} 
decanter [ENG] Tank or vessel in which solids or immiscible dispersions in a carrier liquid settle or coalesce, with clear upper liquid withdrawn (decanted) as overflow from the top. {dè ’kant-ər} 
decaster [MECH] A unit of volume, equal to 10 cubic meters. {dè ’kastər} 
deceleration [MECH] The rate of decrease of speed of a motion. {dè ’səl-ə-rə-shan}
decelerometer  [ENG] An instrument that measures the rate at which the speed of a vehicle decreases. {dék-ə-lər-mət-ər

declare  [MECH] A unit of area, equal to 0.1 are or 10 square meters. {dēs-ə-rē'

decibar [ENG] An instrument calibrated in logarithmic steps and labeled with decibel units and used for measuring power levels in communication circuits. {dēs-ə-bal ,măd-ər}
decibel meter [ENG] An instrument calibrated in logarithmic steps and labeled with decibel units and used for measuring power levels in communication circuits. {dēs-ə-bel ,măd-ər}
decigram [MECH] A unit of mass, equal to 0.1 gram. {dēs-ə-grăm}
decimeter [MECH] A unit of length equal to one-tenth meter. {dēs-ə-mēd-ər

decision calculus [SYS ENG] A guide to the process of decision-making, often outlined in the following steps: analysis of the decision area to discover applicable elements; location or creation of criteria for evaluation; appraisal of the known information pertinent to the applicable elements and correction for bias; isolation of the unknown factors; weighting of the pertinent elements, known and unknown, as to relative importance, and projection of the relative impacts on the objective, and synthesis into a course of action. {dī'sižh-ən 'kal-kyo-ləs}
decision rule [SYS ENG] In decision theory, the mathematical representation of a physical system which operates upon the observed data to produce a decision. {dī'sižh-ən ,rūl}
decision theory [SYS ENG] A broad spectrum of concepts and techniques which have been developed to both describe and rationalize the process of decision making, that is, making a choice among several possible alternatives. {dī'sižh-ən ,the-ə-rē}
decision tree [IND ENG] Graphic display of the underlying decision process involved in the introduction of a new product by a manufacturer. {dī'sižh-ən ,the-ə-rē}
deck  [CIV ENG] 1. A floor, usually of wood, without a roof. 2. The floor or roadway of a bridge. [ENG] A magnetic-tape transport mechanism. {dek}
deck bridge  [CIV ENG] A bridge that carries the deck on the very top of the superstructure. {dek ,brēj}
decking  [CIV ENG] Surface material on a deck. [ENG] Separating explosive charges containing primers with layers of inert material to prevent passage of concussion. {dek-ĭn}
deckle  [ENG] A detachable wood frame fitted around the edges of a papermaking mold. {dék-əl}
deckle rod  [ENG] A small rod inserted at each end of the extrusion coating die to adjust the die opening length. {dék-əl ,rōd}
deckle strip  [ENG] An endless rubber band which runs longitudinally along the wire edges of a paper machine and determines web width. {dék-əl ,strip}
deck roof  [BUILD] A roof that is nearly flat and without parapet walls. {dék ,rfō}
deck truss  [CIV ENG] The frame of a deck. {dék ,trōs}
declination axis  [ENG] For an equatorial mounting of a telescope, an axis of rotation that is perpendicular to the polar axis and allows the telescope to be pointed at objects of different declinations. {dék-la'na-shən ,ak-səz}
declination circle  [ENG] For a telescope with an equatorial mounting, a setting circle attached to the declination axis that shows the declination to which the telescope is pointing. {dék-la'na-shən ,sōr-kal}
declination compass  See declinometer. {dék-la'na-shən ,käm-par}
declination variometer  [ENG] An instrument that measures changes in the declination of the earth's magnetic field, consisting of a permanent magnet, usually about 0.4 inch (1 centimeter) long, suspended with a plane mirror from a fine quartz fiber 2–6 inches (5–15 centimeters) in length; a lens focuses to a point a beam of light reflected from the mirror to recording paper mounted on a rotating drum. Also known as D variometer. {dék-la'na-shən ,ver-ə'äm-ad-ər}
declinometer  [ENG] A magnetic instrument similar to a surveyor's compass, but arranged so that the line of sight can be rotated to conform with the needle or to any desired setting on the horizontal circle; used in determining magnetic declination. Also known as declination compass. {dék-la'na-məd-ər}
decoking  [CHEM ENG] Separating explosive charges containing primers with layers of inert material to prevent passage of concussion. {dē-kōk-əng}
decolorize  [CHEM ENG] To remove the color from, as from a liquid. {dē-kōl-sizh}
decolorizer  [CHEM ENG] An agent used to decolorize, the removal of color may occur by a chemical reaction or a physical reaction. {dē-kōl-sizh}
decompression  [ENG] Any procedure for the relief of pressure or compression. {dē-kəm-presh-ən}
decompression chamber  [ENG] 1. A steel chamber fitted with auxiliary equipment to raise its air pressure to a value two to six times atmospheric pressure, used to relieve a diver who has decompressed too quickly in ascending. 2. Such a chamber in which conditions of high atmospheric pressure can be simulated for experimental purposes. {dē-kəm-presh-ən ,cham-bər}
decompression table  [ENG] A diving guide that
lists ascent rates and breathing mixtures to provide safe pressure reduction to atmospheric pressure after a dive. { de-kam'presh-an, tå-bal }

deconcentrator [ENG] An apparatus for removing dissolved or suspended material from feedwater. { de-kansen-an, träd-år }

decontamination [ENG] The removing of chemical, biological, or radiological contamination from, or the neutralizing of it on, a person, object, or area. { de-kanstam-an, nää-shan }

decoupler [IND ENG] A materials handling device designed specifically for cellular manufacturing. { de-kap-år }

decrement gage [ENG] A type of molecular gage consisting of a vibrating quartz fiber whose damping is used to determine the viscosity and, thereby, the pressure of a gas. Also known as quartz-fiber manometer. { de-kra-mant, gä }

decrometer [ENG] An instrument for measuring the logarithmic decrement (damping) of a train of waves. { de-kra-med-år }

dedendum [DES ENG] The difference between the radius of the pitch circle of a gear and the radius of its root circle. { da-den-dam }

dedendum circle [DES ENG] A circle tangent to the bottom of the spaces between teeth on a gear wheel. { da-den-dam, sar-kal }

deephasis [ENG ACOUS] A process for reducing the relative strength of higher audio frequencies before reproduction, to complement and thereby offset the preemphasis that was introduced to help override noise or reduce distortion. Also known as postemphasis, postequalization. { de-em-fa-sös }

deephasis network [ENG ACOUS] An RC filter inserted in a system to restore preemphasized signals to their original form. { de-em-fa-sös, net, warq }

deep-draw mold [ENG] A mold for plastic material that is long in relation to the thickness of the mold wall. { de-pr dår 'mold }

deep draw [CIV ENG] A well that draws its water from beneath shallow impermeable strata, at depths exceeding 22 feet (6.7 meters). { de-wel }

deep-draw pump [MECH ENG] A multistage centrifugal pump for lifting water from deep, small-diameter wells; a surface electric motor operates the shaft. Also known as vertical turbine pump. { de-pel, wel, pamp }

dehanzize [CHEM ENG] To separate and remove ethane and sometimes lighter fractions from heavy substances, such as propane, by distillation. { de-eth-ə, niz }

dehanzizer [CHEM ENG] The equipment used to dehanzize. { de-eth-ə, niz-ər }

defecation [CHEM ENG] Industrial purification, or clarification, of sugar solutions. { de-ək-a-shan }

defender [IND ENG] A machine or facility which is being considered for replacement. { di-fen-dar }

deferrization [CHEM ENG] Removal of iron, for example, from water in an industrial process. { di-fer-ə-2a-shan }

deflashing [ENG] Finishing technique to remove excess material (flash) from a plastic or metal molding. { de-flash-ia- }

deflectected jet fluidic flowmeter [ENG] A fluidic flow sensor. { de-flek-ted 'jet fluidik folk-med-år }

deflecting torque [MECH] An instrument’s moment, resulting from the quantity measured, that acts to cause the pointer’s deflection. { di-flek-tig, tork }

deflection [ELECTR] The displacement of an electron beam from its straight-line path by an electrostatic or electromagnetic field. [ENG] 1. Shape change or reduction in diameter of a conduit, produced without fracturing the material. 2. Elastic movement or sinking of a loaded structural member, particularly of the mid-span of a beam. { di-flek-shan }

deflection bit [DES ENG] A long, cone-shaped, noncoring bit used to drill past a deflection wedge in a borehole. { di-flek-shan, bit }

deflection curve [MECH] The curve, generally downward, described by a shot deviating from its true course. { di-flek-shan, kanv }

deflection magnetometer [ENG] A magnetometer in which magnetic fields are determined from the angular deflection of a small bar magnet that is pivoted so that it is free to move in a horizontal plane. { di-flek-shan, mag-na-tam-ad-år }

deflection meter [ENG] A flowmeter that applies the differential pressure generated by a differential-producing primary device across a diaphragm or bellows in such a way as to create a deflection proportional to the differential pressure. { di-flek-shan, med-år }

deflection-modulated indicator See amplitude-modulated indicator. { di-flek-shan, maja-lad-ad 'in-da-käd-år }

deflection ultrasonic flowmeter [ENG] A flowmeter for determining velocity from the deflection of a high-frequency sound beam directed across the flow. Also known as drift ultrasonic flowmeter. { di-flek-shan, al-traj-sän-ik 'fol, med-år }

deflection wedge [DES ENG] A wedge-shaped tool inserted into a borehole to direct the drill bit. { di-flek-shan, wel }

deflectometer [ENG] An instrument used for
measuring minute deformations in a structure under transverse stress. (dê,flekt’‑tám‑ad‑ərt)

deflector [ENG] A plate, baffle, or the like that diverts the flow of a forward‑moving stream. (dê,flekt‑tar)
deflocculate [CHEM ENG] To break up and disperse agglomerates and form a stable colloid. (dê,flekt‑yə,la,tə)
defoaming [CHEM ENG] Reduction or elimination of foam. (dê,fôm‑iŋ)
defocus [ENG] To make a beam of x‑rays, electrons, light, or other radiation deviate from an accurate focus at the intended viewing or working surface. (dê,fôk‑sər)
deforation [MECH] Any alteration of shape or dimensions of a body caused by stresses, thermal expansion or contraction, chemical or metallurgical transformations, or shrinkage and expansions due to moisture change. (dê,fo,rəma‑shan)
deforation curve [MECH] A curve showing the relationship between the stress or load on a structure, structural member, or a specimen and the strain or deformation that results. Also known as stress‑strain curve. (dê,fo,rəma‑shan,kərv)
deforation ellipsoid See strain ellipsoid. (dê,fo,rəma‑shan,el ‑lip,soid)
deforation thermometer [ENG] A thermometer with transducing elements which deform with temperature; examples are the bimetallic thermometer and the Bourdon‑tube type of thermometer. (dê,fo,rəma‑shan,thar,məm‑ad‑ərt)
deformal bar [CIV ENG] A steel bar with projections or indentations to increase mechanical bonding; used to reinforce concrete. (dê ‑formd bər)
deformer [ENG] An instrument used to measure minute deformations in materials in structural models. (dê ‑för,med‑ərt)
defrost [ENG] To keep free of ice or to remove ice. [THERMO] To thaw out from a frozen state. (dê ‑frôst)
degas [ELECTR] To drive out and exhaust the gases occluded in the internal parts of an electron tube or other gaseous apparatus, generally by heating during evacuation. [ENG] To remove gas from a liquid or solid. (dê ‑gas)
degassing See breathing. (dê ‑gas‑iŋ)
degauss [ELECTR] To remove, erase, or clear information from a magnetic tape, disk, drum, or core. (dê ‑go‑səs)
degradation [THERMO] The conversion of energy into forms that are increasingly difficult to convert into work, resulting from the general tendency of entropy to increase. (dê,gra‑də‑shan)
degradation failure [ENG] Failure of a device because of a shift in a parameter or characteristic which exceeds some previously specified limit. (dê,gra‑də‑shan,fa − lə ‑ ‑ jər)
degreaser [ENG] A machine designed to clean grease and foreign matter from mechanical parts and like items, usually metallic, by exposing them to vaporized or liquid solvent solutions confined in a tank or vessel. (dê ‑grəs‑ər)
degree [THERMO] One of the units of temperature or temperature difference in any of various temperature scales, such as the Celsius, Fahrenheit, and Kelvin temperature scales (the Kelvin degree is now known as the kelvin). (dî ‑greh)
degree‑day [MECH ENG] A measure of the departure of the mean daily temperature from a given standard; one degree‑day is recorded for each degree of departure above (or below) the standard during a single day, used to estimate energy requirements for building heating and, to a lesser extent, for cooling. (dî ‑gre ‑ ‑ da)
degree of curve [CIV ENG] A measure of the curvature of a railway or highway, equal to the angle subtended by a 100‑foot (32.8‑meter) chord (railway) or by a 100‑foot arc (highway). (dî ‑gre ‑ ‑ wv ‑ ‑ kər)
degree of freedom [MECH] 1. Any one of the number of ways in which the space configuration of a mechanical system may change. 2. Of a gyro, the number of orthogonal axes about which the spin axis is free to rotate, the spin axis freedom not being counted; this is not a universal convention, for example, the free gyro is frequently referred to as a three‑degree‑of‑freedom gyro, the spin axis being counted. (dî ‑gre ‑ ‑ wv ‑ ‑ f्र‑dəm‑ərt)
degritting [CHEM ENG] Removal of fine solid particles (grit) from a liquid carrier by gravity separation (settling) or centrifugation. (dê ‑grid‑iŋ)
dehumidification [MECH ENG] The process of reducing the moisture in the air; serves to increase the cooling power of air. (dê ‑yû,mid‑ə ‑fə ‑ka‑shan)
dehumidifier [MECH ENG] Equipment designed to reduce the amount of water vapor in the ambient atmosphere. (dê ‑yû,mid‑ə ‑fi ‑ər)
dehydration tank [CHEM ENG] A tank in which warm air is blown through oil to remove moisture. (dê ‑hid ‑drə ‑shan, ‑tank)
dehydrator [CHEM ENG] Vessel or process system for the removal of liquids from gases or solids by the use of heat, absorbents, or adsorbents. (dê ‑hid ‑drə ‑dər‑ərt)
dehydrorcyclization [CHEM ENG] Any process involving both dehydrogenation and cyclization, as in petroleum refining. (dê ‑hid ‑dro,si‑kə ‑za‑shan)
deling [ENG] The removal of ice deposited on any object, especially as applied to aircraft icing, by heating, chemical treatment, and mechanical rupture of the ice deposit. (dê ‑ling‑iŋ)
deinking [CHEM ENG] The process of removing ink from recycled paper so that the fibers can be used again. (dê ‑in ‑kə‑iŋ)
delamination [ENG] Separation of a laminate into its constituent layers. (dê ‑lam ‑ə ‑na‑shan)
Delaunay orbit element [MECH] In the a‑body
problem, certain functions of variable elements of an ellipse with a fixed focus along which one of the bodies travels; these functions have rates of change satisfying simple equations. {đał-o-ná 'or-bát, el-a-mant}
delay [IND ENG] Interruption of the normal tempo of an operation; may be avoidable or unavoidable. {di'là}
delay-action detonator See delay blasting cap. {di'là,ak-shàn 'det-an,làd-ar}
delay allowance [IND ENG] A percentage of the normal operating time added to the normal time to allow for delays. {di'là a,lad-àns}
delay blasting cap [ENG] A blasting cap which explodes at a definite time interval after the firing current has been passed by the exploder. Also known as delay-action detonator. {di'là 'blast-in, kàp}
delayed coking [CHEM ENG] A semicontinuous thermal process for converting heavy petroleum stock to lighter material. {di'làd 'kók-in}
delayed combustion [ENG] Secondary combustion in succeeding gas passes beyond the furnace volume of a boiler. {di'làd kàm'bas-chan}
delay time [CONT SYS] The amount of time by which the arrival of a signal is retarded after transmission through physical equipment or systems [ELECTR] The time taken for collector current to start flowing in a transistor that is being turned on from the cutoff condition. [IND ENG] A span of time during which a worker is idle because of factors beyond personal control. {di'là, tìm}
delignification [CHEM ENG] A chemical process for removing lignin from wood. {dé,lìg-'nà-fàl-ka-shàn}
delta [ELECTR] The difference between a partial-select output of a magnetic cell in a one state and a partial-select output of the same cell in a zero state. {dél-tà}
delta modulation [ELECTR] A pulse-modulation technique in which a continuous signal is converted into a binary pulse pattern, for transmission through low-quality channels. {dél-tà, 'màj-à-làd-shàn}
demand See demand factor. {da'mànd}
demanded motions inventory [IND ENG] A list of all motions that are required to perform a specific task, including an exact characterization of each. {da'mànd-dàm jìm-o-shàn 'ìn-vàn,tàr-è}
demand factor [ELEC] The ratio of the maximum demand of a building for electric power to the total connected load. Also known as demand. {da'mànd ,fàk-tàr}
demand meter [ENG] Any of several types of instruments used to determine a customer's maximum demand for electric power over an appreciable time interval, generally used for billing industrial users. {da'mànd ,mèd-ar}
demand regulator [ENG] A component of an open-circuit diving system that permits the diver to expel used air directly into the water without rebreathing exhaled carbon dioxide. {da'mànd 'reg-yà,làd-ar}
demand system [ENG] A system in an airplane that automatically dispenses oxygen according to the demand of the flyer's body. {da'mànd-sìstèm}
demethanation See demethanization. {dé,mèth-à-nà-shàn}
demethanator [CHEM ENG] The apparatus in which demethanization is conducted. {dé,'meth-à-nàd-ar}
demethanization [CHEM ENG] The process of distillation in which methane is separated from the heavier components. Also known as demethylation. {dé,mèth-àn-à'zà-shàn}
demineralization [CHEM ENG] Removal of mineral constituents from water. {de,mé-nàl-la-zà-shàn}
demister [MECH ENG] A series of ducts in automobiles arranged so that hot, dry air directed from the heat source is forced against the interior of the windshield or windshield to prevent condensation. {dé'mis-tàr}
demister blanket [ENG] A section of knitted wire mesh that is placed below the vapor outlet of a vaporizer or an evaporator to separate entrained liquid droplets from the stream of vapor. Also known as demister pad. {dé'mis-tàr ,blàn-kàt}
demister pad See demister blanket. {dé'mis-tàr ,pàd}
demodulator See detector. {dé'mó-di-làt, 'nàl-à-lish-àn}
demon of Maxwell [THERMO] Hypothetical creature who controls a trapdoor over a microscopic hole in an adiabatic wall between two vessels filled with gas at the same temperature, so as to supposedly decrease the entropy of the gas as a whole and thus violate the second law of thermodynamics. Also known as Maxwell's demon. {dé'mon áv 'maks-wèl}
demulsification [CHEM ENG] Prevention or breaking of liquid-liquid emulsions by chemical, mechanical or electrical demulsifiers. {da,mé-làs-á-fa{l-ka-shàn}
demulsifier [CHEM ENG] A chemical, mechanical, or electrical system that either breaks liquid-liquid emulsions or prevents them from forming. {da'mé-làs-fi-ar}
demultiplexer [ELECTR] A device used to separate two or more signals that were previously combined by a compatible multiplexer and transmitted over a single channel. {dé,màl-tà,plék-sàr}
Denison sampler [ENG] A soil sampler consisting of a central nonrotating barrel which is forced into the soil as friction is removed by a rotating external barrel; the bottom can be closed to retain the sample during withdrawal. {dën-sàn, sam-plàr}
De Nora cell [CHEM ENG] Mercury-cathode cell used for production of chlorine and caustic soda by electrolysis of sodium chloride brine. {de'nòr-à,séll}
dense-air refrigeration cycle

operation, the partial condensation of vapor to form a liquid richer in higher boiling constituents than the original vapor. { dě,fleg'má-shan }

dephlegmator [CHEM ENG] An apparatus used in fractional distillation to cool the vapor mixture, thereby condensing higher-boiling fractions. { dě,fleg,mád-ar }

depilation [ENG] Removal of hair from animal skins in processing leather. { děp-o-ši-a-shan }
depletion [ELECTR] Reduction of the charge-carrier density in a semiconductor below the normal value for a given temperature and doping level. { də'ple-shan }
depletion layer [ELECTR] An electric double layer formed at the surface of contact between a metal and a semiconductor having different work functions, because the mobile carrier charge density is insufficient to neutralize the fixed charge density of donors and acceptors. Also known as barrier layer (deprecated), blocking layer (deprecated), space-charge layer. { də'ple-shan }

depletion-layer capacitance See barrier capacitance. { dɪ'ple-shan, la-ar kə'paš-ad-ans }
depletion-layer rectification [ELECTR] Rectification at the junction between dissimilar materials, such as a pn junction or a junction between a metal and a semiconductor. Also known as barrier-layer rectification. { də'ple-shan, la-ar, rek-ta-fə-ká-shan }
depletion-layer transistor [ELECTR] A transistor that relies directly on motion of carriers through depletion layers, such as a spacistor. { də'ple-shan, la-ar tran'zi-tər }
depletion region [ELECTR] The portion of the channel in a metal oxide field-effect transistor in which there are no charge carriers. { də'ple-shan, ər-ən }
depolarization [ELEC] The removal or prevention of polarization in a substance (for example, through the use of a depolarizer in an electric cell) or of polarization arising from the field due to the charges induced on the surface of a dielectric when an external field is applied. { de,pə-la-ra'zą-shan }
deposit gage [ENG] The general name for instruments used in air pollution studies for determining the amount of material deposited on a given area during a given time. { da'paːz-ər, ɡəi }}
depreciation [IND ENG] Loss of value due to physical deterioration. { di,preʃ-a-shan }
depressed center car [ENG] A flat railroad car having a low center section; used to provide adequate tunnel clearance for oversized loads. { di'pres-ər }
depression angle See angle of depression. { di'pres-ər }
depressor [CHEM ENG] An agent that prevents or retards a chemical reaction or process. { di'pres-ər }
depropanization [CHEM ENG] In processing of petroleum, the removal of propane and sometimes higher fractions. { de,pro-pa-na'zą-shan }
depropanizer  [CHEM ENG] A fractionating column in a gasoline plant for removal of propane and lighter components.

depth finder  [ENG] A radar or ultrasonic instrument for measuring the depth of the sea.

depth gage  [DES ENG] An instrument or tool for measuring the depth of depression to a thousandth inch.

depth marker  [ENG] A thin board or other light-weight substance used as a means of identifying the surface of snow or ice which has been covered by a more recent snowfall.

depth micrometer  [DES ENG] A micrometer used to measure the depths of holes, slots, and distances of shoulders and projections.

depth of engagement  [DES ENG] The depth of contact, in a radial direction, between mating threads.

depth sounder  [ENG] An instrument for mechanically measuring the depth of the sea beneath a ship.

depth-type filtration  [CHEM ENG] Removal of solids by passing the carrier fluid through a mass-filter medium that provides a tortuous path with many entrapments to catch the solids.

dequue  [ENG] To select an item from a queue.

derail  [ENG] 1. To cause a railroad car or engine to run off the rails. 2. A device to guide railway cars or engines off the tracks to avoid collision or other accident.

derating  [ELECTR] The reduction of the rating of a device to improve reliability or to permit operation at high ambient temperatures.

derivative action  [CONT SYS] Control action in which the speed at which a correction is made depends on how fast the system error is increasing. Also known as derivative compensation; rate action.

derivative compensation  See derivative action.

derivative network  [CONT SYS] A compensating network whose output is proportional to the sum of the input signal and its derivative. Also known as lead network.

derived sound system  [ENG ACOUS] A four-channel sound system that is artificially synthesized from conventional two-channel stereo sound by an adapter, to provide feeds to four loudspeakers for approximating quadraphonic sound.

derosination  [CHEM ENG] Removing excess resins from wood by saponification with alkaline aqueous solutions or organic solvents.

derrick  [MECH ENG] A hoisting machine consisting usually of a vertical mast, a slanted boom, and associated tackle; may be operated mechanically or by hand.

derrick crane  See stiffleg derrick.

derrick post  See king post.

desalination  [CHEM ENG] Removal of salt, as from water or soil. Also known as desalting.

desalination  See desalination.

desander  [ENG] A centrifuge-type device for removing sand from drilling fluid in order to prevent abrasion damage to pumps.

descaling  [ENG] Removing scale, usually oxide, from the surface of a metal or the inner surface of a pipe, boiler, or other object.

descending branch  [MECH] That portion of a trajectory which is between the summit and the point where the trajectory terminates, either by impact or air burst, and along which the projectile falls, with altitude constantly decreasing. Also known as descent trajectory.

descending vertical angle  See angle of depression.

descent trajectory  See descending branch.

describing function  [CONT SYS] A function used to represent a nonlinear transfer function by an approximately equivalent linear transfer function; it is the ratio of the phasor representing the fundamental component of the output of the nonlinearity, determined by Fourier analysis, to the phasor representing a sinusoidal input signal.

desiccator  [CHEM ENG] A closed vessel, usually made of glass and having an airtight lid, used for drying solid chemicals by means of a desiccant.

design engineering  [ENG] A branch of engineering concerned with the creation of systems, devices, and processes useful to and sought by society.

design factor  [ENG] A safety factor based on the ratio of ultimate load to maximum permissible load that can be safely placed on a structure.

design flood  [CIV ENG] The flood, either observed or synthetic, which is chosen as the basis for the design of a hydraulic structure.

design head  [CIV ENG] The planned elevation between the free level of a water supply and
design heating load

the point of free discharge or the level of free discharge surface.

design heating load [ENG] The space heating needs of a building or an enclosed area expressed in terms of the probable maximum requirement.

design load [DES ENG] The most stressful combination of weight or other forces a building, structure, or mechanical system or device is designed to sustain.

design pressure [CIV ENG] 1. The force exerted by a body of still water on a dam. 2. The pressure which the dam can withstand. [DES ENG] The pressure used in the calculation of minimum thickness or design characteristics of a boiler or pressure vessel in recognized code formulas; static head may be added where appropriate for specific parts of the structure.

design speed [CIV ENG] The highest continuous safe vehicular speed as governed by the design features of a highway.

design standards [DES ENG] Generally accepted uniform procedures, dimensions, materials, or parts that directly affect the design of a product or facility.

design storm [CIV ENG] A storm whose magnitude, rate, and intensity do not exceed the design load for a storm drainage system or flood protection project.

design stress [DES ENG] A permissible maximum stress to which a machine part or structural member may be subjected, which is large enough to prevent failure in case the loads exceed expected values, or other uncertainties turn out unfavorably.

design thickness [DES ENG] The sum of required thickness and corrosion allowance utilized for individual parts of a boiler or pressure vessel.

desilting basin [CIV ENG] A space or structure constructed just below a diversion structure of a canal to remove bed, sand, and silt loads. Also known as desilting works. [dē'sil-tĭn,năs] [dē'sil-tĭn,ŏks] [dē'sil-tĭn,ŏks]

desilting works See desilting basin. [dē'sil-tĭn,ŏks] [dē'sil-tĭn,ŏks]

desirable track See course. [dā'ztrēd 'trak]

desirer [MECH ENG] Apparatus, such as a bowl-type centrifuge, used to remove fine, wet particles (slime) from cement rocks and to size pigments and abrasives.

destearinate [CHEM ENG] A process of removing from a fatty oil the lower melting point compounds.

destruction [CHEM ENG] A high-pressure technique for separating high-boiling or nonvolatile material by dissolving it with application of supercritical gases.

destructive breakdown [ELECTR] Breakdown of the barrier between the gate and channel of a field-effect transistor, causing failure of the transistor.

destructive testing [ENG] 1. Intentional operation of equipment until it fails, to reveal design weaknesses. 2. A method of testing a material that degrades the sample under investigation.

desulfurization [CHEM ENG] The removal of sulfur, as from molten metals or petroleum oil.

desulfurization unit [CHEM ENG] A unit in petroleum refining for removal of sulfur compounds or sulfur.

detachable bit [ENG] An all-steel drill bit that can be removed from the drill steel, and can be resharpened. Also known as knock-off bit, rip bit. [dē'tach-ə-bal 'bit]

detailing See screening. [dē'tāl-ĭng]

det drill See fusion-piercing drill. [dē't dril]

detector bar [CIV ENG] A device that keeps a railroad switch locked while a train is passing over it.

detector car [ENG] A railroad car used to detect flaws in rails.

detent [MECH ENG] A catch or lever in a mechanism which initiates or locks movement of a part, especially in escapement mechanisms.

detention basin [CIV ENG] A reservoir without control gates for storing water over brief periods of time until the stream has the capacity for ordinary flow plus released water, used for flood regulation.

deterioration [ENG] Decline in the quality of equipment or structures over a period of time due to the chemical or physical action of the environment.

determinant [CONT SYS] The product of the partial return differences associated with the nodes of a signal-flow graph.

determinate structure [MECH] A structure in which the equations of statics alone are sufficient to determine the stresses and reactions.

determinism See causality.

detonating fuse [ENG] A device consisting of a core of high explosive within a waterproof textile covering and set off by an electrical blasting cap fired from a distance by means of a fuse line, used in large, deep boreholes.

detonating rate [MECH] The velocity at which the explosion wave passes through a cylindrical charge.

detonating relay [ENG] A device used in conjunction with the detonating fuse to avoid short-delay blasting.

detonation [MECH ENG] Spontaneous combustion of the compressed charge after passage of the spark in an internal combustion engine; it is accompanied by knock.

detonation front [ENG] The reaction zone of a detonation.
dewaterer [CHEM ENG] To remove volatile materials from a material or object. (dē′wōd-ər′i-j)  
dewatering [CHEM ENG] Removing water from a material or object. A process used to separate solid hydrocarbons from petroleum. (dē′ wakz-ə-j)  

detention [ENG] The study of detaining and explosives. (dē′tən-iks)  
detrusor [CIV ENG] A tank in which heavy hydrocarbons from petroleum. (dē′trō-tər)  
detroit rocking furnace [ENG] An indirect arc type of rocking furnace having graphite electrodes entering horizontally from opposite ends. (dē′trōt-āk′əl-nəs)  
development [ENG] The exploratory work required to determine the best production techniques to bring a new process or piece of equipment to the production stage. (dē′vəl-əp-ment)  

device [ELECTR] An electronic element that cannot be divided without destroying its stated function, commonly applied to active elements such as transistors and transducers. [ENG] A mechanism, tool, or other piece of equipment designed for specific uses. (dī′vīz)  

devil [ENG] See devil float. (dē′vəl)  
devil float [ENG] A hand float containing nails projecting at each corner and used to roughen the surface of plaster to provide a key for the next coat. Also known as devil, nail coat. (dē′vəl flōt)  
devil's pitchfork [DES ENG] A tool with flexible prongs used in recovery of a bit, underreamer, cutters, or such lost during drilling. (dē′valz pich′fôrk)  
develop [CHEM ENG] To remove volatile components from a material. (dē′val-ə-təl, liz)  

dew-point boundary [CHEM ENG] On a phase diagram for a gas-condensate reservoir (pressure versus temperature with constant gas-oil ratios), the area along which the gas-oil ratio approaches zero. (dē′pōint bōn′drē)  

dew-point composition [CHEM ENG] The water vapor-air composition at saturation, that is, at the temperature at which water exerts a vapor pressure equal to the partial pressure of water vapor in the air-water mixture. (dē′pōint kəm′pə-zhən)  

dew-point curve [CHEM ENG] On a PVT phase diagram, the line that separates the two-phase (gas-liquid) region from the one-phase (gas) region, and indicates the point at a given gas temperature or pressure at which the first dew or liquid phase occurs. (dē′pōint kəv)  

dew-point depression [CHEM ENG] Reduction of the liquid-vapor dew point of a gas by removal of a portion of the liquid (such as water) from the gas (such as air). (dē′pōint dē′presh′ən)  

dew-point hygrometer [CHEM ENG] An instrument for determining the dew point by measuring the temperature at which vapor being cooled in a silver vessel begins to condense. Also known as cold-spot hygrometer. (dē′pōint hî′gräm-əd-ər)  

dew-point pressure [CHEM ENG] The gas pressure at which a system is at its dew point, that is, the conditions of gas temperature and pressure at which the first dew or liquid phase occurs. (dē′pōint prēsh′ər)  

dew-point recorder [ENG] An instrument which gives a continuous recording of the dew point; it alternately cools and heats the target and uses a photocell to observe and record the temperature at which the condensate appears and disappears. Also known as mechanized dew-point meter. (dē′pōint ri′kərd-ər)  

DFE See design for environment.  

diabatic [THERMO] A thermodynamic change of state of a system in which there is a transfer of...
heat across the boundaries of the system. Also known as nonadiabatic. (\text{\汉语}:bad-ik)

diagnostics [ENG] Information on what tests a device has failed and how they were failed, used to aid in troubleshooting. (\text{\汉语}:\text{\汉语}:näs-tiks)
diagonal [CIV ENG] A sloping structural member, under compression or tension or both, of a truss or bracing system. (\text{\汉语}:\text{\汉语}:\text{\汉语})
diagonal bond [CIV ENG] A masonry bond with diagonal headers. (\text{\汉语}:\text{\汉语}:\text{\汉语})
diagonal pitch [ENG] A masonry bond with diagonal headers. (\text{\汉语}:\text{\汉语}:\text{\汉语})
diagonal pliers [DES ENG] Pliers with cutting jaws at an angle to the handles to permit cutting off wires close to terminals. (\text{\汉语}:\text{\汉语}:\text{\汉语})
diagonal stay [MECH ENG] A diagonal member between the tube sheet and shell in a fire-tube boiler. (\text{\汉语}:\text{\汉语}:\text{\汉语})
diagram factor [MECH ENG] The ratio of the actual mean effective pressure, as determined by an indicator card, to the map of the ideal cycle for a steam engine. (\text{\汉语}:\text{\汉语}:\text{\汉语}:\text{\汉语})
dial [DES ENG] A separate scale or other device for indicating the value to which a control is set. (\text{\汉语})
DIAL See differential absorption lidar. (\text{\汉语}:\text{\汉语})
dial cable [DES ENG] Braided cord or flexible wire cable used to make a pointer move over a dial when a separate control knob is rotated, or used to couple two shafts together mechanically. (\text{\汉语}:\text{\汉语}:\text{\汉语})
dial cord [DES ENG] A braided cotton, silk, or glass fiber cord used as a dial cable. (\text{\汉语}:\text{\汉语}:\text{\汉语})
dial feed [MECH ENG] A device that rotates workpieces into position successively so they can be acted on by a machine. (\text{\汉语}:\text{\汉语}:\text{\汉语})
dial indicator [DES ENG] Meter or gage with a calibrated circular face and a pivoted pointer to give readings. (\text{\汉语}:\text{\汉语}:\text{\汉语}:\text{\汉语})
dialing step [ENG] The minimum amount, expressed in units of mass, that can be added or removed on a balance fitted with dial weights. (\text{\汉语}:\text{\汉语}:\text{\汉语})
dial press [MECH ENG] A punch press with dial feed. (\text{\汉语}:\text{\汉语}:\text{\汉语})
dial weight [ENG] A weight piece that acts on a dial weight. (\text{\汉语}:\text{\汉语}:\text{\汉语})
dia\text{\汉语}lyzer [CHEM ENG] 1. The semipermeable membrane used for dialyzing liquids. 2. The container used in dialysis; it is separated into compartments by membranes. (\text{\汉语}:\text{\汉语}:\text{\汉语})
diameter group [MECH ENG] A dimensionless group, used in the study of flow machines such as turbines and pumps, equal to the fourth root of pressure number 2 divided by the square root of the delivery number. (\text{\汉语}:\text{\汉语}:\text{\汉语}:\text{\汉语})
diameter tape [ENG] A tape for measuring the diameter of trees; when wrapped around the circumference of a tree, it reads the diameter directly. (\text{\汉语}:\text{\汉语}:\text{\汉语}:\text{\汉语})
diametral pitch [DES ENG] A gear tooth design factor expressed as the ratio of the number of teeth to the diameter of the pitch circle measured in inches. (\text{\汉语}:\text{\汉语}:\text{\汉语})
diamond anvil [ENG] A brilliant-cut diamond of extremely high quality that is modified to have 16 sides and has the culet cut off to create either a flat tip or a flat surface followed by a bevel of 5–10\°. (\text{\汉语}:\text{\汉语}:\text{\汉语}:\text{\汉语})
diamond-anvil cell [ENG] A device for generating an extremely high pressure in a sample that is sandwiched between two diamond anvils to which forces are applied. (\text{\汉语}:\text{\汉语}:\text{\汉语}:\text{\汉语})
diamond bit [DES ENG] A rotary drilling bit crowned with bort-type diamonds, used for rock boring. Also known as bort bit. (\text{\汉语}:\text{\汉语}:\text{\汉语})
diamond boring [ENG] Boring with a diamond tool. (\text{\汉语}:\text{\汉语}:\text{\汉语})
diamond chisel [DES ENG] A chisel having a V-shaped or diamond-shaped cutting edge. (\text{\汉语}:\text{\汉语}:\text{\汉语})
diamond circuit [ELECTR] A gate circuit that provides isolation between input and output terminals in its off state, by operating transistors in their cutoff region; in the on state the output voltage follows the input voltage as required for gating both analog and digital signals, while the transistors provide current gain to supply output current on demand. (\text{\汉语}:\text{\汉语}:\text{\汉语}:\text{\汉语})
diamond coring [ENG] Obtaining core samples of rock by using a diamond drill. (\text{\汉语}:\text{\汉语}:\text{\汉语})
diamond count [DES ENG] The number of diamonds set in a diamond crown bit. (\text{\汉语}:\text{\汉语}:\text{\汉语})
diamond crossing [CIV ENG] An oblique railroad crossing that forms a diamond shape between the tracks. (\text{\汉语}:\text{\汉语}:\text{\汉语})
diamond crown [DES ENG] The cutting bit used in diamond drilling; it consists of a steel shell set with black diamonds on the face and cutting edges. (\text{\汉语}:\text{\汉语}:\text{\汉语})
diamond drill [DES ENG] A drilling machine with a hollow, diamond-set bit for boring rock and yielding continuous and columnar rock samples. (\text{\汉语}:\text{\汉语}:\text{\汉语})
Diamond-Hinman radiosonde [ENG] A variable audio-modulated radiosonde used by United States weather services; the carrier signal from the radiosonde is modulated by audio signals determined by the electrical resistance of the humidity- and temperature-transducing elements and by fixed reference resistors; the modulating signals are transmitted in a fixed sequence at predetermined pressure levels by means of a baroswitch. (\text{\汉语}:\text{\汉语}:\text{\汉语}:\text{\汉语}:\text{\汉语})
diamond indenter [ENG] An instrument that measures hardness by indenting a material with a diamond point. (\text{\汉语}:\text{\汉语}:\text{\汉语}:\text{\汉语})
diamond matrix  [DES ENG] The metal or alloy in which diamonds are set in a drill crown. (ʼdi-mand ˈmā-triks)
diamond orientation  [DES ENG] The set of a diamond in a cutting tool so that the crystal face will be in contact with the material being cut. (ʼdi-mand ər-ē-ˈa-nət-shən)
diamond pattern  [DES ENG] The arrangement of diamonds set in a diamond crown. (ʼdi- mand ˈpad-ərn)
diamond point  [DES ENG] A cutting tool with a diamond tip. (ʼdi-mand ˈpoint ˈbit)
diamond-point bit  See mud auger. (ʼdi- mand ˈpoŋt ˈbit)
diamond reamer  [DES ENG] A diamond-inset pipe behind, and larger than, the drill bit and core barrel that is used for enlarging boreholes. (ʼdr-ˈmand ˈrē-mər)
diamond saw  [DES ENG] A circular, band, or frame saw inset with diamonds or diamond dust for cutting sections of rock and other brittle substances. (ʼdi-mand ˈsō)
diamond setter  [ENG] A person skilled at setting diamonds by hand in a diamond bit or a bit mold. (ʼdr-ˈmand ˈse-dər)
diamond size  [ENG] In the bit-setting and diamond-drilling industries, the number of equal-size diamonds having a total weight of 1 carat; a 10-diamond size means 10 stones weighing 1 carat. (ʼdi-ˈmand ˈsōz)
diamond stylus  [ENG ACOUS] A stylus having a ground diamond as its point. (ʼdr-ˈmand ˈstr-las)
diamond tool  [DES ENG] 1. Any tool using a diamond-set bit to drill a borehole. 2. A diamond shaped to the contour of a single-pointed cutting tool, used for precision machining. (ʼdi- mand ˈtōl)
diamond wheel  [DES ENG] A grinding wheel in which synthetic diamond dust is bonded as the abrasive to cut very hard materials such as sintered carbide or quartz. (ʼdi-ˈmand ˈwēl)
diaphragm  [ENG] A thin sheet placed between parallel parts of a member of structural steel to increase its rigidity. [ENG ACOUS] A thin, flexible sheet that can be moved by sound waves, as in a microphone, or can produce sound waves when moved, as in a loudspeaker. (ʼdr-ˈəfra ˈfram)
diaphragm cell  [CHEM ENG] An electrolytic cell used to produce sodium hydroxide and chlorine from sodium chloride brine; porous diaphragm separates the anode and cathode compartments. (ʼdr-ˈəfra ˈsel)
diaphragm compressor  [MECH ENG] Device for compression of small volumes of a gas by means of a reciprocally moving diaphragm, in place of pistons or rotors. (ʼdr-ˈəfra ˈkomprə-sər)
diaphragm gage  [ENG] Pressure- or vacuum-sensing instrument in which pressures act against opposite sides of an enclosed diaphragm that consequently moves in relation to the difference between the two pressures, actuating a mechanical indicator or electric-electronic signal. (ʼdr-ˈəfra ˈɡā)
diaphragm horn  [ENG ACOUS] A horn that produces sound by means of a diaphragm vibrated by compressed air, steam, or electricity. (ʼdr-ˈəfra ˈhorn)
diaphragm meter  [ENG] A flow meter which uses the movement of a diaphragm in the measurement of a difference in pressure created by the flow, such as a force-balance-type or a deflection-type meter. (ʼdr-ˈəfra ˈmed-ər)
diaphragm pump  [MECH ENG] A metering pump which uses a diaphragm to isolate the operating parts from pumped liquid in a mechanically actuated diaphragm pump, or from a fluidic element in a hydraulically actuated diaphragm pump. (ʼdr-ˈəfra ˈpomp)
diaphragm valve  [ENG] A fluid valve in which the open-close element is a flexible diaphragm; used for fluids containing suspended solids, but limited to low-pressure systems. (ʼdr-ˈəfra ˈvalv)
diathermoeive envelope  [THERMO] A surface enclosing a thermodynamic system in equilibrium that is not an adiabatic envelope, intuitively, this means that heat can flow through the surface. (ʼdē-thər-mō-ər ˈam-ər-lop)
dice  See die. (ʼdīs)
dicing  [ELECTR] Sawing or otherwise machining a semiconductor wafer into small squares, or dice, from which transistors and diodes can be fabricated. (ʼdīs-ə)
dicing cutter  [MECH ENG] A cutting mill for sheet material, sheet is first slit into horizontal strips by blades, then fed against a rotating knife for dicing. (ʼdīs-ə ˈkəd-ər)
die  [DES ENG] A tool or mold used to impart shapes to, or to form impressions on, materials such as metals and ceramics. [ELECTR] The tiny, sawed or otherwise machined piece of semiconductor material used in the construction of a transistor, diode, or other semiconductor device, plural is dice. (ʼdī)
die adapter  [ENG] That part of an extrusion die which holds the die block. (ʼdī əˈdāp-tər)
die blade  [ENG] A deformable member attached to a die body which determines the slot opening and is adjusted to produce uniform thickness across plastic film or sheet. (ʼdī ˈblād)
die block  [ENG] 1. A tool-steel block which is bolted to the bed of a punch press and into which the desired impressions are machined. 2. The part of an extrusion mold die holding the forming bushing and core. (ʼdī ˈblāk)
die body  [ENG] The stationary part of an extrusion die, used to separate and form material. (ʼdī ˈbād-ə)
die bushing  See button die. (ʼdī ˈbush-ing)
die casting  [ENG] A metal casting process in which molten metal is forced under pressure into a permanent mold; the two types are hot-chamber and cold-chamber. (ʼdī ˈkast-ing)
die chaser  [ENG] One of the cutting parts of a composite die or a die used to cut threads.  ('di'kəʃər)

dielectric strength  [ELEC] The maximum electrical potential gradient that a material can withstand without rupture, usually specified in volts per millimeter of thickness. Also known as electric stress.  (‘dīlektr-ɪk streɪʧtʃ)
diesinking  [ENG] Making a depressed pattern in a die by forming or machining  

die slide  [MECH ENG] A device in which the lower die of a power press is mounted; it slides in and out of the press for easy access and safety in feeding the parts.  

die swell ratio  [ENG] The ratio of the outer parison diameter (or parison thickness) to the outer diameter of the die (or die gap).  

Dieterici equation of state  [THERMO] An empirical equation of state for gases, 

\[ p = \frac{RT}{V - b} \]

where \( p \) is the pressure, \( T \) is the absolute temperature, \( V \) is the molar volume, \( R \) is the gas constant, and \( a \) and \( b \) are constants characteristic of the substance under consideration.  

differential channel  [ENG ACOUS] An audio channel that handles the difference between the signals in the left and right channels of a stereophonic sound system.  

differential  [CONT SYS] The difference between levels for turn-on and turn-off operation in a control system.  

[MECH ENG] Any arrangement of gears forming an epicyclic train in which the angular speed of one shaft is proportional to the sum or difference of the angular speeds of two other gears which lie on the same axis; allows one shaft to revolve faster than the other, the speed of the main driving member being equal to the algebraic mean of the speeds of the two shafts.  

Also known as differential gear.  

[diff-ren-chan]  

differential absorption lidar  [ENG] A technique for the remote sensing of atmospheric gases, in which lasers transmit pulses of radiation into the atmosphere at two wavelengths, one of which is absorbed by the gas to be measured and one is not, and the difference between the return signals from atmospheric backscattering on the absorbed and nonabsorbed wavelengths is used as a direct measure of the concentration of the absorbing species.  

Abbreviated DIAL.  

[diff-ren-chan ab-sorp-shan 'lɪ,dɪr]  

differential air thermometer  [ENG] A device for detecting radiant heat, consisting of a U-tube manometer with a closed bulb at each end, one clear and the other blackened.  

[diff-ren-chan 'er thar-mám-ad-ər]  

differential brake  [MECH ENG] A brake in which operation depends on a difference between two motions.  

[diff-ren-chan 'bræk]  

differential calorimetry  [THERMO] Technique for measurement of and comparison (differential) of process heats (reaction, absorption, hydrolysis, and so on) for a specimen and a reference material.  

[diff-ren-chan 'kal-ə-rɪm-ə-trɛ]  

differential chemical reactor  [CHEM ENG] A flow reactor operated at constant temperature and very low concentrations (resulting from very short residence times), with product and recirculated reactant concentrations essentially constant at the levels in the feed.  

[diff-ren-chan 'kem-i-kəl rɛә'æk-tər]  

differential effects  [MECH] The effects upon the elements of the trajectory due to variations from standard conditions.  

[diff-ren-chan 'lɛks]  

differential extraction  [CHEM ENG] Theoretical limiting case of crosscurrent extraction in a single vessel where feed is continuously extracted with infinitesimal amounts of fresh solvent, true differential extraction cannot be achieved.  

[diff-ren-chan ɪk'stɹæk-shən]  

differential frequency meter  [ENG] A circuit that converts the absolute frequency difference between two input signals to a linearly proportional direct-current output voltage that can be used to drive a meter, recorder, oscilloscope, or other device.  

[diff-ren-chan 'frɛ-kwən-sə 'med-ɚ]  


[diff-ren-chan 'gɪr]  

differential gap controller  [CONT SYS] A two-position (on-off) controller that actuates when the manipulated variable reaches the high or low value of its range (differential gap).  

[diff-ren-chan 'gap kən,trol-ər]  

differential gear  See differential.  

[diff-ren-chan 'gɪr]  

differential heat of solution  [THERMO] The partial derivative of the total heat of solution with respect to the molar concentration of one component of the solution, when the concentration of the other component or components, the pressure, and the temperature are held constant.  

[diff-ren-chan 'heәv sa'llu-ʃən]  

differential indexing  [MECH ENG] A method of subdividing a circle based on the difference between movements of the index plate and index crank of a dividing engine.  

[diff-ren-chan ɪn'dər-ɪks]  

differential instrument  [ENG] Galvanometer or other measuring instrument having two circuits or coils, usually identical, through which currents flow in opposite directions; the difference or differential effect of these currents actuates the indicating pointer.  

[diff-ren-chan 'ɪn-strə-mənt]  

differential leak detector  [ENG] A leak detector consisting of two tubes and a trap which directs the tracer gas from the system into the desired tube.  

[diff-ren-chan 'lɛk di'tek-tər]  

differential leveling  [ENG] A surveying process in which a horizontal line of sight of known elevation is intercepted by a graduated standard, or rod, held vertically on the point being checked.  

[diff-ren-chan 'lev-ərɪŋ]  

differential manometer  [ENG] An instrument in which the difference in pressure between two sources is determined from the vertical distance between the surfaces of a liquid in two legs of an erect or inverted U-shaped tube when each of the legs is connected to one of the sources.  

[diff-ren-chan mə'nə-məd-ər]  

differential microphone  See double-button microphone.  

[diff-ren-chan 'mɪkra-fən]  

differential motion  [MECH ENG] A mechanism in which the follower has two driving elements; the net motion of the follower is the difference
between the motions that would result from either driver acting alone. \[\text{\textit{difer\textbf{ential} screw}}\]

differential piece-rate system \[\text{\textit{IND ENG}}\] A wage plan based on a standard task time whereby the worker receives increased or decreased piece rates as his or her production varies from that expected for the standard time. Also known as accelerating incentive. \[\text{\textit{thermal steam calorimeter}}\]

differential steam calorimeter \[\text{\textit{ENG}}\] An instrument for measuring small specific-heat capacities, such as those of gases, in which the amount of steam condensing on a body containing the substance whose heat capacity is to be measured is compared with the amount condensing on a similar body which is evacuated or contains a substance of known heat capacity. \[\text{\textit{difer\textbf{ential} piece-rate system}}\]

differential piece-rate system \[\text{\textit{IND ENG}}\] A system in which the worker receives increased or decreased piece rates as his or her production varies from that expected for the standard time. Also known as accelerating incentive. \[\text{\textit{difer\textbf{ential} screw}}\]

differential piece-rate system \[\text{\textit{CHEM ENG}}\] A technique for the fan, resulting from increases in the radius of the impeller, high-pressure flow. \[\text{\textit{difer\textbf{ential} screw}}\]

differential process \[\text{\textit{MECH ENG}}\] A tackle in section, passes through a pulley (which carries the load), then winds around the other section which an endless cable passes through a moving pulley (which carries the load). \[\text{\textit{difer\textbf{ential} screw}}\]

differential-pressure fuel valve \[\text{\textit{CHEM ENG}}\] A needle or spindle normally closed, with seats at the back side of the valve orifice. \[\text{\textit{difer\textbf{ential} screw}}\]

differential-pressure gage \[\text{\textit{ENG}}\] Apparatus to measure pressure differences between two points in a system; it can be a pressured column balanced by a pressured liquid reservoir, a formed metal pressure element with opposing force, or an electrical-liquid gage (such as strain, thermal-conductivity, or ionization). \[\text{\textit{difer\textbf{ential} screw}}\]

differential process \[\text{\textit{CHEM ENG}}\] A process in which a system is caused to move through a bubble point and as a result to form two phases, the minor phase being removed from further contact with the major phase; thus the system continuously changes in quantity and composition. \[\text{\textit{difer\textbf{ential} screw}}\]

differential-producing primary device \[\text{\textit{ENG}}\] An instrument that modifies the flow pattern of gaseous mixtures passing through a pipe, duct, or open channel, and thereby produces a difference in pressure between two points, which can then be measured to determine the rate of flow. \[\text{\textit{difer\textbf{ential} screw}}\]

differential pulley \[\text{\textit{MECH ENG}}\] A pulley in which an endless cable passes through a movable lower pulley, which carries the load, and two fixed coaxial upper pulleys having different diameters, yields a high mechanical advantage. \[\text{\textit{difer\textbf{ential} screw}}\]

differential scanning calorimeter \[\text{\textit{CHEM ENG}}\] An instrument for studying overall chemical reactions by measuring the associated exothermic and endothermic reactions that occur over a specified temperature cycle. \[\text{\textit{difer\textbf{ential} screw}}\]

differential scatter \[\text{\textit{ENG}}\] A technique for the remote sensing of atmospheric particles in which the backscattering from laser beams at a number of infrared wavelengths is measured and correlated with scattering signatures that are uniquely related to particle composition. Abbreviated DISC. \[\text{\textit{difer\textbf{ential} screw}}\]

differential screw \[\text{\textit{MECH ENG}}\] A type of compound screw which produces a motion equal to the difference in motion between the two components. \[\text{\textit{difer\textbf{ential} screw}}\]

differential separation \[\text{\textit{CHEM ENG}}\] Release of gaseous or liquid from a system that allows the vapor to come out of the solution, so that the vapor can be removed from the system; differs from flash separation, in which the vapor and liquid are kept in contact following pressure reduction. \[\text{\textit{difer\textbf{ential} screw}}\]

following page
**diffusion pump** [ENG] A vacuum pump in which a stream of heavy molecules, such as mercury vapor, carries gas molecules out of the volume being evacuated; also used for separating isotopes according to weight, the lighter molecules being pumped preferentially by the vapor stream. (di'fju:s-'pām) 

**diffusiophoresis** [CHEM ENG] A process in a scrubber whereby water vapor moving toward the cold water surface carries particulates with it. (di'fus-'i-ō-fōr-ēs) 

**diffusivity** [THERM] The quantity of heat passing normally through a unit area per unit time divided by the product of specific heat, density, and temperature gradient. Also known as thermal diffusivity; thermometric conductivity. (dif'yu-siv-ē-ōtē) 

**digested sludge** [CIV ENG] Sludge or thickened mixture of sewage solids with water that has been decomposed by anaerobic bacteria. (di'jéstd-slād) 

**digger** [ENG] A tool or apparatus for digging in the ground. (di'gər) 

**digging** [ENG] A sudden increase in cutting depth of a cutting tool due to an erratic change in load. (di'gĭng) 

**digging line** See inhaul cable. (di'gin, lin) 

**digital circuit** [ELECTR] A circuit designed to respond at input voltages at one of a finite number of levels and, similarly, to produce output voltages at one of a finite number of levels. (di'ji-zē) 

**digital control** [CONT SYS] The use of digital or discrete technology to maintain conditions in operating systems as close as possible to desired values despite changes in the operating environment. (di'ji-zē-ōtē) 

**digital delay** [ENG ACOUS] A device for introducing delay in the audio signal in a sound-reproducing system, which converts the audio signal to digital format and stores it in a digital shift register before converting it back to analog form. (di'ji-zē-ōtē) 

**digital log** [ENG] A well log that has undergone discrete sampling and recording on a magnetic tape preparatory to use in computerized interpretation and plotting. (di'ji-zē-ōtē) 

**digital-to-analog converter** [ELECTR] A converter in which digital input signals are changed to essentially proportional analog signals. 

**Abbreviated dac.** (di'ji-zē-ōtē) 

**dike** [CIV ENG] An embankment constructed on dry ground along a riverbank to prevent overflow of lowlands and to retain floodwater. (dīk) 

**dilatometer** [ENG] An instrument for measuring thermal expansion and dilation of liquids or solids. (di-lāt-ōm'ē-tōr) 

**dilute phase** [CHEM ENG] In liquid-liquid extraction, the liquid phase that is dilute with respect to the material being extracted. (di-lüt) 

**dimpling** [ENG] Forming a conical depression in a metal surface in order to countersink a rivet head. (di'iplin) 

**Dines anemometer** [ENG] A pressure-tube anemometer in which the pressure head on a weather vane is kept facing into the wind, and the suction head, near the bearing which supports the vane, develops a suction independent of wind direction; the pressure difference between the heads is proportional to the square of the wind speed and is measured by a float anemometer with a linear wind scale. (dīnz an'ē-mō-mē-tōr) 

**Dings magnetic separator** [MECH ENG] A device which is suspended above a belt conveyor to pull out and separate magnetic material from burden as thick as 40 inches (1 meter) and at belt speeds up to 750 feet (229 meters) per minute. (dīngs mag'ned-ik, sep-ō-rād) 

**dinking** [MECH ENG] Using a sharp, hollow punch for cutting light-gage soft metals or non-metallic materials. (dīŋk) 

**diocyl phthalate test** [ENG] A method used to evaluate air filters to be used in critical air-cleaning applications; a light-scattering technique counts the number of particles of controlled size (0.3 micrometer) entering and emerging from the test filter. Abbreviated DOP test. (di'-o-sil-ōtē) 

**diode** [ELECTR] 1. A two-electrode electron tube containing an anode and a cathode. 2. See semiconductor diode. (di'ōd) 

**diode alternating-current switch** See trigger diode. (di'ōd, ət-ēr) 

**diode amplifier** [ELECTR] A microwave amplifier using an IMPATT, TRAPATT, or transferred-electron electron diode in a cavity, with a microwave circulator providing the input/output isolation required for amplification; center frequencies are in the gigahertz range, from about 1 to 100 gigahertz, and power outputs are up to 20 watts continuous-wave or more than 200 watts pulsed, depending on the diode used. (di'ōd, əm-plār) 

**diode bridge** [ELECTR] A series-parallel configuration of four diodes, whose output polarity remains unchanged whatever the input polarity. (di'ōd, brī) 

**diode-capacitor transistor logic** [ELECTR] A circuit that uses diodes, capacitors, and transistors to provide logic functions. (di'ōd, kā-pās-ōtē) 

**diode characteristic** [ELECTR] The composite
diode clamp

electrode characteristic of an electron tube when all electrodes except the cathode are connected together. \{\textbf{diôd,ód, kar-ik-ta-tris-tik}\}
diode clamp See diode clamping circuit. \{\textbf{diôd,ód kklamp}\}
diode clamping circuit \[\text{ELECTR}\] A clamping circuit in which a diode provides a very low resistance whenever the potential at a certain point rises above a certain value in some circuits or falls below a certain value in others. Also known as diode clamp. \{\textbf{diôd,ód ‘klâmp-ij, sär-kat}\}
diode clipping circuit \[\text{ELECTR}\] A clipping circuit in which a diode is used as a switch to perform the clipping action. \{\textbf{diôd,ód ‘klîp-ij, sär-kat}\}
diode-connected transistor \[\text{ELECTR}\] A bipolar transistor in which two terminals are shorted to give diode action. \{\textbf{diôd,ód ka-ño-nek-tad tran-sis-tor}\}
diode demodulator \[\text{ELECTR}\] A demodulator using one or more diodes to provide a rectified output whose average value is proportional to the original modulation. Also known as diode detector. \{\textbf{diôd,ód de-mäj-ə, lâd-ar}\}
diode detector See diode demodulator. \{\textbf{diôd,ód di’tek-tor}\}
diode drop See diode forward voltage. \{\textbf{diôd,ód dräp}\}
diode forward voltage \[\text{ELECTR}\] The voltage across a semiconductor diode that is carrying current in the forward direction; it is usually approximately constant over the range of currents commonly used. Also known as diode drop; diode voltage; forward voltage drop. \{\textbf{diôd,ód förward ‘völ-tij}\}
diode function generator \[\text{ELECTR}\] A function generator that uses the transfer characteristics of resistive networks containing biased diodes, the desired function is approximated by linear segments. \{\textbf{diôd,ód ‘lejk-shan, jen-ə, räd-ar}\}
diode gate \[\text{ELECTR}\] An AND gate that uses diodes as switching elements. \{\textbf{diôd,ód ‘gät}\}
diode limiter \[\text{ELECTR}\] A peak-limiting circuit employing a diode that becomes conductive when signal peaks exceed a predetermined value. \{\textbf{diôd,ód ‘lim-əd-ar}\}
diode logic \[\text{ELECTR}\] An electronic circuit using current-steering diodes, such that the relations between input and output voltages correspond to AND or OR logic functions. \{\textbf{diôd,ód ‘lär-ik}\}
diode matrix \[\text{ELECTR}\] A two-dimensional array of diodes used for a variety of purposes such as decoding and read-only memory. \{\textbf{diôd,ód má-tär-ik}\}
diode mixer \[\text{ELECTR}\] A mixer that uses a crystal or electron tube diode; it is generally small enough to fit directly into a radio-frequency transmission line. \{\textbf{diôd,ód, mik-sar}\}
diode switch \[\text{ELECTR}\] Diode which is made to act as a switch by the successive application of positive and negative biasing voltages to the anode (relative to the cathode), thereby allowing or preventing, respectively, the passage of other applied waveforms within certain limits of voltage. \{\textbf{diôd,ód ,swich}\}
diode transistor logic \[\text{ELECTR}\] A circuit that uses diodes, transistors, and resistors to provide logic functions. Abbreviated DTL. \{\textbf{diôd,ód tran-zis-tor lâj-ik}\}
diode triode \[\text{ELECTR}\] Vacuum tube having a diode and a triode in the same envelope. \{\textbf{diôd,ód ‘tri,ód}\}
diode voltage See diode forward voltage. \{\textbf{diôd,ód ‘völ-tij}\}
diode voltage regulator \[\text{ELECTR}\] A voltage regulator with a Zener diode, making use of its almost constant voltage over a range of currents. Also known as Zener diode voltage regulator. \{\textbf{diôd,ód ‘völ-tij, reg-yo, lâd-ar}\}
diolefin hydrocarbon \[\text{CHEM ENG}\] A fixed-bed catalytic process used to hydrogenate diolefins in C3 and C4 fractions to mono-olefin in alkyl-ation feedstocks. \{\textbf{dip-o-la, jn, hr-dra-jen-shan}\}
uip \[\text{ENG}\] The vertical angle between the sensible horizon and a line to the visible horizon at sea, due to the elevation of the observer and to the convexity of the earth’s surface. Also known as dip of horizon. \{\textbf{dip}\}
DIP See dual in-line package. \{\textbf{dip}\}
dip circle See inclinometer. \{\textbf{dip, sar-kal}\}
dip coating \[\text{ENG}\] A coating applied to ceramic ware or metal by immersion into a tank of melted nonmetallic material, such as resin or plastic, then chilling the adhering melt. \{\textbf{dip, kôd-ij}\}
dip inductor See earth inductor. \{\textbf{dip in, dak-tor}\}
dipmeter \[\text{ENG}\] \textbf{1.} An instrument used to measure the direction and angle of dip of geologic formations. \textbf{2.} An absorption wavemeter in which bipolar or field-effect transistors replace the electron tubes used in older grid-dip meters. \{\textbf{dip, lèd-ar}\}
dip mold \[\text{ENG}\] A one-piece glassmaking mold with an open top; used to mold patterns. \{\textbf{dip, mold}\}
dip needle \[\text{ENG}\] An obsolete type of magnetometer consisting of a magnetized needle that rotates freely in the vertical plane, with an adjustable weight on one side of the pivot. \{\textbf{dip, nèd-al}\}
dip of horizon \textbf{See} dip. \{\textbf{dip av ha-riz-an}\}
dipole moment \textbf{See} electric dipole moment. \{\textbf{di-pöl, mó-mant}\}
dipper dredge \[\text{MECH ENG}\] A power shovel resembling a grab crane mounted on a flat-bottom boat for dredging under water. Also known as dipper shovel. \{\textbf{dip-ar, drij}\}
dipper stick \[\text{MECH ENG}\] A straight shaft connecting the digging bucket of an excavating machine or power shovel with the boom. \{\textbf{dip-ar, stik}\}
dipper trip \[\text{MECH ENG}\] A device which releases the door of a shovel bucket. \{\textbf{dip-ar, tri-p}\}
dipping sonar \[\text{ENG}\] A sonar transducer that is lowered into the water from a hovering antisubmarine-warfare helicopter and recovered after the search is complete. Also known as dunking sonar. \{\textbf{di-ijo ‘so, nár}\}
**dipstick** [ENG] A graduated rod which measures depth when dipped in a liquid, used, for example, to measure the oil in an automobile engine crankcase. (*'dip, stick*)

**dipstick microscopy** [ENG] A technique for mapping the variation of thickness of a thin liquid film by repeatedly dipping the tip of an atomic force microscope into the film at different locations and calculating its thickness at each location. (*'dip, stick’ ml’m-krås ka-pë*)

**direct-acting pump** [MECH ENG] A displacement reciprocating pump in which the steam or power piston is connected to the pump piston by means of a rod, without crank motion or flywheel. (*'da’rekt, ’kät-iñ’ ’pump*)

**direct-acting recorder** [ENG] A recorder in which the marking device is mechanically connected to or directly operated by the primary detector. (*'da’rekt, ’kät-iñ’ ri’kôrd-ar*)

**direct-arc furnace** [ENG] A furnace in which a material in a refractory-lined shell is rapidly heated to pour temperature by an electric arc which goes directly from electrodes to the material. (*'da’rekt, ’jar̩k, řar-nas*)

**direct bearing** [CIV ENG] A direct vertical support in a structure. (*'da’rekt ’ber-iñ*)

**direct-bonded bearing** [MECH ENG] A bearing formed by pouring molten babbitt metal directly into the bearing housing, allowing it to cool, and then machining the metal to the specified diameter. (*'da’rekt, řan-dad ’ber-iñ*)

**direct command guidance** [ENG] Control of a missile or drone entirely from the launching site by radio or by signals sent over a wire. (*'da’rekt řa’mánd ’gîd-’ans*)

**direct-connected** [MECH ENG] The connection between a driver and a driven part, as a turbine and an electric generator, without intervening speed-changing devices, such as gears. (*'da’rekt ka’nek-tåd*)

**direct-contact condenser** See contact condenser.

**direct-contact control** See contact control.

**direct control function** See regulatory control function. (*'da’rekt, ko’när, tåkt ko’n, den-sar*)

**direct cost** [IND ENG] The cost in goods and labor to produce a product which would not be spent if the product were not made. (*'da’rekt ’kös’t*)

**direct-coupled** [MECH ENG] Joined without intermediate connections. (*'da’rekt ’kap-al’d*)

**direct coupling** [ELEC] Coupling of two circuits by means of a non-frequency-sensitive device, such as a wire, resistor, or battery, so both direct and alternating current can flow through the coupling path. [MECH ENG] The direct connection of the shaft of a prime mover (such as a motor) to the shaft of a rotating mechanism (such as a pump or compressor). (*'da’rekt ’kap-iñ’*)

**direct current** [ELEC] Electric current which flows in one direction only, as opposed to alternating current. Abbreviated dc. (*'da’rekt ’ka-rant’*)

**direct-current power supply** [ELEC] A power supply that provides one or more dc output voltages, such as a dc generator, rectifier-type power supply, converter, or dynamotor. (*'da’rekt ’ka-’ront ’pa-d-ar so-ri*)

**direct digital control** [CONT SYS] The use of a digital computer generally on a time-sharing or multiplexing basis, for process control in petroleum, chemical, and other industries. (*'da’rekt di’ji-ad-al ka’n’trol’*)

**direct drive** [MECH ENG] A drive in which the driving part is directly connected to the driven part. (*'da’rekt ’driv’*)

**direct-drive arm** [CONT SYS] A robot arm whose joints are directly coupled to high-torque motors. (*'da’rekt ’driv’ ’arm’*)

**direct-drive vibration machine** [MECH ENG] A vibration machine in which the vibration table is forced to undergo a displacement by a positive linkage driven by a direct attachment to eccentricities or camshafts. (*'da’rekt ’driv’ vřbra-shan ma’shen’*)

**direct energy conversion** [ENG] Conversion of thermal or chemical energy into electric power by means of direct-power generators. (*'da’rekt ’en-ør-je ko’n, var-zhan’*)

**direct-expansion coil** [MECH ENG] A finned port in a structure. (*'da’rekt ’driv’ ik’span-chan, koöl’*)

**direct expert control system** [CONT SYS] An expert control system that contains rules that directly associate controller output values with different values of the controller measurements and set points. Also known as rule-based control system. (*'da’rekt ,eks-’poart ko’n-tröl ’sis-tom’*)

**direct extrusion** [ENG] Extrusion by movement of ram and product in the same direction against a die orifice. (*'da’rekt ik’strür-zhan’*)

**direct-feedback system** [CONT SYS] A system in which electrical feedback is used directly, as in a tachometer. (*'da’rekt ’fëd-bak ,sis-tom’*)

**direct-fire** [ENG] To fire a furnace without pre-heating the air or gas. (*'da’rekt, ’fîr’*)

**direct-fired evaporator** [CHEM ENG] An evaporator in which the flame and combustion gases are separated from the boiling liquid by a metal wall, or other heating surface. (*'da’rekt ’lîrd vap-o-řad-år’*)

**direct-gearred** [MECH ENG] Joined by a gear on the shaft of one machine meshing with a gear on the shaft of another machine. (*'da’rekt ’jîrd’*)

**direct-imaging mass analyzer** [ENG] A type of secondary ion mass spectrometer in which secondary ions pass through an electrostatic immersion lens which forms an image that bears a point-to-point relation to the ion’s place of origin on the sample surface, and then traverse magnetic sectors which effect mass separation. Also known as Castaing-Slodzian mass analyzer. (*'da’rekt ’lin-i-iñ’ ’nas ’a-nal, lîz-år’*)

**direction** [ENG] The position of one point in space relative to another without reference to the distance between them; may be either three-dimensional or two-dimensional, the horizontal
being the usual plane of the latter, usually indicated in terms of its angular distance from a reference direction.

directional control [ENG] Control of motion about the vertical axis, in an aircraft, usually by the rudder. (da'rekt-shon 'rú-dər)
directional control valve [ENG] A control valve serving primarily to direct hydraulic fluid to the point of application. (da'rekt-shon 'válv)
directional drilling [ENG] A drilling method involving intentional deviation of a wellbore from the vertical. (da'rekt-shon 'dril-î)
directional gain See directivity index. (da'rekt-shon 'gân)
directional gyro [MECH] A two-degrees-of-freedom gyro with a provision for maintaining its spin axis approximately horizontal. (da'rekt-shon 'jí-rō)
directional hydrophone [ENG ACOUS] A hydrophone whose response varies significantly with the direction of sound incidence. (da'rekt-shon 'hî-dro-fón)
directional microphone [ENG ACOUS] A microphone whose response varies significantly with the direction of sound incidence. (da'rekt-shon 'mîr-kra-fón)
directional response pattern See directivity pattern. (da'rekt-shon 'rî'spåns 'pad-rn)
direction cosine [ENG] In tracking, the cosine of the angle between a baseline and the line connecting the center of the baseline with the target. (da'rekt-shon 'ko-sîn)
direction-independent radar [ENG] Doppler radar used in sentry applications. (da'rekt-shan 'in-dafpen-dant 'ra'dr)
directivity factor [ENG ACOUS] 1. The ratio of radiated sound intensity at a remote point on the principal axis of a loudspeaker or other transducer, to the average intensity of the sound transmitted through a sphere passing through the remote point and concentric with the transducer; the frequency must be stated. 2. The ratio of the square of the voltage produced by sound waves arriving parallel to the principal axis of a microphone or other receiving transducer, to the mean square of the voltage that would be produced if sound waves having the same frequency and mean-square pressure were arriving simultaneously from all directions with random phase; the frequency must be stated. (da'rekt-tîv-'fàk-tor)
directivity index [ENG ACOUS] The directivity factor expressed in decibels; it is 10 times the logarithm to the base 10 of the directivity factor. Also known as directional gain. (da'rekt-tîv-'ên, 'in-deks)
directivity pattern [ENG ACOUS] A graphical or other description of the response of a transducer used for sound emission or reception as a function of the direction of the transmitted or incident sound waves in a specified plane and at a specified frequency. Also known as beam pattern, directional response pattern. (da'rekt-tîv-'ên 'pad-rn)
direct labor [IND ENG] The labor or effort actually producing goods or services. (da'rekt 'lôr)
direct labor standard See standard time. (da'rekt 'lôr stan-dard)
directly heated cathode See filament. (da'rekt-le 'hêd-ad 'kathôd)
direct material [IND ENG] Any raw or semi-finished material which will be incorporated into the product. (da'rekt màtir-'əl)
direct-power generator [ENG] Any device which converts thermal or chemical energy into electric power by methods more direct than the conventional thermal cycle. (da'rekt 'pôl-a-gér 'jen-ər, râd-ar)
direct-radiator speaker [ENG ACOUS] A loudspeaker in which the radiating element acts directly on the air, without a horn. (da'rekt 'râd-ə, râd-ar, sîp-euk-ar)
direct-reading gage [ENG] Gage that records directly (instead of inferentially) measured values, for example, a liquid-level gage pointer actuated by direct linkage with a float. (da'rekt 'red-în 'gaj)
direct recording [ENG ACOUS] Recording in which a record is produced immediately, without subsequent processing, in response to received signals. (da'rekt 'ri'tarn, 'sîr-tarn)
direct-writing galvanometer [ENG] A direct-writing recorder in which the stylus or pen is attached to a moving coil positioned in the field of the permanent magnet of a galvanometer. (da'rekt 'writ-în, 'gal-von-nâm-'âd-ar)
direct-writing recorder [ENG] A recorder in which the permanent record of varying electrical quantities or signals is made on paper, directly by a pen attached to the moving coil of a galvanometer or indirectly by a pen moved by some form of motor under control of the galvanometer. Also known as mechanical oscillograph. (da'rekt 'wîd-în 'rî-kîrd-ar)
disappearing filament pyrometer See optical pyrometer. (dis-ô-pîr-in, 'fil-ô-mânt 'pl'râm-'êd-ar)
disappearing stair [BUILD] A stair that can be swung up into a ceiling space. (dis-ô-ri-pîr 'sîr-tar)
disassemble [ENG] To take apart into constituent parts. (dis-ô-ri-sem-bal)
disc See disk. (disk)
DISC See differential scatter. (disk)
discharge [ELEC] To remove a charge from a battery, capacitor, or other electric-energy storage device. (ELECTR) The passage of electricity through a gas, usually accompanied by a glow, arc, spark, or corona. Also known as electric discharge. (dis-chærj)
discharge channel [MECH ENG] The passage in a pressure-relief device through which the fluid
is released to the outside of the device. {‘dis¸chər¸j¸chɔ-nəl} discharging arch |[CIV ENG] A support built against disks attached to a rotating axle or is applied between metal electrodes in the tube. Also known as electric-discharge tube. |[MECH ENG] A tube through which steam and water are released into a boiler drum. {‘dis¸chər¸j¸tûb} discharge-tube leak indicator |[ENG] A device which detects the presence of a tracer gas by using a glass tube attached to a high-voltage source; the presence of leaked gas is indicated by the color of the electric discharge. {‘dis¸chər¸j¸tûb ¸le’ık¸in-da,kãd-ər} discharging arch |[CIV ENG] A support built over, and not touching, a weak structural member, such as a wooden lintel, to carry the main load. Also known as relieving arch. {‘dis¸chər¸j¸iŋ ¸arch} disconnect |[ELEC] To open a circuit by removing wires or connections, from opening a switch to stop current flow. |[ENG] To sever a connection. {‘dis¸kən’ekt} discontinuous construction |[BUILD] A building in which there is no solid connection between the rooms and the building structure or between different sections of the building; the design aims to reduce the transmission of noise. {‘dis¸kən’tin-tin-ə-wəs ¸kənstrək-shən} discount |[IND ENG] A reduction from the gross amount, price, or value. {‘dis¸kəunt} discrete sound system |[ENG ACOUS] A quadraphonic sound system in which the four input channels are preserved as four discrete channels during recording and playback processes; sometimes referred to as a 4-4-4-4 system. {di’skrɛkt ‘sænd¸s¸tɛm} discrete system |[CONT SYS] A control system in which signals at one or more points may change only at discrete values of time. Also known as discrete-time system. {di’skrɛkt ‘sɪstɛm} discrete-time system See discrete system. { di’skrɛkt ‘tɪm ‘sɪstɛm} discrete transfer function See pulsed transfer function. {di’skrɛkt ‘træns-fər¸fəŋk’tʃən} disdrometer |[ENG] Equipment designed to measure and record the size distribution of raindrops as they occur in the atmosphere. {di’sdɛrmətər} disengage |[ENG] To break the contact between two objects. {‘diʒənɡə} dishing |[ENG] In metal-forming or plastics-molding operations, producing a shallow concave surface. {‘dɪʃɪŋ} disintegrator |[MECH ENG] An apparatus used for pulverizing or grinding substances, consisting of two steel cages which rotate in opposite directions. {dis’ɪn-tə,grəd-ə} disk See phonograph record. {disk} disk-and-doughnut |[CHEM ENG] A type of fractionating tower construction of alternating disks and plates that are doughnut-shaped, to provide mixing. {disk ‘aŋ-də-nət} disk attrition mill See disk mill. {disk ¸trɪsh-ən ¸mɪl} disk brake |[MECH ENG] A type of brake in which disks attached to a fixed frame are pressed against disks attached to a rotating axle or against the inner surfaces of a rotating housing. {disk ¸bræk} disk cam |[MECH ENG] A disk with a contoured edge which rotates about an axis perpendicular to the disk, communicating motion to the cam follower which remains in contact with the edge of the disk. {disk ¸kæm} disk canvas wheel |[DES ENG] A polishing wheel made of disks of canvas sewn together with heavy twine or copper wire, and reinforced by steel side plates and side rings with bolts or screws. {disk ¸kæn-ə-ve´l} disk centrifuge |[MECH ENG] A centrifuge with a large bowl having a set of disks that separate the liquid into thin layers to create shallow settling chambers. {disk ¸sen-ə,ʃi´li} disk clutch |[MECH ENG] A clutch in which torque is transmitted by friction between friction disks with specially prepared friction material riveted to both sides and contact plates keyed to the inner surface of an external hub. {disk ¸klʌtʃ} disk coupling |[MECH ENG] A flexible coupling in which the connecting member is a flexible disk. {‘dis¸kəp-ɪŋ} disk engine |[MECH ENG] A rotating engine in which the piston is a disk. {‘dis¸kən-ən} disk filter |[ENG] A filter in which the substance to be filtered is drawn through membranes stretched on segments of revolving disks by a vacuum inside each disk; the solids left on the membrane are lifted from the tank and discharged. Also known as American filter. {disk ¸flər} disk grinder |[MECH ENG] A grinding machine that employs abrasive disks. {‘disk ¸g्रɪnd-ə} disk grinding |[MECH ENG] Grinding with the flat surface of a rigid, bonded abrasive disk or segmental wheel. {‘disk ¸g्रɪnd-ɪŋ} disk leather wheel |[DES ENG] A polishing wheel made of leather disks glued together. {‘disk ¸lɛð-ə} wɛl}
disk meter [ENG] A positive displacement meter to measure flow rate of a fluid; consists of a disk that wobbles or nutates within a chamber so that each time the disk nutates a known volume of fluid passes through the meter. { disk \_mèd \_ar \_}

disk mill [MECH ENG] Size-reduction apparatus in which grinding of feed solids takes place between two disks, either or both of which rotate. Also known as disk attrition mill. { disk \_mil \_}

disk recording [ENG ACOUS] 1. The process of inscribing suitably transformed acoustical or electrical signals on a phonograph record. 2. See phonograph record. { disk r'kòrd \_inj \_}

disk sander [MECH ENG] A machine that uses a circular disk coated with abrasive to smooth or shape surfaces. { disk \_sand \_ar \_}

disk signal [CIV ENG] Automatic block signal with colored disks that indicate train movements. { disk \_sig \_nal \_}

disk spring [MECH ENG] A mechanical spring that consists of a disk or washer supported by one force (distributed by a suitable chuck or holder) at the periphery and by an opposing force on the center or hub of the disk. { disk \_spring \_}

disk wheel [DES ENG] A wheel in which a solid metal disk, rather than separate spokes, joins the hub to the rim. { disk \_wèl \_}

dispatching [IND ENG] The selecting and sequencing of tasks to be performed at individual work stations and the assigning of these tasks to the personnel. { disp \_pach \_inj \_}

dispenser [ENG] Device that automatically dispenses radar chaff from an aircraft. { disp \_enj \_sør \_}

dispersal [CIV ENG] The practice of building or establishing industrial plants, government offices, or the like, in separated areas, to reduce vulnerability to enemy attack. { disp \_sor \_sal \_}

dispersion mill [MECH ENG] Size-reduction apparatus that disrupts clusters or agglomerates of solids, rather than breaking down individual particles; used for paint pigments, food products, and cosmetics. { disp \_zhan \_mil \_}

displacement [ELEC] See electric displacement. [MECH] 1. The linear distance from the initial to the final position of an object moved from one place to another, regardless of the length of path followed. 2. The distance of an oscillating particle from its equilibrium position. [MECH ENG] The volume swept out in one stroke by a piston moving in a cylinder as for an engine, pump, or compressor. { disp \_man \_t}\n
dispacement compressor [MECH ENG] A type of compressor that depends on displacement of a volume of air by a piston moving in a cylinder. { disp \_man \_t\_mànt \_kam\_pres\_ar \_}

displacement engine See piston engine. { disp \_man \_t\_enj \_}

displacement gyroscope [ENG] A gyroscope that senses, measures, and transmits angular displacement data. { disp \_man \_t\_skòp \_}

displacement manometer [ENG] A differential manometer which indicates the pressure difference across a solid or liquid partition which can be displaced against a restoring force. { disp \_mànt\_màn\_ad\_ar \_}

displacement pump [MECH ENG] A pump that develops its action through the alternate filling and emptying of an enclosed volume as in a piston-cylinder construction. { disp \_mànt\_pum \_}

displacer-type meter [ENG] Apparatus to detect liquid level or gas density by measuring the effect of the fluid (gas or liquid) on the buoyancy of a displacer unit immersed within the fluid. { disp \_mànt\_tip \_mànt \_}

disposable [ENG] Within a manufacturing system, designed to be discarded after use and replaced by an identical item, such as a filter element. { disp \_sp \_zal \_bal \_}

dispersal field See absorption field. { disp \_zal \_feld \_}

dissipation factor [ELEC] The inverse of the Q, the storage factor. { disp \_sp \_sh \_fak \_tør \_}

dissipation function See Rayleigh's dissipation function. { disp \_sp \_sh \_fak \_tør \_}

dissipation loss [ELEC] A measure of the power loss of a transducer in transmitting signals, expressed as the ratio of its input power to its output power. { disp \_sp \_sh \_los \_}

dissipative muffler [ENG] A device which absorbs sound energy as the gas passes through it; a duct lined with sound-absorbing material is the most common type. { disp \_sp \_iv \_mål \_tør \_}

dissolved air flotation [CHEM ENG] A liquid-solid separation process wherein the main mechanism of suspended-solids removal is the change of apparent specific gravity of those suspended solids in relation to that of the suspending liquid by the attachment of small gas bubbles formed by the release of dissolved gas to the solids. Also known as air flotation. { dis \_zálvd \_er \_fløt \_sh \_}

distance [MECH] The spatial separation of two points, measured by the length of a hypothetical line joining them. { dis \_tàn \_}

distance marker [ENG] One of a series of concentric circles, painted or otherwise fixed on the screen of a plan position indicator, from which the distance of a target from the radar antenna can be read directly, used for surveillance and navigation where the relative distances between a number of targets are required simultaneously. Also known as radar range marker, range marker. { dis \_tän \_märk \_ar \_}

distance ratio [MECH ENG] The ratio of the distance moved by the effort or input of a machine in a specified time to the distance moved by the load or output. { dis \_tän \_ra \_shō \_}

distance resolution [ENG] The minimum radial distance by which targets must be separated to
be separately distinguishable by a particular radar. Also known as range discrimination, range resolution. 

**distance/velocity lag** [CONT SYS] The delay caused by the amount of time required to transport material or propagate a signal or condition from one point to another. Also known as transportation lag, transport lag. 

**distant signal** [CIV ENG] A signal placed at a distance from a block of track to give advance warning when the block is closed. 

**distillation test** [CHEM ENG] A standardized procedure for finding the initial, intermediate, and final boiling points in the boiling range of petroleum products.

**distortion** [ELECTR] Any undesired change in the waveform of an electric signal passing through a circuit or other transmission medium. 

**distortion meter** [ENG] An instrument that provides a visual indication of the harmonic content of an audio-frequency wave. 

**distributed collector** [ENG] A component of a solar heating system comprising a series of modular focusing collectors that are interconnected with an absorber pipe network to carry the working fluid to a heat exchanger. 

**distributed control system** [CONT SYS] A collection of modules, each with its own specific function, interconnected tightly to carry out an integrated data acquisition and control application. 

**distributed numerical control** [CONT SYS] The use of central computers to distribute part-classification data to machine tools which themselves are controlled by computers or numerical control tapes. 

**distributed-parameter system** See distributed system. 

**distributewhich allocates** 

**distributor** [ELECTR] A radio-frequency power amplifier used to feed a speech or music distribution system and having sufficiently low output impedance so changes in load do not appreciably affect the output voltage. 

**distribution box** [CIV ENG] In sanitary engineering, a box in which the flow of effluent from a septic tank is distributed equally into the lines that lead to the absorption field. 

**distribution reservoir** [CIV ENG] A service reservoir connected with the conduits of a primary water supply, used to supply water to consumers according to fluctuations in demand over short time periods and serves for local storage in case of emergency. 

**distributor** [ELEC] 1. Any device which allocates a telegraphic line to each of a number of channels, or to each row of holes on a punched tape, in succession. 2. A rotary switch that directs the high-voltage ignition current in the proper firing sequence to the various cylinders of an internal combustion engine. 

**disturbance** [CONT SYS] An undesired command signal in a control system. 

**ditch** [CIV ENG] 1. A small artificial channel cut through earth or rock to carry water for irrigation or drainage. 2. A long narrow cut made in the earth to bury pipeline, cable, or similar installations. 

**ditch check** [CIV ENG] A small dam positioned at intervals in a road ditch to prevent erosion. 

**ditcher** See trench excavator. 

**diverse** [ELEC] A force having a controlled amplitude and frequency, applied continuously to a device driven by a servomotor so that the device is constantly in small-amplitude motion and cannot stick at its null position. Also known as buzz. 

**divariant system** [THERMO] A system composed of only one phase, so that two variables, such as pressure and temperature, are sufficient to define its thermodynamic state. 

**dive** [ENG] To submerge into an underwater environment so that it may be studied or utilized; includes the use of specialized equipment such...
divergent die

as scuba, diving helmets, diving suits, diving bells, and underwater research vessels. (div)

**divergent die** [ENG] A die with the internal channels that lead to the orifice diverging, such as the dies used for manufacture of hollow-body plastic items. (da'var-jant 'di')

**divergent nozzle** [DES ENG] A nozzle whose cross section becomes larger in the direction of flow. (da'var-jant 'náz-əl)

**diverging duct** [DES ENG] Fluid-flow conduit whose internal cross-sectional area increases in the direction of flow. (da'var-jı̄n da'kıt)

**diversion canal** [CIV ENG] An artificial channel for diverting water from one place to another. (da'var-zhan ka'nal)

**diversion chamber** [ENG] A chamber designed to direct a stream into a channel or channels. (da'var-zhan ,cham-bar)

**diversion dam** [CIV ENG] A fixed dam for diverting stream water away from its course. (da'var-zhan ,dam)

**diversion gate** [CIV ENG] A gate which may be closed to divert water from the main conduit or canal to a lateral or some other channel. (da'var-zhan ,gat)

**diversion tunnel** [CIV ENG] An underground passageway used to divert flowing water around a construction site. (da'var-zhan ,tun-al)

**diversity radar** [ENG] A radar that uses two or more transmitters and receivers, each pair operating at a slightly different frequency but sharing a common antenna and video display, to obtain greater effective range and reduce susceptibility to jamming. (da'var-sad-e 'rädär)

**diverter valve** See air bypass valve. (da'vordar 'valv)

**divided lane** [CIV ENG] A highway divided into lanes by a median strip. (da'vı̄d-ed 'làn)

**divided pitch** [DES ENG] In a screw with multiple threads, the distance between corresponding points on two adjacent threads measured parallel to the axis. (da'vı̄d-ad 'pich)

**divider** [DES ENG] A tool like a compass, used in metalworking to lay out circles or arcs and to space holes or other dimensions. (da'vı̄d-ar)

**dividing network** See crossover network. (da'vı̄d-ing net,work)

**dividing bell** [ENG] An early diving apparatus constructed in the shape of a box or cylinder without a bottom and connected to a compressed-air hose. (da'vı̄d-bel)

**diving suit** [ENG] A waterproof outfit designed for diving, especially one with a helmet connected to a compressed-air hose. (da'vı̄d-süt)

**division plate** [MECH ENG] A diaphragm which surrounds the piston rod of a crosshead-type engine and separates the crankcase from the lower portion of the cylinder. (da'vı̄zhan ,plāt)

**division wall** [BUILD] A wall used to create major subdivisions in a building. (da'vı̄zh-an ,wōl)

**dock** [CIV ENG] 1. The slip or waterway that is between two piers or cut into the land for the berthing of ships. 2. A basin or enclosure for reception of vessels, provided with means for controlling the water level. (dák)

**docking block** [CIV ENG] A member used to support a ship in dry dock. (da'kım 'blık)

**dockyard** [CIV ENG] A yard utilized for ship construction and repair. (da'kım,yärḑ)

**doctor bar** See doctor blade. (da'kım-taɾ ,bär)

**doctor blade** [ENG] A device for regulating the amount of liquid material on the rollers of a spreader. Also known as doctor bar; doctor knife; doctor roll. (da'kım-təɾ ,blăd)

**doctor knife** See doctor blade. (da'kım-taɾ ,nif)

**doctor roll** [CHEM ENG] Roller device used to remove accumulated filter cake from rotary filter drums. See doctor blade. (da'kım-təɾ ,nol)

**doctor solution** [CHEM ENG] Sodium plumbite solution used to remove mercaptan sulfur from gasoline and other light petroleum distillates, used in doctor treatment. (da'kım-taɾ səl'lu-shon)

**doctor test** [CHEM ENG] A procedure using doctor solution (sodium plumbite) to detect sulfur compounds in light petroleum distillates which react with the sodium plumbite. (da'kım-taɾ ,test)

**doctor treatment** [CHEM ENG] Refining process to sweeten (reduce the odor) of gasoline, solvents, and kerosine; sodium plumbite and sulfur convert the odoriferous mercaptans into disulfides. (da'kım-taɾ ,trët-mant)

**dodge chain** [DES ENG] A chain with detachable bearing blocks between the links. (daj chon)

**Dodge-Romig tables** [IND ENG] Tabular data for acceptance sampling, including lot tolerance and AOQL tables. (daj ,romig,ta-bal)

**dodo** [ENG] A rectangular groove cut across the grain of a board. (dodo)

**Doebner-Miller synthesis** [CHEM ENG] Synthesis of methylquinoline by heating aniline with paraaldehyde in the presence of hydrochloric acid. (dēb-nar ,mil-ar ,sin-tha'sas)

**dog** [DES ENG] 1. Any of various simple devices for holding, gripping, or fastening, such as a hook, rod, or spike with a ring, claw, or lug at the end. 2. An iron for supporting logs in a fireplace. 3. A drag for the wheel of a vehicle. (dog)

**dog clutch** [DES ENG] A clutch in which projections on one part fit into recesses on the other part. (dog,klach)

**dog iron** [DES ENG] 1. A short iron bar with ends bent at right angles. 2. An iron pin that can be inserted in stone or timber in order to lift it. (dōg ,īn)

**dog screw** [DES ENG] A screw with an eccentric head; used to mount a watch in its case. (dōg ,skrū)

**dog’s tooth** [CIV ENG] A masonry string course in which the brick corner projects. (dōg ,tūf)

**dolly** [ENG] Any of several types of industrial hand trucks consisting of a low platform or specially shaped carrier mounted on rollers or combinations of fixed and swivel casters; used to...
carry such things as furniture, milk cans, paper rolls, machinery weighing up to 80 tons, and television cameras short distances. ['dalē]
dolphin ['CIV ENG] 1. A group of piles driven close and tied together to provide a fixed mooring in the open sea or a guide for ships coming into a narrow harbor entrance. 2. A mooring post on a wharf. {'dāl-fōn]
dome ['ENG] The portion of a cylindrical container used in a filament-winding process that forms an integral end of the container. ['ENG ACOUS] An enclosure for a sonar transducer, projector, or hydrophone and associated equipment, designed to have minimum effect on sound waves traveling underwater. {'dōm]
domestic induction heater ['ENG] A cooking utensil heated by current (usually of commercial power line frequency) induced in it by a primary inductor. {'dōmes-tek' in'dak-shan, hēd-ər]
domestic refrigerator ['MECH ENG] A refrigeration system for household use which typically has a compression machine designed for continuous automatic operation and for conservation of the charges of refrigerant and oil, and is usually motor-driven and air-cooled. Also known as refrigerator. {'dōmes-tek n'rif'ij-ə, rād-ər]
donkey engine ['MECH ENG] A small auxiliary engine which is usually portable or semiportable and powered by steam, compressed air, or other means, particularly one used to power a windlass to lift cargo on shipboard or to haul logs. {'dōn'kē, en'jan]
Donohue equation ['THERMO] Equation used to determine the heat-transfer film coefficient for a fluid on the outside of a baffled shell-and-tube heat exchanger. {'dān-ə-hū, j'kwa-zhan}
doodlebug ['MECH ENG] 1. A small tractor. 2. A motor-driven railroad car used for maintenance and repair work. {'dūd-al,bāg]
door ['ENG] A piece of wood, metal, or other firm material pivoted or hinged on one side, sliding along grooves, rolling up and down, revolving, or folding, by means of which an opening into or out of a building, room, or other enclosure is open or closed to passage. {'dōr]
door check See door closer. {'dōr, chek]
door closer ['DES ENG] 1. A device that makes use of a spring for closing, and a compression chamber from which liquid or air escapes slowly, to close a door at a controlled speed. Also known as door check. 2. In elevators, a device or assembly of devices which closes an open car or hoistway door by the use of gravity or springs. {'dōr, klo-zər}
doorstop ['BUILD] A strip positioned on the doorjamb for the door to close against. {'dōr, stāp}
dope See doping agent. {'dōp]
doped junction ['ELECTR] A junction produced by adding an impurity to the melt during growing of a semiconductor crystal. {'dōpt jānk-shan]
doping ['ELECTR] The addition of impurities to a semiconductor to achieve a desired characteristic, as in producing an n-type or p-type material. Also known as semiconductor doping. ['ENG]
Coating the mold or mandrel with a substance which will prevent the molded plywood part from sticking to it and will facilitate removal. {'dōp-əng}
doping agent ['ELECTR] An impurity element added to semiconductor materials used in crystal diodes and transistors. Also known as dopant; dope. {'dōp-əng, jā-jānt]
doping compensation ['ELECTR] The addition of donor impurities to a p-type semiconductor or of acceptor impurities to an n-type semiconductor. {'dōp-əng kām-pān'sā-shon]
Doppler current meter ['ENG] An acoustic current meter in which a collimated ultrasonic signal of known frequency is projected into the water and the reverberation frequency is measured, the difference in frequencies (Doppler shift) is proportional to the speed of water traveling past the meter. {'dōp-ər-lār kār-ənt, mēd-ər]
Doppler radar ['ENG] A radar that makes use of the Doppler shift of an echo due to relative motion of target and radar to differentiate between fixed and moving targets and measure target velocities. {'dōp-ər-lār rā'ra, dār]
Doppler range See doran. {'dōp-ər-lār, rān]
Doppler sonar ['ENG] Sonar based on Doppler shift measurement technique. Abbreviated DS. {'dōp-ər-lār 'sō, nār]
Doppler tracking ['ENG] Tracking of a target by using Doppler radar. {'dōp-ər-lār 'trāk-ə]
Doppler ultrasonic flowmeter ['ENG] An instrument for determining the velocity of fluid flow from the Doppler shift of high-frequency sound waves reflected from particles or discontinuities in the flowing fluid. {'dōp-ər-lār āl-tra'sān-ik 'flo, mēd-ər]
DOP test See dioctyl phthalate test. {'dōp, test]
doran ['ENG] A Doppler ranging system that uses phase comparison of three different modulation frequencies on the carrier wave, such as 0.01, 0.1, and 1 megahertz, to obtain missile range data with high accuracy. Derived from Doppler range. {'dōr, rān]
dormer window ['BUILD] An extension of an attic room through a sloping roof to accommodate a vertical window. {'dōr-mār 'win-dō]
Dorr agitator ['MECH ENG] A tank used for batch washing of precipitates which cannot be leached by use of a spring for closing, and a compression chamber from which liquid or air escapes slowly, to close a door at a controlled speed. Also known as door check. 2. In elevators, a device or assembly of devices which closes an open car or hoistway door by the use of gravity or springs. {'dōr, klo-zər}
dort stop ['BUILD] A strip positioned on the doorjamb for the door to close against. {'dōr, stāp}
dote See dot button. {'dāt]
double-acting  [MECH ENG] Acting in two directions, as with a reciprocating piston in a cylinder with a working chamber at each end.  

double-acting compressor  [MECH ENG] A reciprocating compressor in which both ends of the piston act in working chambers to compress the fluid.  

double-acting pawl  [MECH ENG] A double pawl which can drive in either direction.  

double-action mechanical press  [MECH ENG] A press having two slides which move one within the other in parallel movements.  

double-amplitude-modulation multiplier  [ELECTR] A multiplier in which one variable is amplitude-modulated by a carrier, and the modulated signal is again amplitude-modulated by the other variable; the resulting double-modulated signal is applied to a balanced demodulator to obtain the product of the two variables.  

double-barrier resonant tunneling diode  [ELECTR] A variant of the tunnel diode with thin layers of aluminum gallium arsenide and gallium arsenide that have sharp interfaces and have widths comparable to the Schrödinger wavelengths of the electrons, permitting resonant behavior. Abbreviated DBRT diode.  

double-base junction diode  [ELECTR] A tetrode transistor that is essentially a junction triode transistor having two base connections on opposite sides of the central region of the transistor. Also known as tetrode junction transistor.  

double block and bleed system  [ENG] A valve system configuration in which a full-flow vent valve is installed in a pipeline between two shut-off valves to provide a means of releasing excess pressure between them.  

double-cored barrel drill  [DES ENG] A core drill consisting of an inner and an outer tube; the inner member can remain stationary while the outer one revolves.  

double-coursed  [BUILD] Covered with a material such as shingles in such a way that no area is covered with less than two thicknesses.  


double-crossover  See scissors crossover.  

double-cut file  [DES ENG] A file covered with two series of parallel ridges crossing at angles to each other.  

double-cut planer  [MECH ENG] A planer designed to cut in both the forward and reverse strokes of the table.  

double-cut saw  [DES ENG] A saw with teeth that cut during the forward and return strokes.  

double-diffused transistor  [ELECTR] A transistor in which two pn junctions are formed in the semiconductor wafer by gaseous diffusion of both p-type and n-type impurities; an intrinsic region can also be formed.  

double diode  See binode; duodiode.  

double-diode limiter  [ELECTR] Type of limiter which is used to remove all positive signals from a combination of positive and negative pulses, or to remove all the negative signals from such a combination of positive and negative pulses.  

double distribution  [CHEM ENG] The product distribution resulting from counter double-current extraction, a scheme in which each of the two liquid phases is transferred simultaneously and continuously in opposite directions through an interconnected train of contact vessels.  

double-doped transistor  [ELECTR] The original grown-junction transistor, formed by successively adding p-type and n-type impurities to the melt during growth of the crystal.  

double-drum hoist  [MECH ENG] A hoisting device consisting of two cable drums which rotate in opposite directions and can be operated separately or together.  

double floor  [BUILD] A floor in which binding joists support the ceiling joists below as well as the floor joists above.  

doublehand drilling  [ENG] A rock-drilling method performed by two men, one striking the rock with a long-handled sledge hammer while a second holds the drill and twists it between strokes. Also known as double jacking.  

double Hooke’s joint  [MECH ENG] A universal joint which eliminates the variation in angular displacement and angular velocity between driving and driven shafts, consisting of two Hooke’s
joints with an intermediate shaft. {'dab-al 'hūks 'jōnt}
double-housing planer [MECH ENG] A planer having two housings to support the cross rail, with two heads on the cross rail and one side-head on each housing. {'dab-al 'hūs-'jan '
plān-'ar} 
double-hung [BUILD] Of a window, having top and bottom sashes which are counterweighted or equipped with a spring on each side for easier raising and lowering. {'dab-al 'hāj} 
double impeller breaker See impact breaker. {'dab-al 'im'pēl-'ar ,brāk-'ar} 
double-integrating gyro [MECH] A single-degree-of-freedom gyro having essentially no restraint of its spin axis about the output axis. {'dab-al 'in-tā ,grād-'ın 'lī-rō} 
double jack [DES ENG] A heavy hammer, weighing about 10 pounds (4.5 kilograms), requiring the use of both hands. {'dab-al 'jak} 
double jacking See doublehand drilling. {'dab-al 'jak-'ıng} 
double load [ENG] A charge separated by inert material in a borehole. {'dab-al 'lod} 
double mast See A frame. {'dab-al 'mast} 
double pendulum [MECH] Two masses, one suspended from a fixed point by a weightless string or rod of fixed length, and the other similarly suspended from the first; often the system is constrained to remain in a vertical plane. {'dab-al 'pen-'lām} 
double-pipe exchanger [CHEM ENG] Fluid-fluid heat exchanger made of two concentric pipe sections; one fluid (such as a coolant) flows in the annular space between pipes, and the other fluid (such as hot process stream) flows through the inner pipe. {'dab-al 'pīp īks 'chān-'jār} 
double-quirked bead See quirk bead. {'dab-al 'kwārk 'bēd} 
double-rivet [ENG] To rivet a lap joint with two rows of rivets or a butt joint with four rows. {'dab-al 'riv-'ar} 
double-roll crusher [MECH ENG] A machine which crushes materials between teeth on two roll surfaces, used mainly for coal. {'dab-al 'rōl 'krāsh-'ar} 
double sampling [IND ENG] Inspecting one sample and then deciding whether to accept or reject the lot or to defer action until a second sample is inspected. {'dab-al 'sam-'plı̇} 
double-shot molding [ENG] A means of turning out two-color parts in thermoplastic materials by successive molding operations. {'dab-al 'shāt 'mōld-'ı̇q} 
double-sided board [ELECTR] A printed wiring board that contains circuitry on both external layers. {'dab-al 'sid-'ād 'bōrd} 
double-slider coupling See slider coupling. {'dab-al 'sid-'ād 'kāp-'ı̇q} 
double-solvent refining [CHEM ENG] Petroleum-refining process using two solvents to simultaneously deasphalt and solvent-treat lubricating oil stocks. {'dab-al 'sōl-vənt rāf-'ın-q} 
double square See adjustable square. {'dab-al 'skwər} 
double-stream amplifier [ELECTR] Microwave traveling-wave amplifier in which amplification occurs through interaction of two electron beams having different average velocities. {'dab-al 'strēm 'am-pla fra-rər} 
double-theodolite observation [ENG] A technique for making winds-altof observations in which the theodolites located at either end of a base line follow the ascent of a pilot balloon; synchronous measurements of the elevation and azimuth angles of the balloon, taken at periodic intervals, permit computation of the wind vector as a function of height. {'dab-al thēd-al 'it āb-zār-'vāshən} 
double-track tape recorder [ENG ACOUS] A tape recorder with a recording head that covers half the tape width, so two parallel tracks can be recorded on one tape. Also known as dual-track tape recorder, half-track tape recorder. {'dab-al 'trak 'tāp ri,kōrd-'ar} 
double-tuned circuit [ELECTR] A circuit that is resonant to two adjacent frequencies, so that there are two approximately equal values of peak response, with a dip between. {'dab-al ,tūnd 'sār-'kāt} 
double-tuned detector [ELECTR] A type of frequency-modulation discriminator in which the limiter output transformer has two secondaries, one tuned above the resting frequency and the other tuned an equal amount below. {'dab-al 'tūnd dī tēk-'tər} 
double-wall cofferdam [CIV ENG] A cofferdam consisting of two lines of steel piles tied to each other, and having the space between filled with sand. {'dab-al 'wul 'kōf-'ar ,dam} 
double weighing [MECH] A method of weighing to allow for differences in lengths of the balance arms, in which object and weights are balanced twice, the second time with their positions interchanged. Also known as Gauss method of weighing. {'dab-al 'wā-'ı̇q} 
dovetail joint [DES ENG] A joint consisting of a flaring tenon in a fitting mortise. {'dāv,tāl 'jōnt} 
dovetail saw [DES ENG] A short stiff saw with a thin blade and fine teeth, used for accurate woodwork. {'dāv,tāl 'sō} 
dowel [DES ENG] 1. A headless, cylindrical pin which is sunk into corresponding holes in adjoining parts, to locate the parts relative to each other or to join them together. Also known as dowel pin. 2. A round wooden stick from which dowel pins are cut. {'dāul} 
dowel pin See dowel. {'dāul pin} 
dowel plate [DES ENG] A hardened steel plate with drilled holes that is used to fashion dowels by driving pegs through the holes to remove excess wood. {'dāul plāt} 
dowel screw [DES ENG] A dowel with threads at both ends. {'dāul ,skrū} 
down [ENG] Not in operation. {'dāun} 
downcomer [BUILD] See downspout [CHEM ENG] A method of conveying liquid from one tray to the one below in a bubble-tray column. [ENG] In an air-pollution control system, a pipe
that conducts gases downward to a device that removes undesirable substances. [MECH ENG] A tube in a boiler waterwall system wherein the fluid flows downward.

**downdraft carburetor** [MECH ENG] A carburetor in which the fuel is fed into a downward current of air.

**down-feed system** [MECH ENG] In a heating or cooling system, a piping arrangement in which the fluid is circulated through supply mains that are located above the levels of the units they serve.

**downhole equipment** See drill fittings.

**Down’s process** [CHEM ENG] A method for producing sodium and chlorine from sodium chloride; potassium chloride and fluoride are added to the sodium chloride to reduce the melting point, the fused mixture is electrolyzed, with sodium forming at the cathode and chlorine at the anode.

**downstream** [CHEM ENG] A product of a steam stream that has already passed through the system; that portion located after a specific process unit.

**downtime** [IND ENG] The lost production time dragged along by the rakes. See downtime.

**drag** [ENG] 1. A tool fashioned from sheet steel and having a toothed edge along the long dimension, used to level and scratch plaster to produce a key for the next coat of plaster. Also known as comb. 2. A tool consisting of a steel plate with a finely serrated edge; dragged over the surface to dress stone. [drag]

**drag bit** See bit drag.

**drag-body flowmeter** [ENG] Device to meter liquid flow; measures the net force parallel to the direction of flow; the resulting pressure difference is used to solve flow equations.

**drag chain** [ENG] 1. A chain dragged along the ground from a motor vehicle chassis to prevent the accumulation of static electricity. 2. A chain for coupling rail cars.

**drag-chain conveyor** [MECH ENG] A conveyor in which the open links of a chain drag material along the bottom of a hard-faced concrete or cast iron trough. Also known as dragline conveyor.

**drag classifier** [MECH ENG] A continuous belt containing transverse rakes, used to separate coarse sand from fine; the belt moves up through an inclined trough, and fast-settling sands are dragged along by the rakes.

**drag conveyor** See flight conveyor.

**drag-cup generator** [ENG] A type of tachometer which uses eddy currents and functions in control systems; it consists of two stationary windings, positioned so as to have zero coupling, and a nonmagnetic metal cup, which is revolved by the source whose speed is to be measured; one of the windings is used for excitation, inducing eddy currents in the rotating cup. Also known as drag-cup tachometer.

**drag-cup tachometer** See drag-cup generator.

**drag cut** [ENG] A drill hole pattern for breaking out rock, in which angled holes are drilled along a floor toward a parting, or on a free face and then broken by other holes drilled into them.

**drag factor** [CHEM ENG] Ratio of hindered diffusion rate to unhindered rate through a swollen dialysis membrane. Also known as Faxon drag factor, hindrance factor.

**dragline** [MECH ENG] An excavator operated by pulling a bucket on ropes towards the jib from
which it is suspended. Also known as dragline excavator. 

**dragline excavator** 

See drag-chain excavator. 

**dragline scraper** 

[MECH ENG] A machine with a flat, plowlike blade or partially open bucket pulled on rope for withdrawing piled material, such as stone or coal, from a stockyard to the loading platform; the empty bucket is subsequently returned to the pile of material by means of a return rope. 

**drag link** 

[MECH ENG] A four-bar linkage in which both cranks traverse full circles, the fixed member must be the shortest link. 

**drag saw** 

[DES ENG] A saw that cuts on the pulling stroke, used in power saws for cutting felled trees. 

**drag-type tachometer** 

See eddy-current tachometer. 

**drain** 

[CIV ENG] 1. A channel which carries off surface water. 2. A pipe which carries off liquid sewage. 

**drainage** 

[CIV ENG] Removal of groundwater or drainage, including the emptying of water areas. 

**drainage canal** 

[ENG] A steel point used to scratch bottom of a water area. 

**drainage gallery** 

[ENG] A cylindrical point used to scratch Lines or to pierce holes. 

**drainage well** 

[ENG] A vertical shaft in a masonry dam to intercept seepage before it reaches the downstream face. 

**drain tile** 

[BUILD] A cylindrical tile with holes in the walls used at the base of a building foundation to carry away groundwater. 

**drain valve** 

[CHEM ENG] A valve used to drain off material that has separated from a fluid or gas stream, or one used to empty a process line, vessel, or storage tank. 

**drainage** 

[ENG] A method of forming thermostatic sheet in which the sheet is clamped into a movable frame, heated, and draped over high points of a male mold; vacuum is then applied to complete the forming operation. 

**draper** 

[CHEM ENG] The increase in volume at constant pressure at the start of the reaction of hydrogen and chlorine to form hydrogen chloride; the volume increase is caused by an increase in temperature of the reactants, due to heat released in the reaction. 

**draught** 

See draft. 

**draught stop** 

See fire stop. 

**draw** 

[ENG] To haul a load. 

**drawbar** 

[ENG] 1. A bar used to connect a tender to a steam locomotive. 2. A beam across the rear of a tractor for coupling machines or other loads. 3. A clay block submerged in a glass-making furnace to define the point at which sheet glass is drawn. 

**drawbar horsepower** 

[MECH ENG] The horsepower available at the drawbar in the rear of a locomotive or tractor to pull the vehicles behind it. 

**drawdown ratio** 

[ENG] The ratio of die opening thickness to product thickness. 

**drawer** 

[ENG] A box or receptacle that slides or rolls on tracks within a cabinet. 

**draw-filing** 

[ENG] Filing by pushing and pulling a file sideways across the work. 

**drawing** 

[ENG] Removing ceramic ware from a kiln after it has been fired. 

**drawknife** 

[DES ENG] A woodcutting tool with a long, narrow blade and two handles mounted at right angles to the blade. 

**drowpoint** 

[ENG] A steel point used to scratch lines or to pierce holes. 

**dredge** 

[ENG] A cylindrical or rectangular device for collecting samples of bottom sediment and benthic fauna. 

**dredging** 

[ENG] Removing solid matter from the bottom of a water area. 

**dress** 

[CIV ENG] To smooth the surface of concrete or stone. 

**dresser** 

[ENG] Any tool or apparatus used for dressing something. 

**dressing** 

[CIV ENG] The process of smoothing or squaring lumber or stone for use in a building.
Dressler kiln

Dressler kiln  [MECH ENG] The first successful muffle-type tunnel kiln.  { 'dres-lar, kiln }
drier  [ENG] A device to remove water.  { 'dri-ar }
drift  [ENG] 1. A gradual deviation from a set adjustment, such as frequency or balance current, or from a direction.  2. The deviation, or the angle of deviation, of a borehole from the vertical or from its intended course.  3. To measure the size of a pipe opening by passing a mandrel through it.  [MECH ENG] The water lost in a cooling tower as mist or droplets entrained by the circulating air, not including the evaporative loss.  { 'drift }
drift bolt  [ENG] 1. A bolt used to force out other bolts or pins.  2. A metal rod used to secure timbers.  { 'drift , bolt }
drifter  [MECH ENG] A rock drill, similar to but usually larger than a jack hammer, mounted for drilling holes up to 4 1/2 inches (11.4 centimeters) in diameter.  { 'drift , tar }
drift indicator  [ENG] Device used to record directional logs; records only the amount of drift (deviation from the vertical), and not the direction.  { 'drift , in-dar, kad-ar }
drillpin  [DES ENG] A round, tapered metal rod that is driven into matching rivet holes of two the angle and length of a twist drill while grinding.  { 'drill, pin }
drift plug  [ENG] A plug that can be driven into a pipe to straighten it or to flare its opening.  { 'drift, plug }
drift ultrasonic flowmeter  See deflection ultrasonic flowmeter.  { 'drift , al-tros-an-ik 'flo-ar, med-ar }
drill  [ENG] A rotating-end cutting tool for creating or enlarging holes in a solid material. Also known as drill bit.  { 'drill }
drillability  [ENG] Fitness for being drilled, denoting ease of penetration.  { 'dril-ar-bil-ad-e }
drill angle gage  See drill grinding gage.  { 'drill , an-gal,gai }
drill bit  See drill.  { 'drill , bit }
drill cable  [ENG] A cable used to pull up drill rods, casing, and other drilling equipment used in making a borehole.  { 'dril , ka-bal }
drill capacity  [MECH ENG] The length of drill rod of specified size that the hoist on a diamond or rotary drill can lift or that the brake can hold on a single line.  { 'dril , ka-pas-ad-e }
drill carriage  [MECH ENG] A platform or frame on which several rock drills are mounted and which moves along a track, for heavy drilling in large tunnels. Also known as jumbo.  { 'dril , kar-ar }
drill chuck  [DES ENG] A chuck for holding a drill or other cutting tool on a spindle.  { 'dril , chak }
drill collar  [DES ENG] A ring which holds a drill bit and gives it radial location with respect to a bearing.  { 'dril , ka-lar }
drill cuttings  [ENG] Cuttings of rock and other subterranean materials brought to the surface during the drilling of wellholes.  { 'dril , kad-arz }
drill drift  [ENG] A steel wedge used to remove tapered shank tools from spindles, sockets, and sleeves.  { 'dril , drift }
drilled caisson  [CIV ENG] A drilled hole filled with concrete and lined with a cylindrical steel casing if needed.  { 'drilld , ka-san }
driller  [ENG] A person who operates a drilling machine.  [MECH ENG] See drilling machine.  { 'dril-ar }
drill extractor  [ENG] A tool for recovering broken drill pieces or a detached drill from a borehole.  { 'dril ik, strak-tar }
drill feed  [MECH ENG] The mechanism by which the drill bit is fed into the borehole during drilling.  { 'dril , fed }
drill fittings  [ENG] All equipment used in a borehole during drilling. Also known as downhole equipment.  { 'dril , fid-ij }
drill floor  [ENG] A work area covered with planks around the collar of a borehole at the base of a drill tripod or derrick.  { 'dril , fle-or }
drill footage  [ENG] The lineal feet of borehole drilled.  { 'dril , fad-ar }
drill gage  [DES ENG] A thin, flat steel plate that has accurate holes for many sizes of drills; each hole, identified as to drill size, enables the diameter of a drill to be checked.  [ENG] Diameter of a borehole.  { 'dril , gai }
drill grinding gage  [DES ENG] A tool that checks the angle and length of a twist drill while grinding it. Also known as drill angle gage; drill point gage.  { 'dril, grind-ar, gai }
drill hole  [ENG] A hole created or enlarged by a drill or auger. Also known as borehole.  { 'dril , hol }
drill-hole logging  See borehole logging.  { 'dril , hol , pad-ar-n }
drill-hole pattern  [ENG] The number, position, angle, and depth of the shot holes forming the round in the face of a tunnel or sinking pit.  { 'dril , hol , pad-ar-n }
drill-hole survey  See borehole survey.  { 'dril , hol , sar, va }
drilling  [ENG] The creation or enlarging of a hole in a solid material with a drill.  { 'dril-ar }
drilling column  [ENG] The column of drill rods, with the drill bit attached to the end.  { 'dril-ar , kai-arn }
drilling machine  [MECH ENG] A device, usually motor-driven, fitted with an end cutting tool that is rotated with sufficient power either to create a hole or to enlarge an existing hole in a solid material. Also known as driller.  { 'dril-ar, ma, shen }
drilling platform  [ENG] The structural base upon which the drill rig and associated equipment is mounted during the drilling operation.  { 'dril-ar , plat, form }
drilling rate  [MECH ENG] The number of linear feet drilled per unit of time.  { 'dril-ar , rat }
drilling time  [ENG] 1. The time required in rotary drilling for the bit to penetrate a specified thickness (usually 1 foot) of rock.  2. The actual time the drill is operating.  { 'dril-ar , tim }
drilling time log  [ENG] Foot-by-foot record of how fast a formation is drilled.  { 'dril-ar , tim , laj }
drill jig  [MECH ENG] A device fastened to the
work in repetition drilling to position and guide the drill. (**dril, lág**)

**drill log**  [ENG]  1. A record of the events and features of the formations penetrated during boring. Also known as boring log.  2. A record of all occurrences during drilling that might help in a complete logging of the hole or in determining the cost of the drilling. (**dril, lág**)

**drill out**  [ENG]  1. To complete one or more boreholes.  2. To penetrate or remove a borehole obstruction.  3. To locate and delineate the area of a subsurface ore body or of petroleum by a series of boreholes. (**dril, 'aút**)

**drill-over**  [ENG]  The act or process of drilling around a casing lodged in a borehole. (**dril, 'ov-er**)

**drill point gage**  See drill grinding gage. (**dril, 'punt, gā**)

**drill press**  [MECH ENG]  A drilling machine in which a vertical drill moves into the work, which is stationary. (**dril, pres**)

**drill rod**  [ENG]  The long rod that drives the drill bit in drilling boreholes. (**dril, 'rād**)

**drill sleeve**  [ENG]  A tapered, hollow steel shaft designed to fit the tapered shank of a cutting tool to adapt it to the drill press spindle. (**dril, slēv**)

**drill socket**  [ENG]  An adapter to fit a tapered drill shaft to a taper hole that is larger than that in the drill press spindle. (**dril, sāk-at**)

**drill string**  [MECH ENG]  The assemblage of drill rods, core barrel, and bit, or of drill rods, drill collars, and bit in a borehole, which is connected to and rotated by the drill collar of the borehole. (**dril, strīn**)

**drip cap**  [BUILD]  A horizontal molding installed over the frame for a door or window to direct water away from the frame. (**drip, 'kap**)

**drip edge**  [BUILD]  A metal strip that extends beyond the other parts of the roof and is used to direct rainwater off. (**drip, 'ēj**)

**drive**  [ELECTR]  See excitation.  [MECH ENG]  The means by which a machine is given motion or power (as in steam drive, diesel-electric drive), or by which power is transferred from one part of a machine to another (as in gear drive, belt drive). (**driv**)

**drive-by-wire**  [MECH ENG]  Electronic throttle control in automobiles. (**driv bī 'wīr**)

**drive chuck**  [MECH ENG]  A mechanism at the lower end of a diamond-drill drive rod on the swivel head by means of which the motion of the drive rod can be transmitted to the drill string. (**driv, chak**)

**drive fit**  [DES ENG]  A fit in which the larger (male) part is pressed into a smaller (female) part; the assembly must be effected through the application of an external force. (**driv, fit**)

**drivehead**  [ENG]  A cap fitted over the end of a mechanical part to protect it while it is being driven. (**driv, hed**)

**driveline**  [MECH ENG]  In an automotive vehicle, the group of parts, including the universal joint and the drive shaft, that connect the transmission with the driving wheels. (**driv, ln**)

**droop governor**  [MECH ENG]  A device, such as a sea anchor, usually shaped like a funnel or cone and dragged or towed behind a boat or seaplane for deceleration, stabilization, or speed control.  2. A current-measuring assembly consisting of a weighted current cross, sail, or parachute and an attached surface buoy. Also known as drag anchor, sea anchor. (**drouch**)

**drop governor**  [MECH ENG]  A governor whose equilibrium speed decreases as the load on the
drop ball

machinery controlled by the governor increases.

`drępˌ gaˌvar-nər`

drop ball  [ENG] A ball, weighing 3000–4000 pounds (1400–1800 kilograms), dropped from a crane through about 20–33 feet (6–10 meters) onto oversize quarry stones left after blasting; this method is used to avoid secondary blasting.

`drępˌ bół`

drop bar  [ELEC] Protective device used to ground a high-voltage capacitor when opening a door.  [MECH ENG] A bar that guides sheets of paper into a printing or folding machine.

`drępˌ bær`

drop hammer  See pile hammer.  `

`drępˌ ham-ər`

droplet condensation  [THERMO] The formation of numerous discrete droplets of liquid on a wall in contact with a vapor, when the wall is cooled below the local vapor saturation temperature and the liquid does not wet the wall.  

`drępˌ latˌ kānˌdan-sāˈshan`

dropout  [ELEC] Of a relay, the maximum current, voltage, power, or such, at which it will release from its energized position.  [ELECTR] A reduction in output signal level during reproduction of recorded data, sufficient to cause a processing error.

`drępˌ āutˌ ārər`

dropout error  [ELECTR] Loss of a recorded bit or any other error occurring in recorded magnetic tape due to foreign particles on or in the magnetic coating or to defects in the backing.

`drępˌ āutˌ ārər`

drop press  See punch press.

`drępˌ pres`

drop repeater  [ELECTR] Microwave repeater that is provided with the necessary equipment for local termination of one or more circuits.

`dręp r. pędˌar`

drop siding  [BUILD] Building siding with a ship-lap joint.

`drępˌ sildˌiəj`

dropsonde  [ENG] A radiosonde dropped by parachute from a high-flying aircraft to measure weather conditions and report them back to the aircraft. Also known as dropwindsonde.  

`drępˌsānd`

dropsonde dispenser  [ENG] A chamber from which dropsonde instruments are released from weather reconnaissance aircraft, used only for some models of equipment, ejection chambers being used for others.

`drępˌsānd dąˈspenˌsar`

drop spillway  [CIV ENG] A spillway usually less than 20 feet (6 meters) high having a vertical downstream face, and water drops over the face without touching the face.

`drępˌ sīplˌwa`

drop vent  [ENG] In a plumbing system, a type of vent that is connected to a drain or vent pipe at a point below the fixture it is serving.

`drępˌ vent`

dropwindsonde  See dropsonde.

`drępˌwindˌ sānd`

dropwise condensation  [THERMO] Condensation of a vapor on a surface in which the condensate forms into drops.

`drępˌ wizˌ kānˌdan-sāˈshan`

dromometer  [ENG] An instrument used to measure the amount of dew deposited on a given surface.

`drō₂ˌsamˌ adˌər`

drum  [CHEM ENG] Tower or vessel in a refinery into which heated products are conducted so that volatile portions can separate.  [DES ENG] 1. A hollow, cylindrical container. 2. A metal cylindrical shipping container for liquids having a capacity of 12–110 gallons (45–416 liters).  [ELECTR] A computer storage device consisting of a rapidly rotating cylinder with a magnetizable external surface on which data can be read or written by many read/write heads floating a few millionths of an inch off the surface. Also known as drum memory; drum storage; magnetic drum; magnetic drum storage.  

`drąm`

drum brake  [MECH ENG] A brake in which two curved shoes fitted with heat- and wear-resistant linings are forced against the surface of a rotating drum.

`drąmˌ brąk`

drum cam  [MECH ENG] A device consisting of a drum with a contoured surface which communicates motion to a cam follower as the drum rotates around an axis.

`drąmˌ kam`

drum dryer  [MECH ENG] A machine for removing water from substances such as milk, in which a thin film of the product is moved over a turning steam-heated drum and a knife scrapes it from the drum after moisture has been removed.

`drąmˌ dfrˌar`

drum feeder  [MECH ENG] A rotating drum with vanes or buckets to lift and carry parts and drop them into various orienting or chute arrangements. Also known as tumbler feeder.

`drąmˌ fedˌar`

drum filter  [MECH ENG] A cylindrical drum that rotates through thickened ore pulp, extracts liquid by a vacuum, and leaves solids, in the form of a cake, on a permeable membrane on the drum end. Also known as rotary filter, rotary vacuum filter.

`drąmˌ filˌtar`

drum gate  [CIV ENG] A movable crest gate in the form of an arch hinged at the apex and operated by reservoir pressure to open and close a spillway.

`drąmˌ gät`

drum memory  See drum.

`drąm ˈmemˌrē`

drum meter  See liquid-sealed meter.

`drąmˌ mēdˌar`

drum plotter  [ENG] A graphics output device that draws lines with a continuously moving pen on a sheet of paper rolled around a rotating drum that moves the paper in a direction perpendicular to the motion of the pen.

`drąmˌ pladˌar`

drum storage  See drum.

`drąmˌ stōrˌiəj`

drum trap  [ENG] In plumbing, a trap in the form of a cylinder with a vertical axis that is fitted with a removable cover plate.

`drąmˌ trap`

drum-type boiler  See bent-tube boiler.

`drąmˌ tipˌboiˌar`
dry abrasive cutting  [MECH ENG] Frictional cutting using a rotary abrasive wheel without the use of a liquid coolant. (ˈdriˌə,brəˈsitv ˈkoʊd-ən])

dry-back boiler See scotch boiler. (ˈdriˌbækˈbɔrˈlə) 

dry blast cleaning  [ENG] Cleaning of metallic surfaces by blasting with abrasive material traveling at a high velocity, abrasive may be accelerated by an air nozzle or a centrifugal wheel. (ˈdriˌblasˈklen-ən])

dry-box process  [CHEM ENG] The passing of coke-oven or other industrial gases through boxes containing trays of iron oxide coated on wood shavings or other supporting material in order to remove hydrogen sulfide. (ˈdriˌbɔksˈprəs-əs])

dry-bulb thermometer  [ENG] An ordinary thermometer, especially one with an unmoistened bulb, not dependent upon atmospheric humidity. (ˈdriˌbalbˈtohrˌməd-ər])

dry cargo  [IND ENG] Nonliquid cargo, including minerals, grain, boxes, and drums. (ˈdriˌkærˈgō)

dry cell  [ELEC] A voltage-generating cell having an immobilized electrolyte. (ˈdriˌsel])

dry-chemical fire extinguisher  [CHEM ENG] A dry powder, consisting principally of sodium bicarbonate, which is used for extinguishing small fires, especially electrical fires. (ˈdriˌkiˌməˌkālˈfīrˌikˌstīŋˌgwōˈshər])

dry cleaning  [ENG] To utilize dry-cleaning fluid to remove stains from textile. (ˈdriˌklen-ən])

dry coloring  [CHEM ENG] A configuration of solid plastic particles with dyed and pigmented. (ˈdriˌpιˌpιˌsiˌsəm-ət])

dry cooling tower  [MECH ENG] A structure in which water is cooled by circulation through finned tubes, transferring heat to air passing over the fins, there is no loss of water by evaporation because the air does not directly contact the water. (ˈdriˌkəlˌənˌtər])

dry course  [BUILD] An initial roofing course of felt or paper not bedded in tar or asphalt. (ˈdriˌkɔrs)

dry desiccant dehydration  [CHEM ENG] Use of silica gel or other solid absorbent to remove liquids from gases, such as water from air, or liquid hydrocarbons from natural gas. (ˈdriˌdesəˈkantˌdēˈhɪdrəˈʃən])

dry-disk rectifier See metallic rectifier. (ˈdriˌdiskˌrekˈtaˌfər])

dry dock  [CIV ENG] A dock providing support for a vessel and a means for removing the water so that the bottom of the vessel can be exposed. (ˈdriˌdɔk) 

dry-dock caisson  [CIV ENG] The floating gate to a dry dock. Also known as caisson. (ˈdriˌdɔksˈkæˌsən])

dry friction  [MECH ENG] Resistance between two dry solid surfaces, that is, surfaces free from contaminating fluids. (ˈdriˌfrəkˈʃən)

dry grinding  [ENG] Reducing particle sizes without a liquid medium. (ˈdriˌgrənd-ən])

dry hole  [ENG] A hole driven without the use of water. (ˈdriˌhəl)

drying oven  [ENG] A closed chamber for drying an object by heating at relatively low temperatures. (ˈdriˌiŋˌəvən)

dry klin  [ENG] A heated room or chamber used to dry and season cut lumber. (ˈdriˌklīn)

dry limestone process  [CHEM ENG] An air-pollution control method in which sulfur oxides are exposed to limestone to convert them to disposable residues. (ˈdriˌlimˌstənˌprəs-əs])

dry machining  [MECH ENG] Cutting, drilling, and grinding operations in which the use of a cutting fluid (lubricant) has been eliminated. (ˈdriˌməˌshən-ən])

dry measure  [MECH ENG] A measure of volume for commodities that are dry. (ˈdriˌmezəˌrər])

dry mill  [MECH ENG] Grinding device used to powder or pulverize solid materials without an associated liquid. (ˈdriˌmil])

dry permeability  [ENG] A property of dried bonded sand to permit passage of gases while molten material is poured into a mold. (ˈdriˌpəˌməˌeˌbəlˌadˌe])

dry pint See pint. (ˈdriˌpɪnt)

dry pipe  [MECH ENG] A perforated metal pipe above the normal water level in the steam space of a boiler which prevents moisture or extraneous matter from entering steam outlet lines. (ˈdriˌpɪp)

dry-pipe system  [ENG] A sprinkler system that admits water only when the air it normally contains has been vented; used for systems subjected to freezing temperatures. (ˈdriˌpιˌpιˌsiˌsəm-ət])

dry-pit pump  [MECH ENG] A pump operated with the liquid conducted to and from the unit by piping. (ˈdriˌpitˌpimp)

dry plasma etching See plasma etching. (ˈdriˌpləˈməz-ə)

dry pressing  [ENG] Molding clayware by compressing moist clay powder in metal dies. (ˈdriˌprəs-ən])

dry pt See pint. (ˈdriˌpɪnt)

dry run  [ENG] Any practice test or session. (ˈdriˌrʌn]

Drysdale ac polar potentiometer  [ENG] A potentialmeter for measuring alternating-current voltages in which the voltage is applied across a slide-wire supplied with current by a phase-shifting transformer; this current is measured by an ammeter and brought into phase with the unknown voltage by adjustment of the transformer rotor, and the unknown voltage is measured by observation of the slide-wire setting for a null indication of a dial calibration galvanometer. (ˈdriˌdɔlˌsleɪˌəˌpəˈlər ˌpəˌtenˌkəˈlemˌədˌər])

dry sieving  [ENG] Particle-size distribution analysis of powdered solids, the sample is on the top sieve screen of a nest (stack), with
mesh openings decreasing in size from the top to the bottom of the nest. {\textit{dry sleeve}}

**dry sleeve [MECH ENG]** A cylinder liner which is not in contact with the coolant. {\textit{dry sleeve}}

**dry spot [CHEM ENG]** 1. An open area of an incomplete surface film on laminated plastic. 2. A section of laminated glass where the interlayer and glass are not bonded. {\textit{dry spot}}

**dry-steam drum [MECH ENG]** 1. Pressurized chamber into which steam flows from the steam space of a boiler drum. 2. That portion of a two-stage furnace that extends forward of the main combustion chamber; fuel is dried and gasified therein, with combustion of gaseous products accomplished in the main chamber, the refractory walls of the Dutch oven are sometimes water-cooled. {\textit{dry-steam drum}}

**dry-steam energy system [ENG]** 1. A geothermal energy source that produces superheated steam. 2. A hydrothermal convective system driven by vapor with a temperature in excess of 300°F (150°C). {\textit{dry-steam energy system}}

**dry storage [MECH ENG]** Cold storage in which refrigeration is provided by chilled air. {\textit{dry storage}}

**dry strength [ENG]** The strength of an adhesive joint determined immediately after drying under specified conditions or after a period of conditioning in the standard laboratory atmosphere. {\textit{dry strength}}

**dry test meter [ENG]** Gas-flow rate meter with two compartments separated by a movable diaphragm which is connected to a series of gears that actuate a dial; when one chamber is full, a valve switches to the other, empty chamber, used to measure household gas flow rates and to calibrate flow-measurement instruments. {\textit{dry test meter}}

**dry ticket [IND ENG]** Tank inspection form signed by shore and ship officers before loading and after discharging the ship. {\textit{dry ticket}}

**dry wall [BUILD]** A wall covered with wallboard, in contrast to plaster. [ENG] A wall constructed of rock without cementing material. {\textit{dry wall}}

**dry well [CIV ENG]** 1. A well that has been completely drained. 2. An excavated well filled with broken stone and used to receive drainage when the water percolates into the soil. 3. Compartment of a pumping station in which the pumps are housed. {\textit{dry well}}

**Drzewiecki theory [MECH ENG]** In theoretical investigations of windmill performance, a theory concerning the air forces produced on an element of the blade. {\textit{Drzewiecki theory}}

**DS** See Doppler sonar.

**Dualayer distillate process [CHEM ENG]** A process for the removal of mercaptan and oxygenated compounds from distillate fuel oils; treatment is with concentrated caustic Dualayer solution and electrical precipitation of the impurities. {\textit{Dualayer distillate process}}

**Dualayer solution [CHEM ENG]** A concentrated potassium or sodium hydroxide solution containing a solubilizer, used in the Dualayer distillate process. {\textit{Dualayer solution}}

**dual-bed dehumidifier [MECH ENG]** A sorbent dehumidifier with two beds; one bed dehumidifies while the other bed is reactivating, thus providing a continuous flow of air. {\textit{dual-bed dehumidifier}}

**dual-channel amplifier [ENG ACOUS]** An audio-frequency amplifier having two separate amplifiers for the two channels of a stereophonic sound system, usually operating from a common power supply mounted on the same chassis. {\textit{dual-channel amplifier}}

**dual control [CONT SYS]** An optimal control law for a stochastic adaptive control system that gives a balance between keeping the control errors and the estimation errors small. {\textit{dual control}}

**dual-flow oil burner [MECH ENG]** An oil burner with two sets of tangential slots in its atomizer for use at different capacity levels. {\textit{dual-flow oil burner}}

**dual-fuel engine [MECH ENG]** Internal combustion engine that can operate on either of two fuels, such as natural gas or gasoline. {\textit{dual-fuel engine}}

**dual-gravity valve [CHEM ENG]** A float-operated valve that operates on the interface between two immiscible liquids of different specific gravities. {\textit{dual-gravity valve}}

**dual-in-line package [ELECTR]** Microcircuit package with two rows of seven vertical leads that are easily inserted into an etched circuit board. Abbreviated DIP. {\textit{dual-in-line package}}

**dual meter [ENG]** Meter constructed so that two aspects of an electric circuit may be read simultaneously. {\textit{dual meter}}

**dual-mode control [CONT SYS]** A type of control law which consists of two distinct types of operation, in linear systems, these modes usually consist of a linear feedback mode and a bang-bang-type mode. {\textit{dual-mode control}}

**dual-track tape recorder** See double-track tape recorder. {\textit{dual-track tape recorder}}

**dub [ENG ACOUS]** 1. To transfer recorded material from one recording to another, with or without the addition of new sounds, background music, or sound effects. 2. To combine two or more sources of sound into one record. 3. To add a new sound track or new sounds to a motion picture film, or to a recorded radio or television production. {\textit{dub}}

**Dubbs cracking [CHEM ENG]** A continuous, liquid-phase, thermal cracking process. {\textit{Dubbs cracking}}

**dub [ENG]** A shaking type of combination loader and conveyor whose loading end is generally shaped like a duck's bill. {\textit{dub}}

**duckbill [MECH ENG]** A section of laminated glass where the interlayer and glass are not bonded. {\textit{duckbill}}

**duckfoot [ENG]** In a piping system, a support fitted to the bend of a vertical pipe to permit the direct load of the pipework and fittings to be transferred to the floor, foundation, or associated installations. {\textit{duckfoot}}
duct [MECH ENG] A fluid flow passage which may range from a few inches in diameter to many feet in rectangular cross section, usually constructed of galvanized steel, aluminum, or copper, through which air flows in a ventilation system or to a compressor, supercharger, or other equipment at speeds ranging to thousands of feet per minute. (dakt)
ducted fan [MECH ENG] A propeller or multibladed fan inside a coaxial duct or cowling. Also known as ducted propeller, shrouded propeller. (ˈdak-tad ′fan)
ducted propeller See ducted fan. (ˈdak-tad ′pra-pel-ar)
ductile fracture See fibrous fracture. (ˈdak-tal"
Dufour effect [THERMO] Energy flux due to a mass gradient occurring as a coupled effect of irreversible processes. (ˈdy-för ′i-fikt)
Dufour number [THERMO] A dimensionless number used in studying thermomixing, equal to the increase in enthalpy of a unit mass during isothermal mass transfer divided by the enthalpy of a unit mass of mixture. Symbol Du. (ˈdy- for ′na-nam-bar)
Duhem-Margules equation [THERMO] An equation showing the relationship between the two constituents of a liquid-vapor system and their partial vapor pressures
\[
\frac{d \ln p_x}{d \ln p_y} = \frac{d \ln x_y}{d \ln x_x}
\]
where \(x_x\) and \(x_y\) are the mole fractions of the two constituents, and \(p_x\) and \(p_y\) are the partial vapor pressures. (ˈdoöm ˈmär-ə-ˈɡə-ˌlēz iˌkwe-zhan)
Dukler theory [CHEM ENG] Relationship of velocity and temperature distribution in thin films on vertical walls, used to calculate eddy viscosity and thermal conductivity near the solid boundary. (ˈduk-lər ′the-ə-ˈrei)
Dulong-Petit law [THERMO] The law that the product of the specific heat per gram and the atomic weight of many solid elements at room temperature has almost the same value, about 6.3 calories (264 joules) per degree Celsius. (ˈdoöləng ˈpa-tē ′lo)
Dulong's formula [ENG] A formula giving the gross heating value of coal in terms of the weight fractions of carbon, hydrogen, oxygen, and sulfur from the ultimate analysis. (ˈdoölən ˈfor-mə-lə)
DUMAND See deep underwater muon and neutrino detector. (ˈdəu ˈman-dənd)
dumb iron [ENG] 1. A rod for opening seams prior to caulking. 2. A rigid connector between the frame of a motor vehicle and the spring shackle. (ˈdəm ˈtər-nərn)
dumbwaiter [MECH ENG] An industrial elevator which carries small objects but is not permitted to carry people. (ˈdəm-wātər)
dummy [ENG] Simulating device with no operating features, as a dummy heat coil. (ˈdəm-ə)
dummy joint [ENG] A groove cut into the top half of a concrete slab, sometimes packed with filler, to form a line where the slab can crack with only minimum damage. (ˈdəm-ə ˈjoint)
dump baller [ENG] A cylindrical vessel designed to deliver cement or water into a well which otherwise might cave in if fluid was poured from the top. (ˈdamp ˈba-lər)
dump bucket [MECH ENG] A large bucket with movable discharge gates at the bottom, used to move soil or other construction materials by a crane or cable. (ˈdamp ˈba-kat)
dump car [MECH ENG] Any of several types of narrow-gage rail cars with bodies which can easily be tipped to dump material. (ˈdamp ˈkær)
dump tank See measuring tank. (ˈdamp ˈtaink)
dump truck [ENG] A motor or hand-propelled truck for hauling and dumping loose materials, equipped with a body that discharges its contents by gravity. (ˈdamp ˈtræk)
dump valve [ENG] A large valve located at the bottom of a tank or container used in emergency situations to empty the tank quickly, for example, to jettison fuel from an airplane fuel tank. (ˈdamp ˈvalv)
dumpy level [ENG] A surveyor’s level which has a telescope with its level tube rigidly attached to a vertical spindle and is capable only of horizontal rotary movement. (ˈdamp-ə ˈlev-əl)
dunking sonar See dipping sonar. (ˈdəŋk-ən ˈso-nər)
dunnage [ENG] A configuration of members that forms a structural support for a cooling tower or similar appendage to a building but is not part of the building itself. (ˈdən ˈe-j"
duplex [ENG] Consisting of two parts working together or in a similar fashion. (ˈdəp-əks)
duplexed system [ENG] A system with two distinct and separate sets of facilities, each of which is capable of assuming the system function while the other assumes a standby status. Also known as redundant system. (ˈdəp-əklst ˈsi-stəm)
duplex lock [DES ENG] A lock with two independent pin-tumbler cylinders on the same bolt. (ˈdəp-əklst ˈlək)
duplex operation [ENG] In radar, a condition of operation when two identical and interchangeable equipments are provided, one in an active state and the other immediately available for operation. (ˈdəp-əklst ˈap-ər-ən-
duplex pump [MECH ENG] A reciprocating pump with two parallel pumping cylinders. (ˈdəp-əklst ˈpʌmp)
duplex tandem compressor [MECH ENG] A compressor having cylinders on two parallel frames connected through a common crankshaft. (ˈdəp-əklst ˈkempər-ər)
duplicate cavity plate [ENG] In plastics molds, the removable plate in which the molding cavities are retained, used in operating where two plates are necessary for insert loading. (ˈdup-ək-lat ˈkav-əd-əl ˈplæt)
Dupré equation [THERMO] The work WLS done
durability

by adhesion at a gas-solid-liquid interface, expressed in terms of the surface tensions $\gamma$ of the three phases, is $W_{LS} = \gamma_{GS} + \gamma_{GL} - \gamma_{LS}$. (dúrˈbælˈdʒərəz)

durability [ENG] The quality of equipment, structures, or goods of continuing to be useful after an extended period of time and usage. (dúrˈbælˈdʒərəz)

durable goods [ENG] Products whose usefulness continues for a number of years and that are not consumed or destroyed in a single usage. Also known as durables; hard goods. (dúrˈbælˈgùdz)

durables See durable goods. (dúrˈbælˈgùdz)

duration [MECH] A basic concept of kinetics which is expressed quantitatively by time measured by a clock or comparable mechanism. (dʊˈreɪʃən)

durometer hardness [ENG] The hardness of a material as measured by a durometer. (dʊˈrɛtərˈmɛnt)

durometer [ENG] An instrument consisting of a small drill or blunt indenter point under pressure, used to measure hardness of metals and other materials. (dʊˈrɛtərˈmɛnt)

durometers hardness [ENG] The hardness of a material as measured by a durometer. (dʊˈrɛtərˈmɛnt)

dust chamber [ENG] A chamber through which gases pass to permit deposition of solid particles for collection. Also known as ash collector; dust collector. (dʌstˈkæmˌbær)

dust collector See dust chamber. (dʌstˈkæmˌbær)

dust control system [ENG] System to capture, settle, or inert dusts produced during handling, drying, or other process operations, considered important for safety and health. (dʌstˈkɔnˌtrəlˌsɪstəm)

dust counter [ENG] A photoelectric apparatus which measures the size and number of dust particles per unit volume of air. Also known as Kern counter. (dʌstˈkɔntər)

dust-counting microscope [ENG] A microscope equipped for quantitative dust sample analysis; magnification is usually 100x. (dʌstˈkɔntɪŋˈmaɪˈrəskəʊp)

dust explosion [ENG] An explosion following the ignition of flammable dust suspended in the air. (dʌstˈɪkˈsplɔrˈzən)

dust filter [ENG] A gas-cleaning device using a dry or viscous-coated fiber or fabric for separation of particulate matter. (dʌstˈfɪltər)

dust separator [ENG] Device or system to remove dust from a flowing stream of gas, includes electrostatic precipitators, wet scrubbers, bag filters, screens, and cyclones. (dʌstˈsepəˈreɪtər)

Dutch door [BUILD] A door with upper and lower parts that can be opened and closed independently. (dʌtʃ 'dɔr)

dutchman [ENG] A filler piece for closing a gap between two pipes or between a pipe or fitting and a piece of equipment, if the pipe is too short to achieve closure or if the pipe and equipment are not aligned. (dʌtʃˈmæn)

Dutchman's log [ENG] A buoyant object thrown overboard to determine the speed of a vessel; the time required for a known length of the vessel to pass the object is measured, and the speed can then be computed. (dʌtʃˈmænz 'læg)

Dutch process [CHEM ENG] A process for making white lead, metallic lead is placed in vessels containing a dilute acetic acid, and the vessels are stacked in bark or manure. (dʌtʃˈprəʊsəz)

duty cycle [ELECTR] See duty ratio. (dəˈtjuːriˈsɔr)

duty ratio [ENG] 1. The time intervals devoted to starting, running, stopping, and idling when a device is used for intermittent duty. 2. The ratio of working time to total time for an intermittently operating device, usually expressed as a percent. Also known as duty factor. (dəˈtjuːriˈsɔr)

duty cyclometer [ENG] Test meter which gives direct reading of duty cycle. (dəˈtjuːriˈsɔr)

Dvorak keyboard [ENG] A keyboard whose layout is altered from that of the standard qwerty keyboard to speed up typing; more of the frequently used keys are on the home row. (dəˌvɔrəkˌkeɪˈbrɔd)

dwell [DES ENG] That part of a cam that allows the cam follower to remain at maximum lift for a period of time. (dəˈvəʊl)

dwell angle See dwell. (dəˈvɔlˌæŋˈgəl)

dwt See pennyweight. (dəˈwʌt)

DX coil See direct-expansion coil. (dəˈdɛksˌkoʊl)

dye [ENG] A process of adding a color to material, usually fibrous or film, in order to impart a degree of color permanence demanded by the projected end use. (dɪˈɪdʒ)

dynamical similarity [MECH] Two flow fields are dynamically similar if one can be transformed into the other by a change of length and velocity scales. All dimensionless numbers of the flows must be the same. (dɪˈnæməlˈsɪməˈlærədˈɪdʒ)

dynamical variable [MECH] One of the quantities used to describe a system in classical mechanics, such as the coordinates of a particle, the components of its velocity, the momentum, or functions of these quantities. (dɪˈnæməlˈvərəˈeɪtərˈdɪdʒ)

dynamic augment [MECH ENG] Force produced by unbalanced reciprocating parts in a steam locomotive. (dɪˈnæməkˈæŋˈmənt)

dynamic balance [MECH] The condition which exists in a rotating body when the axis about which it is forced to rotate, or to which reference is made, is parallel with a principal axis of inertia; no products of inertia about the center of gravity of the body exist in relation to the selected rotational axis. (dɪˈnæməkˈæŋˈbæləns)

180
dynamic behavior  [ENG] A description of how a system or an individual unit functions with respect to time.  {dī'nam-ik ˈbōd-ˈēv-ər}
dynamic braking  [MECH] A technique of electric braking in which the retarding force is supplied by the same machine that originally was the driving motor.  {dī'nam-ik ˈbrāk-ɪŋ}
dynamic check  [ENG] Check used to ascertain the correct performance of some or all components of equipment or a system under dynamic or operating conditions.  {dī'nam-ik ˈček}
dynamic compressor  [MECH ENG] A compressor which uses rotating vanes or impellers to impart velocity and pressure to the fluid.  {dī'nam-ik kəmˈprɛs-ər}
dynamic creep  [MECH] Creep resulting from fluctuations in a load or temperature.  {dī'nam-ik ˈkrep}
dynamic equilibrium  [MECH] The condition of any mechanical system when the kinetic reaction is regarded as a force, so that the resultant force on the system is zero according to d’Alembert’s principle. Also known as kinetic equilibrium.  {dī'nam-ik ˈkɪn-ə-tik ˈɛqvələrənəm}
dynamic holdup  [CHEM ENG] Liquid held by a tank or process vessel, with constant introduction of fresh material and countering withdrawal of held material to maintain a constant liquid level.  {dī'nam-ik ˈhōld-əp}
dynamic leak test  [ENG] A type of leak test in which the vessel to be tested is evacuated and an external tracer gas is applied; an internal leak detector will respond if gas is drawn through any leaks.  {dī'nam-ik ˈlek test}
dynamic load  [CIV ENG] A force exerted by a moving body on a resisting member, usually in a relatively short time interval. Also known as energy load.  {dī'nam-ik ˈlōd}
dynamic loudspeaker  [ENG ACOUS] A loudspeaker in which the moving diaphragm is attached to a current-carrying voice coil that interacts with a constant magnetic field to give the in-and-out motion required for the production of sound waves. Also known as dynamic speaker; moving-coil loudspeaker.  {dī'nam-ik ˈlōd ˈspēk-ər}
dynamic microphone  [ENG ACOUS] A moving-conductor microphone in which the flexible diaphragm is attached to a coil positioned in the fixed magnetic field of a permanent magnet. Also known as moving-coil microphone.  {dī'nam-ik ˈmīˈkrɑˌfən}
dynamic model  [ENG] A model of an aircraft or other object which has its linear dimensions and its weight and moments of inertia reproduced in scale in proportion to the original.  {dī'nam-ik ˈmōdəl}
dynamic noise suppressor  [ENG ACOUS] An audio-frequency filter circuit that automatically adjusts its band-pass limits according to signal level, generally by means of reactance tubes; at low signal levels, when noise becomes more noticeable, the circuit reduces the low-frequency response and sometimes also reduces the high-frequency response.  {dī'nam-ik ˈnoiz ˈspəs-ər}
dynamic packing  [ENG] Any packing that operates on moving surfaces, in functioning, to retain fluid under pressure, they carry the hydraulic load and therefore operate like bearings.  {dī'nam-ik ˈpæk-ɪŋ}
dynamics  [MECH] That branch of mechanics which deals with the motion of a system of material particles under the influence of forces, especially those which originate outside the system under consideration.  {dī'nam-ik ˈdæktəməns}
dynamic sensitivity  [ENG] The minimum leak rate which a leak detector is capable of sensing.  {dī'nam-ik ˈsen-sə-tiv-əd-ət ˈdæktəməns}
dynamic similarity  [MECH ENG] A relation between two mechanical systems (often referred to as model and prototype) such that by proportional alterations of the units of length, mass, and time, measured quantities in the one system go identically (or with a constant multiple for each) into those in the other, in particular, this implies constant ratios of forces in the two systems.  {dī'nam-ik ˈsimplər-ə-ˈlær ˈdæktəməns}
dynamic speaker  [ENG] A dynamic loudspeaker.
dynamic stability  [MECH] The characteristic of a body, such as an aircraft, rocket, or ship, that causes it, when disturbed from an original state of steady motion in an upright position, to damp the oscillations set up by restoring moments and gradually return to its original state. Also known as stability.  {dī'nam-ik ˈstæbəl-əd-ət ˈdæktəməns}
dynamical test  [ENG] A test conducted under active or simulated load.  {dī'nam-ik ˈtɛst}
dynamic time warping  [ENG ACOUS] In speech recognition, the operation of compressing or stretching the temporal pattern of speech signals to take speaker variations into account.  {dī'nam-ik ˈtīm wɔr-pɪŋ}
dynamic unbalance  [MECH ENG] Failure of the rotation axis of a piece of rotating equipment to coincide with one of the principal axes of inertia due to forces in a single axial plane and on opposite sides of the rotation axis, or in different axial planes.  {dī'nam-ik ˈwɒnˈbæl-əns}
dynamic work  [IND ENG] A sustained pattern of work that results in motion around an anatomical joint, for example, a handling or assembly task.  {dī'nam-ik ˈwɜrk}
dynamometer  [ENG] 1. An instrument in which current, voltage, or power is measured by the force between a fixed coil and a moving coil. 2. A special type of electric rotating machine used to measure the output torque or driving torque of rotating machinery by the elastic deformation produced.  {dīˈnəməˈmətər}
dyne  [MECH] The unit of force in the centimeter-gram-second system of units, equal to the force which imparts an acceleration of 1 cm/s² to a 1 gram mass.  {dīn}
This page intentionally left blank.
earthenware

earliest completion time  [IND ENG] The earliest time for completion of an activity or for the entire project, it equals the earliest start time of the final event included in the schedule.  {ˈər-\text{-}lē\text{-}əst \text{-}ˈfin\text{-}i\text{-}sh \text{-}ˌtim}

earliest start time  [IND ENG] The earliest time at which an activity may begin in the schedule of a project, it equals the earliest time that all predecessor activities can be completed.  {ˈər-\text{-}lē\text{-}əst \text{-}ˈstārt \text{-}ˌtim}

early finish date  [IND ENG] The earliest time that an activity can be completed.  {ˈər-\text{-}lē\text{-}ˈfin\text{-}ish \text{-}ˌdāt}

early start date  [IND ENG] The earliest time that an activity may begin in the schedule.  {ˈər-\text{-}lē \text{-}ˈstārt \ˌdāt}

earned value  [IND ENG] The budgeted cost of the work performed for a given project.  {ˈərd\text{-}vəl\text{-}yū}

earphone  [ENG ACOUS] 1. An electroacoustical transducer, such as a telephone receiver or a headphone, actuated by an electrical system and supplying energy to an acoustical system of the ear, the waveform in the acoustical system being substantially the same as in the electrical system.  2. A small, lightweight electroacoustic transducer that fits inside the ear, used chiefly with hearing aids.  {ˈɪr\text{-}fən}

earplug  [ENG] A device made of a pliable substance which fits into the ear opening; used to protect the ear from excessive noise or from water.  {ˈɪr\text{-}plag}

ear protector  [ENG] A device, such as a plug or ear muff, used to protect the human ear from loud noise that may be injurious to hearing, such as that of jet engines.  {ˈɪr \text{-}prə\text{-}tek\text{-}tər}

earth  See ground.  {ər\text{-}θ}

earth current  [ELEC] Return, fault, leakage, or stray current passing through the earth from electrical equipment. Also known as ground current.  {ˈər\text{-}θ \text{-}ko\text{-}rənt}

earth dam  [CIV ENG] A dam having the main section built of earth, sand, or rock, and a core of impervious material such as clay or concrete.  {ˈər\text{-}θ\text{-}dám}

earthware  [ENG] Ceramic products of natural clay, fired at 1742–2129°F (950–1165°C), that is slightly porous, opaque, and usually covered with a nonporous glaze.  {ˈər\text{-}than\text{-}wer}

earth inductor  [ENG] A type of inclinometer that has a coil which rotates in the earth's field and in which a voltage is induced when the rotation axis does not coincide with the field direction; used to measure the dip angle of the earth's magnetic field. Also known as dip inductor, earth inductor compass, induction inclinometer.  {ˈər\text{-}θ \text{-}in\text{-}dak\text{-}ˈtər}

earth inductor compass  See earth inductor.  {ˈər\text{-}θ \text{-}in\text{-}dak\text{-}ˈtər \ˌkam\text{-}ˈpæs}

earthmover  [MECH ENG] A machine used to excavate, transport, or push earth.  {ˈər\text{-}θ\text{-}muv\text{-}ər}

earth pressure  [CIV ENG] The pressure which exists between earth materials (such as soil or sediments) and a structure (such as a wall).  {ˈər\text{-}θ\text{-}presh\text{-}ər}

earthquake-resistant  [CIV ENG] Of a structure or building, able to withstand lateral seismic stresses at the base.  {ˈər\text{-}θ\text{-}kwák\text{-}r i\text{-}zis\text{-}ˈtɔnt}

earth thermometer  See soil thermometer.  {ˈər\text{-}θ\text{-}thər\text{-}mən\text{-}dəm\text{-}ər}

earthwork  [CIV ENG] 1. Any operation involving the excavation or construction of earth embankments.  2. Any construction made of earth.  {ˈər\text{-}θ\text{-}wərk}

easement  [CIV ENG] The right held by one person over another person's land for a specific use; rights of tenants are excluded.  {ˈɛz\text{-}mənt}

easement curve  [CIV ENG] A curve, as on a highway, whose degree of curvature is varied to provide a gradual transition between a tangent and a simple curve, or between two simple curves which it connects. Also known as transition curve.  {ˈɛz\text{-}mənt \ˈkɔrv}

eave  [BUILD] The border of a roof overhanging a wall.  {ɛv}

eaves board  [BUILD] A strip nailed along the eaves of a building to raise the end of the bottom course of tile or slate on the roof.  {ˈɛvz\text{-}bərd}

eaves molding  [BUILD] A cornicelike molding below the eaves of a building.  {ˈɛvz\text{-}məl\text{-}ˈdʒip}

Ebert ion counter  [ENG] An ion counter of the aspiration condenser type, used for the measurement of the concentration and mobility of small ions in the atmosphere.  {ˈəb\text{-}ərt \ˌi\text{-}ən \ˌkəʊnt\text{-}ər}

ebullating-bed reactor  [CHEM ENG] A type of fluidized bed in which catalyst particles are held in suspension by the upward movement of the
eccentric bit

liquid reactant and gas flow. Also known as slurry-bed reactor. 

**eccentric bit** [DES ENG] A modified chisel for drilling purposes having one end of the cutting edge extended further from the center of the bit than the other. (ēk'sen-trik 'bit')

**eccentric cam** [DES ENG] A cylindrical cam with the shaft displaced from the geometric center. (ēk'sen-trik 'cam')

**eccentric gear** [DES ENG] A gear whose axis deviates from the geometric center. (ēk'sen-trik 'gär')

**eccentricity** [MECH] The distance of the geometric center of a revolving body from the axis of rotation. (ēk'san-tris-adē)'

**eccentric load** [ENG] A load imposed on a structural member at some point other than the centroid of the section. (ēk'sen-trik 'lod')

**eccentric reducer** [ENG] A threaded or butt-welded fitting for pipes whose ends are not the same size and are eccentric to each other. (ēk'sen-trik rīdūs-'or')

**eccentric rotor engine** [MECH ENG] A rotary engine, such as the Wankel engine, wherein motion is imparted to a shaft by a rotor eccentric to the shaft. (ēk'sen-trik 'rōd-or en-'jan)

**eccentric signal** [ENG] A survey signal whose position is not in a vertical line with the station it is representing. (ēk'sen-trik 'sig-nal')

**eccentric station** [ENG] A survey point over which an instrument is centered and which is not positioned in a vertical line with the station it is representing. (ēk'sen-trik 'stā-shan')

**eccentric valve** [ENG] A rubber-lined slurry or fluid valve with an eccentric rotary cut-off body to reduce corrosion and wear on mechanical moving valve parts. (ēk'sen-trik 'valv')

ECDIS See electronic chart display and information system. (ēk'dis or 'ēk'sēdēlīs')

**echogram** [ENG] The graphic presentation of echo soundings recorded as a continuous profile of the sea bottom. (ēk'-ō 'gram)

**echograph** [ENG] An instrument used to record an echogram. (ēk'-ō graf)

**echo matching** [ENG] Rotating an antenna to a position in which the pulse indications of an echo-splitting radar are equal. (ēk'-ō 'mach-in)

**echo ranging** [ENG] Active sonar, in which underwater sound equipment generates bursts of ultrasonic sound and picks up echoes reflected from submarines, fish, and other objects within range, to determine both distance and direction to each target. (ēk'-ō 'rān-jīn)

**echo-ranging sonar** [ENG] Active sonar, in which underwater sound equipment generates bursts of ultrasonic sound and picks up echoes reflected from submarines, fish, and other objects within range, to determine both direction and distance to each target. (ēk'-ō 'rān-jīn 'sō-nār)

**echo recognition** [ENG] Identification of a sonar reflection from a target, as distinct from energy returned by other reflectors. (ēk'-ō, rek'-ig, nīsh-'ən)

**echo repeater** [ENG ACOUS] In sonar calibration and training, an artificial target that returns a synthetic echo by receiving a signal and retransmitting it. (ēk'-ō rē-pēd-or)

**echosonogram** [ENG] A graphic display obtained with ultrasound pulse-reflection techniques; for example, an echocardiogram. (ēk'-ō 'sān-, ā-grandam)

**echo sounder** See sonic depth finder. (ēk'-ō 'sān-dūd-ar)

**echo sounding** [ENG] Determination of the depth of water by measuring the time interval between emission of a sonic or ultrasonic signal and the return of its echo from the sea bottom. (ēk'-ō 'sān-dūd-'in)

**echo-splitting radar** [ENG] Radar in which the echo is split by special circuits associated with the antenna lobe-switching mechanism, to give two echo indications on the radarscope screen; when the two echo indications are equal in height, the target bearing is read from a calibrated scale. (ēk'-ō 'spīd-'in 'rād-ar)

**econometrics** [IND ENG] The application of mathematical and statistical techniques to the estimation of mathematical relationships for testing of economic theories and the solution of economic problems. (ēk'-ā-nā-mē-triks)

**economic life** [IND ENG] The number of years after which a capital good should be replaced in order to minimize the long-run annual cost of operation, repair, depreciation, and capital. Also known as project life. (ēk'-ō 'nām-ik 'lif)

**economic lot size** [IND ENG] The number of units of a product or item to be manufactured at each setup or purchased on each order so as to minimize the cost of purchasing or setup, and the cost of holding the average inventory over a given period, usually annual. Also known as project life. (ēk'-ō 'nām-ik 'lāt, 'sil-

**economic order quantity** [IND ENG] The number of orders required to fulfill the economic lot size. (ēk'-ō 'nām-ik 'ōr-'dār, 'kwān-'dē)

**economic purchase quantity** [IND ENG] The economic lot size for a purchased quantity. (ēk'-ō 'nām-ik 'pār-chās, 'kwān-'dē)

**economics** [IND ENG] A social science that deals with production, distribution, and consumption of commodities, or wealth. (ēk'-ō 'nām-iks or, ék'-ō 'nām-iks)

**economic tool life** [IND ENG] In metal machining, the total time, usually expressed in minutes, during which a given tool performs its required function under the most efficient cutting conditions. (ēk'-ō 'nām-ik 'tūl, 'sil-

**economizer** [ENG] A reservoir in a continuous-flow oxygen system in which oxygen exhaled by the user is collected for recirculation in the system. [MECH ENG] A forced-flow, once-through, convection-heat-transfer tube bank in which feedwater is raised in temperature on its way to the evaporating section of a steam boiler,
thus lowering flue gas temperature, improving boiler efficiency, and saving fuel. { ei·kán·ə·miz·ər }

economy [CHEM ENG] In a multiple-effect evaporation system, the total weight of water vaporized in an evaporator per unit weight of the original steam supplied. { ei·kán·ə·mè́ }  
ECR See electronic cash register. 

ED See electronic dummy.  
eddy conduction See eddy heat conduction. { 'ed·ë ,kàn ,dák·tiv·ad·ë }  
eddy conductivity [THERMO] The exchange coefficient for eddy heat conduction. { 'ed·ë ,kàn ,dák·tiv·ad·ë }  
eddy-current brake [MECH ENG] A control device or dynamometer for regulating rotational speed, as of flywheels, in which energy is converted by eddy currents into heat. { 'ed·ë ,kà-rànt ,brák }  
eddy-current clutch [MECH ENG] A type of electromagnetic clutch in which torque is transmitted by means of eddy currents induced by a magnetic field set up by a coil carrying direct current in one rotating member. { 'ed·ë ,kà-rànt ,kloch }  
eddy-current heating See induction heating. { 'ed·ë ,kà-rànt ,hëd·ë·g }  
eddy-current sensor [ENG] A proximity sensor which uses an alternating magnetic field to create eddy currents in nearby objects, and then the currents are used to detect the presence of the objects. { 'ed·ë ,kà-rànt 'sen·sar }  
eddy-current tachometer [ENG] A type of tachometer in which a rotating permanent magnet induces currents in a spring-mounted metal cylinder. The resulting torque rotates the cylinder and moves its attached pointer in proportion to the speed of the rotating shaft. Also known as drag-type tachometer. { 'ed·ë ,kà-rànt tə́kårn·əd·ə́r }  
eddy heat conduction [THERMO] The transfer of heat by means of eddies in turbulent flow, treated analogously to molecular conduction. Also known as eddy heat flux, eddy conduction. { 'ed·ë·hë́t kàn·dák·shän }  
eddy heat flux See eddy heat conduction. { 'ed·ë·hë́t ,fläks }  

Edeleanu process [CHEM ENG] A process for removal of compounds of sulfur from petroleum fractions by an extraction procedure utilizing liquid sulfur dioxide, or liquid sulfur dioxide and benzene. { ə́d·e·lē·në·nə́ˌnə́ˌpräs·ə́s }  
EDEL room [ENG ACOUS] A control room in a sound-recording studio in which reflective or diffusive surfaces are placed near the loudspeaker and above the mixing console, while the rear wall behind the mixer is made absorptive. Derived from LEDE room (by reverse spelling). { 'ed·əlˌrùm ar əˈgenresˌrùm }  
edge connector [ELECTR] A row of etched lines on the edge of a printed circuit board that is inserted into a slot to establish a connection with another printed circuit board. { 'éj kānek·tə́r }  
edge effect [ELEC] An outward-curving distortion of lines of force near the edges of two parallel metal plates that form a capacitor. { 'éj iˌfeḱt }  
edge runner See Chile mill. { 'éj ,ran·ə́r }  
Edison effect See thermionic emission. { 'ed·ə·san iˌfeḱt }  
eductor [ENG] 1. An ejectorlike device for mixing two fluids. 2. See ejector. { əˈdək·tə́r }  
effective area [CHEM ENG] Absolute or cross-sectional area of process media involved in the process, such as the actual area of filter media through which a fluid passes, or the available surface area of absorbent contacted by a gas or liquid. { əˈfek·tiv ˈer·ə́ }  
effective bandwidth [ELECTR] The bandwidth of an assumed rectangular band-pass having the same transfer ratio at a reference frequency as a given actual band-pass filter, and passing the same mean-square value of a hypothetical current having even distribution of energy throughout that bandwidth. { əˈfek·tiv ˈband·width }  
effective center [ENG ACOUS] In a sonar projector, the point where lines coincide with the direction of propagation, as observed at different points some distance from the projector, apparently intersect. Also known as apparent source. { əˈfek·tiv ˈsen·tar }  
effective confusion area [ENG] Amount of chaff whose radar cross-sectional area equals the radar cross-sectional area of the particular aircraft at a particular frequency. { əˈfek·tiv kanˌfyuˌzhən ər·ə́ }  
effective discharge area [DES ENG] A nominal or calculated area of flow through a pressure relief valve for use in flow formulas to determine valve capacity. { əˈfek·tiv ˈdisˌchärˌər·ə́ }  
effective force See inertial force. { əˈfek·tiv ˈförz }  
effective gun bore line [MECH] The line which a projectile should follow when the muzzle velocity of the antiaircraft gun is vectorially added to the aircraft velocity. { əˈfek·tiv ˈgænˌbôrˌlining }  
effective launcher line [MECH] The line along which the aircraft rocket would go if it were not affected by gravity. { əˈfek·tiv ˈlän·charˌlining }  
effective rake [MECH ENG] The angular relationship between the plane of the tooth face of the cutter and the line through the tooth point measured in the direction of chip flow. { əˈfek·tiv ˈræk }  
effective surface [ENG] In a heat exchanger, a surface that actively transfers heat. { əˈfek·tiv ˈsar·fas }  
effective thermal resistance [ELECTR] Of a semiconductor device, the effective temperature rise per unit power dissipation of a designated junction above the temperature of a stated external reference point under conditions of thermal equilibrium. Also known as thermal resistance. { əˈfek·tiv ˈθər·məl əˌnə́ˌʒiz·ə́ns }  
effector [CONT SYS] A motor, solenoid, or hydraulic piston that turns commands to a teleoperator into specific manipulatory actions. { əˈfek·tə́r }  
efficiency Abbreviated eff. [ENG] 1. Measure of
efficiency expert

calculating the degree of heat output per unit of fuel when all available oxidizable materials in the fuel have been burned. 2. Ratio of useful energy provided by a dynamic system to the energy supplied to it during a specific period of operation. [THERMO] The ratio of the work done by a heat engine to the heat energy absorbed by it. Also known as thermal efficiency. {ä'fish-an-sé}

ejector [MECH] A type of direct-contact condenser in which vacuum is maintained by high-velocity injection water. Condensates steam and discharges water, condensate, and noncondensables to the atmosphere. {ä'jek-tar kan,dem-sar}

ejector pin [ENG] A pin driven into the rear of a mold cavity to force the finished piece out. Also known as knockout pin. {ä'jek-tar pin}

ejector plate [ENG] The plate backing up the ejector pins and holding the ejector assembly together. {ä'jek-tar plat}

ejector rod [ENG] A rod that activates the ejector assembly of a mold when it is opened. {ä'jek-tar råd}

Ekman current meter [ENG] A mechanical device for measuring ocean current velocity which incorporates a propeller and a magnetic compass and can be suspended from a moored ship. {ek-man 'kört-e,med-ar}

Ekman dredge [ENG] A special type of dredge for sampling sediment that is fitted with opposable jaws operated by a messenger traveling down a cable to release a spring catch. {ek-man 'drei}

Ekman water bottle [ENG] A cylindrical tube fitted with plates at both ends and used for deep-water samplings, when hit by a messenger it turns 180°, closing the plates and capturing the water sample. {ek-man 'wöd-ar,bäd-al}

elastance [ELEC] The reciprocal of capacitance. {i'las-tans}

elastic [MECH] Capable of sustaining deformation without permanent loss of size or shape. {i'las-tik}

elastica [MECH] The elastic curve formed by a uniform rod that is originally straight, then bent in a principal plane by applying forces, and couples only at its ends. {i'las-ta-kö}

elastic aftereffect [MECH] The delay of certain substances in regaining their original shape after being deformed within their elastic limits. Also known as elastic lag. {i'las-tik 'ak-sas}

elastic axis [MECH] The lengthwise line of a beam along which transverse loads must be applied in order to produce bending only, with no torsion of the beam at any section. {i'las-tik 'båd-e}

elastic body [MECH] A solid body for which the additional deformation produced by an increment of stress completely disappears when the increment is removed. Also known as elastic solid. {i'las-tik 'båd-ar}

elastic buckling [MECH] An abrupt increase in the lateral deflection of a column at a critical load while the stresses acting on the column are wholly elastic. {i'las-tik 'båk-šin}

elastic center [MECH] That point of a beam in the plane of the section lying midway between the flexural center and the center of twist in that section. {i'las-tik 'sen-tar}

elastic collision [MECH] A collision in which the sum of the kinetic energies of translation of the participating systems is the same after the collision as before. {i'las-tik ka'lizh-an}
elastic constant [MECH] See compliance constant; stiffness constant.  \{ 'l'as-tik 'kam-stant \}
elastic curve [MECH] The curved shape of the longitudinalcentroidal surface of a beam when the transverse loads acting on it produced wholly elastic stresses.  \{ 'l'as-tik 'kəv \}
elastic deformation [MECH] Reversible alteration of the form or dimensions of a solid under stress or strain.  \{ 'l'as-tik ,də-ˈfar-ˈmə-shən \}
elastic design [CIV ENG] In the design of a structural member, a method of analysis based on a linear stress-strain relationship, with the assumption that the working stresses constitute only a fraction of the elastic limit of the material.  \{ 'l'as-tik dəˈzn \}
elastic equilibrium [MECH] The condition of an elastic body in which each volume element of the body is in equilibrium under the combined effect of elastic stresses and externally applied body forces.  \{ 'l'as-tik, ˈkwaˈlɪb-ˈrə-əm \}
elastic failure [MECH] Failure of a body to recover its original size and shape after a stress is removed.  \{ 'l'as-tik ˈfæl-ˈyar \}
elastic flow [MECH] Return of a material to its original shape following deformation.  \{ 'l'as-tik ˈfləʊ \}
elastic force [MECH] A force arising from the deformation of a solid body which depends only on the body's instantaneous deformation and not on its previous history, and which is conservative.  \{ 'l'as-tik ˈfoʃəz \}
elastic hysteresis [MECH] Phenomenon exhibited by some solids in which the deformation of the solid depends not only on the stress applied to the solid but also on the previous history of this stress; analogous to magnetic hysteresis, with magnetic field strength and magnetic induction replaced by stress and strain respectively.  \{ 'l'as-tik, ˈhɪs-təˈrɛs-əs \}
elasticity [MECH] 1. The property whereby a solid material changes its shape and size under action of opposing forces, but recovers its original configuration when the forces are removed. 2. The existence of forces which tend to restore to its original position any part of a medium (solid or fluid) which has been displaced.  \{ 'l'as-tis-əd-ə \}
elasticity modulus [MECH] See modulus of elasticity.  \{ 'l'as-tis-əd-ə, ˈmɑj-ə-ˈlas \}
elastic lag See elastic aftereffect.  \{ 'l'as-tik 'læg \}
elastic limit [MECH] The maximum stress a solid can sustain without undergoing permanent deformation.  \{ 'l'as-tis-tik ˈlɪm-ət \}
elastic modulus [MECH] See modulus of elasticity.  \{ 'l'as-tik ˈmɑj-ə-ˈlas \}
elastic potential energy [MECH] Capacity that a body has to do work by virtue of its deformation.  \{ 'l'as-tik ˈpɑtən-ˈchəl ən-ər-ɨə \}
elastic ratio [MECH] The ratio of the elastic limit to the ultimate strength of a solid.  \{ 'l'as-tik ˈrə-ə-ˈbô \}
elastic recovery [MECH] That fraction of a given deformation of a solid which behaves elastically.  \{ 'l'as-tik ˈrɪkəv-ə-ˈrè \}
elastic scattering [MECH] Scattering due to an elastic collision.  \{ 'l'as-tik ˈskæd-ə-ˈrɪŋ \}
elastic solid See elastic body.  \{ 'l'as-tik ˈsæl-əd \}
elastic strain energy [MECH] The work done in deforming a solid within its elastic limit.  \{ 'l'as-tik ˈstrən, ən-ər-ə \}
elastic theory [MECH] Theory of the relations between the forces acting on a body and the resulting changes in dimensions.  \{ 'l'as-tik ˈθɛr-ə-ˈrè \}
elastic vibration [MECH] Oscillatory motion of a solid body which is sustained by elastic forces and the inertia of the body.  \{ 'l'as-tik ˈvləˈbrə-ʃən \}
elastodynamics [MECH] The study of the mechanical properties of elastic waves.  \{ 'l'as-təˈdɪnəm-ɪks \}
elastoplasticity [MECH] State of a substance subjected to a stress greater than its elastic limit but not so great as to cause it to rupture, in which it exhibits both elastic and plastic properties.  \{ 'l'as-təˈplæs-əd-ə \}
elasto-resistance [ELEC] The change in material's electrical resistance as it undergoes a stress within its elastic limit.  \{ 'l'as-tə-ˈrɪz-tən-əs \}
elbow [DES ENG] 1. A fitting that connects two pipes at an angle, often of 90°. 2. A sharp corner in a pipe.  \{'el,boʊ \}
elbow meter [ENG] Pipe elbow used as a liquids flowmeter, flow rate is measured by determining the differential pressure developed between the inner and outer radii of the bend by means of two pressure taps located midway on the bend.  \{'el,boʊ ˈmɛd-ər \}
electret [ELEC] A solid dielectric possessing persistent electric polarization, by virtue of a long time constant for decay of a charge instability.  \{ 'ɪlekˌtret \}
electret headset [ENG ACOUS] A headphone consisting of an electret transducer, usually in the form of a push-pull transducer.  \{ 'ɪlekˌhedt \}
electret microphone [ENG ACOUS] A microphone consisting of an electret transducer in which the foil electret diaphragm is placed next to a perforated, ridged, metal or metal-coated backplate, and output voltage, taken between diaphragm and backplate, is proportional to the displacement of the diaphragm.  \{ 'ɪlekˌmɪkroʊˌfɔn \}
electret transducer [ELECTR] An electroacoustic or electromechanical transducer in which a foil electret, stretched out to form a diaphragm, is placed next to a metal or metal-coated plate, and motion of the diaphragm is converted to voltage between diaphragm and plate, or vice versa.  \{ 'ɪlekˌtred ˈtrænsdər \}
electric [ELEC] Containing, producing, arising from, or actuated by electricity, often used interchangeably with electrical.  \{ 'ɪlek-trɪk \}
electrical [ELEC] Related to or associated with electricity, but not containing it or having its properties or characteristics; often used interchangeably with electric.  \{ əˈlek-trə-kəl \}
electrical blasting cap | ENG | A blasting cap ignited by electric current and not by a spark.

electrical breakdown See breakdown. (‘ol’ek-trə-kəl blothd,brə-wnk)

electrical conductance See conductance. (‘ol’ek-trə-kəl kən’dək-səns)

electrical conductivity See conductivity. (‘ol’ek-trə-kəl kən’dək-siv-əd-ə)

electrical drainage [ELEC] Diversion of electric currents from subterranean pipes to prevent electrolytic corrosion. (‘i’lek-trə-kəl dren-ij)

electrical engineer [ENG] An engineer whose training includes a degree in electrical engineering from an accredited college or university (or who has comparable knowledge and experience), to prepare him or her for dealing with the generation, transmission, and utilization of electric energy. (‘i’lek-trə-kəl en-jə-nər-ir)

electrical engineering [ENG] Engineering that deals with practical applications involving current flow through conductors, as in motors and generators. (‘i’lek-trə-kəl en’ja’ni-rən-əz)

electrical fault See fault. (‘i’lek-trə-kəl fəlt)

electrical image [ENG] An image that is obtained in the course of borehole logging and is based on electrical rather than optical contrasts. (‘i’lek-trə-kəl im’jər-ə)

electrical impedance Also known as impedance. [ELEC] 1. The total opposition that a circuit presents to an alternating current, equal to the complex ratio of the voltage to the current in complex notation. Also known as complex impedance. 2. The ratio of the maximum voltage in an alternating-current circuit to the maximum current, equal to the magnitude of the quantity in the first definition. (‘i’lek-trə-kəl im’pəd-ən-s)

electrical insulator See insulator. (‘i’lek-trə-kəl in’sa’ləd-ər)

electrical loading See loading. (‘i’lek-trə-kəl ləd-ing)

electrical log [ENG] Recorded measurement of the conductivities and resistivities down the length of uncased borehole, gives a complete record of the formations penetrated. (‘i’lek-trə-kəl ləg)

electrical logging [ENG] The recording in uncased sections of a borehole of the conductivities and resistivities of the penetrated formations, used for geological correlations of the strata and evaluation of possibly productive horizons. Also known as electrical well logging. (‘i’lek-trə-kəl ləg-ing)

electrical prospecting [ENG] The use of downhole electrical logs to obtain subsurface information for geological analysis. (‘i’lek-trə-kəl ‘prəs pəkt-təng)

electrical resistance See resistance. (‘i’lek-trə-kəl rə’zəns-təns)

electrical resistance meter See resistance meter. (‘i’lek-trə-kəl rə’zəns-təns’ mət-ər)

electrical-resistance strain gage [ENG] A vibration-measuring device consisting of a grid of fine wire cemented to the vibrating object to measure fluctuating strains. (‘i’lek-trə-kəl rə’zəns-təns strən’ gə-ə)

electrical-resistance thermometer See resistance thermometer. (‘i’lek-trə-kəl rə’zəns-təns thər’mən-dət)

electrical resistivity [ELEC] The electrical resistance offered by a material to the flow of current, times the cross-sectional area of current flow and per unit length of current path, the reciprocal of the conductivity. Also known as resistivity, specific resistance. (‘i’lek-trə-kəl rə’zəs’tiv-əd-ə)

electrical resistor See resistor. (‘i’lek-trə-kəl ri’zə-sər)

electrical symbol [ELEC] A simple geometrical symbol used to represent a component of a circuit in a schematic circuit diagram. (‘i’lek-trə-kəl ‘sim-bal)

electrical transcription See transcription. (‘i’lek-trə-kəl tran’skrip-shən)

electrical unit [ELEC] A standard in terms of which some electrical quantity is evaluated. (‘i’lek-trə-kəl ‘yu-ə-nət)

electrical weighing system [ENG] An instrument which weighs an object by measuring the change in resistance caused by the elastic deformation of a mechanical element loaded with the object. (‘i’lek-trə-kəl ‘wə-in,si’ta-mən)

electrical well logging See electrical logging. (‘i’lek-trə-kəl ‘wel,la’g-ən)

electric arc [ELEC] A discharge of electricity through a gas, normally characterized by a voltage drop approximately equal to the ionization potential of the gas. Also known as arc. (‘i’lek-trik ‘ərk)

electric battery See battery. (‘i’lek-trik ‘bəd-a-rə)

electric boiler [MECH ENG] A steam generator using electric energy, in immersion, resistor, or electrode elements, as the source of heat. (‘i’lek-trik ‘bɔi-lər)

electric brake [MECH ENG] An actuator in which the actuating force is supplied by current flowing through a solenoid, or through an electromagnet which is thereby attracted to disks on the rotating member, actuating the brake shoes; this force is counteracted by the force of a compression spring. Also known as electromagnetic brake. (‘i’lek-trik ‘brək)

electric bridge See bridge. (‘i’lek-trik ‘brid)

electric car [MECH ENG] An automotive vehicle that is propelled by one or more electric motors powered by a special rechargeable electric battery rather than by an internal combustion engine. (‘i’lek-trik ‘kər)
electric cell  [ELEC]  1. A single unit of a primary or secondary battery that converts chemical energy into electric energy.  2. A single unit of a device that converts radiant energy into electric energy, such as a nuclear, solar, or photovoltaic cell.  (iək-trik ˈsel) 

electric charge See charge.  (iək-trik ˈchārʤ) 

electric circuit  [ELEC] Also known as circuit.  1. A path or group of interconnected paths capable of carrying electric currents.  2. An arrangement of one or more complete, closed paths for electron flow.  (iək-trik ˈsār-kät) 

electric coil See coil.  (iək-trik ˈkōl) 

electric conductor See conductor.  (iək-trik ˈkanˈdək-tər) 

electric connection  [ELEC] A direct wire path for current between two points in a circuit.  (iək-trik ˈkōnˈnek-shən) 

electric connector  [ELEC] A device that joins electric conductors mechanically and electrically to other conductors and to the terminals of apparatus and equipment.  (iək-trik ˈkō-nəkˈtər) 

electric contact  [ELEC] A physical contact that permits current flow between conducting parts. Also known as contact.  (iək-trik ˈkənˌtækt) 

electric contactor See contactor.  (iək-trik ˈkänˌtək-tər) 

electric coupling  [MECH ENG] Magnetic-field coupling between the shafts of a driver and a driven machine.  (iək-trik ˈkapˌlēj) 

electric current density See current density.  (iək-trik ˈkər–rənt ˌdēnˌsətē) 

electric current meter See ammeter.  (iək-trik ˈkər–rənt ˌmeɪˈmɛr) 

electric desalting  [CHEM ENG] A process to remove impurities such as inorganic salts from crude oil by settling out in an electrostatic field.  (iək-trik dəˈsəlt ing) 

electric detonator  [ENG] A detonator ignited by a fuse wire which serves to touch off the primer.  (iək-trik ˈdətənəˈteɪtər) 

electric dipole  [ELEC] A localized distribution of positive and negative electricity, without net charge, whose mean positions of positive and negative charges do not coincide.  (iək-trik ˈdīˈpōl) 

electric dipole moment  [ELEC] A quantity characteristic of a charge distribution, equal to the vector sum over the electric charges of the product of the charge and the position vector of the charge.  (iək-trik ˈdīˌpōlˌmōnt) 

electric discharge See discharge.  (iək-trik ˈdīsˈchārj) 

electric displacement  [ELEC] The electric field intensity multiplied by the permittivity. Symbolized D. Also known as dielectric displacement, dielectric flux density, displacement, electric displacement density, electric flux density, electric induction.  (iək-trik ˈdīsˈplāsˈmānt) 

electric drive  [MECH ENG] A mechanism which transmits motion from one shaft to another and controls the velocity ratio of the shafts by electrical means.  (iək-trik ˈdrīv) 

electric fence  [ENG] A fence consisting of one or more lengths of wire energized with high-voltage, low-current pulses, and giving a warning shock when touched.  (iək-trik ˈfens) 

electric field  [ELEC] 1. One of the fundamental fields in nature, causing a charged body to be attracted to or repelled by other charged bodies; associated with an electromagnetic wave or a changing magnetic field.  2. Specifically, the electric force per unit test charge.  (iək-trik ˈfi ld) 

electric-field intensity See electric-field vector.  (iək-trik ˈfi ld ɪnˈtenˈsətē) 

electric-field strength See electric-field vector.  (iək-trik ˈfi ld ˈstrɛŋkθ) 

electric-field vector  [ELEC] The force on a stationary charge per unit charge at a point in an electric field. Designated E. Also known as electric-field intensity, electric-field strength. electric vector.  (iək-trik ˈfi ld ˈvektər) 

electric flowmeter  [ELEC] Fluid-flow measurement device relying on an inductance or impedance bridge or on electrical-resistance rod elements to sense flow-rate variations.  (iək-trik ˈfləʊˌmər) 

electric flux  [ELEC] 1. The integral over a surface of the component of the electric displacement perpendicular to the surface; equal to the number of electric lines of force crossing the surface.  2. The electric lines of force in a region.  (iək-trik ˈflāks) 

electric flux density See electric displacement.  (iək-trik ˈflāksˌdenˌsətē) 

electric flux line See electric line of force.  (iək-trik ˈflāksˌlīn) 

electric furnace  [ENG] A furnace which uses electricity as a source of heat.  (iək-trik ˈfərnəs) 

electric fuse See fuse.  (iək-trik ˈfyūz) 

electric guitar  [ENG ACOUS] A guitar in which a contact microphone placed under the strings picks up the acoustic vibrations for amplification and for reproduction by a loudspeaker.  (iək-trik ˈgærˌtər) 

electric hammer  [MECH ENG] An electric-powered hammer, often used for riveting or caulking.  (iək-trik ˈhæmˌər) 

electric heating  [ENG] Any method of converting electric energy to heat energy by resisting the free flow of electric current.  (iək-trik ˈhēdˌiŋ) 

electric hygrometer  [ENG] An instrument for indicating by electrical means the humidity of the ambient atmosphere; usually based on the relation between the electric conductance of a film of hygrosopic material and its moisture content.  (iək-trik ˈhigrəmˌər) 

electric hysteresis See ferroelectric hysteresis.  (iək-trik ˈhɪstrēˈsəs) 

electrician  [ENG] A skilled worker who installs, repairs, maintains, or operates electric equipment.  (iək-trishən) 

electric ignition  [MECH ENG] Ignition of a charge of fuel vapor and air in an internal combustion engine by passing a high-voltage electric
electric image

In finding the electric field setup by fixed electric charges, is replaced by one or more of these fictitious charges. Also known as image. (\{i\}lek-tri̱k 'im-ij)

electric induction See electric displacement. (\{i\}lek-tri̱k in'dak-shan)

electric instrument [ENG] An electricity-measuring device that indicates, such as an ammeter or voltmeter, in contrast to an electric meter that totalizes or records. (\{i\}lek-tri̱k 'in-stra-mant)

electric locomotive [MECH ENG] A locomotive operated by electric power picked up from a system of continuous overhead wires, or, sometimes, from a third rail mounted alongside the track. (\{i\}lek-tri̱k 'lo-kəpər-mo̱d-iv)

electric meter [ENG] An electricity-measuring device that totalizes with time, such as a watt-hour meter or ampere-hour meter, in contrast to an electric instrument. (\{i\}lek-tri̱k 'mëd-ər)

electric motor See motor. (\{i\}lek-tri̱k 'mōd-ər)

electric polarization See polarization. (\{i\}lek-tri̱k 'po-lə-rəz-ən-

lectric power [ENG] The rate at which electric energy is converted to other forms of energy, equal to the product of the current and the voltage drop. (\{i\}lek-tri̱k 'pō-ər)

electric power generation [MECH ENG] The large-scale production of electric power for industrial, residential, and rural use, generally in stationary plants designed for that purpose. (*i*lek-tri̱k 'pō-ərə ,əlɛn-ər'-ə-nən-

electric power line See power line. (\{i\}lek-tri̱k 'pō-ər,-lın)

electric power meter [ENG] A device that measures electric power consumed, either at an instant, as in a wattmeter, or averaged over a time interval, as in a demand meter. Also known as power meter. (\{i\}lek-tri̱k 'pō-ərə ,mëd-ər)

electric power plant [MECH ENG] A power plant that converts a form of raw energy into electricity, for example, a hydro, steam, diesel, or nuclear generating station for stationary or transportation service. (\{i\}lek-tri̱k 'pō-ərə ,-pənt-

electric power station [ELEC] A generating station or an electric power substation. (\{i\}lek-tri̱k 'pō-ərə ,stə̱-ə-nən-

electric power substation [ELEC] An assembly of equipment in an electric power system through which electric energy is passed for transmission, transformation, distribution, or switching. Also known as substation. (\{i\}lek-tri̱k 'pō-ərə ,stə̱-ə-nən-

electric power system [MECH ENG] A complex assemblage of equipment and circuits for generating, transmitting, transforming, and distributing electric energy. (\{i\}lek-tri̱k 'pō-ərə ,si̱-sə-mən-

electric power transmission [ELEC] Process of transferring electric energy from one point to another in an electric power system. (\{i\}lek-tri̱k 'pō-ərə tranz,mi̱-shən-

electric precipitation [CHEM ENG] A process that utilizes an electric field to improve the separation of hydrocarbon reagent dispersions. (\{i\}lek-tri̱k prə̱s-ə-mipə̱-ən-

electric pressure transducer See pressure transducer. (\{i\}lek-tri̱k 'pre̱s-ə-mir tranz,du̱-ər)

electric railroad [MECH ENG] A railroad which has a system of continuous overhead wires or a third rail mounted alongside the track to supply electric power to the locomotive and cars. (\{i\}lek-tri̱k 'ræl-rōd)

electric reactor See reactor. (\{i\}lek-tri̱k rē̱k-tə̱r)

electric resistance See resistance. (\{i\}lek-tri̱k riz'-tə̱ns)

electric resistance furnace See resistance furnace. (\{i\}lek-tri̱k riz'-tə̱ns fə̱r-nəsn)

electric shunt See shunt. (\{i\}lek-tri̱k 'shə̱nt)

electric stacker [MECH ENG] A stacker whose carriage is raised and lowered by a winch powered by electric storage batteries. (\{i\}lek-tri̱k 'stə̱k-ə̱r)

electric strength See dielectric strength. (\{i\}lek-tri̱k 'strē̱ngθk)

electric susceptibility [ELEC] A dimensionless parameter measuring the ease of polarization of a dielectric, equal (in meter-kilogram-second units) to the ratio of the polarization to the product of the electric field strength and the vacuum permittivity. Also known as dielectric susceptibility. (\{i\}lek-tri̱k sa̱pə̱s-tə̱l-ə̱d-ə̱r)

electric tachometer [ENG] An instrument for measuring rotational speed by measuring the output voltage of a generator driven by the rotating unit. (\{i\}lek-tri̱k tə̱kəm-əd-ə̱r)

electric tank See electrolytic tank. (\{i\}lek-tri̱k 'tə̱nk)

electric thermometer [ENG] An instrument that utilizes electrical means to measure temperature, such as a thermocouple or resistance thermometer. (\{i\}lek-tri̱k thə̱r-mə̱mə̱d-ə̱r)

electric typewriter [MECH ENG] A typewriter having an electric motor that provides power for all operations initiated by the touching of the keys. (\{i\}lek-tri̱k 'tip,-rī̱d-ə̱r)

electric vehicle [MECH ENG] A ground vehicle propelled by a motor powered by electrical energy from rechargeable batteries or other source onboard the vehicle, or from an external source in, on, or above the roadway, examples include the electrically powered golf cart, automobile, and trolley bus. (\{i\}lek-tri̱k 'və̱r-kə̱l)

electric wire See wire. (\{i\}lek-tri̱k 'wir̩)
electroacoustic effect [ENG] See acoustoelectric effect.

electroacoustics [ENG ACOUS] The conversion of acoustic energy and waves into electric energy and waves, or vice versa. (i|lek-trô-ak-tû-stik i|lekt)

electroacoustic energy See acoustoelectric energy.

electroacoustic field See acoustoelectric field.

electroacoustic impedance See acoustoelectric impedance.

electroacoustic power generation [ENG] The direct conversion of chemical energy to electric energy, as in a battery or fuel cell. (i|lek-trô 'kem-ô-kal 'pau ar |jen-ô-rashan)

electroacoustic recording [ELECTR] Recording by means of a chemical reaction brought about by the passage of signal-controlled current through the sensitized portion of the record sheet. (i|lek-trô'kem-ô-kal ri 'kôrd-iq)

electrochemical grinding See electrolytic grinding. (i|lek-trô'kem-i-kal 'grind-iq)

electrochemical power transducer [ENG ACOUS] A transducer that receives waves from an electric system and delivers waves to an acoustic system, or vice versa. Also known as sound transducer. (i|lek-trô-ak-tû-stik tran'zdû-sar)

electrochemical grinding See electrolytic grinding. (i|lek-trô'kem-i-kal 'grind-iq)

electrochemical power generation [ENG] The direct conversion of chemical energy to electric energy, as in a battery or fuel cell. (i|lek-trô 'kem-ô-kal 'pau ar |jen-ô-rashan)

electrochemical recording [ELECTR] Recording by means of a chemical reaction brought about by the passage of signal-controlled current through the sensitized portion of the record sheet. (i|lek-trô'kem-ô-kal ri 'kôrd-iq)

electrochemical thermodynamics [THERMO] The application of the laws of thermodynamics to electrochemical systems. (i|lek-trô'kem-ô-kal ,tharm-i-dî'nam-iiks)

electrochemical transducer [ENG] A device which uses a chemical change to measure the input parameter; the output is a varying electrical signal proportional to the measurand. (i|lek-trô'kem-ô-kal tran'zdû-sar)

electrochemical valve [ELEC] Electric valve consisting of a metal in contact with a solution or compound, across the boundary of which current flows more readily in one direction than in the other direction, and in which the valve action is accompanied by chemical changes. (i|lek-trô'kem-ô-kal 'valv)

electromechanical device [ENG] A self-contained, hermetically sealed, two-electrode electrolytic cell that includes one or more electrochemical materials and an electrolyte. (i|lek-trô'krom-i-k dî'vis)

electrodynamic display [ELECTR] A solid-state passive display that uses organic or inorganic insulating solids which change color when injected with positive or negative charges. (i|lek-trô'kro-mik di'spl)

electrode [ELEC] 1. An electric conductor through which an electric current enters or leaves a medium, whether it be an electrolytic solution, solid, molten mass, gas, or vacuum. 2. One of the terminals used in dielectric heating or diathermy for applying the high-frequency electric field to the material being heated. (i|lek-trôd)

electrode admittance [ELECTR] Quotient of dividing the alternating component of the electrode current by the alternating component of the electrode voltage, all other electrode voltages being maintained constant. (i|lek-trôd ad'mit-ans)

electrode capacitance [ELECTR] Capacitance between one electrode and all the other electrodes connected together. (i|lek-trôd ka'pas-ad-ans)

electrode characteristic [ELECTR] Relation between the electrode voltage and the current to an electrode, all other electrode voltages being maintained constant. (i|lek-trôd 'kar-ik-tô ris-tik)

electrode conductance [ELECTR] Quotient of the inphase component of the electrode alternating current by the electrode alternating voltage, all other electrode voltage being maintained constant; this is a variational and not a total conductance. Also known as grid conductance. (i|lek-trôd kan'dak-tans)

electrode couple [ELEC] The pair of electrodes in an electric cell, between which there is a potential difference. (i|lek-trôd ,ka-pal)

electrode current [ELECTR] Current passing to or from an electrode, through the interelectrode space within a vacuum tube. (i|lek-trôd ,ka-ront)

electrode impedance [ELECTR] Reciprocal of the electrode admittance. (i|lek-trôd im'ped-ans)

electrode resistance [ELECTR] Reciprocal of the electrode conductance; this is the effective parallel resistance and is not the real component of the electrode impedance. (i|lek-trôd nı'zis-tans)

electro-de-type liquid-level meter [ENG] Device that senses liquid level by the effect of the liquid-gas interface on the conductance of an electrode or probe. (i|lek-trôd ,tip 'ilik-wad lıev-əl 'mêd-ər)

electrode voltage See electrode potential. (i|lek-trôd ,vol-tij)

electrodrill [MECH ENG] A drilling machine driven by electric power. (i|lek-trôd ,dril)

electrodynamometer [ELEC] Instrument which measures the current passing through a fixed coil and a movable coil connected in series by balancing the torque on the movable coil (resulting from the magnetic field of the fixed coil) against that of a spiral spring. (i|lek-trôd 'nam-i-k 'a,mêd-ər)

electrodynamic instrument [ENG] An instrument that depends for its operation on the reaction between the current in one or more movable coils and the current in one or more fixed coils. Also known as electrodynamometer. (i|lek-trôd 'nam-i-k 'ın-stra-mant)

electrodynamic loudspeaker [ENG ACOUS] Dynamic loudspeaker in which the magnetic field is produced by an electromagnet, called the field coil, to which a direct current must be furnished. (i|lek-trôd 'dir'nam-i-k 'lau âm,spêk-ər)

electrodynamic wattmeter [ENG] An electrodynamic instrument connected as a wattmeter, with the main current flowing through the fixed coil, and a small current proportional to the voltage flowing through the movable coil. Also known as moving-coil wattmeter. (i|lek-trôd 'dir'nam-i-k 'wâr,mêd-ər)

electrodynamometer See electrodynamic instrument. (i|lek-trôd ,di'nam-əm-əd-ər)

electroexplosive [ENG] An initiator or a system in which an electric impulse initiates detonation
electrograph

or deflagration of an explosive. \{\jectr̩ō-ik \ˈsplō-siv\}

electrograph [ENG] Any plot, graph, or tracing produced by the action of an electric current on prepared sensitized paper or other chart material or by means of an electrically controlled stylus or pen. \{\ijlek'tr̩aˌgraf\}
electrohydraulic [ENG] Operated or effected by a combination of electric and hydraulic mechanisms. \{\ijlek-tr̩ˈhi-drəl-ik\}
electrokinetograph [ENG] An instrument used to measure ocean current velocities based on their electrical effects in the magnetic field of the earth. \{\ijlekˌtr̩əˌkənˈɛd-əˌgraf\}
electroluminescence [ELECTR] The emission of light, not due to heating effects alone, resulting from application of an electric field to a material, usually solid. \{\ijlekˌtr̩oˌlju̇ˈmen-əns\}
electrolyte-MOSFET [ENG] A metal oxide semiconductor field-effect transistor (MOSFET) that is immersed in a solution to determine the concentrations of dissolved redox active species, the bulk part of the work function of the gate electrode of the transistor changes when the sensor membrane is oxidized or reduced. Abbreviated EMOSFET. \{\ijlekˌtr̩əˌlɪtˈmoʊˌfet\}
electrolytic grinding [MECH ENG] A combined grinding and machining operation in which the abrasive, cathodic grinding wheel is in contact with the anodic workpiece beneath the surface of an electrolyte. Also known as electrochemical grinding. \{\ijlekˌtr̩əˌlɪdˌɪk \ˈɡrɪnd-ɪj\}
electrolytic mercaptan process [CHEM ENG] A process in which an aqueous caustic solution is used to extract mercaptans from refinery streams. \{\ijlekˌtr̩əˌlɪdˌɪk \ˈmɑrˈkæp-tənˌpræˈsæs\}
electrolytic refining See electrefining. \{\ijlekˌtr̩əˌlɪdˌɪk \ˈræˈfɪn-ɪj\}
electrolytic strip See humidity strip. \{\ijlekˌtr̩əˌlɪdˌɪk \ˈstript\}
electrolytic tank [ENG] A tank in which voltages are applied to an enlarged scale model of an electron-tube system or a reduced scale model of an aerodynamic system immersed in a poorly conducting liquid, and equipotential lines between electrodes are traced, used as an aid to electron-tube design or in computing ideal fluid flow. The latter application is based on the fact that the velocity potential in ideal flow and the stream function in planar flow satisfy the same equation, Laplace’s equation, as an electrostatic potential. Also known as electric tank, potential flow analyzer. \{\ijlekˌtr̩əˌlɪdˌɪk \ˈtæŋk\}
electromachining [MECH ENG] The application of electric or ultrasonic energy to a workpiece to effect removal of material. \{\ijlekˌtr̩əˌmɑsˈken-ɪn\}
electromagnetic brake See electric brake. \{\ijlekˌtr̩əˌmagˈnɛd-ik \ˈbrɑk\}
electromagnetic clutch [MECH ENG] A clutch based on magnetic coupling between conductors, such as a magnetic fluid and powder clutch, an eddy-current clutch, or a hysteresis clutch. \{\ijlekˌtr̩əˌmagˈnɛd-ik \ˈklɑk\}
electromagnetic flowmeter [ENG] A flowmeter that offers no obstruction to liquid flow; two coils produce an electromagnetic field in the conductive moving fluid, the current induced in the liquid, detected by two electrodes, is directly proportional to the rate of flow. Also known as electromagnetic meter. \{\ijlekˌtr̩əˌmagˈnɛd-ik \ˈfloʊˌmɛd-ər\}
electromagnetic interference [ELECTR] Interference, generally at radio frequencies, that is generated inside systems, as contrasted to radio-frequency interference coming from sources outside a system. Abbreviated emi. \{\ijlekˌtr̩əˌmagˈnɛd-ik \inˈtərˈfɜr-əns\}
electromagnetic log [ENG] A log containing an electromagnetic sensing element extended below the hull of the vessel; this device produces a voltage directly proportional to speed through the water. \{\ijlekˌtr̩əˌmagˈnɛd-ik \ˈlæg\}
electromagnetic meter See electromagnetic flowmeter. \{\ijlekˌtr̩əˌmagˈnɛd-ik \ˈmɛd-ər\}
electromagnetic noise [ELECTR] Noise in a communications system resulting from undesired electromagnetic radiation. Also known as radiation noise. \{\ijlekˌtr̩əˌmagˈnɛd-ik \nəˈnoiz\}
electromagnetic prospecting See electromagnetic surveying. \{\ijlekˌtr̩əˌmagˈnɛd-ik \ˈpræˌspektɪŋ\}
electromagnetic surveying [ENG] Underground surveying carried out by generating electromagnetic waves at the surface of the earth; the waves penetrate the earth and induce currents in conducting ore bodies, thereby generating new waves that are detected by instruments at the surface or by a receiving coil lowered into a borehole. Also known as electromagnetic prospecting. \{\ijlekˌtr̩əˌmagˈnɛd-ik \ˈsɑrˈveɪ-ɪŋ\}
electromagnetic well logging See electromagnetic logging. \{\ijlekˌtr̩əˌmagˈnɛd-ik \ˈwelˌlæg-ɪn\}
electromanometer [ENG] An electronic instrument used for measuring pressure of gases or liquids. \{\ijlekˌtr̩əˌmɑnˈɑd-ər\}
electromechanical [MECH ENG] Pertaining to a mechanical device, system, or process which is electrostatically or electromagnetically actuated or controlled. \{\ijlekˌtr̩əˌmɪkˈɑnəˌkoʊl\}
electromechanical circuit [ELECTR] A circuit containing both electrical and mechanical parameters of consequence in its analysis. \{\ijlekˌtr̩əˌmɪkˌɑnəˌkoʊl \ˈsɑrˈkoʊt\}
electromechanics [MECH ENG] The technology of mechanical devices, systems, or processes which are electrostatically or electromagnetically actuated or controlled. \{\ijlekˌtr̩əˌmɪkˌɑnik\}
electrometer [ENG] An instrument for measuring voltage without drawing appreciable current. \{\ijlekˈtr̩rəˌm retreated\}
electronic chart display

electron beam [ELECTR] A narrow stream of electrons moving in the same direction, all having about the same velocity. {i'lek,trân 'bɛm}
electron-beam channeling [ELECTR] The technique of transporting high-energy, high-current electron beams from an accelerator to a target through a region of high-pressure gas by creating a path through the gas where the gas density may be temporarily reduced; the gas may be ionized, or a current may flow whose magnetic field focuses the electron beam on the target. {i'lek,trân 'bɛm 'chan-ôl-iŋ}
electron-beam drilling [ELECTR] Drilling of tiny holes in a ferrite, semiconductor, or other material by using a sharply focused electron beam to melt and evaporate or sublime the material in a vacuum. {i'lek,trân 'bɛm 'drîl-iŋ}
electron-beam generator [ELECTR] Velocity-modulated generator, such as a klystron tube, used to generate extremely high frequencies. {i'lek,trân 'bɛm 'jen-'ɑ,rad-ôr}
electron-beam ion source [ELECTR] A source of multiply charged heavy ions which uses an intense electron beam with energies of 5 to 10 kiloelectronvolts to successively ionize injected gas. Abbreviated EBS {i'lek,trân 'bɛm 'lɛn 'sɔrs}
electron-beam ion trap [ELECTR] A device for producing the highest possible change states of heavy ions, in which impact ionization or excitation by successive electrons is efficiently achieved by causing the ions to be trapped in a compressed electron beam by the electron beam's space charge. Abbreviated EBIT {i'lek,trân 'bɛm 'lɛn 'trôp}
electron-beam lithography [ELECTR] Lithography in which the radiation-sensitive film or resist is placed in the vacuum chamber of a scanning-beam electron microscope and exposed by an electron beam under digital computer control; after exposure, the film is removed from the vacuum chamber for conventional development and other production processes. {i'lek,trân 'bɛm 'lɛn'thɑɡ-iô-fɛ}
electron-beam magnetometer [ENG] A magnetometer that depends on the change in intensity or direction of an electron beam that passes through the magnetic field to be measured. {i'lek,trân 'bɛm 'mɑɡ-nətɑm-ôd-ôr}
electron-beam parametric amplifier [ELECTR] A parametric amplifier in which energy is pumped from an electrostatic field into a beam of electrons traveling down the length of the tube, and electron couplers impress the input signal at one end of the tube and translate spiraling electron motion into electric output at the other. {i'lek,trân 'bɛm 'par-ɑm-ɛ-trîk 'am-plə,fî-ôr}
electron-beam pumping [ELECTR] The use of an electron beam to produce excitation for population inversion and lasing action in a semiconductor laser. {i'lek,trân 'bɛm 'pəm-pîŋ}
electron-beam recorder [ELECTR] A recorder in which a moving electron beam is used to record signals or data on photographic or thermoplastic film in a vacuum chamber. {i'lek,trân 'bɛm 'rîkôrd-ôr}
electron-beam tube [ELECTR] An electron tube whose performance depends on the formation and control of one or more electron beams. {i'lek,trân 'bɛm 'tôb}
electron conduction [ELEC] Conduction of electricity resulting from motion of electrons, rather than from ions in a gas or solution, or holes in a solid. [THERMO] The transport of energy in highly ionized matter primarily by electrons of relatively high temperature moving in one direction and electrons of lower temperature moving in the other. {i'lek,trân 'kan, hôk-shon}
electron cyclotron resonance reactor [ENG] A plasma reactor in which resonant coupling of microwave energy into an electron gas at electron cyclotron resonance accelerates electrons, which in turn ionize and excite the neutral gas, resulting in a low-pressure, almost collisionless plasma. {i'lek,trân 'sku-klə, trân 'rez-ɑn-nəns rék-tôr}
electronically negative [ELEC] 1. Carrying a negative electric charge. 2. Capable of acting as the negative electrode in an electric cell. {i'lek-trô 'neg-ôd-ôiv}
electron flow [ELEC] A current produced by the movement of free electrons toward a positive terminal; the direction of electron flow is opposite to that of current. {i'lek,trân 'flô}
electron holography [ELECTR] An imaging technique using the wave nature of electrons and light, in which an interference pattern between an object wave and a reference wave is formed using a coherent field-emission electron beam from a sharp tungsten needle, and is recorded on film as a hologram, and the image of the original object is then reconstructed by illuminating a light beam equivalent to the reference wave onto the hologram. {i'lek,trân håɡ 'rîɡ-iô-fɛ}
electronically agile radar [ENG] An airborne radar that uses a phased-array antenna which changes radar beam shapes and beam positions at electronic speeds. {i'lek,trân-'ik 'læl-iô 'râ,dâr}
electronic altimeter See radio altimeter. {i'lek 'trân-'ik 'altîm-ôd-ô-r}
electronic cash register [ENG] A system for automatically checking out goods from retail food stores, consisting of a device that scans packages and reads symbols imprinted on the label, and a computer that converts the symbol information to tell a cash register the price of the item; the computer can also keep records of sales and inventories. Abbreviated ECR {i'lek,trân-'ik 'kæsh 'rej–ô-stôr}
electronic chart display and information system [ENG] A navigation information system with an electronic chart database, as well as navigational and piloting information (typically, vessel-route-monitoring, track-keeping, and track-planning information). Abbreviated ECS. {i'lek,trân-'ik 'chært dîjsplâ ən in-fərm-'mə-shon-sîstom}
electronic dummy [ENG ACOUS] A vocal simulator which is a replica of the head and torso of a person, covered with plastisol flesh that simulates the acoustical and mechanical properties of real flesh, and possessing an artificial voice and two artificial ears. Abbreviated ED. {i,lek'tran-ik 'dâm-É}  
electronic engineering [ENG] Engineering that deals with practical applications of electronics. {i,lek'tran-ik 'én-kra-nir-ig}  
electronic flame safeguard [MECH ENG] An electrode used in a burner system which detects the main burner flame and interrupts fuel flow if the flame is not detected. {i,lek'tran-ik 'flâm-sal-fêrd}  
electronic fuse [ENG] A fuse, such as the radio proximity fuse, set off by an electronic device incorporated in it. {i,lek'tran-ik 'fîyz}  
electronic heating [ENG] Heating by means of radio-frequency current produced by an electron-tube oscillator or an equivalent radio-frequency power source. Also known as high-frequency heating, radio-frequency heating. {i,lek'tran-ik 'hêd-în-ig}  
electronic humidistat [ENG] A humidistat in which a change in the relative humidity causes a change in the electrical resistance between two sets of alternate metal conductors mounted on a small flat plate with plastic coating, and this change in resistance is measured by a relay amplifier. {i,lek'tran-ik 'hyûl-mîd-ê-stat}  
electronic logger See Geiger-Müller probe. {i,lek'tran 'myû-zîk}  
electronic musical instrument [ENG ACOUS] Musical consisting of tones originating in electronic sound and noise generators used alone or in conjunction with electroacoustic shaping means and sound-recording equipment. {i,lek'tran-ik 'myû-zîk}  
electronic packaging [ENG] The technology of packaging electronic equipment, in current usage it refers to inserting discrete components, integrated circuits, and MSI and LSI chips (usually attached to a lead frame by beam leads) into plates through holes on multilayer circuit boards (also called cards), where they are soldered in place. {i,lek'tran-ik 'pak-îj-în-ig}  
electronic photometer See photoelectric photometer. {i,lek'tran-ik 'fotûm-ôd-ôr}  
electronic polarization [ELEC] Polarization arising from the displacement of electrons with respect to the nuclei with which they are associated, upon application of an external electric field. {i,lek'tran-ik 'pô-lô-rô-dô-san}  
electronic robot [CON TSYS] A robot whose motions are powered by a direct-current stepper motor. {i,lek'tran-ik 'rô-bôt}  
electronic speedometer [ENG] A speedometer in which a transducer sends speed and distance pulses over wires to the speed and mileage indicators, eliminating the need for a mechanical link involving a flexible shaft. {i,lek'tran-ik 'spê-dâm-ôd-ôr}  
electronic thermometer [ENG] A thermometer in which a sensor, usually a thermistor, is placed on or near the object being measured. {i,lek'tran-ik 'thar-mâm-ôd-ôr}  
electronic voltmeter [ENG] Voltmeter which uses the rectifying and amplifying properties of electron devices and their associated circuits to secure desired characteristics, such as high-input impedance, wide-frequency range, crest indications, and so on. {i,lek'tran-ik 'volt-med-ôr}  
electron injection [ELECTR] 1. The emission of electrons from one solid into another. 2. The process of injecting a beam of electrons with an electron gun into the vacuum chamber of a mass spectrometer, betatron, or other large electron accelerator. {i,lek'tran in'lek-shan}  
electron microscope [ELECTR] A device for forming greatly magnified images of objects by means of electrons, usually focused by electron lenses. {i,lek'tran 'mîr-kra-skôp}  
electron vacuum gage [ENG] An instrument used to measure vacuum by the ionization effect that an electron flow (from an incandescent filament to a charged grid) has on gas molecules. {i,lek'tran 'vak-yûm ,gâj}  
electrooptic radar [ENG] Radar system using electrooptic techniques and equipment instead of microwave to perform the acquisition and tracking operation. {i,lek'tro-op-tik 'rå-dár}  
electrolyzing [ENG] Electrolytic deposition of a thin layer of paint on a metal surface which is made an anode. {i,lek'tro-op-ênt-în}  
electrophotoluminescence [ELECTR] Emission of light resulting from application of an electric field to a phosphor which is concurrently, or has been previously, excited by other means. {i,lek'tro-pô-fûl-ôm-es-ên}  
electrorefining [CHEM ENG] Petroleum refinery process for light hydrocarbon streams in which an electrostatic field is used to assist in separation of chemical treating agents (acid, caustic, doctor) from the hydrocarbon phase. {i,lek'tro-ref'î-nîn-în}  
electroresistive effect [ELECTR] The change in the resistivity of certain materials with changes in applied voltage. {i,lek'tro-ref'înt-zis-tiv i,lek'tîn}  
electroscope [ENG] An instrument for detecting an electric charge by means of the mechanical forces exerted between electrically charged bodies. {i,lek'tro-skôp}  
electrostatic [ELEC] Pertaining to electricity at rest, such as an electric charge on an object. {i,lek'tro-stat-ad-êk}  
electrostatic actuator See actuator. {i,lek'tra-stad-îk 'lek'cha-wad-ôr}  
electrostatic atomization [MECH ENG] Atomization in which a liquid jet or film is exposed to an electric field, and forces leading to atomization arise from either free charges on the surface.
or liquid polarization. (i,lek-tra'stad-ik ,ad-a-ma'zə-shan)
electrostatic attraction See Coulomb attraction. (i,lek-tra'stad-ik a'trak-shan)

**electrostatic energy** [ELEC] The potential energy which a collection of electric charges possesses by virtue of their positions relative to each other. (i,lek-tra'stad-ik 'en-ar-je)

electrostatic field [ELEC] A time-independent electric field, such as that produced by stationary charges. (i,lek-tra'stad-ik 'feld)

**electrostatic force** [ELEC] Force on a charged particle due to an electrostatic field, equal to the electric field vector times the charge of the particle. (i,lek-tra'stad-ik 'förs)

electrostatic force microscopy [ENG] The use of an atomic force microscope to measure electrostatic forces from electric charges on a surface. (i,lek-tra'stad-ik 'förs mi'kra-ska-pə)

**electrostatic generator** [ELEC] Any machine which produces electric charges by friction or (more commonly) electrostatic induction. (i,lek-tra'stad-ik 'jen-ar.rad-ør)

**electrostatic gyroscope** [ENG] A gyroscope in which a small beryllium ball is electrostatically suspended within an array of six electrodes in a vacuum inside a ceramic envelope. (i,lek-tra'stad-ik 'i1-ør,skəp)

**electrostatic induction** [ELEC] The process of charging an object electrically by bringing it near another charged object, then touching it to ground. Also known as induction. (i,lek-tra'stad-ik in'dak-shan)

electrostatic interactions See Coulomb interactions. (i,lek-tra'stad-ik int-ar'ak-shan)

**electrostatic loudspeaker** [ENG ACOUS] A loudspeaker in which the mechanical forces are produced by the action of electrostatic fields; in one type the fields are produced between a thin metal diaphragm and a rigid metal plate. Also known as capacitor loudspeaker. (i,lek-tra'stad-ik 'la'id,spēk-ør)

electrostatic microphone See capacitor microphone. (i,lek-tra'stad-ik 'mi1-krə,fôn)

**electrostatic painting** [ENG] A painting process that uses the particle-attracting property of electrostatic charges; direct current of about 100,000 volts is applied to a grid of wires through which the paint is sprayed to charge each particle, the metal objects to be sprayed are connected to the opposite terminal of the high-voltage circuit, so that they attract the particles of paint. (i,lek-tra'stad-ik 'pànt-ig)

**electrostatic potential** See electric potential. (i,lek-tra'stad-ik pə'ten-chal)

**electrostatic precipitator** [ENG] A device which removes dust or other finely divided particles from a gas by charging the particles inductively with an electric field, then attracting them to highly charged collector plates. Also known as precipitator. (i,lek-tra'stad-ik pró'sip-ar,täd-ar)

**electrostatic repulsion** See Coulomb repulsion. (i,lek-tra'stad-ik ri'pal-shan)

**electrostatics** [ELEC] The study of electric charges at rest, their electric fields, and potentials. (i,lek-tra'stad-iks)

**electrostatic separation** [ENG] Separation of finely pulverized materials by placing them in electrostatic separators. Also known as high-tension separation. (i,lek-tra'stad-ik 'sep-ar'a-shan)

**electrostatic separator** [ENG] A separator in which a finely pulverized mixture falls through a powerful electric field between two electrodes; materials having different specific inductive capacitances are deflected by varying amounts and fall into different sorting chutes. (i,lek-tra'stad-ik 'sep-ar,a-rad-ar)

**electrostatic shielding** [ELEC] The placing of a grounded metal screen, sheet, or enclosure around a device or between two devices to prevent electric fields from interacting. (i,lek-tra'stad-ik 'sheld-ing)

**electrostatic stress** [ELEC] An electrostatic field acting on an insulator, which produces polarization in the insulator and causes electrical breakdown if raised beyond a certain intensity. (i,lek-tra'stad-ik 'stres)

**electrostatic transducer** [ENG ACOUS] A transducer consisting of a fixed electrode and a movable electrode, charged electrostatically in opposite polarity; motion of the movable electrode changes the capacitance between the electrodes and thereby makes the applied voltage change in proportion to the amplitude of the electrode's motion. Also known as condenser transducer. (i,lek-tra'stad-ik tran'du-sar)

**electrostatic tweeter** [ENG ACOUS] A tweeter loudspeaker in which a flat metal diaphragm is driven directly by a varying high voltage applied between the diaphragm and a fixed metal electrode. (i,lek-tra'stad-ik 'twe1-ør)

**electrostatic units** [ELEC] A centimeter-gram-second system of electric and magnetic units in which the unit of charge is that charge which exerts a force of 1 dyne on another unit charge when separated from it by a distance of 1 centimeter in vacuum; other units are derived from this definition by assigning unit coefficients in equations relating electric and magnetic quantities. Abbreviated esu. (i,lek-tra'stad-ik 'yu1-nats)

**electrostatic voltmeter** [ENG] A voltmeter in which the voltage to be measured is applied between fixed and movable metal vanes; the resulting electrostatic force deflects the movable vane against the tension of a spring. (i,lek-tra'stad-ik 'vəlt,med-ar)

**electrostatic wattmeter** [ENG] An adaptation of a quadrant electrometer for power measurements in which two quadrants are charged by the voltage drop across a noninductive shunt resistance through which the load current passes, and the line voltage is applied between one of the quadrants and a moving vane. (i,lek-tra'stad-ik 'wait,med-ar)

**electrostriction** [MECH] A form of elastic deformation of a dielectric induced by an electric field, associated with those components of strain.
electrostriction transducer

which are independent of reversal of field direction, in contrast to the piezoelectric effect. Also known as electrostrictive strain.  "\textit{lek-trö\textsuperscript{strik-shan}}"

**electrostriction transducer** [ENG ACOUS] A transducer which depends on the production of an elastic strain in certain symmetric crystals when an electric field is applied, or, conversely, which produces a voltage when the crystal is deformed. Also known as ceramic transducer.  "\textit{lek-trö\textsuperscript{strik-shan tranz\textsuperscript{dú\textsuperscript{sar}}}}"

**electrostrictive strain** See electrostriction.  "\textit{lek-trö\textsuperscript{strik-tiv \textsuperscript{stran}}}"

**electrothermal ammeter** See thermoammeter.  "\textit{lek-trö\textsuperscript{thar malt \textsuperscript{a,med-ar}}}"

**electrothermal energy conversion** [ENG] The direct conversion of electric energy into heat energy, as in an electric heater.  "\textit{lek-trö\textsuperscript{thar malt \textsuperscript{en-ar-jé kan,\textsuperscript{var\textsuperscript{shan}}}}}"

**electrothermal process** [ENG] Any process which uses an electric current to generate heat, utilizing resistance, arcs, or induction, used to achieve temperatures higher than can be obtained by combustion methods.  "\textit{lek-trö\textsuperscript{thar malt \textsuperscript{prás-as}}}"

**electrothermal voltmeter** [ENG] An electrothermal ammeter employing a series resistor as a multiplier, thus measuring voltage instead of current.  "\textit{lek-trö\textsuperscript{thar malt \textsuperscript{völt,méd-ar}}}"

**Elektron process** [CHEM ENG] A process of condensation and polymerization in which a mixture of a relatively light mineral oil and a fatty oil is subjected to an electric discharge in an atmosphere of hydrogen; the product is a very viscous oil used for blending with lighter lubricating oils.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{prás-as}}}"

**element** [CIV ENG] See member.  "\textit{lek-trö\textsuperscript{thar malt \textsuperscript{prás-as}}}"

**elementary commodity group** [IND ENG] The lowest level of goods or services for which consistent values can be determined. Also known as elementary group.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{prás-as}}}"

**elementary group** See elementary commodity group.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{prás-as}}}"

**element breakdown** [IND ENG] Separation of a work cycle into elemental motions.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**elements** [MECH] The various features of a trajectory such as the angle of departure, maximum ordinate, angle of fall, and so on.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**element time** [IND ENG] The time to complete a specific motion element.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**elaborate** [ENG] To increase the angle of elevation of a gun, launcher, optical instrument, or the like.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**elevated flooring** See raised flooring.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**elevation** [ENG] Vertical distance to a point or object from sea level or some other datum.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**elevation angle** See angle of elevation.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**elevation meter** [ENG] An instrument that measures the change of elevation of a vehicle.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**elevation stop** [ENG] Structural unit in a gun or other equipment that prevents it from being elevated or depressed beyond certain fixed limits.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**elevator** [MECH ENG] Also known as elevating machine. 1. Vertical, continuous-belt, or chain device with closely spaced buckets, scoops, arms, or trays to lift or elevate powders, granules, or solid objects to a higher level. 2. Pneumatic device in which air or gas is used to elevate finely powdered materials through a closed conduit. 3. An enclosed platform or car that moves up and down in a shaft for transporting people or materials. Also known as lift.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**Eline extraction** [CHEM ENG] Spray-tower, multistage, counterflow extractor in which the diameter of the base section is expanded to eliminate flow restriction at the light-liquid distribution location.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**ell** [BUILD] A wing built perpendicular to the main section of a building.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**elliptical orbit** [MECH] The path of a body moving along an ellipse, such as that described by either of two bodies revolving under their mutual gravitational attraction but otherwise undisturbed.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**elliptical system** [ENG] A tracking or navigation system where ellipsoids of position are determined from time or phase summation relative to two or more fixed stations which are the focuses for the ellipsoids.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**elliptic gear** [MECH ENG] A change gear composed of two elliptically shaped gears, each rotating about one of its focal points.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**elliptic spring** [DES ENG] A spring made of laminated steel plates, arched to resemble an ellipse.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**elongation** [MECH] The fractional increase in a material's length due to stress in tension or to thermal expansion.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**elutriation** [CHEM ENG] The process of removing substances from a mixture through washing and decanting.  "\textit{\textsuperscript{196}lek-trö\textsuperscript{thar malt \textsuperscript{bräk,da\textsuperscript{in}}}"

**elutriator** [ENG] An apparatus used to separate
suspended solid particles according to size by the process of elutriation. { e'lù-tré,əd-or }
emagram [THERMO] A graph of the logarithm of the pressure of a substance versus its temperature, when it is held at constant volume; in meteorological investigations, the potential temperature is often the parameter. { 'em-a-gram }
emameter [ENG] An instrument for the measurement of the radon content of the atmosphere; radon is removed from a sample of air by condensation or adsorption on a surface, and is then placed in an ionization chamber and its activity determined. { 'em-ə-nám-əd-or }
embankment [CIV ENG] 1. A ridge constructed of earth, stone, or other material to carry a roadway or railroad at a level above that of the surrounding terrain. 2. A ridge of earth or stone to prevent water from passing beyond desirable limits. Also known as bank. { em'baŋk-mant }
embossing stylus [ENG ACOUS] A recording stylus with a rounded tip that forms a groove by displacing material in the recording medium. { em'bos-ing-styl-us }
embrittlement [MECH] Reduction or loss of ductility or toughness in a metal or plastic with little change in other mechanical properties. { em'bríd-al-mant }
emergency brake [MECH ENG] A brake that can be set by hand and, once set, continues to hold until released, used as a parking brake in an automobile. { əm'jər-ən-sé, brák }
Emerson wage incentive plan [IND ENG] A plan comprising time wages to 66 2/3% of standard, ending at 120% time base, and thereafter a straight-line earning which is 20% above and parallel to basic piece rate. { 'em-ər-sən 'wā in,sen-tiv ,plan }
Emery-Dietz gravity corer [ENG] A tube, with weights attached, which forces sediment samples into its interior as it is dropped on the ocean bottom. { 'em-ər-sən 'klör }
emery wheel [DES ENG] A grinding wheel made of or having a surface of emery powder, used for grinding and polishing. { 'em-ə-ré ,wěl }
emi See electromagnetic interference.
emission standard [ENG] The maximum legal quantity of pollutant permitted to be discharged from a single source. { i'mish-ən ,stan-dard }
emissive power See emittance. { əm-i-siv ˈpau-ər }
emissivity [THERMO] The ratio of the radiation emitted by a surface to the radiation emitted by a perfect blackbody radiator at the same temperature. Also known as thermal emissivity. { ə-ˈmə-siv-əd-ɪ }
emittance [THERMO] The power radiated per unit area of a radiating surface. Also known as emissive power, radiating power. { i'mit-əns }
emitter [ELECTR] A transistor region from which charge carriers that are minority carriers in the base are injected into the base, thus controlling the current flowing through the collector, corresponds to the cathode of an electron tube. Symbolized E. Also known as emitter region. { i'mid-ər }
emitter barrier [ELECTR] One of the regions in which rectification takes place in a transistor, lying between the emitter region and the base region. { i'mid-ər ,baŋ-ər }
emitter junction [ELECTR] A transistor junction normally biased in the low-resistance direction to inject minority carriers into a base. { i'mid-ər ,jaŋk-shan }
EMOSFET See electrolyte-MOSFET.
employment test [IND ENG] Any of a wide variety of tests to measure intelligence, personality traits, skills, interests, aptitudes, or other characteristics; used to supplement interviews, physical examinations, and background investigations before employment. { em'plō-i-mant ,test }
empty-cell process [ENG] A wood treatment in which the preservative coats the cells without filling them. { əm-ˈtē-zel ˈpráz-as }
emulsification test [CHEM ENG] Standard laboratory procedure for evaluating the insulating properties of oils, turbine oils, and other lubricating oils to emulsification. { ə,mal-sə-fəkən-shən ,test }
emulsion cleaner [CHEM ENG] A cleaner composed of organic solvents dispersed in an aqueous solution with the aid of an emulsifying agent. { əmˈal-shən ,klen-ər }
emaline See glaze. { əmˈal-in }
emalining [ENG] The application of a vitreous glaze to pottery or metal surfaces, followed by firing in a kiln or furnace. { əmˈal-lin }
emaline kiln [ENG] A kiln in which enamel colors are fired. { əmˈal-in ,kil }
encastré beam See fixed-end beam. { ən-kə-strə bəm }
encoder See matrix. { enˈkɔd-ər }
encrustation [ENG] The buildup of slag or other material inside furnaces and kilns. { enˈkrəstən-shən }
end-bearing pile [CIV ENG] A bearing pile that is driven down to hard ground so that it carries the full load at its point. Also known as a point-bearing pile. { end ˈber-ing ,pil }
end construction [CIV ENG] Structural blocks or tiles laid so that the hollow cells run vertically. { end, ˌkan, ˈstrək-shən }
end effector [CONF SYS] The component of a robot that comes into contact with the workpiece and does the actual work on it. Also known as hand. { end ˌiʃek-tər }
end-feed centerless grinding [MECH ENG] Centerless grinding in which the piece is fed through grinding and regulating wheels to an end stop. { end-feeding ˈsen-ər-ləs ˈgrind-ən }
end item [ENG] A final combination of end products, component parts, or materials which is ready for its intended use; for example, ship, tank, mobile machine shop, or aircraft. { end ˌiʃam }
end lap [DES ENG] A joint in which two joining members are made to overlap by removal of half the thickness of each. { end ˌlap }
end loader [MECH ENG] A platform elevator at the rear of a truck. { end ˌloʊdər }
end mill [MECH ENG] A machine which has a
end-milled keyway

rotating shank with cutting teeth at the end and spiral blades on the peripheral surface; used for shaping and cutting metal. {'end', 'mill'}

end-milled keyway See profiled keyway. {'end', 'mild', 'key', 'wa'}

end-of-arm speed [CONT SYS] The speed at which an end effector arrives at its desired position. {'end', 'arm', 'speed'}

endoskeletons [ENG] A miniature battery-powered radio transmitter encapsulated like a pill, designed to be swallowed for measuring and transmitting physiological data from the gastrointestinal tract. {'end', 'skeleton', 'endoskeleton', 'end', 'skeleton', 'end'}

end play [MECH ENG] Axial movement in a shaft-and-bearing assembly resulting from clearances between the components. {'end', 'play'}

end point [CHEM ENG] In the distillation analysis of crude petroleum and its products, the highest reading of a thermometer when a specified proportion of the liquid has boiled off. Also known as final boiling point. [CONT SYS] The point at which a robot stops along its path of motion. See breakpoint. {'end', 'point'}

end-point rigidity [CONT SYS] The resistance of a robot to further movement after it has reached its end point. {'end', 'point', 'rigidity'}

end stop [MECH ENG] A limit to the movement of a mechanical system or part, usually brought about by valves or shock absorbers. {'end', 'stop'}

end turning See boxing. {'end', 'turning'}

endurance [ENG] The time an aircraft, vehicle, or ship can continue operating under given conditions without refueling. {'end', 'dur', 'ens', 'lim', 'at'}

endurance limit See fatigue limit. {'end', 'dur', 'ens', 'lim', 'fatigue', 'limit'}

endurance ratio See fatigue ratio. {'end', 'dur', 'ens', 'fatigue', 'ratio'}

endurance strength See fatigue strength. {'end', 'dur', 'ens', 'strength'}

energy beam [ENG] An intense beam of light, electrons, or other nuclear particles, used to cut, drill, form, weld, or otherwise process metals, ceramics, and other materials. {'energy', 'beam'}

energy conversion efficiency [MECH ENG] The efficiency with which the energy of the working substance is converted into kinetic energy. {'energy', 'conversion', 'efficiency'}

energy efficiency ratio [ELEC] A value that represents the relative electrical efficiency of air conditioners, it is the quotient obtained by dividing Btu-per-hour output by electrical-watts input during cooling. {'energy', 'efficiency', 'ratio', 'end', 'energy', 'efficiency', 'ratio'}

energy efficiency ratio [ELEC] A value that represents the relative electrical efficiency of air conditioners, it is the quotient obtained by dividing Btu-per-hour output by electrical-watts input during cooling. {'energy', 'efficiency', 'ratio'}

energy efficiency ratio [ELEC] A value that represents the relative electrical efficiency of air conditioners, it is the quotient obtained by dividing Btu-per-hour output by electrical-watts input during cooling. {'energy', 'efficiency', 'ratio'}

energy efficiency ratio [ELEC] A value that represents the relative electrical efficiency of air conditioners, it is the quotient obtained by dividing Btu-per-hour output by electrical-watts input during cooling. {'energy', 'efficiency', 'ratio'}

energy integral [MECH] A constant of integration resulting from integration of Newton's second law of motion in the case of a conservative force, equal to the sum of the kinetic energy of the particle and the potential energy of the force acting on it. {'energy', 'integral'}

enflurane [CHEM ENG] Removal of the odoriferous components from flowers by placing them near an odorless mixture of lard and tallow; this mixture absorbs the perfume, which is subsequently extracted. {'enflurane'}

engaged column [CIV ENG] A column partially built into a wall, and not freestanding. {'engaged', 'column'}

engine [MECH ENG] A machine in which power is applied to do work by the conversion of various forms of energy into mechanical force and motion. {'engine'}

engine balance [MECH ENG] Arrangement and construction of moving parts in reciprocating or rotating machines to reduce dynamic forces which may result in undesirable vibrations. {'engine', 'balance'}

engine block See cylinder block. {'engine', 'block'}

engine cooling [MECH ENG] Controlling the temperature of internal combustion engine parts to prevent overheating and to maintain all operating dimensions, clearances, and alignment by a circulating coolant, oil, and a fan. {'engine', 'cooling'}

engine cycle [THERMO] Any series of thermodynamic phases constituting a cycle for the conversion of heat into work. Examples are the Otto cycle, Stirling cycle, and Diesel cycle. {'engine', 'cycle'}

engine cylinder [MECH ENG] A cylindrical chamber in an engine in which the energy of the working fluid, in the form of pressure and heat, is converted to mechanical force by performing work on the piston. Also known as cylinder. {'engine', 'cylinder', 'engine', 'cylinder'}

engine displacement [MECH ENG] Volume displaced by each piston moving from bottom dead center to top dead center multiplied by the number of cylinders. {'engine', 'displacement'}

engine efficiency [MECH ENG] Ratio between the energy supplied to an engine to the energy output of the engine. {'engine', 'efficiency'}

engineer [ENG] An individual who specializes in one of the branches of engineering. {'engineer'}

engineering economy [IND ENG] 1. Application of engineering or mathematical analysis and synthesis to decision making in economics. 2. The knowledge and techniques concerned with evaluating the worth of commodities and services relative to their cost. 3. Analysis of the economics of engineering alternatives. {'engineering', 'economy'}

engineering geology [CIV ENG] The application of education and experience in geology and other geosciences to solve geological problems posed by civil engineering structures. {'engineering', 'geology'}

engineer's chain [CIV ENG] A surveyor's measuring instrument consisting of 1-foot (30.48-centimeter) steel links joined together by rings, 100 feet (30.5 meters) or 50 feet (15.29 meters) long. Also known as chain. {'engineer', 'chain'}

engine inlet [MECH ENG] A place of entrance for engine fuel. {'engine', 'inlet'}

engine knock [MECH ENG] In spark ignition engines, the sound and other effects associated
with ignition and rapid combustion of the last part of the charge to burn, before the flame front reaches it. Also known as combustion knock. (ˈe-nə-jən, nə-k)  

**engine lathe** [MECH ENG] A manually operated lathe equipped with a headstock of the backgared, cone-driven type or of the geared-head type. (ˈe-nə-jən ˈlæθ)  

**engine performance** [MECH ENG] Relationship between power output, revolutions per minute, fuel or fluid consumption, and ambient conditions in which an engine operates. (ˈe-nə-jən ˈpər-fər-məns)  

**engine sludge** [ENG] The insoluble products of degradation of lubricating oils and fuels formed during the operation of an internal combustion engine. (ˈe-nə-jən ˈslæd)  

**Engler distillation test** [CHEM ENG] A standard test for determination of the volatility characteristics of a gasoline by the measurement of the percent of gasoline distilled at various specific temperatures. (ˈeŋ-glər ˈdɪs-təl-ər-ˌshən ˈtɛst)  

**Engler flask** [CHEM ENG] A standardized flask of 100-milliliter volume used in the Engler distillation test. (ˈeŋ-glər ˈflɑsk)  

**Engler viscometer** [ENG] An instrument used in the measurement of the degree Engler, a measure of viscosity, the kinematic viscosity \( \nu \) in stokes for this instrument is obtained from the equation \( \nu = 0.00147t - 3.74/t \) where \( t \) is the efflux time in seconds. (ˈeŋ-glər ˈvɪskəm-ər)  

**English garden-wall bond** [CIV ENG] A masonry bond in which there are three courses of stretchers to one of headers. (ˈɪŋ-glɪʃ ˈgɑrd-ən ˈwoʊl ˌbænd)  

**enhancement** [ELECTR] An increase in the density of charged carriers in a particular region of a semiconductor. (enˈhɑːns-mənt)  

**enhancement mode** [ELECTR] Operation of a field-effect transistor in which no current flows when zero gate voltage is applied, and increasing the gate voltage increases the current. (enˈhɑːns-mənt, ˈməʊd)  

**enhancement-mode high-electron-mobility transistor** [ELECTR] A high-electron-mobility transistor in which application of a positive bias to the gate electrode is required for current to flow between the source and drain electrodes. Abbreviated E-HEMT. (enˈhɑːns-mənt ˈməʊd ˈhɪ ˈlɛktroʊˌmɑːnˌtɪər)  

**enhancement-mode junction field-effect transistor** [ELECTR] A type of gallium arsenide field-effect transistor in which the gate consists of the junction between the \( n \)-type gallium arsenide forming the conducting channel and \( p \)-type material implanted under a metal electrode. Abbreviated E-JFET. (enˈhɑːns-mənt ˈməʊd ˈjɛktˌrənˌmɑːnˌtɪər)  

**enqueue** [ENG] To place a data item in a queue. (enˈkjuː)  

**enriching column** [CHEM ENG] The portion of a countercurrent contractor (liquid-liquid extraction or vapor-liquid distillation) above the feed point in which an upward-moving, product-rich stream from the stripping column is further purified by countercurrent contact with a downward-flowing reflux stream from the overhead product-removal vessel. (ˈen-rɪtʃ ˈkən-ˌtɛr-ˈkəntˌrɛkt)  

**enroachment** [CIV ENG] A grouping of large stones dropped into water to form a base, such as for supporting a pier. (ˈen-rək-əm)  

**entering angle** [MECH ENG] The angle between the side-cutting edge of a tool and the machined surface of the work; angle is 90° for a tool with 0° side-cutting edge effective. (ˈen-tər-əm ˈæŋ-gəl)  

**enthalpy** [THERMO] The sum of the internal energy of a system plus the product of the system's volume multiplied by the pressure exerted on the system by its surroundings. Also known as heat content, sensible heat, total heat. (enˈθal-pi)  

**enthalpy-entropy chart** [THERMO] A graph of the enthalpy of a substance versus its entropy at various values of temperature, pressure, or specific volume; useful in making calculations about a machine or process in which this substance is the working medium. (enˈθal-pi ˈen-thər-pi ˈʃært)  

**enthalpy of vaporization** [THERMO] The heat of vaporization. (enˈθal-pi ˈovər-pər-ˈzɪ-zən)  

**entrainer** [CHEM ENG] An additive that forms an azo trope with one component of a liquid mixture to aid in otherwise difficult separations by distillation, as in azotropic distillation. (enˈtraɪn-ər)  

**entrainment** [CHEM ENG] A process in which the liquid boils so violently that suspended droplets of liquid are carried in the escaping vapor. (enˈtraɪn-əment)  

**entrance** [CIV ENG] The seaward end of a channel, harbor, and so on. [ENG] A place of physical entering, such as a door or passage. (ˈen-trəns)  

**entrance angle** [ENG] In molding, the maximum angle, measured from the center line of the mandrel, at which molten material enters the land area of a die. (ˈen-trəns ˈæŋ-gəl)  

**entrance lock** [CIV ENG] A lock between the tideway and an enclosed basin made necessary because the levels of the two bodies of water vary, by means of this lock, vessels can pass either way at all states of the tide. Also known as guard lock, tidal lock, tide lock. (ˈen-trəns ˈlɑk)  

**entropy** [THERMO] Function of the state of a thermodynamic system whose change in any differential reversible process is equal to the heat absorbed by the system from its surroundings divided by the absolute temperature of the system. Also known as thermal charge. (enˈtra-pə)  

**entry ballistics** [MECH] That branch of ballistics which pertains to the entry of a missile, spacecraft, or other object from outer space into and through an atmosphere. (ˈen-trē ˈbæli-stiks)  

**entry point** [ENG] The glass or metal housing of
an electron tube or the glass housing of an incandescent lamp. { 'en-ya,lop }

environment [ENG] The aggregate of all natural, operational, or other conditions that affect the operation of equipment or components. { in'vi-arm-mant or in'vi-tan-mant }

environmental cab [ENG] Operator's compartment in earthmovers equipped with tinted safety glass, soundproofing, air conditioning, and cleaning units. { in'vi-arm-mant-al 'kab }

environmental control [ENG] Modification and control of soil, water, and air environments of humans and other living organisms. { in'vi-arm-mant-al 'kan'trol }

environmental control system [ENG] A system used in a closed area, especially a spacecraft or submarine, to permit life to be sustained, the system provides the occupants with a suitably controlled atmosphere to permit them to live and work in the area. { in'vi-arm-mant-al kan'trol 'si-tam }

environmental engineering [ENG] The technology concerned with the reduction of pollution, contamination, and deterioration of the surroundings in which humans live. { in'vi-arm-mant-al en'ja'niin }

environmental impact analysis [IND ENG] Predetermination of the extent of pollution or environmental degradation which will be involved in a mining or processing project. { in'vi-arm-mant-al 'im'pakt 'a'nal-a'sas }

environmental impact statement [ENG] A report of the potential effect of plans for land use in terms of the environmental, engineering, aesthetic, and economic aspects of the proposed objective. { in'vi-arm-mant-al 'im'pakt 'stah'mant }

environmental protection [ENG] The protection of humans and equipment against stresses of climate and other elements of the environment. { in'vi-arm-mant-al protek'shan }

environmental range [ENG] The range of environment throughout which a system or portion thereof is capable of operation at not less than the specified level of reliability. { in'vi-arm-mant-al 'ran'i }

environmental stress cracking [MECH] The susceptibility of a material to crack or craze in the presence of surface-active agents or other factors. { in'vi-arm-mant-al 'stres 'krak-in }

environmental test [ENG] A laboratory test conducted to determine the functional performance of a component or system under conditions that simulate the real environment in which the component or system is expected to operate. { in'vi-arm-mant-al 'test }

environment simulator [ENG] Any machine or artificial device that simulates all or some of the attributes of an environment, such as the solar simulators with artificial suns used in testing spacecraft. { in'vi-arm-mant 'sim-ya'lad-ar }

eolian anemometer [ENG] An anemometer which works on the principle that the pitch of the eolian tones made by air moving past an obstacle is a function of the speed of the air. { e'ool-yan an-ma'mad-ad-ar }

eon [MECH] A unit of time, equal to 10^9 years. { e'n }

Eötvös effect [MECH] An apparent decrease (or increase) in the weight of a body moving from west to east (or east to west) because of its greater (or smaller) centrifugal acceleration. { at-vash i'fekt }

Eötvös rule [THERMO] The rule that the rate of change of molar surface energy with temperature is a constant for all liquids; deviations are encountered in practice. { at-vash ,ril }

Eötvös torsion balance [ENG] An instrument which records the change in the acceleration of gravity over the horizontal distance between the ends of a beam; used to measure density variations of subsurface rocks. { at-vash 'tor-shan 'bal'ans }

epicyclic gear [MECH ENG] A system of gears in which one or more gears travel around the inside or the outside of another gear whose axis is fixed. { ep-a'st-klik 'gir }

epicyclic train [MECH ENG] A combination of epicyclic gears, usually connected by an arm, in which some or all of the gears have a motion compounded of rotation about an axis and a translation or revolution of that axis. { ep-a'st-klik 'tran }

epitaxial diffused-junction transistor [ELECTR] A junction transistor produced by growing a thin, high-purity layer of semiconductor material on a heavily doped region of the same type. { ep-a'tak-se-al da'fyuzid 'jan-kshan tran'sis-tar }

epitaxial diffused-mesa transistor [ELECTR] A diffused-mesa transistor in which a thin, high-resistivity epitaxial layer is deposited on the substrate to serve as the collector. { ep-a'tak-se-al da'fyuzid 'ma-sa tran'sis-tar }

epitaxial transistor [ELECTR] Transistor with one or more epitaxial layers. { ep-a'tak-se-al tran'sis-tar }

Eppley pyrheliometer [ENG] A pyrheliometer of the thermoelectric type, radiation is allowed to fall on two concentric silver rings, the outer covered with magnesium oxide and the inner covered with lampblack; a system of thermocouples (thermopile) is used to measure the temperature difference between the rings; attachments are provided so that measurements of direct and diffuse solar radiation may be obtained. { ep-le 'pir he-le'am-ad-ar }

equal-arm balance [MECH] A simple balance in which the distances from the point of support of the balance-arm beam to the two pans at the end of the beam are equal. { e'kwal farn 'bal'ans }

equalizing file [DES ENG] A slightly bulging double-cut file used in fine toolmaking. { e'kwai'lin 'fil }

equalizer [ELECTR] A network designed to compensate for an undesired amplitude-frequency or phase-frequency response of a system or component; usually a combination of coils, capacitors, and resistors. Also known as equalizing
equivalent nitrogen pressure

equilibrium distillation See equilibrium flash vaporization.

equilibrium flash vaporization [CHEM ENG] Process in which a continuous liquid-mixture feed stream is partly vaporized in a column or vessel, with continuous withdrawal of vapor and liquid portions, the vapor and liquid in equilibrium. Also known as continuous equilibrium vaporization, equilibrium distillation; flash distillation, simple continuous distillation. {έκβαλλων το θάλασσαν, θάλασσαν}

equilibrium state [IND ENG] A state in which the numbers of customers or items waiting in a queue varies in such a way that the mean and distribution remain constant over a long period. {έκβαλλων το θάλασσαν, θάλασσαν}

equipment [ENG] One or more assemblies capable of performing a complete function. {ακύρωσμα}

equipment chain [ENG] Group of equipments that functionally in series, the failure of one or more of the equipments results in loss of the function. {ακύρωσμα}

equipment replacement study [IND ENG] A cost analysis based on estimates of operating costs over a stated time for the old facility compared with the new facility. {ακύρωσμα}

equipollent [MECH] Of two systems of forces, having the same vector sum and the same total torque about an arbitrary point. {ακύρωσμα}

equipotential surface [ELEC] A surface on which the electric potential is the same at every point. {ακύρωσμα}

equipotential line [ELEC] A surface on which the electric potential is the same at every point. {ακύρωσμα}

equipotential surface [ELEC] A surface on which the electric potential is the same at every point. {ακύρωσμα}

equipotentiel [MECH] Of two systems of forces, having the same vector sum and the same total torque about an arbitrary point. {ακύρωσμα}

characteristic nitrogen pressure [MECH] The pressure that would be indicated by a device if the gas inside it were replaced by nitrogen of equivalent
equivalent noise pressure

equivalent noise pressure [ENG ACOUS] In an electroacoustic transducer or sound reception system, the root-mean-square sound pressure of a sinusoidal plane progressive wave, which when propagated parallel to the primary axis of the transducer, produces an open-circuit signal voltage equivalent to the root-mean-square of the inherent open-circuit noise voltage of the transducer in a transmission band with a bandwidth of 1 hertz and centered on the frequency of the plane sound wave. Also known as inherent noise pressure. (i'kwiv-ə-lənt 'nī-tra-jən, presh-ər)
equivalent orifice [MECH ENG] An expression of fan performance as the theoretical sharp-edge orifice area which would offer the same resistance to flow as the system resistance itself. (i'kwiv-ə-lənt 'or-ə-sər)
equivalent round [ENG] The diameter of a circle whose circumference is equal to the circumference of a pipe whose cross section is not a perfect circle. (i'kwiv-ə-lənt 'rōound)
equivalent temperature [THERMO] A term used in British engineering for that temperature of a uniform enclosure in which, in still air, a sizable blackbody at 75°F (23.9°C) would lose heat at the same rate as in the environment. (i'kwiv-ələnt 'tem-prə-char)
equivalent twisting moment [MECH] A twisting moment which, if acting alone, would produce in a circular shaft a shear stress of the same magnitude as the shear stress produced by a given twisting moment and a given bending moment acting simultaneously. (i'kwiv-ə-lənt 'twist-ing ,mō-ment)
equivalent viscous damping [MECH] An assumed value of viscous damping used in analyzing a vibratory motion, such that the dissipation of energy per cycle at resonance is the same for the assumed or the actual damping force. (i'kwiv-ə-lənt 'vis-ə-kəs 'damp-ing)
equiviscous temperature [CHEM ENG] A measure of viscosity used in the tar industry, equal to the temperature in degrees Celsius at which the viscosity of tar is 50 seconds as measured in a standard tar efflux viscometer. Abbreviated EVT. (e-kwiv-ə-lənt 'tem-prə-char)
erection [CIV ENG] Positioning and fixing the frame of a structure. (i'rek-shən)
erection bolt [CIV ENG] A threaded rod with a head at one end, used to temporarily join parts of a structure during construction. (i'rek-shən ,bolt)
erection stress [MECH] The internal forces exerted on a structural member during construction. (i'rek-shən ,stres)
erection tower [CIV ENG] A temporary framework built at a construction site for hoisting equipment. (i'rek-shən ,tāu-ar)
ergograph [ENG] An instrument with a recording device used to measure work capacity of muscles. (er-gə-graf)
ergometer [ENG] An instrument with a recording device used to measure work performed by muscles under control conditions. (ar-gəm-ər)
ergostatistics [IND ENG] The application of various procedures for determining the time for an operator to perform a task satisfactorily, using the standard method in the usual environmental conditions, for example, time study or work sampling. Also known as work measurement. (ar-gå̆m-ən-triks)
ergonomics [IND ENG] The study of human capability and psychology in relation to the working environment and the equipment operated by the worker. (ar-ga-nım-iks)
Ericsson cycle [THERMO] An ideal thermodynamic cycle consisting of two isobaric processes interspersed with processes which are, in effect, isothermal, but each of which consists of an infinite number of alternating isentropic and iso-baric processes. (e-rik-sən, sī-kol)
error coefficient [CONT SYS] The steady-state value of the output of a control system, or of some derivative of the output, divided by the steady-state actuating signal. Also known as error constant. (e'-ər, kō-līsh-ənt)
error constant See error coefficient. (e'-ər ,kān-stōnt)
error of closure [ENG] Also known as angular error of closure. 1. The amount by which the measurement of the azimuth of the first line of a traverse, made after completing the circuit, fails to equal the initial measurement. 2. The amount by which the sum of the angles measured around the horizon differs from 360°. (e'-ər av 'klōz-hor)
error signal [CONT SYS] In an automatic control device, a signal whose magnitude and sign are used to correct the alignment between the controlling and the controlled elements. See error voltage. [ELECTR] A voltage that depends on the signal received from the target in a tracking system, having a polarity and magnitude dependent on the angle between the target and the center of the scanning beam. (e'-ər ,sig-nal)
escalation [IND ENG] Provision in actual or estimated costs for inflational increases in the costs of equipment, materials, labor, and so on, over those specified in an original contract. (e-sə-kəl-lə-shən)
escalator [MECH ENG] A continuously moving stairway and handrail. (e-sə-kə, lād-ər)
escape hatch [ENG] A hatch which permits persons to escape from a compartment, such as the interior of a submarine or aircraft, when normal means of exiting are blocked. (əskəp,hach)
escapement [MECH ENG] A ratchet device that permits motion in one direction slowly. (əskəp-mant)
escutcheon [DES ENG] An ornamental shield, flap, or border used around a dial, window, control knob, or other panel-mounted part. Also known as escutcheon plate. (es-kəch-ən)
escutcheon plate See escutcheon.
esthesiometer [ENG] An instrument used to measure tactile sensibility by determining the distance by which two points pressed against
the skin must be separated in order that they be felt as separate. Also spelled aesthesiometer.

**estimated time** [IND ENG] A predicted element or operation time. {‘es,thi:z’tim-əd-ar}

**etched circuit** [ENG] A printed circuit formed consisting of a pane, used in the measurement of electric circuits. {‘etcheid’kracht}

**ethoxylation** [CHEM ENG] A catalytic process which involves the direct addition of ethylene oxide to an alkyl phenol or to an aliphatic alcohol. {‘eth,thæk-sal’la-shan}

**ethylene alkylation** [CHEM ENG] A catalytic petroleum-refining process in which dry isobutane and ethylene react to form ethylene alkylate. {‘eth-a-len_əh-ka’lə-shan}

**EU** See expected unit.

**eudiometer** [ENG] An instrument for measuring changes in volume during the combustion of gases, consisting of a graduated tube that is closed at one end and has two wires sealed into it, between which a spark may be passed. {‘yoo-de’am-əd-ar}

**Euler angles** [MECH] Three angular parameters that specify the orientation of a body with respect to reference axes. {‘oy-lər_ən-gəlz}

**Euler equation** [MECH] Expression for the energy removed from a gas stream by a rotating blade system (as a gas turbine), independent of the blade system (as a radial- or axial-flow system). {‘oy-lər_ɪ_ka’wədən}

**Euler equations of motion** [MECH] A set of three differential equations expressing relations between the force moments, angular velocities, and angular accelerations of a rotating rigid body. {‘oy-lər_ɪ_ka’wədən əv ‘mō-əshən}

**Euler force** [MECH] The greatest load that a long, slender column can carry without buckling, according to the Euler formula for long columns. {‘oy-lər_ɪ_fo’rəs}

**Euler formula for long columns** [MECH] A formula which gives the greatest axial load that a long, slender column can carry without buckling, in terms of its length, Young’s modulus, and the moment of inertia about an axis along the center of the column. {‘oy-lər_ɪ_foHR-myə’la_ lor_ lo’n ‘kəl-amz}

**Eulerian description** See Euler method. {‘oy-lər_ən di’skrip-shən}

**Euler method** [MECH] A method of studying fluid motion and the mechanics of deformable bodies in which one considers volume elements at fixed locations in space, across which material flows; the Euler method is in contrast to the Lagrangian method. {‘oy-lər_ɪ_ meth-əd}

**Euler-Rodrigues parameter** [MECH] One of four numbers which may be used to specify the orientation of a rigid body; they are components of a quaternion. {‘oy-lər_ɪ_rod-dri-guaz_ pər-am-əd-an}

**EV** See expected value.

**evaporation rate** See atometer. {i,vap-ə’rə-shən_ə’rə-jə}

**evaporation loss** [CHEM ENG] The loss of a stored volatile liquid component or mixture by evaporation; controlled by temperature, pressure, and the presence or absence of vapor-recovery systems. {i,vap-ə’rə-shən_ə’rə-jə}

**evaporation pan** [ENG] A type of atmometer consisting of a pan, used in the measurement of the evaporation of water into the atmosphere. {i,vap-ə’rə-shən_ _pən}

**evaporation tank** [ENG] A tank used to measure the evaporation of water under controlled conditions. {i,vap-ə’rə-shən_ _tənk}

**evaporative condenser** [MECH ENG] An apparatus in which vapor is condensed within tubes that are cooled by the evaporation of water flowing over the outside of the tubes. {i,vap-ə,ri-d-ıv kən-dən-sər}

**evaporative control system** [MECH ENG] A motor vehicle system that prevents escape of gasoline vapors from the fuel tank or carburetor to the atmosphere while the engine is not operating. {i,vap-ə,ri-d-ıv kən-tər-ləs-sən-mənt}

**evaporative cooling** [ENG] 1. Lowering the temperature of a large mass of liquid by utilizing the latent heat of vaporization of a portion of the liquid. 2. Cooling air by evaporating water into it. 3. See vaporization cooling. {i,vap-ə,ri-d-ıv ‘kəl-ən’}

**evaporative cooling tower** See wet cooling tower. {i,vap-ə,ri-d-ıv ‘kəl-ən_ təu-rər}

**evaporator** [CHEM ENG] A device used to vaporize part or all of the solvent from a solution; the valuable product is usually either a solid or concentrated solution of the solute. [MECH ENG] Any of many devices in which liquid is changed to the vapor state by the addition of heat, for example, distiller, still, dryer, water purifier, or refrigeration system element where evaporation proceeds at low pressure and consequent low temperature. {i,vap-ə,ri-d-ər}

**evaporimeter** See atmometer. {i,vap-ə-ri-mər-əd-ar}

**evaporite pond** [IND ENG] Any containment area for brines or solution-mined effluents constructed to permit solar evaporation and harvesting of dewatered evaporite concentrates. {i,vap-ə,ri-tər_ pən-dənd}

**evapotranspirometer** [ENG] An instrument which measures the rate of evapotranspiration; consists of a vegetation soil tank so designed that all water added to the tank and all water left after evapotranspiration can be measured. {i,vap-ə,trans-ər-pə’rə-shən_ _pən-dənd}

**Evasé stack** [CIV ENG] In tunnel engineering, an exhaust stack for air having a cross section that increases in the direction of airflow at a rate to regain pressure. {ə’vəzhə_ _stək}

**even pitch** [DES ENG] The pitch of a screw in which the number of threads per inch is a multiple (or submultiple) of the threads per inch of the lead screw of the lathe on which the screw is cut. {i, vən_ pıtch}

**event** [IND ENG] A specified accomplishment in a program at a particular time; appears as a node
in a graphic representation of an endeavor with a specific objective (project).

**event recorder**  [ENG] A recorder that plots on-off information against time, to indicate when events start, how long they last, and how often they occur.

**event tree**  [IND ENG] A graphical representation of the possible sequence of events that might occur following an event that initiates an accident.

**evolutionary operation**  [IND ENG] An iterative technique for optimizing a production process by systematically introducing small changes in the process and then observing and evaluating the results.

**EVT** See equiviscous temperature.

**Ewing’s hysteresis tester**  [ENG] An instrument for determining the hysteresis loss of a specimen of magnetic material by measuring the deflection of a horseshoe magnet when the specimen is rapidly rotated between the poles of the magnet and the magnet is allowed to rotate about an axis that is aligned with the axis of rotation of the specimen.

**excavation**  [CIV ENG] 1. The process of digging a hollow in the earth. 2. An uncovered cavity in the ground.

**excavator**  [MECH ENG] A machine for digging and removing earth.

**exception handling**  [CONT SYS] The actions taken by a control system when unpredictable conditions or situations arise in which the controller must respond quickly.

**excess air**  [ENG] The amount of air admitted noxious gases from engine exhaust.

**excess coefficient**  [CHEM ENG] The signal voltage that heat rise and fall versus time for an exothermic event.

**excess time**  [ELECTR] A layer in a semiconductor, adjacent to its contact with a metal, in which there is almost complete ionization of atoms in the lattice and few charge carriers, resulting in a space-charge density.

**exchanger** See heat exchanger.

**excess air**  [ENG] Amount of air in a combustion process greater than the amount theoretically required for complete oxidation.

**excess coefficient**  [MECH ENG] The ratio \( A - R/R \), where \( A \) is the amount of air admitted in the combustion of fuel and \( R \) is the amount required.

**exchange adsorption**  [CHEM ENG] Ion exchange process in which the fluid phase contains or consists of two adsorbable components which together entirely saturate the surfaces of the adsorbent.

**exchanger** See heat exchanger.

**excitation**  [CONT SYS] The application of energy to one portion of a system or apparatus in a manner that enables another portion to carry out a specialized function; a generalization of the electricity and electronics definitions.

**exchanger** See heat exchanger.

**exergy**  [THERMO] The portion of the total energy of a system that is available for conversion to useful work; in particular, the quantity of work that can be performed by a fluid relative to a reference condition, usually the surrounding ambient condition.

**exhaust**  [MECH ENG] 1. The working substance discharged from an engine cylinder or turbine after working personnel on the moving parts of the machine. 2. The phase of the engine cycle concerned with this discharge. 3. A duct for the escape of gases, fumes, and odors from an enclosure, sometimes equipped with an arrangement of fans.

**exhaust deflecting ring**  [MECH ENG] A type of jetavator consisting of a ring so mounted at the end of a nozzle as to permit it to be rotated into the exhaust stream.

**exhaust gas**  [MECH ENG] Spent gas leaving an internal combustion engine or gas turbine.

**exhaust-gas analyzer**  [ENG] An instrument that analyzes the gaseous products to determine the effectiveness of the combustion process.

**exhaust head**  [ENG] A device placed on the end of an exhaust pipe to remove oil and water and to reduce noise.

**exhaust region**  [ELECTR] A layer in a semiconductor, adjacent to its contact with a metal, in which there is almost complete ionization of atoms in the lattice and few charge carriers, resulting in a space-charge density.

**exhaust manifold**  [MECH ENG] A branched system of pipes to carry waste emissions away from the piston chambers of an internal combustion engine.

**exhaust pipe**  [MECH ENG] The duct through which engine exhaust is discharged.

**exhaust scrubber**  [ENG] A purifying device on internal combustion engines which removes noxious gases from engine exhaust.

**exhaust stroke**  [MECH ENG] The stroke of an engine, pump, or compressor that expels the fluid from the cylinder.

**exhaust suction stroke**  [MECH ENG] A stroke of an engine that simultaneously removes used fuel and introduces fresh fuel to the cylinder.

**exhaust valve**  [MECH ENG] The valve on a cylinder in an internal combustion engine which controls the discharge of spent gas.

**exit**  [ENG] A door, passage, or place of egress.

**ex lightener**  [IND ENG] Price quoted exclusive of lightener fees.

**exotherm**  [CHEM ENG] The graphical plotting of heat rise and fall versus time for an exothermic reaction or process system.

**expanded-flow bin**  [ENG] A bin formed by attaching a mass-flow hopper to the bottom of a funnel-flow bin.

**expander flange**  [ENG] A type of butt-welded flange designed with a tapered bore so that various pipe sizes can be matched.
expanding brake [MECH ENG] A brake that operates by moving outward against the inside rim of a drum or wheel. { ik'span'shan 'brak}

expansion [ELECTR] A process in which the effective gain of an amplifier is varied as a function of signal magnitude, the effective gain being greater for large signals than for small signals; the result is greater volume range in an audio amplifier and greater contrast range in facsimile. [MECH ENG] Increase in volume of working material with accompanying drop in pressure of a gaseous or vapor fluid, as in an internal combustion engine or steam engine cylinder. { ik'span'shan}

expansion bolt [DES ENG] A bolt having an end which, when embedded into masonry or concrete, expands under a pull on the bolt, thereby providing anchorage. { ik'span'shan 'bolt}

expansion chucking reamer [DES ENG] A machine reamer with an expansion screw at the end which increases the diameter. { ik'span'shan 'summer}

expansion coefficient See coefficient of cubical expansion. { ik'span'shan 'ko-a-fish-ant}

expansion cooling [MECH ENG] Cooling of a substance by having it undergo adiabatic expansion. { ik'span'shan 'kül-iq}

expansion engine [MECH ENG] Piston-cylinder device that cools compressed air via sudden expansion, used in production of pure gaseous oxygen via the Claude cycle. { ik'span'shan 'en-jən}

expansion fit [DES ENG] A condition of optimum clearance between certain mating parts in which the cold inner member is placed inside the warmer outer member and the temperature is allowed to equalize. { ik'span'shan 'fit}

expansion joint [CIV ENG] 1. In masonry, a flexible bituminous fiber strip used to separate blocks or units of concrete to prevent cracking caused by thermally induced expansion and contraction. 2. A union or gap between adjacent parts of a building, structure, or concrete work in which a very high energy electrical impulse is passed through a bridge wire, literally exploding the bridge wire and releasing thermal and shock energy capable of initiating a relatively insensitive explosive in contact with the bridge wire. { ik'span'shan 'zhan 'dör}

explicit programming [CONT SYS] Robotic programming that employs detailed and exact descriptions of the tasks to be performed. { ik'splis-at 'pro,gram-iq}

explosive bit [DES ENG] A bit in which the cutting blade can be set at various sizes. { ek'span'siv 'bit}

expansivity See coefficient of cubical expansion. { ek'span'siv-ad-e}

extended utility See expected value.

effected value [SYS ENG] In decision theory, a measure of the value or utility expected to result from a given strategy, equal to the sum over states of nature of the product of the probability of the state times the consequence or outcome of the strategy in terms of some value or utility parameter. Abbreviated EV. Also known as expected utility (EU). { ek'spek-tad 'val-yü}

expansion valve [MECH ENG] A valve in which fluid flows under falling pressure and increasing volume. { ik'span'shan 'valv}

expansive bolt See coefficient of cubical expansion.

expansive fit [DES ENG] See expansion bolt.

expletive [ENG] Any material used as fill, for example, a piece of masonry used to fill a cavity. { 'ek-'splad-iv}

expanding brake [MECH ENG] A brake that operates by moving outward against the inside rim of a drum or wheel. { ik'span'shan 'brak}

expansion reamer [ENG] A reamer whose diameter may be adjusted between limits by an expanding screw. { ik'span'shan 'ra-mar}

expansion rollers [CIV ENG] Rollers fitted to one support of a bridge or truss to allow for thermal expansion and contraction. { ik'span'shan 'ro-larz}

expansion shield [DES ENG] An anchoring device that expands as it is driven into masonry or concrete, pressing against the sides of the hole. { ik'span'shan 'shild}

expansion valve [MECH ENG] A valve in which fluid flows under falling pressure and increasing volume. { ik'span'shan 'valv}

expansive bit [DES ENG] A bit in which the cutting blade can be set at various sizes. { ek'span'siv 'bit}

expansivity See coefficient of cubical expansion. { ek'span'siv-ad-e}

expected utility See expected value.

effected value [SYS ENG] In decision theory, a measure of the value or utility expected to result from a given strategy, equal to the sum over states of nature of the product of the probability of the state times the consequence or outcome of the strategy in terms of some value or utility parameter. Abbreviated EV. Also known as expected utility (EU). { ek'spek-tad 'val-yü}

expert control system [CONT SYS] A control system that uses expert systems to solve control problems. { ek'span'kon'trol 'sis-təm}

explicative [ENG] Any material used as fill, for example, a piece of masonry used to fill a cavity. { 'ek-'splad-iv}

explicit programming [CONT SYS] Robotic programming that employs detailed and exact descriptions of the tasks to be performed. { ik'splis-at 'pro,gram-iq}

explosive bit [DES ENG] A bit in which the cutting blade can be set at various sizes. { ek'span'siv 'bit}

explosivity See coefficient of cubical expansion. { ek'span'siv-ad-e}

expected utility See expected value.

effected value [SYS ENG] In decision theory, a measure of the value or utility expected to result from a given strategy, equal to the sum over states of nature of the product of the probability of the state times the consequence or outcome of the strategy in terms of some value or utility parameter. Abbreviated EV. Also known as expected utility (EU). { ek'spek-tad 'val-yü}

expanded valve [MECH ENG] A valve in which fluid flows under falling pressure and increasing volume. { ik'span'shan 'valv}

expansive bit [DES ENG] A bit in which the cutting blade can be set at various sizes. { ek'span'siv 'bit}

expansivity See coefficient of cubical expansion. { ek'span'siv-ad-e}

expected utility See expected value.

effected value [SYS ENG] In decision theory, a measure of the value or utility expected to result from a given strategy, equal to the sum over states of nature of the product of the probability of the state times the consequence or outcome of the strategy in terms of some value or utility parameter. Abbreviated EV. Also known as expected utility (EU). { ek'spek-tad 'val-yü}

expert control system [CONT SYS] A control system that uses expert systems to solve control problems. { ek'span'kon'trol 'sis-təm}

explicative [ENG] Any material used as fill, for example, a piece of masonry used to fill a cavity. { 'ek-'splad-iv}

explicit programming [CONT SYS] Robotic programming that employs detailed and exact descriptions of the tasks to be performed. { ik'splis-at 'pro,gram-iq}

explosive bit [DES ENG] A bit in which the cutting blade can be set at various sizes. { ek'span'siv 'bit}

explosivity See coefficient of cubical expansion. { ek'span'siv-ad-e}

expected utility See expected value.

effected value [SYS ENG] In decision theory, a measure of the value or utility expected to result from a given strategy, equal to the sum over states of nature of the product of the probability of the state times the consequence or outcome of the strategy in terms of some value or utility parameter. Abbreviated EV. Also known as expected utility (EU). { ek'spek-tad 'val-yü}

expert control system [CONT SYS] A control system that uses expert systems to solve control problems. { ek'span'kon'trol 'sis-təm}

explicative [ENG] Any material used as fill, for example, a piece of masonry used to fill a cavity. { 'ek-'splad-iv}

explicit programming [CONT SYS] Robotic programming that employs detailed and exact descriptions of the tasks to be performed. { ik'splis-at 'pro,gram-iq}

explosive bit [DES ENG] A bit in which the cutting blade can be set at various sizes. { ek'span'siv 'bit}

explosivity See coefficient of cubical expansion. { ek'span'siv-ad-e}

expected utility See expected value.

effected value [SYS ENG] In decision theory, a measure of the value or utility expected to result from a given strategy, equal to the sum over states of nature of the product of the probability of the state times the consequence or outcome of the strategy in terms of some value or utility parameter. Abbreviated EV. Also known as expected utility (EU). { ek'spek-tad 'val-yü}

expert control system [CONT SYS] A control system that uses expert systems to solve control problems. { ek'span'kon'trol 'sis-təm}

explicative [ENG] Any material used as fill, for example, a piece of masonry used to fill a cavity. { 'ek-'splad-iv
explosive-actuated device [ENG] Any of various devices actuated by means of explosive, includes devices actuated either by high explosives or low explosives, whereas propellant-actuated devices include only the latter. (ik'splō-siv ək-chā,wād-əd dī,vis)
explosive disintegration [ENG] Explosive shattering when pressure is suddenly released on a pressurized, permeable material (wood, mineral, and such) containing gas or liquid, the rupture of wood by this process is used to manufacture Masonite. (ik'splō-siv 'e-kō̅ ,rānj-i̯ ə)
explosive echo ranging [ENG] Sonar in which a charge is exploded underwater to produce a shock wave that serves the same purpose as an ultrasonic pulse; the elapsed time for return of the reflected wave gives target range. (ik'splō-siv ʻe-kō̅ ,rānj-i̯ ə)
explosive limits [CHEM ENG] The upper and lower limits of percentage composition of a combustible gas mixed with other gases or air within which the mixture explodes when ignited. (ik 'spō'-siv ʻlim-əts)
explosive rivet [ENG] A rivet holding a charge of explosive material; when the charge is set off, the rivet expands to fit tightly in the hole. (ik'splō-siv 'riv-ət)
exponential horn [ENG ACOUS] A horn whose cross-sectional area increases exponentially with axial distance. (ek-spa'n-ən-chāl ʻhōrn)
exponential smoothing [IND ENG] A mathematical-statistical method of forecasting used in industrial engineering which assumes that demand for the following period is some weighted average of the demands for the past periods. (ek-spa'n-ən-chāl 'smūth-i̯ ə)
exposure [BUILD] The distance from the butt of one shingle to the butt of the shingle above it, or the amount of a shingle that is seen. (ik 'spō'-zhār)
exposure time [CIV ENG] The time period of interest for seismic hazard calculations such as the design lifetime of a building or the time over which the numbers of casualties should be estimated. (ik'spō-zhar ʻtim)
expression [CHEM ENG] Separation of liquid from a two-phase solid-liquid system by compression under conditions that permit liquid to escape while the solid is retained between the compressing surfaces. Also known as mechanical expression. (ik'spresh-ən)
expressway [CIV ENG] A limited-access, high-speed, divided highway having grade separations at points of intersection with other roads. Also known as limited-access highway. (ik'spres 'wa̯)
extended area [DES ENG] An engineering surface that has been extended areawise without increasing diameter, as by using pleats (as in filter cartridges) or fins (as in heat exchangers). (ik'stend-əd 'er-ə-ə)
extendibility [MECH] The amount to which a material can be stretched or distorted without breaking (ik,sten-sa'bil-əd-ə)
extension bolt [DES ENG] A vertical bolt that can be slid into place by a long extension rod; used at the top of doors. (ik'sten-chan _bōl̩ _bōl̩)
extension jamb [BUILD] A jamb that extends past the head of a door or window. (ik'sten-chan_jam)
extension ladder [DES ENG] A ladder of two or more nesting sections which can be extended to almost the combined length of the sections. (ik'sten-chan _lad-ər)
extension spring [DES ENG] A tightly coiled spring designed to resist a tensile force. (ik 'sten-chan _spring)
extensometer [ENG] 1. A strainometer that measures the change in distance between two reference points separated 60–90 feet (20–30 meters) or more, used in studies of displacements due to seismic activities. 2. An instrument designed to measure minute deformations of small objects subjected to stress. (ek,sten 'sam-ad-ər)
exterior ballistics [MECH] The science concerned with behavior of a projectile after leaving the muzzle of the firing weapon. (ek'stir-eə bo'li̯s-tiks)
external brake [MECH ENG] A brake that operates by contacting the outside of a brake drum. (ek'stərn-əl 'brāk)
external centerless grinding [MECH ENG] A process by which a metal workpiece is finished on its external surface by supporting the piece on a blade while it is advanced between a regulating wheel and grinding wheel. (ek'stərn-əl 'sen-tər-ləs ,grən-dəng)
external combustion engine [MECH ENG] An engine in which the generation of heat is effected in a furnace or reactor outside the engine cylinder. (ek'stərn-əl kam'bəs-chan _en-jən)
external device [ENG] A piece of equipment that operates in conjunction with and under the control of a central system, such as a computer or control system, but is not part of the system itself. (ek'stərn-əl di'vis)
external force [MECH] A force exerted on a system or on some of its components by an agency outside the system. (ek'stərn-əl _fōrs)
external grinding [MECH ENG] Grinding the outer surface of a rotating piece of work. (ek'stərn-əl ,grən-dəng)
external header [MECH ENG] Manifold connecting sections of a cast iron boiler. (ek'stərn-əl _hed-ər̩)
externally fired boiler [MECH ENG] A boiler that has refractory or cooling tubes surrounding its furnace. (ek'stərn-əl _frd 'boil-ər̩)
external-mix oil burner [ENG] A burner utilizing a jet stream of air to strike the liquid fuel after it has left the burner orifice. (ek'stərn-əl _miks 'oil,barn-ər̩)
external sensor [CONT SYS] A device that senses information about the environment of a control system but is not part of the system itself. (ek'stərn-əl _sen-sər̩)
external shoe brake [MECH ENG] A friction brake operated by the application of externally contracting elements. (ek'stərn-əl 'shū ,brāk)
fabrication [ENG] 1. The manufacture of parts, usually structural or electromechanical parts. 2. The assembly of parts into a structure.  
face [CIV ENG] 1. The surface of the area that has been excavated in constructing a tunnel. 2. In building construction, the exposed surface of a wall, masonry unit, or sheet of material. 3. To install a surface layer of one material over another, such as laying brick on a wall built of concrete blocks. [DES ENG] The surface of a flange on a pipe that is fitted against another flange. [ELECTR] See faceplate.  
face-discharge bit [MECH ENG] A liquid-coolant bit designed for drilling in soft formations and for use on a double-tube core barrel, the inner tube of which fits snugly into a recess cut into the inside wall of the bit directly above the inside reaming stones; the coolant flows through the bit and is ejected at the cutting face. Also known as bottom-discharge bit, face-ejection bit.  
facemold [ENG] A pattern for cutting forms out of sheets of wood, metal, or other material.  
face milling [MECH ENG] Milling flat surfaces perpendicular to the rotational axis of the cutting tool.  
face mold [ENG] A pattern for cutting forms out of sheets of wood, metal, or other material.  
face nailing [ENG] Nailing of facing wood to a base, leaving the nailheads exposed.  
faceplate [ELECTR] The transparent or semi-transparent glass front of a cathode-ray tube, through which the image is viewed or projected; the inner surface of the face is coated with fluorescent chemicals that emit light when hit by an electron beam. Also known as face. [ENG] 1. A disk fixed perpendicularly to the spindle of a lathe and used for attachment of the workpiece. 2. A protective plate used to cover holes in machines or other devices. 3. In scuba or skin diving, a glass or plastic window positioned over the face to provide an air space between the diver's eyes and the water.  
face shield [ENG] A detachable wraparound guard fitted to a worker's helmet to protect the face from flying particles.  
facemold [ENG] A pattern for cutting forms out of sheets of wood, metal, or other material.  
facemold [ENG] Ornamental or otherwise special material on the front side or outside of a wall.  
facemold [ENG] A covering or casting of some material applied to the outer face of embankments, buildings, and other structures. [MECH ENG] Machining the end of a flat rotating surface by applying a tool perpendicular to the axis of rotation in a spiral planar path.  
facemold [ENG] A lock used on a railroad track, such as a switch track, which contains a plunger that engages a rod on the switch point to lock the device.  
facemold [ENG] A covering or casting of some material applied to the outer face of embankments, buildings, and other structures. [MECH ENG] Machining the end of a flat rotating surface by applying a tool perpendicular to the axis of rotation in a spiral planar path.  
facemold [ENG] A lock used on a railroad track, such as a switch track, which contains a plunger that engages a rod on the switch point to lock the device.  
facemold [ENG] A covering or casting of some material applied to the outer face of embankments, buildings, and other structures. [MECH ENG] Machining the end of a flat rotating surface by applying a tool perpendicular to the axis of rotation in a spiral planar path.  
facemold [ENG] A lock used on a railroad track, such as a switch track, which contains a plunger that engages a rod on the switch point to lock the device.  
facemold [ENG] A covering or casting of some material applied to the outer face of embankments, buildings, and other structures. [MECH ENG] Machining the end of a flat rotating surface by applying a tool perpendicular to the axis of rotation in a spiral planar path.  
facemold [ENG] A lock used on a railroad track, such as a switch track, which contains a plunger that engages a rod on the switch point to lock the device.  
facemold [ENG] A covering or casting of some material applied to the outer face of embankments, buildings, and other structures. [MECH ENG] Machining the end of a flat rotating surface by applying a tool perpendicular to the axis of rotation in a spiral planar path.  
facemold [ENG] A lock used on a railroad track, such as a switch track, which contains a plunger that engages a rod on the switch point to lock the device.  
facemold [ENG] A covering or casting of some material applied to the outer face of embankments, buildings, and other structures. [MECH ENG] Machining the end of a flat rotating surface by applying a tool perpendicular to the axis of rotation in a spiral planar path.  
facemold [ENG] A lock used on a railroad track, such as a switch track, which contains a plunger that engages a rod on the switch point to lock the device.  
facemold [ENG] A covering or casting of some material applied to the outer face of embankments, buildings, and other structures. [MECH ENG] Machining the end of a flat rotating surface by applying a tool perpendicular to the axis of rotation in a spiral planar path.  
facemold [ENG] A lock used on a railroad track, such as a switch track, which contains a plunger that engages a rod on the switch point to lock the device.  
facemold [ENG] A covering or casting of some material applied to the outer face of embankments, buildings, and other structures. [MECH ENG] Machining the end of a flat rotating surface by applying a tool perpendicular to the axis of rotation in a spiral planar path.  
facemold [ENG] A lock used on a railroad track, such as a switch track, which contains a plunger that engages a rod on the switch point to lock the device.  
facemold [ENG] A covering or casting of some material applied to the outer face of embankments, buildings, and other structures. [MECH ENG] Machining the end of a flat rotating surface by applying a tool perpendicular to the axis of rotation in a spiral planar path.  
facemold [ENG] A lock used on a railroad track, such as a switch track, which contains a plunger that engages a rod on the switch point to lock the device.  
facemold [ENG] A covering or casting of some material applied to the outer face of embankments, buildings, and other structures. [MECH ENG] Machining the end of a flat rotating surface by applying a tool perpendicular to the axis of rotation in a spiral planar path.  
facemold [ENG] A lock used on a railroad track, such as a switch track, which contains a plunger that engages a rod on the switch point to lock the device.  
facemold [ENG] A covering or casting of some material applied to the outer face of embankments, buildings, and other structures. [MECH ENG] Machining the end of a flat rotating surface by applying a tool perpendicular to the axis of rotation in a spiral planar path.  
facemold [ENG] A lock used on a railroad track, such as a switch track, which contains a plunger that engages a rod on the switch point to lock the device.  
facemold [ENG] A covering or casting of some material applied to the outer face of embankments, building
Fahrenheit’s hydrometer

Fahrenheit’s hydrometer  [ENG] A type of hydrometer which carries a pan at its upper end in which weights are placed, the relative density of a liquid is measured by determining the weights necessary to sink the instrument to a fixed mark, first in water and then in the liquid being studied.  { ’far-ən-hits hii’drəm-əd-ər}  
failed hole  [ENG] A drill hole loaded with dynamite which did not explode. Also known as missed hole.  { ’fæld ’hɔl}  
fail-safe system  [ENG] A system designed so that failure of power, control circuits, structural members, or other components will not endanger people operating the system or other people in the vicinity.  { ’fæl sēf ’sis-tam}  
fall soft  [ENG] A failure in the performance of a system component that neither results in immediate or major interruption of the system operation as a whole nor adversely affects the quality of its products.  { ’fæl soft}  
failure  [ENG] A permanent change in the volume of a powder or the stresses within it.  [MECH] Condition caused by collapse, break, or bending, so that a structure or structural element can no longer fulfill its purpose.  { ’fæl-ər}  
failure properties  [ENG] The parameters that control the degree of the failure of a powder.  { ’fæl-ər ,præp-ərd-əz}  
failure rate  [ENG] The probability of failure per unit of time of items in operation, sometimes estimated as a ratio of the number of failures to the accumulated operating time for the items.  { ’fæl-ər ,ræt}  
faired cable  [DES ENG] A trailing cable covered by streamlined surfaces to reduce hydrodynamic drag.  { ’ferd ’ka-bal}  
fairead  [MECH ENG] A group of pulleys or rollers used in conjunction with a winch or similar apparatus to permit the cable to be reeled from any direction.  { ’fer ,lēd}  

Fales-Stuart windmill  [MECH ENG] A windmill developed for farm use from the two-blade airfoil propeller. Also known as Stuart windmill.  { ’fəlz stū-ərt ’wīnd-mil}  
Falk flexible coupling  [MECH ENG] A spring coupling in which a continuous steel spring is threaded back and forth through axial slots in the periphery of two hubs on the shaft ends.  { ’fōkl jīlek-sə-bal ’kāp-əl}  
fall  [ENG] The minimum slope that is required to facilitate proper drainage of liquid inside a pipe.  [MECH ENG] The rope or chain of a hoisting tackle.  { ’fōl}  

fall block  [MECH ENG] A pulley block that rises and falls with the load on a lifting tackle.  { ’fōl ,blāk}  
faller  [MECH ENG] A machine part whose operation depends on a falling action.  { ’fōl-ər}  
falling-ball viscometer  See falling-sphere viscometer.  { ’fōl-ər ,bōl vi’skām-əd-ər}  
falling body  [MECH] A body whose motion is accelerated toward the center of the earth by the force of gravity, other forces acting on it being negligible by comparison.  { ’fōl-ər ,bōd-ə}  

falling-film cooler  [ENG] Liquid cooling system in which the cooling liquid flows down vertical tube exterior surfaces in a thin film, and hot process fluid flows upward through the tubes.  { ’fōl-ər ,film ,kōl-ar}  
falling-film evaporator  [ENG] Liquid evaporator system with heated vertical tubes. Liquid to be evaporated flows down the inside tube surfaces as a film, evaporating as it flows.  { ’fōl-ər ,film ’vəp-a-răd-ər}  
falling-film molecular still  See falling-film still.  { ’fōl-ər ,film məlek-ə-lər ’stil}  
falling-film still  [CHEM ENG] Special molecular distillation apparatus designed for high evaporative and separation efficiency. Also known as falling-film molecular still.  { ’fōl-ər ,film ’stil}  
falling-sphere viscometer  [ENG] A viscometer which measures the speed of a spherical body falling with constant velocity in the fluid whose viscosity is to be determined. Also known as falling-ball viscometer.  { ’fōl-ər ,sir vi’skām-əd-ər}  
fallout shelter  [CIV ENG] A structure that affords some protection against fallout radiation and other effects of nuclear explosion; maximum protection is in reinforced concrete shelters below the ground. Also known as radiation shelter.  { ’fōl ,āt ,shel-ər}  
false attic  [BUILD] A section under a roof normally occupied by an attic, but which has no windows and does not enclose rooms.  { ’fōls ’ad-ik}  
false bottom  [CIV ENG] A temporary bottom installed in a caisson to add to its buoyancy.  { ’fōls ’bād-əm}  
false header  [CIV ENG] A half brick used to complete a visible bond; it is not a header.  { ’fōls ’hed-ər}  
falsework  [CIV ENG] A temporary support used until the main structure is strong enough to support itself.  { ’fōls ,wōrk}  
family mold  [ENG] A multicavity injection mold where each cavity forms a component part of the finished product.  { ’fam- ’lē ,mōld}  
fan  [MECH ENG] 1. A device, usually consisting of a rotating paddle wheel or an airscrew, with or without a casing, for producing currents in order to circulate, exhaust, or deliver large volumes of air or gas. 2. A vane to keep the sails of a windmill facing the direction of the wind.  { fan}  
fan brake  [MECH ENG] A fan used to provide a load for a driving mechanism.  { ’fān ,brāk}  
fan cut  [ENG] A cut in which holes of equal or increasing length are drilled in a pattern on a horizontal plane or in a selected stratum to break out a considerable part of the plane or stratum before the rest of the round is fired.  { ’fān ,kaut}  
fan drilling  [ENG] 1. Drilling boreholes in different vertical and horizontal directions from a single-drill setup. 2. A radial pattern of drill holes from a setup.  { ’fān ,dril-ər}  
fan efficiency  [MECH ENG] The ratio obtained by dividing a fan’s useful power output by the power input (the power supplied to the fan
fatigue limit

shaft), it is expressed as a percentage. \( \text{fan bōt} \) [DES ENG] A bolt having a triangular nut with sharp projections at its corners; used to attach metal pieces to wood. \( \text{fan rating} \) [MECH ENG] The head, quantity, power, and efficiency expected from a fan operating at peak efficiency. \( \text{fan ring} \) [DES ENG] Circular metallic collar encircling (but spaced away from) the tips of the fan blade in process equipment, such as air-cooled heat exchangers; ring design is critical to the efficiency of fan performance. \( \text{fan shaft} \) [DES ENG] The spindle on which a fan impeller is mounted. \( \text{fan, shooting} \) [ENG] Seismic exploration in which seismometers are placed in a fan-shaped array to detect anomalies in refracted-wave arrival times indicative of circular rock structures such as salt domes. \( \text{fan static pressure} \) [MECH ENG] The total pressure rise diminished by the velocity pressure in the fan outlet. \( \text{fan total pressure} \) [MECH ENG] The algebraic difference between the mean total pressure at the fan outlet and the mean total pressure at the fan inlet. \( \text{fan truss} \) [CIV ENG] A truss with struts arranged as radiating lines. \( \text{fan velocity pressure} \) [MECH ENG] The velocity pressure corresponding to the average velocity at the fan outlet. \( \text{farad} \) [ELEC] The unit of capacitance in the meter-kilogram-second system, equal to the capacitance of a capacitor which has a potential difference of 1 volt between its plates when the charge on one of its plates is 1 coulomb, there being an equal and opposite charge on the other plate. Symbolized \( \text{F} \). \( \text{Faraday cage} \) See Faraday shield. \( \text{Faraday cylinder} \) [ELEC] 1. A closed, or nearly closed, hollow conductor, usually grounded, within which apparatus is placed to shield it from electrical fields. 2. A nearly closed, insulated, hollow conductor, usually shielded by a second grounded cylinder, used to collect and detect a beam of charged particles. \( \text{Faraday screen} \) See Faraday shield. \( \text{Faraday tube} \) [ELEC] A tube of force for electric displacement which is of such size that the integral over any surface across the tube of the component of electric displacement perpendicular to that surface is unity. \( \text{far-infrared maser} \) [ENG] A gas maser that generates a beam having a wavelength well above 100 micrometers, and ranging up to the present lower wavelength limit of about 500 micrometers for microwave oscillators. \( \text{fascia} \) [BUILD] A wide board fixed vertically on edge to the rafter ends or wall which carries the gutter around the eaves of a roof. \( \text{fascine} \) [CIV ENG] A cylindrical bundle of brushwood 1–3 feet (30–90 centimeters) in diameter and 10–20 feet (3–6 meters) long, used as a facing for seawalls on riverbanks, as a foundation mat, as a dam in an estuary, or to protect bridge, dike, and pier foundations from erosion. \( \text{fastener} \) [DES ENG] 1. A device for joining two separate parts of an article or structure. 2. A device for holding closed a door, gate, or similar structure. \( \text{fastening} \) [DES ENG] A spike, bolt, nut, or other device to connect rails to ties. \( \text{fast-joint} \) [ENG] Pertaining to a joint with a permanently secured pin. \( \text{fast pin} \) [ENG] A pin that fastens immovably, particularly the pin in a fast joint. \( \text{fast-spiral drill} \) See high-helix drill. \( \text{fatigue} \) [ELECTR] The decrease of efficiency of a luminescent or light-sensitive material as a result of excitation. \( \text{fatigue factor} \) [IND ENG] The element of physical and mental exhaustion in a time-motion study, the multiplier used to add the fatigue allowance to the normal time. \( \text{fatigue life} \) [MECH] The number of applied repeated stress cycles a material can endure before failure. \( \text{fatigue limit} \) [MECH] The maximum stress that a material can endure for an infinite number of
fatigue ratio

stress cycles without breaking. Also known as endurance limit. [fʊtˈteɪɡ, lɪm-ət]  

fatigue ratio [MECH] The ratio of the fatigue limit or fatigue strength to the static tensile strength. Also known as endurance ratio. {fʊtˈteɪɡˌrædʒ-ətʃər}  

fatigue strength [MECH] The maximum stress a material can endure for a given number of stress cycles without breaking. Also known as endurance strength. {fʊtˈteɪɡˌstreŋθ}  

fatigue-strength reduction factor See factor of stress concentration. {fʊtˈteɪɡˌstrestʃkθ riˈdɑkˌʃənˌfakˌtər}  

fatigue test [ENG] Test to determine the range of alternating stress which a material can withstand without breaking. {fʊtˈteɪɡˌtɛst}  

faugeron kiln [ENG] A coal-fired tunnel kiln for firing feldspathic porcelain; the distinctive feature is the separation of the tunnel into a series of chambers by division walls on the cars and drop arches in the roof. {foʊˈzaˌθəˌrænˌkɪl}  

fault [ELEC] A defect, such as an open circuit, short circuit, or ground, in a circuit, component, or line. Also known as electrical fault; faulting. [ELECTR] Any physical condition that causes a component of a data-processing system to fail in performance. (fəlt)  

fault analysis [ENG] The detection and diagnosis of malfunctions in technical systems, in particular, by means of a scheme in which one or more computers monitor the technical equipment to signal any malfunction and designate the components responsible for it. {fəlt nəlˈætʃər}  

fault finder [ENG] Test set for locating trouble conditions in communications circuits or systems. {fəlt ˈfɪndər}  

faulting See fault. (fəltˈɪŋ)  

fault monitoring [SYS ENG] A procedure for systematically checking for errors and malfunctions in the software and hardware of a computer or control system. { fəltˌmænˈər-tʃər}  

fault tolerance [SYS ENG] The capability of a system to perform in accordance with design specifications even when undesired changes in the internal structure or external environment occur. {fəltˌtɛlˈər-ənς}  

fault tree [IND ENG] A graphical representation of an undesired event caused by a combination of factors arising from equipment failure, human error, or environmental events. {fəltˌtir}  

Faxen drag factor See drag factor. {fɑkˌsənˈdρrəfər}  

faying surface [ENG] The surfaces of materials in contact with each other and joined or joined to be joined together. {fɑɪnˌsɚfər}  

feasibility study [SYS ENG] 1. A study of applicability or desirability of any management or procedural system from the standpoint of advantages versus disadvantages in any given case. 2. A study to determine the time at which it would be practicable or desirable to install such a system when determined to be advantageous. 3. A study to determine whether a plan is capable of being accomplished successfully. {fɛˈzəˈbiləd-ət}  

feasibility test [SYS ENG] A test conducted to obtain data in support of a feasibility study or to demonstrate feasibility. {fɛˈzəˌbɪləd-əˌtɛst}  

feasible method See interaction prediction method. {fɛˈzəˌbɪlˌmɛθəd}  

feather [MECH ENG] To change the pitch on a propeller in order to reduce drag and prevent windmilling in case of engine failure. {ˈfeθər}  

feather edge [CIV ENG] The thin edge of a gravel-surfaced road. {DES ENG} A wood tool with a level edge used to straighten angles in the finish coat of plaster. {ˈfeθərˌeʤ}  

feathering [MECH ENG] A pitch position in a controllable-pitch propeller; it is used in the event of engine failure to stop the windmilling action, and occurs when the blade angle is about 90° to the plane of rotation. Also known as full feathering. {ˈfeθərˌər}  

feathering propeller [MECH ENG] A variable-pitch marine or airscrew propeller capable of increasing pitch beyond the normal high pitch value to the feathered position. {ˈfeθərˌər}  

feather joint [ENG] A joint made by cutting a mating groove in each of the pieces that are joined and inserting a feather in the opening formed when the pieces are butted together. Also known as ploughed-and-tongued joint. {ˈfeθərˌjɔn}  

feed [ELECTR] To supply a signal to the input of a circuit, transmission line, or antenna. [ENG] 1. Process or act of supplying material to a processing unit for treatment. 2. The material supplied to a processing unit for treatment. 3. A device that moves stock or workpieces to, in, or from a die. [MECH ENG] Forward motion imparted to the cutters or drills of cutting or drilling machinery. {fɛd}  

feedback [ELECTR] The return of a portion of the output of a circuit or device to its input. {ˈfɛdˌbæk}  

feedback branch [CONT SYS] A branch in a signal-flow graph that belongs to a feedback loop. {ˈfɛdˌbækˌbrəŋk}  

feedback circuit [ELECTR] A circuit that returns a portion of the output signal of an electronic circuit or control system to the input of the circuit or system. {ˈfɛdˌbækˌkɔrəkt}  

feedback compensation [CONT SYS] Improvement of the response of a feedback control system by placing a compensator in the feedback path, in contrast to cascade compensation. Also known as parallel compensation. {ˈfɛdˌbækˌkæmˌpəlˌrəlˌkɔrəkt}  

feedback control loop See feedback loop. {ˈfɛdˌbækˌkɔnˌtrelˌlʊp}  

feedback control signal [CONT SYS] The portion of an output signal which is retransmitted as an input signal. {ˈfɛdˌbækˌkɔnˌtrelˌsɪŋɡnəl}  

feedback control system [CONT SYS] A system in which the value of some output quantity is
controlled by feeding back the value of the controlled quantity and using it to manipulate an input quantity so as to bring the value of the controlled quantity closer to a desired value. Also known as closed-loop control system.

**feedback loop** [CONT SYS] A closed transmission path or loop that involves an active transducer and consists of a forward path, a feedback path, and one or more mixing points arranged to maintain a prescribed relationship between the loop input signal and the loop output signal. Also known as feedback control loop.

**feedback regulator** [CONT SYS] A feedback control system that tends to maintain a prescribed relationship between certain system signals and other predetermined quantities.

**feedback transfer function** [CONT SYS] In a feedback control loop, the transfer function of the feedback path.

**feed-control valve** [MECH ENG] A small valve, usually a needle valve, on the outlet of the hydraulic-feeding cylinder on the swivel head of a diamond drill, used to control minutely the speed of the hydraulic piston travel and hence the rate at which the bit is made to penetrate the rock.

**feeder** [ELEC] 1. A transmission line used between a transmitter and an antenna. 2. A conductor, or several conductors, connecting generating stations, substations, or feeding points in an electric power distribution system. 3. A group of conductors in an interior wiring system which link a main distribution center with secondary or branch-circuit distribution centers. [MECH ENG] 1. A conveyor adapted to control the rate of delivery of bulk materials, packages, or objects, or a control device which separates or assembles objects. 2. A device for delivering materials to a processing unit.

**feeder-breaker** [MECH ENG] A unit that breaks and feeds ore or crushed rock to a materials-handling system at a required rate.

**feeder canal** [CIV ENG] A canal serving to conduct water to a larger canal.

**feeder conveyor** [MECH ENG] A short auxiliary conveyor designed to transport materials to another conveyor. Also known as stage loader.

**feeder road** [CIV ENG] A road that feeds traffic to a more important road.

**feedforward control** [CONT SYS] Process control in which changes are detected at the process input and an anticipating correction signal is applied before process output is affected.

**feeding zone** [CONT SYS] The area on the planar surface of a conveyor or pallet where the center of an object to be manipulated by a robotic system is placed.

**feed nut** [MECH ENG] The threaded sleeve fitting around the feed screw on a gear-feed drill swivel head, which is rotated by means of paired gears driven from the spindle or feed shaft.

**feed off** [ENG] To lower the bit continuously or intermittently during a drilling operation by disengaging the drum brake.

**feed pipe** [MECH ENG] The pipe which conducts water to a boiler drum.

**feed pitch** [DES ENG] The distance between the centers of adjacent feed holes in punched paper tape.

**feed preparation unit** [CHEM ENG] A processing unit (such as distillation or desulfurization units) providing feedstock for subsequent processing.

**feed pressure** [MECH ENG] Total weight or pressure, expressed in pounds or tons, applied to the drilling stem to make the drill bit cut and penetrate the geologic, rock, or ore formation.

**feed pump** [MECH ENG] A pump used to supply water to a steam boiler.

**feed rate** See cutting speed.

**feed ratio** [MECH ENG] The number of revolutions a drill stem and bit must turn to advance the drill bit 1 inch when the stem is attached to and rotated by a screw- or gear-feed type of drill swivel head with a particular pair of the set of gears engaged. Also known as feed speed.

**feed reel** [ENG] The reel from which paper tape or magnetic tape is being fed.

**feed screw** [MECH ENG] The externally threaded drill-rod drive rod in a screw- or gear-feed swivel head on a diamond drill; also used on percussion drills, lathes, and other machinery.

**feed shaft** [MECH ENG] A short shaft or counter-shaft in a diamond-drill gear-feed swivel head which is rotated by the drill motor through gears or a fractional drive and by means of which the engaged pair of feed gears is driven.

**feed speed** See feed ratio.

**feedstock** [ENG] The raw material furnished to a machine or process.

**feed tank** [ENG] A chamber that contains feedstock.

**feed travel** [MECH ENG] The distance a drilling machine moves the steel shank in traveling from top to bottom of its feeding range.

**feed tray** [CHEM ENG] For a tray-type distillation column, that tray on which fresh feedstock is introduced into the system.

**feed trough** [MECH ENG] A receptacle into which feedwater overflows from a boiler drum.

**feedwater** [MECH ENG] The water supplied to a boiler or still.

**feedwater heater** [MECH ENG] An apparatus that utilizes steam extracted from an engine or
feeler gage

turbine to heat boiler feedwater. {‘fēdˌwōdˌarˌhēdˌarˌ}

feeler gage [MECH ENG] A tool with many blades of different thickness used to establish clearance between parts or for gapping spark plugs. {‘fēlˌarˌgā́i̯}\n
feeler pin [MECH ENG] A pin that allows a duplicating machine to operate only when there is a supply of paper. {‘fēlˌarˌpēnˌ}\n
Fell system [CIV ENG] A method of traction intended for steep railroad slopes; a central rail is gripped between horizontal wheels on the locomotive. {‘fēlˌsisˈtān̩ˌmə́}\n
female connector [ELEC] A connector having one or more contacts set into recessed openings; jacks, sockets, and wall outlets are examples. {‘fēlˌsisˈiˌnaktoʊr̩ˌ}\n
female fitting [DES ENG] In a paired pipe or an electrical or mechanical connection, the portion (fitting) that receives, contrasted to the male portion (fitting) that inserts. {‘fēlˌsiˌlīt̩ˌiŋ̩ˌ}\n
femtrons [ELECTR] Class of field-emission microwave devices. {‘fēmˌaˌtrān̩z̩ˌ}\n
femtometer [MECH] A unit of length, equal to 10^-15 meter, used particularly in measuring nuclear distances. Abbreviated fm. Also known as fermi. {‘fēmˌtōˌmēdˌarˌ}\n
fence [ENG] 1. A line of data-acquisition or tracking stations used to monitor orbiting satellites. 2. A line of radar or radio stations for detection of satellites or other objects in orbit. 3. A line or network of early-warning radar stations. 4. A concentric steel fence erected around a ground radar transmitting antenna to serve as an artificial horizon and suppress ground clutter that would otherwise drown out weak signals returning at a low angle from a target. 5. An adjustable guide on a tool. {fens}\n
fender [CIV ENG] A timber, cluster of piles, or bag of rope placed along dock or bridge pier to prevent damage by docking ships or floating objects. [ENG] A cover over the upper part of a wheel of an automobile or other vehicle. {‘fēnˌderˌ}\n
Fenske equation See Fenske-Underwood equation. {‘fēnˌskēˌiˌkwāˌzhanˌ}\n
Fenske-Underwood equation [CHEM ENG] Equation in plate-to-plate distillation-column calculations relating the number of theoretical plates needed at total reflux to overall relative volatility and the liquid-vapor composition ratios on upper and lower plates. Also known as Fenske equation. {‘fēnˌskēˌanˌdārˌwūdˌiˌkwāˌzhanˌ}\n
fermi See femtometer. {‘ferˌmē}\n
ferrite device [ELEC] An electrical device whose principle of operation is based upon the use of ferrites in powdered, compressed, sintered form, making use of their ferrimagnetism and their high electrical resistivity, which makes eddy-current losses extremely low at high frequencies. {‘fēˌrīt̩ˌdīˌvīs}\n
ferrocyanide process [CHEM ENG] A regenerative chemical treatment for removal of mercaptans from petroleum fuels; uses caustic-sodium ferrocyanide reagent. {‘fērˌrō̃ˌsāˌnīdˌprāz̩ˌas̩ˌ}\n
ferroelectric converter [ELEC] A converter that transforms thermal energy into electric energy by utilizing the change in the dielectric constant of a ferroelectric material when heated beyond its Curie temperature. {‘fērˌrō̃ˌiˌlekˌtrīk ˌkōnˌˈvardˌarˌ}\n
ferroelectric hysteresis [ELEC] The dependence of the polarization of ferroelectric materials not only on the applied electric field but also on their previous history; analogous to magnetic hysteresis in ferromagnetic materials. Also known as dielectric hysteresis, electric hysteresis. {‘fērˌrō̃ˌiˌlekˌtrīkˌhisˌtāˈresˌsəsˌ}\n
ferroelectric hysteresis loop [ELEC] Graph of polarization or electric displacement versus applied electric field of a material displaying ferroelectric hysteresis. {‘fērˌrō̃ˌiˌlekˌtrīkˌhisˌtāˈresˌsəsˌlīpˌ}\n
ferrograph analyzer [ENG] An instrument used for ferrography; a pump delivers a small sample of the fluid to a microscope slide mounted above a magnet that generates a high-gradient magnetic field, causing particles to be deposited in a gradient of sizes along the slide. {‘ferˌaˌgrafˌˈaˌnəˌlīz̩ˌarˌ}\n
ferrography [ENG] Wear analysis of machine bearings, bones, or prosthetic materials from synovial fluids of the joint; the utilization of the magnetic polarization properties of materials. {‘fērˌrō̃ˌmāˈɡnəˌnēdˌiksˌ}\n
ferrometer [ENG] An instrument used to make permeability and hysteresis tests of iron and steel. {‘fērtəˌrāmˌədˌarˌ}\n
ferrule [DES ENG] 1. A bag of rope placed along dock or bridge pier to prevent damage by docking ships or floating objects. 2. A bushing inserted in the end of a tool handle, post, or other device to strengthen and protect it. 2. A bushing inserted in the end of a boiler flue to spread and tighten it. See stabilizer. {‘ferˌalˌ}\n
FET See field-effect transistor.\n
fiber gyro See fiber-optic gyroscope. {‘fiˌbār̩ˌiˈrō̃} fiber-optic gyroscope. {‘fiˌbār̩ˌaˈpēˌtīˈkəˈrāntˌˌsenˌsār̩ˌ}\n
fiber-optic current sensor [ENG] An instrument for measuring currents on high-voltage lines, in which the magnetic field associated with the current changes the phase of light traveling through an optical fiber, and the phase change is measured in an interferometer. {‘fiˌbār̩ˌaˈpēˌtīˈkəˈraˈrāntˌˌsenˌsār̩ˌ}\n
fiber-optic gyroscope [ENG] An instrument for measuring rotation rate, in which light from a laser or light-emitting diode is split into two beams which travel in opposite directions around a coil of optical fiber and recombine to generate interference fringes whose shift is a
measure of the rotation rate of the coil. Also known as fiber gyro, laser/fiber-optics gyrooscope.

fiber optic hydrophone See interferometric hydrophone.

fiber optic magnetometer [ENG] A magnetometer in which the deformation of a magnetostriuctive body in the field causes phase changes in light traveling through an optical fiber wrapped around the body, and these phase changes are measured in an interferometer.

fiber optic sensor See optical-fiber sensor.

fiber optic thermometer [ENG] A thermometer in which light from a mercury lamp is guided along an optical fiber to excite a tiny fluorescent crystal, whose light is in turn guided back along the fiber to an evaluation unit where the crystal temperature is determined from the ratios of the strengths of spectral lines in the fluorescent light or from the decay time of the fluorescence.

field-effect transistor [ELECTR] A transistor in which the resistance of the current path from source to drain is modulated by applying a transverse electric field between grid or gate electrodes; the electric field varies the thickness of the depletion layer between the gates, thereby reducing the conductance. Abbreviated FET.

field-effect transistor resistor [ELECTR] A field-effect transistor in which the gate is generally tied to the drain; the resultant structure is used as a resistance load for another transistor.

field-effect tetrode [ELECTR] Four-terminal device consisting of two independently terminated semiconducting channels so displaced that the conductance of each is modulated along its length by the voltage conditions in the other.

field-effect varistor [ELECTR] A transistor in which the resistance of the current path from source to drain is modulated by light as the input signal.

field-effect phototransistor [ELECTR] A field-effect transistor that responds to modulated light.

field-effect phototransistor resistor [ELECTR] A field-effect transistor resistor.

field-effect tetrode [ELECTR] Four-terminal device consisting of two independently terminated semiconducting channels so displaced that the conductance of each is modulated along its length by the voltage conditions in the other.

field-effect transistor [ELECTR] A transistor in which the resistance of the current path from source to drain is modulated by applying a transverse electric field between grid or gate electrodes; the electric field varies the thickness of the depletion layer between the gates, thereby reducing the conductance. Abbreviated FET.

field-effect transistor resistor [ELECTR] A field-effect transistor in which the gate is generally tied to the drain; the resultant structure is used as a resistance load for another transistor.

field-effect varistor [ELECTR] A passive, two-terminal, nonlinear semiconductor device that maintains constant current over a wide voltage range.

field excitation [MECH ENG] Control of the speed of a series motor in an electric or diesel-electric locomotive by changing the relation between the armature current and the field strength, either through a reduction in field current by shorting the field coils with resistance, or through the use of field taps.

field-strength meter [ENG] A calibrated radio receiver used to measure the field strength of radiated electromagnetic energy from a radio transmitter.

FIFO See first-in, first-out.

fifteen degrees calorie See calorie.

fifth wheel [MECH ENG] A coupling device in the form of two horizontal disks that rotate on each other positioned between a tractor and a semitrailer so that they can change direction independently.

figure of merit [ELECTR] A performance rating that governs the choice of a device for a particular application; for example, the figure of merit of a magnetic amplifier is the ratio of usable power gain to the control time constant.

filar filament [ELECT] Metallic wire or ribbon which is heated in an incandescent lamp to produce light; by passing an electric current through the filament. A cathode made of resistance wire or ribbon, through which an electric current is sent to produce the high temperature.
filamentary cathode

required for emission of electrons in a thermionic tube. Also known as directly heated cathode, filamentary cathode, filament-type cathode. { 'fil-ə-mant }

filamentary cathode See filament. { 'fil-ə-mant }

filament-type cathode See filament. { 'fil-ə-mant }

filament winding [ELECTR] The secondary winding of a power transformer that furnishes alternating-current heater or filament voltage for one or more electron tubes. [ENG] A process for fabricating a composite structure in which continuous fiber reinforcement (glass, boron, silicon carbide), either previously impregnated with a matrix material or impregnated during winding, are wound under tension over a rotating core. { 'fil-ə-mant, wind-ing }

filar micrometer [DES ENG] An instrument used to measure small distances in the field of an eyepiece by using two parallel wires, one of which is fixed while the other is moved at right angles to its length by means of an accurately cut screw. Also known as bifilar micrometer. { 'fı̃l-lar mı̃kə-ər }

file [DES ENG] A steel bar or rod with cutting teeth on its surface, used as a smoothing or forming tool. { fil }

file hardness [ENG] Hardness of a material as determined by testing with a file of standardized hardness, a material which cannot be cut with the file is considered as hard as or harder than the file. { 'fil-här-də-sən }

fill [CIV ENG] Earth used for embankments or as backfill. { fil }

filled-system thermometer [ENG] A thermometer which has a bourdon tube connected by a capillary tube to a hollow bulb; the deformation of the bourdon tube depends on the pressure of a gas (usually nitrogen or helium) or on the volume of a liquid filling the system. Also known as filled thermometer. { 'fı̃l-dı̃s-ə-tı̃m thar-mə-məd }

filled thermometer See filled-system thermometer. { 'fı̃l-dı̃s-ə-tı̃m thar-mə-məd }

fillet [BUILD] A flat molding that separates rounded or angular moldings. [DES ENG] A concave transition surface between two otherwise intersecting surfaces. [ENG] 1. Any narrow, flat metal or wood member. 2. A corner piece at the juncture of perpendicular surfaces to lessen the danger of cracks, as in core boxes for castings. { 'fil-ət }

fillet gage [DES ENG] A gage for measuring convex or concave surfaces. { 'fil-ət, ə-gā́ }

fill factor [MECH ENG] The approximate load that the dipper of a shovel is carrying, expressed as a percentage of the rated capacity. { 'fil-ə-kər }

filling [ENG] The loading of trucks with any material. { 'fil-ing }

fill-up work See internal work. { 'fil-ap, ə-wərk }

film [ELEC] The layer adjacent to the valve metal in an electrochemical valve, in which is located the high voltage drop when current flows in the direction of high flows. { film }

film analysis [IND ENG] A systematic detailed analysis of work from a motion picture film, usually derived from a motion study. { 'fil-ə-nal-ə-səs }

film boiling [THERMO] Boiling in which a continuous film of vapor forms at the hot surface of the container holding the boiling liquid, reducing heat transfer across the surface. { 'film, bol-ing }

film coefficient [THERMO] For a fluid confined in a vessel, the rate of flow of heat out of the fluid, per unit area of vessel wall divided by the difference between the temperature in the interior of the fluid and the temperature at the surface of the wall. Also known as convection coefficient. { 'film, kə-tə-ə-fənt }

film condensation [THERMO] The formation of a continuous film of liquid on a wall in contact with a vapor, when the wall is cooled below the local vapor saturation temperature and the liquid wets the cold surface. { 'film, kən-dən-sən }

film cooling [THERMO] The cooling of a body or surface, such as the inner surface of a rocket combustion chamber, by maintaining a thin fluid layer over the affected area. { 'film, kəl-ı̃ng }

film platen [ENG] A device which holds film in the focal plane during exposure. { 'film, plə-tən }

film resistor [ELEC] A fixed resistor in which the resistance element is a thin layer of conductive material on an insulated form; the conductive material does not contain binders or insulating material. { 'film, rə-zəs-tə }

film transport [MECH ENG] 1. The mechanism for moving photographic film through the region where light strikes it in recording film tracks or sound tracks of motion pictures. 2. The mechanism which moves the film print past the area where light passes through it in reproduction of picture and sound. { 'film, trənz, port }

film vault [ENG] A place for safekeeping of film. { 'film, vəlt }

filter See compensator. [ELECTR] Any transmission network used in electrical systems for the selective enhancement of a given class of input signals. Also known as electric filter, electric-wave filter. [ENG] A porous article or material for separating suspended particulate matter from liquids by passing the liquid through the pores in the filter and sieving out the solids. [ENG ACOUS] A device employed to reject sound in a particular range of frequencies while passing sound in another range of frequencies. Also known as acoustic filter. { 'fil-tər }

filterability [ENG] The adaptability of a liquid-solid system to filtration, system is not filterable if it is too viscous to be forced through a filter medium, or if the solids are too small to be stopped by the filter medium. { 'fil-trə-bil-ə-də́ }

filter bed [CIV ENG] A fill of pervious soil that
provided a site for a septic field. [ENG] A contact bed used for filtering purposes. { 'fil-tär ,bed' }

filter cake See mud cake. { 'fil-tär ,kärk' }

filter-cake washing [CHEM ENG] An operation performed at the end of a filtration, in which residual liquid impurities are washed out of the cake by the flow of another liquid through the cake. { 'fil-tär ,kärk ,wash-in' }

filter capacitor [ELEC] A capacitor used in a power-supply filter system to provide a low-reactance path for alternating currents and thereby suppress ripple currents, without affecting direct currents. { 'fil-tär kär,pas-əd-ər' }

filtered-particle testing [ENG] A penetrant by the temperature difference from fin-to-fluid divideding direct currents. { 'fin,blank-kär' }

fin efficiency [ENG] In extended-surface heat-exchange equations, the ratio of the mean temperature difference from surface-to-fluid divided by the temperature difference from fin-to-fluid at the base or root of the fin. { 'fin,a,fish-an-se' }

fine grinding [MECH ENG] Grinding performed in a mill rotating on a horizontal axis in which the material undergoes final size reduction, to −100 mesh. { 'fin,grind-in' }

fineness modulus [ENG] A number denoting the fineness of a fine aggregate or other fine material such as sand or paint. { 'fin-nas 'mài-jə-ləs' }

finger bit [DES ENG] A steel rock-cutting bit having fingerlike, fixed or replaceable steel-cutting points. { 'fin-gar ,bit' }

finger gripper [CONT SYS] A robot component that uses two or more joints for grasping objects. { 'fin-gar ,grip-ar' }

fining [CHEM ENG] A process in which molten glass is cleared of bubbles, usually by the addition of chemical agents. { 'fin-in' }

finished goods [IND ENG] Manufactured products in inventory ready for packaging, shipment, or sale. { 'fin-isht 'gudz' }

finisher [CIV ENG] A construction machine used to smooth the freshly placed surface of a roadway, or to prepare the foundation for a pavement. { 'fin-ish-ar' }

finish grinding [MECH ENG] The last action of a grinding operation to achieve a good finish and accurate dimensions. { 'fin-ish ,grind-in' }

finishing hardware [BUILD] Items, such as hinges, door pulls, and strike plates, made in attractive shapes and finishes, and usually visible on the completed structure. { 'fin-ish-in' }

finishing nail [DES ENG] A wire nail with a small head that can easily be concealed. { 'fin-ish-in' }

finish plate [DES ENG] A plate which covers and protects the cylinder setscrews; it is fastened to the underplate and forms part of the armored front for a mortise lock. { 'fin-ish ,plät' }

finish turning [MECH ENG] The operation of machining a surface to accurate size and producing a smooth finish. { 'fin-ish ,tərning' }

finite elasticity theory See finite strain theory. { 'fì,ni,tər las-'tə-stræn' ,θər-ə-ri' }

finite element method [ENG] An approximation method for studying continuous physical systems, used in structural mechanics, electrical field theory, and fluid mechanics; the system is broken into discrete elements interconnected
finite strain theory

at discrete node points. \( \{ \text{finite} \ \text{strain} \ \text{theory} \} \)

finite strain theory [MECH] A theory of elasticity, appropriate for high compressions, in which it is not assumed that strains are infinitesimally small. Also known as finite elasticity theory. \( \{ \text{finite} \ \text{strain} \ \text{theory} \} \)

Fink truss [CIV ENG] A symmetrical steel roof truss suitable for spans up to 50 feet (15 meters). \( \{ \text{Fink truss} \} \)

finned surface [MECH ENG] A tubular heat-exchange surface with extended projections on one side. \( \{ \text{finned surface} \} \)

fire [ENG] To blast with gunpowder or other explosives. \( \{ \text{fire} \} \)

firebox [MECH ENG] The furnace of a locomotive or similar type of fire-tube boiler. \( \{ \text{firebox} \} \)

fire bridge [ENG] A low wall separating the hearth and the grate in a reverberatory furnace. \( \{ \text{fire bridge} \} \)

fire crack [ENG] A crack resulting from thermal stress which propagates on the heated side of a shell or head in a boiler or a heat transfer surface. \( \{ \text{fire crack} \} \)

firecracker [ENG] A cylindrically shaped item containing an explosive and a fuse, used to simulate the noise of an explosive charge. \( \{ \text{firecracker} \} \)

firecut [BUILD] An angular cut made at the end of a joist which will rest on a brick wall. \( \{ \text{firecut} \} \)

firedamp reforming process [CHEM ENG] A process in which methane (firedamp) is mixed with steam and passed over a nickel catalyst for conversion to a mixture of hydrogen and carbon monoxide; this mixture is blended with pure methane, and the result is a fuel of high calorific value. \( \{ \text{firedamp reforming process} \} \)

danger meter [ENG] A graphical aid used in fire-weather forecasting to calculate the degree of forest-fire danger (or burning index); commonly in the form of a circular slide rule, it relates numerical indices of the seasonal stage of foliage, the cumulative effect of past precipitation or lack thereof (buildup index), the measured fuel moisture, and the speed of the wind in the woods; the fuel moisture is determined by weighing a special type of wooden stick that has been exposed in the woods, its weight being proportional to its contained water; the calculated burning index falls on a scale of 1 to 100: 1 to 11 is no fire danger, 12 to 35 medium danger, 40 to 100 high danger. \( \{ \text{fire-danger meter} \} \)

fire detector [ENG] A temperature-sensing device designed to sound an alarm, to turn on a sprinkler system, or to activate some other fire preventive measure at the first signs of fire. \( \{ \text{fire detector} \} \)

fire door [ENG] 1. The door or opening through which fuel is supplied to a furnace or stove. 2. A door that can be closed to prevent the spreading of fire, as through a building or mine. \( \{ \text{fire door} \} \)

fire extinguisher [ENG] Any of various portable devices used to extinguish a fire by the ejection of a fire-inhibiting substance, such as water, carbon dioxide, gas, or chemical foam. \( \{ \text{fire extinguisher} \} \)

fire hydrant [ENG] An outlet from a water main provided inside buildings or outdoors to which fire hoses can be connected. Also known as a pike pole. \( \{ \text{fire hydrant} \} \)

fire hydrant system [CIV ENG] An outlet from a water main provided inside buildings or outdoors to which fire hoses can be connected. Also known as a pike pole. \( \{ \text{fire hydrant system} \} \)

fire line [ENG] A papework system dedicated to providing water for extinguishing fires. \( \{ \text{fire line} \} \)

fire load [CIV ENG] The load of combustible material per square foot of floor space. \( \{ \text{fire load} \} \)

fire partition [BUILD] A wall inside a building intended to retard fire. \( \{ \text{fire partition} \} \)

fire plug [CIV ENG] See fire hydrant. \( \{ \text{fire plug} \} \)

fireproof [BUILD] Having noncombustible walls, stairways, and stress-bearing members, and having all steel and iron structural members which could be damaged by heat protected by refractory materials. \( \{ \text{fireproof} \} \)

fire protection [CIV ENG] Measures for reducing injury and property loss by fire. \( \{ \text{fire protection} \} \)

fire pump [MECH ENG] A pump for fire protection purposes usually driven by an independent, reliable prime mover and approved by the National Board of Fire Underwriters. \( \{ \text{fire pump} \} \)

fire-resistant [CIV ENG] Of a structural element, able to resist combustion for a specified time under conditions of standard heat intensity without burning or failing structurally. \( \{ \text{fire-resistant} \} \)

fireroom [MECH ENG] That portion of a fossil fuel-burning plant which contains the furnace and associated equipment. \( \{ \text{fireroom} \} \)

fire sprinkling system [MECH ENG] See sprinkler system. \( \{ \text{fire sprinkling system} \} \)

fire standpipe [CIV ENG] A high, vertical pipe
or tank that holds water to assure a positive, relatively uniform pressure, particularly to pro-
vide fire protection to upper floors of tall build-
ings. {fr‘t, dŞőp}

**fire stop**  [BUILD] An incombustible, horizontal or vertical barrier, as of brick across a hollow wall or across an open roof, to stop the spread of fire. Also known as draught stop. {fr‘, st‘p‘}

**fire tower**  [BUILD] A fireproof and smokeproof stairway compartment running the height of a building. {fr‘, tau‘-r‘}

**fire-tube boiler**  [MECH] A steam boiler in which hot gaseous products of combustion pass through tubes surrounded by boiler water. {fr‘, tib‘, boi‘-l‘-r‘}

**fire wall**  [CIV ENG] 1. A fire-resisting wall separating two parts of a building from the lowest floor to several feet above the roof to prevent the spread of fire. 2. A fire-resisting wall surrounding an oil storage tank to retain oil that may escape and to confine fire. {fr‘, wol‘}

**firing**  [ELECTR] 1. The gas ionization that initiates current flow in a gas-discharge tube. 2. Excitation of a magnetron or transmit-receive tube by a pulse. 3. The transition from the unsaturated to the saturated state of a saturable reactor. [ENG] 1. The act or process of adding fuel and air to a furnace. 2. Igniting an explosive mixture. 3. Treating a ceramic product with heat. {fr‘, jng‘}

**firing machine**  [ENG] An electric blasting machine [MECH ENG] A mechanical stoker used to feed coal to a boiler furnace. {fr‘-n, shn‘}

**firing mechanism**  [ENG] A mechanism for firing a primer, the primer may be for initiating the propelling charge, in which case the firing mechanism forms a part of the weapon, if the primer is for the purpose of initiating detonation of the main charge, the firing mechanism is a part of the ammunition item and performs the function of a fuse. {fr‘-n, mek‘-n, niz‘-n‘}

**firing pressure**  [MECH ENG] The highest pressure in an engine cylinder during combustion. {fr‘-n, pr*sh‘-r‘}

**firing rate**  [MECH ENG] The rate at which fuel feed to a burner occurs, in terms of volume, heat units, or weight per unit time. {fr‘-n, r*tt‘}

**firm er chisel**  [DES ENG] A small hand chisel with a flat blade, used in woodworking. {fr‘, mar‘, chiz‘-n‘}

**firm-joint caliper**  [DES ENG] An outside or inside caliper whose legs are jointed together at the top with a nut and which must be opened and closed by hand pressure. {fr‘, min‘, jnt‘ ‘kal‘-n‘-r‘}

**firmoviscosity**  [MECH] Property of a substance in which the stress is equal to the sum of a term proportional to the substance's deformation, and a term proportional to its rate of deformation. {fr‘-m‘-vis‘kš-ads‘-a‘}

**first arrival**  [ENG] In exploration refraction seismology, the first seismic event recorded on a seismogram; it is noteworthy in that only first arrivals are considered in this usage. {fr‘, s‘r‘-v‘, s‘-v‘}

**first cost**  [IND ENG] The sum of the initial expendi-
tures involved in capitalizing a property; includes items such as transportation, installa-
tion, preparation for service, as well as other related costs. {fr‘, kšts‘}

**first fire**  [ENG] The igniter used with pyrotech-
nic devices, consisting of first fire composition, loaded in direct contact with the main pyrotech-
nic charge, the ignition of the igniter or first fire is generally accomplished by fuse action. {fr‘, fr‘}

**first-in, first-out**  [IND ENG] An inventory cost evaluation method which transfers costs of material to the product in chronological order. Abbreviated FIFO. {fr‘, ln‘, fr‘, a‘it‘}

**first law of motion** See Newton's first law. {fr‘, l, av‘ ‘m‘-shn‘}

**first law of thermodynamics**  [THERMO] The law that heat is a form of energy, and the total amount of energy of all kinds in an isolated system is constant; it is an application of the princi-
ple of conservation of energy. {fr‘, lo‘ av‘ ‘m‘-shn‘-iks‘}

**first-level controller**  [CONT SYS] A controller that is associated with one of the subsystems into which a large-scale control system is partitioned by plant decomposition, and acts to satisfy local objectives and constraints. Also known as local controller. {fr‘, lev‘-l‘, kan‘ t‘-l‘-r‘}

**first-order leveling**  [ENG] Spirit leveling of high precision and accuracy in which lines are run first forward to the objective point and then backward to the starting point. {fr‘, or‘-n‘, lev‘-l‘-n‘}

**first-order transition**  [THERMO] A change in state of aggregation of a system accompanied by a discontinuous change in enthalpy, entropy, and volume at a single temperature and pres-
sure. {fr‘, or‘-n‘, tr‘-sh‘-zish‘-n‘}

**Fischer-Tropsch process**  [CHEM ENG] A cata-
ytic process to synthesize hydrocarbons and their oxygen derivatives by the controlled reac-
tion of hydrogen and carbon monoxide. {fish‘-r‘, tr†p‘sh‘, präs‘-n‘}

**fished joint**  [CIV ENG] A structural joint made with fish plates. {fish‘, jnt‘}

**fishing**  [ENG] In drilling, the operation by which lost or damaged tools are secured and brought to the surface from the bottom of a well or drill hole. {fish‘-n‘}

**fishing space**  [CIV ENG] The space between base and head of a rail in which a joint bar is placed. {fish‘-n‘, späs‘}

**fishing tool**  [ENG] A device for retrieving ob-
jects from inaccessible locations. {fish‘-n‘, tšl‘}

**fish ladder**  [CIV ENG] Contrivance that carries water around a dam through a series of stepped baffles or boxes and thus facilitates the migration of fish. Also known as fishway. {fish‘, ladj‘-n‘}

**fish lead**  [ENG] A type of sounding lead used
fish plate

without removal from the water between soundings. {fish, plate}

fish plate {CIV ENG} One of a pair of steel plates bolted to the sides of a rail or beam joint, to secure the joint. {fish, plate}

fish screen {CIV ENG} 1. A screen set across a water intake canal or pipe to prevent fish from entering. 2. Any similar barrier to prevent fish from entering or leaving a pond. {fish, screen}

fish tail bit {DES ENG} A drilling bit shaped like the tail of a fish. {fish, tail, bit}

fish tail burner {ENG} A burner in which two jets of gas impinge on each other to form a flame shaped like a fish’s tail. {fish, tail, burner}

fishway See fish ladder. {fish, way}

fit {DES ENG} The dimensional relationship between mating parts, such as press, shrink, or sliding fit. {fit}

fitment {BUILD} A decorative or functional item or component in a room that is fixed in place but not actually built in. Also known as fitting. {fit, ment}

fitter {ENG} One who maintains, repairs, and assembles machines in an engineering shop. {fitter}

fitting {BUILD} See fitment. {ENG} A small auxiliary part of standard dimensions used in the assembly of an engine, piping system, machine, or other apparatus. {fitting}

fivethirds power law {THERMO} The proposition that the rate of heat loss from a body by free convection is proportional to the five-thirds power of the difference between the temperature of the body and that of its surroundings. {fivethirds, power, law}

fixed-active tooling {CONT SYS} Stationary equipment in a robotic system, such as numerical control equipment, sensors, cameras, conveying systems and parts feeders, that is activated and controlled by signals. {fixed, active, tooling}

fixed arch {CIV ENG} A stiff arch having rotation prevented at its supports. {fixed, arch}

fixed-bed hydroforming {CHEM ENG} A cyclic petroleum process that utilizes a fixed bed of molybdenum oxide catalyst deposited on activated alumina. {fixed, bed, hydroforming}

fixed-bed operation {CHEM ENG} An operation in which the additive material (catalyst, absorbent, filter media, ion-exchange resin) remains stationary in the chemical reactor. {fixed, bed, operation}

fixed bias {ELECTR} A constant value of bias voltage, independent of signal strength. {fixed, bias}

fixed bridge {CIV ENG} A bridge having permanent horizontal or vertical alignment. {fixed, bridge}

fixed capacitor {ELEC} A capacitor having a definite capacitance value that cannot be adjusted. {fixed, capacitor}

fixed-charging problem {IND ENG} A linear programming problem in which each variable has a fixed-charging coefficient in addition to the usual cost coefficient; the fixed charge (for example, a setup time charge) is a nonlinear function and is incurred only when the variable appears in the solution with a positive level. {fixed, charging, problem}

fixed cost {IND ENG} A cost that remains unchanged during short-term changes in production level. Also known as overhead, overhead cost. {fixed, cost}

fixed-electrode method {ENG} A geophysical surveying method used in a self-potential system of prospecting in which one electrode remains stationary while the other is grounded at progressively greater distances from it. {fixed, electrode, method}

fixed end {MECH} An end of a structure, such as a beam, that is clamped in place so that both its position and orientation are fixed. {fixed, end}

fixed-end beam {CIV ENG} A beam that is supported at both free ends and is restrained against rotation and vertical movement. Also known as built-in beam; encastré beam. {fixed, end, beam}

fixed-end column {CIV ENG} A column with the end fixed so that it cannot rotate. {fixed, end, column}

fixed end moment See fixing moment. {fixed, end, moment}

fixed-feed grinding {MECH ENG} Feeding processed material to a grinding wheel, or vice versa, in predetermined increments or at a given rate. {fixed, feed, grinding}

fixed inductor {ELEC} An inductor whose coils are wound in such a manner that the turns remain fixed in position with respect to each other, and which either has no magnetic core or has a core whose air gap and position within the coil are fixed. {fixed, inductor}

fixed linkage system {IND ENG} Linkage formed between the skeletal elements of a human and a fixed machine in a human-machine system. {fixed, linkage, system}

fixed mooring berth {CIV ENG} A marine structure consisting of dolphins for securing a ship and a platform to support cargo-handling equipment. {fixed, mooring, berth}

fixed-neckle traverse {ENG} In surveying, a traverse with a compass fitted with a sight line which can be moved above a graduated horizontal circle, so that the azimuth angle can be read, as with a theodolite. {fixed, neckle, traverse}

fixed-passive tooling {CONT SYS} Unpowered, accessory equipment in a robotic system, such as jigs, fixtures, and work-holding devices. {fixed, passive, tooling}

fixed point {ENG} A reproducible value, as for temperature, used to standardize measurements, derived from intrinsic properties of pure substances. {fixed, point}

fixed resistor {ELEC} A resistor that has no provision for varying its resistance value. {fixed, resistor}

fixed-sequence robot See fixed-stop robot. {fixed, sequence, robot}

fixed sonar {ENG} Sonar in which the receiving
flame arrester  [ENG] An assembly of screens, flak vest  [ENG] A jacket or vest of heavy fabric flakjacket  flaking mill  [MECH ENG] A machine for con-
[CHEM ENG] Continuous process opera-
[ENG] A pendant along each axis has a fixed limit, but the motion between these limits is not controlled and the robot cannot stop except at these limits. Also known as fixed-sequence robot, limited-sequence robot, non servo robot.  ['flɪkst ʃɪp ˌrɒ,bæt']

fixing moment  [MECH] The bending moment at the end support of a beam necessary to fix it and prevent rotation. Also known as fixed end moment.  ['fɪkʃɪn moʊˌmənt]

flicker  See continuity.  ['fliks ˈdætʃ]

fixture  [CIV ENG] An object permanently attached to a structure, such as a light or sink.  [MECH ENG] A device used to hold and position a piece of work without guiding the cutting tool.  ['fɪkʃə]
flank wear

**flank wear**  [ENG] Loss of relief on the flank of a tool behind the cutting edge.  {'fləŋk ˌwer}

**flap gate**  [CIV ENG] A gate that opens or closes by rotation around hinges at the top of the gate. Also known as pivot leaf gate.  {'flæp ˈɡæt}

**flap hinge** See backflap hinge.  {'flæp ˈhɪŋj}

**flap trap**  [ENG] In plumbing, a trap fitted with a hinged flap that permits flow in one direction only, thus preventing backflow.  {'flæp ˌtræp}

**flap valve**  [MECH ENG] A valve fitted with a hinged flap or disk that swings in one direction only.  {'flæp ˌvæl}

**flare**  [CHEM ENG] A device for disposing of combustible gases from refining or chemical processes by burning in the open. In contrast to combustion in a furnace or closed vessel or chamber.  [DES ENG] An expansion at the end of a cylindrical body, as at the base of a rocket.  [ELECTR] A radar screen target indication having an enlarged and distorted shape due to excessive brightness.  [ENG] A pyrotechnic item designed to produce a single source of intense light for such purposes as target or airfield illumination.  {'flər}

**flare chute**  [ENG] A flare attached to a parachute.  {'flər ˈʃhʊt}

**flare factor**  [ENG ACOUS] Number expressing two-phase (vapor-liquid) flow.  {'flər ˈfæk-tər}

**flare gas**  [CHEM ENG] Surplus gas that is disposed of by combustion in the open.  {'flər ˈɡæs}

**flare-type burner**  [ENG] A circular burner which discharges flame in the form of a cone.  {'flər ˈtɪp,ˈbɔrn-ər}

**flash**  [ENG] In plastics or rubber molding or in metal casting, a portion of the charge which overflows from the mold cavity at the joint line.  {'flæʃ}

**flashback** See backfire.  {'flæʃ,bæk}

**flashback arrester**  [ENG] A device which prevents a flashback from passing the point where the arrester is installed in a torch, thereby preventing damage.  {'flæʃ,bæk əˈres-tər}

**flashboard**  [CIV ENG] A relatively low, temporary barrier constructed of a series of boards along the top of a dam spillway to increase storage capacity.  {'flæʃ,bɔːrd}

**flash boiler**  [MECH ENG] A boiler with hot tubes of small capacity, designed to immediately convert small amounts of water to superheated steam.  {'flæʃˌboɪl-ər}

**flash bomb**  [ENG] A bomb that illuminates the ground for night aerial photography.  {'flæʃˌbɒm}

**flash carbonization**  [CHEM ENG] A carbonization process in which coal is subjected to a very brief residence time in the reactor in order to produce the largest possible yield of tar.  {'flæʃˌkær-bə-nərə-sən}

**flash chamber**  [CHEM ENG] A conventional oil-and-gas separator operated at low pressure, with the liquid from a higher-pressure vessel being flashed into it. Also known as flash trap; flash vessel.  {'flæʃˌchæm-bər}

**flash distillation** See equilibrium flash vaporization.  {'flæʃˌdɪst-əl-ərə-sən}

**flash drum**  [CHEM ENG] A facility such as a tower, which receives the products of a preheater or heat exchanger to release pressure; volatile components are vaporized and separated for further fractionation.  {'flæʃˌdrʌm}

**flash dry**  [CHEM ENG] The rapid evaporation of moisture from a porous or granular solid by a sudden reduction in pressure or by placing the material in an updraft of warm air.  {'flæʃˌdrɪ}

**flash groove**  [ENG] 1. A groove in a casting die so that excess material can escape during casting.  2. See cutoft.  {'flæʃˌgruːv}

**flashling**  [BUILD] A strip of sheet metal placed at the junction of exterior building surfaces to render the joint watertight.  [CHEM ENG] Vaporization of volatile liquids by either heat or vacuum.  [ENG] Burning brick in an intermittent air supply in order to impart irregular color to the bricks.  {'flæʃˌɪŋ}

**flashling block** See raggle.  {'flæʃˌɪŋˌblothk}

**flashling flow**  [CHEM ENG] The condition when a liquid at its boiling point flows through a heated conduit and is further heated to cause partial vaporization (flashling), with a resultant two-phase (vapor-liquid) flow.  {'flæʃˌɪŋˌflɔː}

**flashing ring**  [ENG] A ring around a pipe that holds it in place as it passes through a partition such as a floor or wall.  {'flæʃˌɪŋˌrɪŋ}

**flash line**  [ENG] A raised line on the surface of a molding where the mold faces joined.  {'flæʃˌlɪn}

**flash mold**  [ENG] A mold which permits excess material to escape during closing.  {'flæʃˌmولد}

**flashover**  [ELEC] An electric discharge around or over the surface of an insulator.  [ENG] A condition occurring during a fire in a building in which the surfaces of everything within a compartment or room seem to burst into flame simultaneously.  {'flæʃˌoʊvər}

**flash process**  [CHEM ENG] Liquid-vapor system in which the composition remains constant, but the proportion of gas and liquid phases changes as pressure or temperature change.  {'flæʃˌprə-səsər}

**flash ridge**  [ENG] The part of a flash mold along which the excess material escapes before the mold is closed.  {'flæʃˌrɪdʒ}

**flash separation**  [CHEM ENG] Process for separation of gas (vapor) from liquid components under reduced pressure; the liquid and gas remain in contact as the gas evolves from the liquid.  {'flæʃˌsep-ərə-ʃən}

**flash steam**  [ENG] A mixture of steam and water that occurs when hot water under pressure moves to a region of lower pressure, such as in a flash boiler.  {'flæʃˌstɛm}

**flash tank**  [CHEM ENG] In a processing operation, a unit that is used to separate the liquid and gas phases.  {'flæʃˌtæŋk}

**flash trap** See flash chamber.  {'flæʃˌtræp}

**flash vaporization**  [CHEM ENG] Rapid vaporization achieved by passing a volatile liquid through
continuously heated coils. [ENG] A method used for withdrawing liquefied petroleum gas from storage in which liquid is first flashed into a vapor in an intermediate pressure system, and then a second stage regulator provides the low pressure required to use the gas in appliances. {\textit{flash vār-ərə-zə-shən}}

\textbf{flash vessel} See flash chamber. {\textit{flash \_vəs-əl}}

\textbf{flat} [ENG] A nonglossy painted surface. {\textit{flat}}

\textbf{flatbed plotter} [ENG] A graphics output device that draws by moving a pen in both horizontal and vertical directions over a sheet of paper; the overall size of the drawing is limited by the height and width of this bed. {\textit{flat\_bed \_plād-ər}}

\textbf{flatbed truck} [ENG] A truck whose body is in the form of a platform. {\textit{\_bed \_trək}}

\textbf{flat belt} [DES ENG] A power transmission belt, in the form of leather belting, used where high-speed motion rather than power is the main concern. {\textit{\_belt \_belt}}

\textbf{flat-belt conveyor} [MECH ENG] A conveyor belt in which the carrying run is supported by flat-belt idlers or pulleys. {\textit{\_belt \_kan\_və\_ər}}

\textbf{flat-belt pulley} [DES ENG] A smooth, flat-faced pulley made of cast iron, fabricated steel, wood, paper, and used with a flat-belt drive. {\textit{\_belt \_pul\_ē}}

\textbf{flat-blade turbine} [MECH ENG] An impeller with flat blades attached to the margin. {\textit{\_blade \_tar\_bın}}

\textbf{flat-bottom crown} See flat-face bit. {\textit{\_bit} \_bād\_-əm \_ˈkrɑːn\_ən}

\textbf{flatcar} [ENG] A railroad car without fixed walls or a cover. {\textit{\_car \_kär}}

\textbf{flat chisel} [DES ENG] A steel chisel used to obtain a flat and finished surface. {\textit{\_chiz-əl}}

\textbf{flat crank} [DES ENG] A crankshaft having one flat bearing journal. {\textit{\_kran\_kæk}}

\textbf{flat-crested weir} [CIV ENG] A type of measuring weir whose crest is in the horizontal plane and whose length is great compared with the height of water passing over it. {\textit{\_krest-əd \_wer}}

\textbf{flat drill} [DES ENG] A type of rotary drill constructed from a flat piece of material. {\textit{\_dril}}

\textbf{flat edge trimmer} [MECH ENG] A machine designed to trim the notched edges of metal shells. {\textit{\_ej \_tĭm\_-ər}}

\textbf{flat-face bit} [DES ENG] A diamond core bit whose face in cross section is square. Also known as flat-bottom crown, flat-nose bit; square-nose bit. {\textit{\_fas\_bit}}

\textbf{flat-flamed burner} [ENG] A burner which emits flat-face bit. {\textit{\_nəz \_bit}}

\textbf{flatpack} [ELECTR] Semiconductor network encapsulated in a thin, rectangular package, with the necessary connecting leads projecting from the edges of the unit. {\textit{\_pak}}

\textbf{flat-panel display} See panel display. {\textit{\_panel \_di\_splă}}

\textbf{flat-plate collector} [ENG] A solar collector consisting of a shallow metal box covered by a transparent lid. {\textit{\_flat \_kə\_lekt\_-tər}}

\textbf{flat rope} [DES ENG] A steel or fibre rope having a flat cross section and composed of a number of loosely twisted ropes placed side by side, the lay of the adjacent strands being in opposite directions to secure uniformity in wear and to prevent twisting during winding. {\textit{\_rōp}}

\textbf{flat slab} [CIV ENG] A flat plate of reinforced concrete designed to span in two directions. {\textit{\_slab}}

\textbf{flat spin} [MECH] Motion of a projectile with a slow spin and a very large angle of yaw, happening most frequently in Fin-stabilized projectiles with some spin-producing moment, when the period of revolution of the projectile coincides with the period of its oscillation; sometimes observed in bombs and in unstable spinning projectiles. {\textit{\_spin}}

\textbf{flat spring} See leaf spring. {\textit{\_spring}}

\textbf{flat trajectory} [MECH] A trajectory which is relatively flat, that is, described by a projectile of relatively high velocity. {\textit{\_kra\_-tək\_-tər}}

\textbf{flat-turret lathe} [MECH ENG] A lathe with a low, flat turret on a power-fed cross-sliding headstock. {\textit{\_tə\_-tə \_lat\_-hət}}

\textbf{flat yard} [CIV ENG] A switchyard in which railroad cars are moved by locomotives, not by gravity. {\textit{\_yard}}

\textit{fl} See fluid drum.

\textbf{fleam} [DES ENG] The angle of bevel of the edge of the teeth of a saw with respect to the plane of the blade. {\textit{flem}}

\textbf{fleat} [MECH ENG] Sidewise movement of a rope or cable when winding on a drum. {\textit{flet}}

\textbf{fleat angle} [MECH ENG] In hoisting gear, the included angle between the rope, in its position of greatest travel across the drum, and a line drawn perpendicular to the drum shaft, passing through the center of the head sheave or lead sheave groove. {\textit{flet \_ən\_-gəl}}

\textbf{Fleming cracking process} [CHEM ENG] An obsolescent liquid-phase thermal cracking process for heavy petroleum fractions; the charge was heated under pressure in a vertical shell still. {\textit{flem\_-iŋ \_kra\_-k\_-iŋ \_pra\_-s\_-s}}

\textbf{Flemish bond} [CIV ENG] A masonry bond consisting of alternating stretchers and headers in each course, laid with broken joints. {\textit{flem\_-i\_-shə \_bənd}}

\textbf{Flemish garden wall bond} [CIV ENG] A masonry bond consisting of headers and stretchers in the ratio of one to three or four in each course,
Flesh-Demag process

with joints broken to give a variety of patterns. {‘flēm-īsh ’gārd-án ˌwol ˌbānd}

Flesh-Demag process  [CHEM ENG] A gas-making process in which a cyclic water-gas apparatus is used for feeding and charging the coal charge and for gas generation, with periodic automatic removal of the resultant ash. {‘flesh ˌda-māk ˌprās-əs}

fleshing machine  [ENG] A machine that removes flesh from hides in a tannery. {‘flesh- ĭŋ ma ˌshēn}

Fletcher radial burner  [ENG] A burner with gas jets arranged radially. {‘flek-ər ’rād-əl ’bārn-ər}

Flettner windmill  [MECH ENG] An inefficient windmill with four arms, each consisting of a rotating cylinder actuated by a Savonius rotor. {‘flet-nar ’wind-mil}

flexibility  [MECH] The quality or state of being able to be flexed or bent repeatedly. {‘flek-ə-bal-əd-ə}

flexible circuit  [ELECTR] A printed circuit made on a flexible plastic sheet that is usually die-cut to fit between large components. {‘flek-ə-bal ’sār-ka’t}

flexible coupling  [MECH ENG] A coupling used to connect two shafts and to accommodate their misalignment. {‘flek-ə-bal ’kāp-ˌliŋ}

flexible-joint pipe  [ENG] Cast-iron pipe adapted to laying under water and capable of motion through several degrees without leakage. {‘flek-ə-bal ’joointment ’pīp}

flexible manufacturing system  [IND ENG] A form of computer-integrated manufacturing used to make small to moderate-sized batches of parts. {‘flek-ə-bal ’man-ya’-flak-cha-rīŋ sis-tam}

flexible mold  [ENG] A coating mold made of flexible rubber or other elastomeric materials, used mainly for casting plastics. {‘flek-ə-bal ’mōld}

flexible pavement  [CIV ENG] A road or runway made of bituminous material which has little tensile strength and is therefore flexible. {‘flek-ə-bal ’pā-yə-mont}

flexible shaft  [MECH ENG] 1. A shaft that transmits rotary motion at any angle up to about 90°. 2. A shaft made of flexible material or of segments. 3. A shaft whose bearings are designed to accommodate a small amount of misalignment. {‘flek-ə-bal ’shaft}

flexicoking  [CHEM ENG] A continuous coke-making process that has a gasification section in which coke can be gasified to produce refinery fuel gas, allowing the production of both gas and coke in line with market requirements. {‘flek-ə-kōk-ıə}

flexometer  [ENG] An instrument for measuring the flexibility of materials. {‘flek-sām-əd-ar}

flexural modulus  [MECH] A measure of the resistance of a beam of specified material and cross section to bending, equal to the product of Young’s modulus for the material and the square of the radius of gyration of the beam about its neutral axis. {‘flek-ə-ral ˌmājə-lish}

flexural rigidity  [MECH] The ratio of the side- ward force applied to one end of a beam to the resulting displacement of this end, when the other end is clamped. {‘flek-ə-ral ri’jīd-əd-ə}

flexural strength  [MECH] Strength of a material in bending, that is, resistance to fracture. {‘flek-ə-ral ˌstreŋθ}

flexure  [MECH] 1. The deformation of any beam subjected to a load. 2. Any deformation of an elastic body in which the points originally lying on any straight line are displaced to form a plane curve. {‘flek-shar}

flexure theory  [MECH] Theory of the deformation of a prismatic beam having a length at least 10 times its depth and consisting of a material obeying Hooke’s law, in response to stresses within the elastic limit. {‘flek-ə-shar ˌthe-ə-re}

flight  [CIV ENG] A series of stairs between land- ings or floors. [MECH ENG] Plain or shaped plates that are attached to the propelling mecha- nism of a flight conveyor. {‘flīt}

flight conveyor  [MECH ENG] A conveyor in which paddles, attached to single or double strands of chain, drag or push pulverized or granu- lated solid materials along a trough. Also known as drag conveyor. {‘flīt kan,vā-ər}

flight feeder  [MECH ENG] Short-length flight conveyor used to feed solids materials to a pro- cess vessel or other receptacle at a preset rate. {‘flīt ,flīd-ər}

flight recorder  [ENG] Any instrument or device that records information about the performance of an aircraft in flight or about conditions en- countered in flight, for future study and evalua- tion. {‘flīt ri’kōrd-ər}

flinching  [IND ENG] In inspection, failure to call a borderline defect a defect. {‘flīn-chiŋ}

flint mill  [MECH ENG] A mill employing pebbles to pulverize materials (for example, in cement manufacturing). {‘flīnt ,mil}

flip chip  [ELECTR] A tiny semiconductor die having terminations all on one side in the form of solder pads or bump contacts; after the surface of the chip has been passivated or otherwise treated, it is flipped over for attaching to a matching substrate. Also known as solder-ball flip chip. {‘flip ,chip}

flip-flop circuit  See bistable multivibrator. {‘flip ,flap ,sār-ka’t}

FLIR imager  See forward-looking infrared imager. {‘flīr ,im-ii-jə-ər}

flitch beam  See flitch girder. {‘flīch ,bēm}

flitch girder  [BUILD] A beam made of structural timbers bolted together with a steel plate be- tween them. Also known as flitch beam, sand- wich beam. {‘flīch ,gārd-ər}

flitch plate  [CIV ENG] The metal plate in a flitch beam or girder. {‘flīch ,plāt}

float  [DES ENG] A file which has a single set of parallel teeth. [ENG] 1. A flat, rectangular piece of wood with a handle, used to apply and smooth coats of plaster. 2. A mechanical device

224
to finish the surface of freshly placed concrete paving. 3. A marble-polishing block. 4. Any structure that provides positive buoyancy such as a hollow, watertight unit that floats or rests on the surface of a fluid. 5. See plummet. [IND. ENG] See bank. {flōt}

float barograph [ENG] A type of siphon barograph in which the mechanically magnified motion of a float resting on the lower mercury surface is used to record atmospheric pressure on a rotating drum. {flōt 'bār-grāf}

float bowl [MECH ENG] A component of a carburetor that holds a small amount of liquid gasoline and serves as a constant-level reservoir of fuel that is metered into the passing flow of air. {flōt 'bōl}

float chamber [ENG] A vessel in which a float regulates the level of a liquid. {flōt 'chām-bər}

float control [ENG] Floating device used to transmit a liquid-level reading to a control apparatus, such as an on-off switch controlling liquid flow into and out of a storage tank. {flōt 'kan-trol}

float-cut file [DES ENG] A coarse file used on soft materials. {flōt 'kot-fil}

float finish [CIV ENG] A rough concrete finish, obtained by using a wooden float for finishing. {flōt 'fin-ish}

float gage [ENG] Any one of several types of instruments in which the level of a liquid is determined from the height of a body floating on its surface, by using pulleys, levers, or other mechanical devices. {flōt 'gāj}

floating [ELECTR] The condition wherein a device or circuit is not grounded and not tied to an established voltage supply. {flōt-ing}

floating action [ENG] Controller action in which there is a predetermined relation between the deviation and the speed of a final control element; a neutral zone, in which no motion of the final control element occurs, is often used. {flōt-ing 'ak-shən}

floating axle [MECH ENG] A live axle used to turn the wheels of an automotive vehicle, the weight of the vehicle is borne by housings at the ends of a fixed axle. {flōt-ing 'ak-sol}

floating block [CIV ENG] A traveling block. {flōt-ing 'blāk}

floating chaser [ENG] A mold part that can move freely in a vertical plane, which fits over a lower member (such as a cavity or plug) and into which an upper plug can telescope. {flōt-ing 'chās}

floating control [ENG] Control device in which the speed of correction of the control element (such as a piston in a hydraulic relay) is proportional to the error signal. Also known as proportional-speed control. {flōt-ing 'kron-trol}

floating crane [CIV ENG] A crane having a barge or scow for an undercarriage and moved by cables attached to anchors set some distance off the corners of the barge, used for water work and for work on waterways. {flōt-ing 'krān}

floating dock [CIV ENG] 1. A form of dry dock for repairing ships; it can be partly submerged by controlled flooding to receive a vessel, then raised by pumping out the water so that the vessel's bottom can be exposed. Also known as floating dry dock. 2. A barge or flatboat which is used as a wharf. {flōt-ing 'drī-dək}

floating dry dock [ENG] See floating dock. {flōt-ing 'drī-dək}

floating floor [BUILD] A floor constructed so that the bearing surface is separated from the supporting structure by an insulating layer of mineral wool, resilient quilt, or other material to provide insulation against impact sound. {flōt-ing 'flōr}

floating foundation [CIV ENG] 1. A reinforced concrete slab that distributes the concentrated load from columns, used on soft soil. 2. A foundation mat several meters below the ground surface when it is combined with external walls. {flōt-ing 'fān-də-shən}

floating lever [MECH ENG] A horizontal brake lever with a movable fulcrum; used under railroad cars. {flōt-ing 'lev-or}

floating pan [ENG] An evaporation pan in which the evaporation is measured from water in a pan floating in a large body of water. {flōt-ing 'pān}

floating plate [ENG] In a multidaylight press, a platen that is between the main head and the press table and can be moved independently of them. {flōt-ing 'plat-on}

floating roof [ENG] A type of tank roof (steel, plastic, sheet, or microballoons) which floats upon the surface of the stored liquid, used to decrease the vapor space and reduce the potential for evaporation. {flōt-ing 'rūf}

floating scraper [MECH ENG] A balanced scraper blade that rests lightly on a drum filter, removes solids collected on the rotating drum surface by riding on the drum's surface contour. {flōt-ing 'skrā-par}

floatless level control [ENG] Any nonfloat device for measurement and control of liquid levels in storage tanks or process vessels; includes use of manometers, capacitances, electropotentials, nuclear radiation, and sonics. {flōt-ləs 'lev-əl-

kən-trol}

float level [MECH ENG] The position of the float in a carburetor at which the needle valve closes the fuel inlet to prevent entry of additional fuel. {flōt-

lev-əl}

float switch [ENG] A switch actuated by a float at the surface of a liquid. {flōt 'swich}

float-type rain gage [ENG] A class of rain gage in which the level of the collected rainwater is measured by the position of a float resting on the surface of the water; frequently used as a recording rain gage by connecting the float through a linkage to a pen which records on a clock-driven chart. {flōt, 'tīp 'rä-nəl 'gāj}

float valve [ENG] A valve whose on-off action is controlled directly by the fall or rise of a float concurrent with the fall or rise of liquid level in a liquid-containing vessel. {flōt 'valv}

flood [ELECTR] To direct a large-area flow of electrons toward a storage assembly in a charge storage tube. [ENG] To cover or fill with fluid.
flood control

[MECH ENG] To supply an excess of fuel to a carburetor so that the level rises above the nozzle. {flo\-
  \-r}
flood control \[CIV ENG\] Use of levees, walls, reservo-
irs, floodways, and other means to protect land from water overflow. \{flo\-\-ad \-s\\-
\-t\-
\-m\-
\-\-
\-
\-
\-
\-\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
\-
flowing-temperature factor  [THERMO] Calculation correction factor for gases flowing at temperatures other than that for which a flow equation is valid, that is, other than 60°F (15.5°C).  {flo̱ig temper-Char.,fak-tar.}

flow line  [ENG] 1. The connecting line or arrow between symbols on a flow chart or block diagram. 2. Mark on a molded plastic or metal article made by the meeting of two input-flow fronts during molding. Also known as weld line; weld mark.  {flo̱i̱ṉ}

flow measurement  [ENG] The determination of the quantity of a fluid, either a liquid, a vapor, or a gas, that passes through a pipe, duct, or open channel.  {flo̱,mēzh-ar-mant.}

flow meter  [ENG] An instrument used to measure pressure, flow rate, and discharge rate of a liquid, vapor, or gas flowing in a pipe. Also known as fluid meter.  {flo̱,mēd-ar.}

flow mixer  [MECH ENG] Liquid-liquid mixing device in which the mixing action occurs as the liquids pass through it; includes jet nozzles and agitator vanes. Also known as line mixer.  {flo̱,nik-sar.}

flow nozzle  [ENG] A flowmeter in a closed conduit, consisting of a short flared nozzle of reduced diameter inset into the inner diameter of a pipe, used to cause a temporary pressure drop in flowing fluid to determine flow rate via measurement of static pressure differences before and after the nozzle.  {flo̱,nāz-ol.}

flow process  [ENG] System in which fluids or solids are handled in continuous movement during chemical or physical processing or manufacturing.  {flo̱,prās-as.}

flow-rating pressure  [MECH ENG] The value of inlet static pressure at which the relieving capacity of a pressure-relief valve is established.  {flo̱,rād-iṉ,presh-ar.}

flow reactor  [CHEM ENG] A dynamic reactor system in which reactants flow continuously into the vessel and products are continuously removed, in contrast to a batch reactor.  {flo̱,rēak-tar.}

flow sheet  See flow chart.  {flo̱,shēt.}

flow shop  [IND ENG] A manufacturing facility in which machine tools and robots are employed in the same manner on all jobs.  {flo̱,shāp.}

flow soldering  [ENG] Soldering of printed circuit boards by moving them over a flowing wave of molten solder in a solder bath; the process permits precise control of the depth of immersion in the molten solder and minimizes heating of the board. Also known as wave soldering.  {flo̱,sād-ō-nī̱.}

flow stress  [MECH] The stress along one axis at a given value of strain that is required to produce plastic deformation.  {flo̱,stres̱.}

flow transmitter  [ENG] A device used to measure the flow of liquids in pipelines and convert the results into proportional electric signals that can be transmitted to distant receivers or controllers.  {flo̱,tranz-mid-ar.}

flow valve  [ENG] A valve that closes itself when the flow of a fluid exceeds a particular value.  {flo̱,valv.}

flow visualization  [ENG] Method of making visible the disturbances that occur in fluid flow, using the fact that light passing through a flow field of varying density exhibits refraction and a relative phase shift among different rays.  {flo̱,vizh-ə-la-ẕa-shən.}

fl oz  See fluid ounce.

flue  [ENG] A channel or passage for conveying combustion products from a furnace, boiler, or fireplace to or through a chimney.  {fli̱.}

flue exhaust  [ENG] A device installed as part of a vent in order to provide a positive induced draft.  {fli̱,gəs-tar.}

flue gas  [ENG] Gaseous combustion products from a furnace.  {fli̱,gas.}

flue gas analyzer  [ENG] A device that monitors the composition of the flue gas of a boiler heating unit to determine if the mixture of air and fuel is at the proper ratio for maximum heat output.  {fli̱,gas an-ə,li̱z-ər.}

flue gas expander  [MECH ENG] In a petroleum processing system, a turbine for recovering energy at the point where combustion gases are discharged under pressure to the atmosphere, the reduction in pressure drives the turbine impeller.  {fli̱,gas ik'spand-ar.}

fluid amplifier  [ENG] An amplifier in which all amplification is achieved by interaction between jets of fluid, with no electronic circuit and usually no moving parts.  {fli̱,am-pła,fr-ər.}

fluid-bed process  [CHEM ENG] A type of process based on the tendency of finely divided powders to behave in a fluidlike manner when supported and moved by a rising gas or vapor stream; used mainly for catalytic cracking of petroleum distillates.  {fli̱,bed 'prās-as.}

fluid catalyst  [CHEM ENG] Finely divided solid particles utilized as a catalyst in a fluid-bed process.  {fli̱,kad-al,i̱st.}

fluid catalytic cracking  [CHEM ENG] An oil refining process in which the gas is cracked by a catalyst bed fluidized by using oil vapors.  {fli̱,kād-al-i̱d-ək kрак-iṉ.}

fluid clutch  See fluid drive.  {fli̱,klu̱k.}

fluid coking  [CHEM ENG] A thermal process utilizing the fluidized solids technique for continuous conversion of heavy, low-grade petroleum oils into petroleum coke and lighter hydrocarbon products.  {fli̱,koking.}

fluid-controlled valve  [MECH ENG] A valve for which the valve operator is activated by a fluid energy, in contrast to electrical, pneumatic, or manual energy.  {fli̱,kon-trəld valv.}

fluid coupling  [MECH ENG] A device for transmitting rotation between shafts by means of the acceleration and deceleration of a fluid such as oil. Also known as hydraulic coupling.  {fli̱,kpl.}

fluid die  [MECH ENG] A die for shaping parts by liquid pressure; a plunger forces the liquid against the part to be shaped, making the part conform to the shape of a die.  {fli̱,dī̱.}

fluid distributor  [ENG] Device for the controlled
distribution of fluid feed to a process unit, such as a liquid-gas or liquid-solids contactor, reactor, mixer, burner, or heat exchanger, can be a simple perforated-pipe sparger, spray head, or such.

[fluˈɪd dəˈstrɪbjuˈeɪd ər]

fluid dram [MECH] Abbreviated fl dr. 1. A unit of volume used in the United States for measurement of liquid substances, equal to 1/8 fluid ounce, or 3.9666911953125 × 10^-6 cubic meter. 2. A unit of volume used in the United Kingdom for measurement of liquid substances and occasionally of solid substances, equal to 1/8 fluid ounce or 3.5516328125 × 10^-6 cubic meter. (ˈfluˈɪd ˈdram)

fluid drive [MECH ENG] A power coupling operated on a hydraulic turbine principle in which the engine flywheel has a set of turbine blades which are connected directly to it and which are driven in oil, thereby turning another set of blades attached to the transmission gears of the automobile. Also known as fluid clutch, hydraulic clutch (ˈfluˈɪd drıˈvı́)

fluid end [MECH ENG] In a fluid pump, the section that contains parts which are directly involved in moving the fluid. (ˈfluˈɪd ˈe nd)

fluid-energy mill [ENG] A size-reduction unit in which the amount of air required for combustion is achieved by collision of a fluid such as air or other selected gas directed onto two adjacent small openings and is deflected by the upward current of air (or other fluid), producing a cushion of air or hot gas which rises and circulates in the bed, causing it to act like a turbulent fluid. Also known as fluidized bed; used in the fluidized bed combustion process.

28 fluid dram

fluid drive [MECH ENG] A power coupling operated on a hydraulic turbine principle in which the engine flywheel has a set of turbine blades which are connected directly to it and which are driven in oil, thereby turning another set of blades attached to the transmission gears of the automobile. Also known as fluid clutch, hydraulic clutch (ˈfluˈɪd drıˈvı́)

fluid end [MECH ENG] In a fluid pump, the section that contains parts which are directly involved in moving the fluid. (ˈfluˈɪd ˈe nd)

fluid-energy mill [ENG] A size-reduction unit in which the amount of air required for combustion is achieved by collision of a fluid such as air or other selected gas directed onto two adjacent small openings and is deflected by the upward current of air (or other fluid), producing a cushion of air or hot gas which rises and circulates in the bed, causing it to act like a turbulent fluid. Also known as fluidized bed; used in the fluidized bed combustion process.

28 fluid dram

fluid film bearing [MECH ENG] An antifriction bearing in which rubbing surfaces are kept apart by a film of lubricant such as oil. (ˈfluˈɪd ˈfilm ˈber-iŋ)

fluid hydroforming [CHEM ENG] A type of fluid catalytic cracking process used by petroleum refineries to upgrade low-octane-number stocks. (ˈfluˈɪd aˈhɪdərəˈmɪk)

fluidic device [ENG] A device that operates by the interaction of streams of fluid. (ˈfluˈɪdɪk ˈdɪvı́s)

fluidic flow sensor [ENG] A device for measuring the velocity of gas flows in which a jet of air or other selected gas is directed onto two adjacent small openings and is deflected by the flow of gas being measured so that the relative pressure on the two ports is a measure of gas velocity. Also known as deflected jet fluidic flow sensor. (ˈfluˈɪdɪk ˈfləʊ ˈsen-sər)

fluidic oscillator meter [ENG] A flowmeter that measures the frequency with which a fluid entering the meter attaches to one of two opposite diverging side walls and then the other, because of the Coanda effect. (ˈfluˈɪdɪk ˈəzə-sə,lədər ˈmedər)

fluidics [ENG] A control technology that employs fluid dynamic phenomena to control the interactions between sets of gases or liquids. (ˈfluˈɪdɪks)

fluid mechanics [MECH] The science concerned with fluids, either at rest or in motion, and dealing with pressures, velocities, and accelerations in the fluid, including fluid deformation and compression or expansion. (ˈfluˈɪd məˈkænnɪks)

fluid meter See flowmeter. (ˈfluˈɪd məˈdʊər)

fluid ounce [MECH] Abbreviated fl oz. 1. A unit of volume that is used in the United States for measurement of liquid substances, equal to 1/16 liquid pint, or 231/128 cubic inches, or 2.95735295625 × 10^-5 cubic meter. 2. A unit of volume used in the United Kingdom for measurement of liquid substances, and occasionally of solid substances, equal to 1/20 pint or 2.84130625 × 10^-3 cubic meter. (ˈfluˈɪd aʊns)

fluid stress [MECH] Stress associated with plastic deformation in a solid material. (ˈfluˈɪd ˈstres)

fluid ton [MECH] A unit of volume equal to 32 cubic feet or approximately 0.90614 cubic meter, used for many hydrometallurgical, hydraulic, and other industrial purposes. (ˈfluˈɪd tɔn)

fluid transmission [MECH ENG] Automotive transmission with fluid drive. (ˈfluˈɪd tranz ˈmishən)

fluencing [ENG] A forming process in which a...
flange is formed around a hole in a sheet-metal part by pressing a cylindrical die through the hole. { flùˌɪŋ }

flume [ENG] 1. An open channel constructed of steel, reinforced concrete, or wood and used to convey water to be utilized for power, to transport logs, and so on. 2. To divert by a flume, as the waters of a stream, in order to lay bare the auriferous sand and gravel forming the bed. { flʌm }

fluorescent lamp [ELECTR] A tubular discharge lamp in which ionization of mercury vapor produces radiation that activates the fluorescent coating on the inner surface of the glass. { flʊˈres-tənt 'lamp }

fluorescent screen [ENG] A sheet of material coated with a fluorescent substance so as to emit visible light when struck by ionizing radiation such as x-rays or electron beams. { flʊˈres-tənt 'skrɛn }

fluoridation [ENG] The addition of the fluorine ion (F⁻) to municipal water supplies in a final concentration of 0.8–1.6 parts per million to help prevent dental caries in children. { flʊr-aˈdə-shən }

fluorimeter See fluorometer. { flʊˈrɪm-ərd-ar }

fluorologging [ENG] A well-logging technique in which well cuttings are examined under ultraviolet light for fluorescence radiation related to traces of occurrences of oil. { flʊrˌoʊˈlæg-in }

fluorometer [ENG] An instrument that measures the fluorescent radiation emitted by a sample which is exposed to monochromatic radiation, usually radiation from a mercury-arc lamp or a tungsten or molybdenum-x-ray source that has passed through a filter, used in chemical analysis, or to determine the intensity of the radiation producing fluorescence. Also spelled fluorimeter. { flʊˈrɪm-ərd-ar }

fluoroscope [ENG] A fluorescent screen designed for use with an x-ray tube to permit direct visual observation of x-ray shadow images of objects interposed between the x-ray tube and the screen. { flʊr-aˈskɔp }

fluoroscopy [ENG] Use of a fluoroscope for x-ray examination. { flʊrəˈskɔp-i }

flush [ENG] Pertaining to separate surfaces that are on the same level. { flɔsh }

flush bead See quirk bead. { flɔshˌbɛd }

flush coat [CIV ENG] A coating of bituminous material, used to waterproof a surface. { flɔshˌkɔt }

flush gate [CIV ENG] A gate for flushing a channel that lies below the gate of a dam. { flɔshˌgæt }

flushing [CIV ENG] The removal or reduction to a permissible level of dissolved or suspended contaminants in an estuary or harbor. [ENG] Removing lodged deposits of rock fragments and other debris by water flow at high velocity, used to clean water conduits and drilled boreholes. { flɔʃing }

flushometer [ENG] A valve that discharges a fixed quantity of water when a handle is operated, used to flush toilets and urinals. { flɔʃˈəm-ərd-ar }

flush tank [CIV ENG] 1. A tank in which water or sewage is retained for periodic release through a sewer. 2. A small water-filled tank for flushing a water closet. { flɔshˌtænk }

flush valve [ENG] A valve used for flushing toilets. { flɔʃˌvalv }

flute [DES ENG] A groove having a curved section, especially when parallel to the main axis, as on columns, drills, and other cylindrical or conical shaped pieces. { flʌt }

fluted chucking reamer [DES ENG] A machine reamer with a straight or tapered shank and with straight or spiral flutes; the ends of the teeth are ground on a slight chamfer for end cutting. { flʊdˌəd 'chɔkˌɪŋˌrɛm-ərd }

flute length [DES ENG] On a twist drill, the length measured from the outside corners of the cutting lips to the farthest point at the back end of the flutes. { flʌtˌlength }

fluting [MECH ENG] A machining operation whereby flutes are formed parallel to the main axis of cylindrical or conical parts. { flʊdˌiŋ }

flutter [ENG] The irregular alternating motion of the parts of a relief valve due to the application of pressure where no contact is made between the valve disk and the seat. { flɔdˌərd }

flutter valve [ENG] A valve that is operated by fluctuations in pressure of the material flowing over it; used in carburetors. { flɔdˌərdˌvalv }

fluvarium [ENG] A large aquarium in which the tanks contain flowing stream water maintained by gravity, not pumps. { flɔˈver-əm }

flux gate [ENG] A detector that gives an electric signal whose magnitude and phase are proportional to the magnitude and direction of the external magnetic field acting along its axis; used to indicate the direction of the terrestrial magnetic field. { flɔksˌgæt }

fluxmeter [ENG] An instrument for measuring magnetic flux. { flɔksˌmɛd-ərd }

fly [MECH ENG] A fan with two or more blades used in timepieces or light machinery to govern speed by air resistance. { flʌ }

fly ash [ENG] 1. Fine particulate, essentially noncombustible refuse, carried in a gas stream from a furnace. 2. Coal combustion residue. { flʌˌash }

fly cutter [MECH ENG] A cutting tool that revolves with the arbor of a lathe. { flʌˌkəd-ərd }

fly cutting [MECH ENG] Cutting with a milling cutter provided with only one tooth. { flʌˌkəd-ərd }

flying switch [ENG] Disconnection of railroad cars from a locomotive while they are moving and switching them to another track under their own momentum. { flɔˌɪŋˈswɪtʃ }

fly rock [ENG] The fragments of rock thrown and scattered during quarry or tunnel blasting. { flɔˌræk }

flywheel [MECH ENG] A rotating element
attached to the shaft of a machine for the maintenance of uniform angular velocity and revolutions per minute. Also known as balance wheel. (‘fli, wéð’)

**fm** See [femtometer]

**FM/AM multiplier** [ELECTR] Multiplier in which the frequency deviation from the central frequency of a carrier is proportional to one variable, and its amplitude is proportional to the other variable. The frequency-amplitude-modulated carrier is then consecutively demodulated for frequency modulation (FM) and for amplitude modulation (AM); the final output is proportional to the product of the two variables. (‘ʃf, em ə, em ’mælˈtə, plər)
of the suction pipe of a pump which prevents backward flow of water.  

Forbes bar  [THERMO] A metal bar which has one end immersed in a crucible of molten metal and thermometers placed in holes at intervals along the bar, measurement of temperatures along the bar together with measurement of cooling of a short piece of the bar enables calculation of the thermal conductivity of the metal.  

force  [MECH] That influence on a body which causes it to accelerate, quantitatively it is a vector, equal to the body's time rate of change of momentum.  

force-balance meter  [ENG] A flowmeter that measures a force, such as that associated with the air pressure in a small bellows, that is required to balance the net force created by the differential pressure, on opposite sides of a diaphragm or diaphragm capsule, generated by a differential-producing primary device.  

force compensation  [ENG] On an analytical balance, the weight force of a load that is held in equilibrium by a force of equal size which acts in the opposite direction.  

force constant  [MECH] The ratio of the force to the deformation of a system whose deformation is proportional to the applied force.  

force-controlled motion commands  [CONT SYS] Robot control in which motion information is provided by computer software but sensing of forces or feedback is used by the robot to adapt this information to the environment.  

forced-air heating  [MECH ENG] A warm-air heating system in which positive air circulation is provided by means of a fan or a blower.  

forced circulation  [MECH ENG] The use of a pump or other fluid-motion device in conjunction with liquid-processing equipment to move the liquid through pipes and process vessels; contrasted to gravity or thermal circulation.  

forced-circulation boiler  [MECH ENG] A once-through steam generator in which water is pumped through successive parts.  

forced convection  [THERMO] Heat convection in which fluid motion is maintained by some external agency.  

forced draft  [MECH ENG] Air under positive pressure produced by fans at the point where air or gases enter a unit, such as a combustion furnace.  

forced oscillation  [MECH] An oscillation produced in a simple oscillator or equivalent mechanical system by an external periodic driving force. Also known as forced vibration.  

forced ventilation  [MECH ENG] A system of ventilation in which air is forced through ventilation ducts under pressure.  

forced oscillation See forced oscillation.  

force feedback  [CONT SYS] A method of error detection in which the force exerted on the effector is sensed and fed back to the control, usually by mechanical, hydraulic, or electric transducers.  

force fit  See press fit.  

force gage  [ENG] An instrument which measures the force exerted on an object.  

force main  [CIV ENG] The discharge pipeline of a pumping station.  

force plate  [ENG] A plate that carries the plunger or force plug of a mold and the guide pins on bushings.  

force plug  [ENG] A mold member that fits into the cavity block, exerting pressure on the molding compound. Also known as piston; plunger.  

force polygon  [MECH] A closed polygon whose sides are vectors representing the forces acting on a body in equilibrium.  

forceps  [DES ENG] A pincerlike instrument for grasping objects.  

force pump  [MECH ENG] A pump fitted with a solid plunger and a suction valve which draws and forces a liquid to a considerable height above the valve or puts the liquid under a considerable pressure.  

force ratio  See mechanical advantage.  

force-time  [IND ENG] The product of an applied force and its time of application; used for quantitative determination of isometric work.  

foraging depth  [ENG] Maximum depth at which a particular vehicle can operate in water.  

forebay  [CIV ENG] 1. A small reservoir at the head of the pipe line that carries water to the consumer, it is the last free water surface of a distribution system. 2. A reservoir feeding the penstocks of a hydro-power plant.  

foreign-body locator  [ENG] A device for locating foreign metallic bodies in tissue by means of suitable probes that generate a magnetic field; the presence of a magnetic body within this field is indicated by a meter or a sound signal.  

foreign element  [IND ENG] A work element which is not a part of the normal work cycle, either because it is accidental or because it occurs only occasionally.  

forecage  [ENG] 1. A sight or bearing on a new survey point, taken in a forward direction and made in order to determine its elevation. 2. A sight on a previously established survey point, taken in order to close a circuit. 3. A reading taken on a level rod to determine the elevation of the point on which the rod rests when read. Also known as minus sight.  

231
forest engineering

forest engineering [ENG] A branch of engineering concerned with the solution of forestry problems with regard to long-range environmental and economic effects. ['fɔːrst, ɛn-ja-ni-rɪŋ]

forklift [MECH ENG] A machine, usually powered by hydraulic means, consisting of two or more prongs which can be raised and lowered and are inserted under heavy materials or objects for hoisting and moving them. {'fɔrk, lɪft}

forklift truck See forklift. {'fɔrk, lɪft, ˈtræk}

fork pocket [MECH ENG] An opening in the base of a container or pallet for insertion of the prong of a forklift. {'fɔrk, ˈpæk-ət}

fork truck [MECH ENG] A vehicle equipped with a forklift. Also known as forklift truck. {'fɔrk, ˈtræk}

form [CIV ENG] Temporary boarding, sheeting, or pans of plywood, molded fiber glass, and so forth, used to give desired shape to poured concrete or the like. {'fɔrm}

form clamp [CIV ENG] An adjustable metal clamp used to secure planks of wooden forms for concrete columns or beams. {'fɔrm, ˈklamp}

form cutter See formed cutter. {'fɔrm, ˈkʌtər}

formed cutter [MECH] A cutting tool shaped to make surfaces with irregular geometry. Also known as form cutter. {'fɔrmd, ˈkʌtər}

form factor [ELEC] 1. The ratio of the effective value of a periodic function, such as an alternating current, to its average absolute value. 2. A factor that takes the shape of a coil into account when computing its inductance. Also known as shape factor. [MECH] The theoretical stress concentration factor for a given shape, for a perfectly elastic material. {'fɔrm, ˈfæk-tər}

form grinding [MECH ENG] Grinding by use of a wheel whose cutting face is contoured to the reverse shape of the desired form. {'fɔrm, ˈgrɪnd-ɪŋ}

forming [ELEC] Application of voltage to an electrolytic capacitor, electrolytic rectifier, or semiconductor device to produce a desired permanent change in electrical characteristics as a part of the manufacturing process. [MECH ENG] A process for shaping or molding sheets, rods, or other pieces of glass, ceramic ware, plastic, or metal by the application of pressure. {'fɔrm-ɪŋ}

forming die [ENG] A die like a drawing die, but without a blank holder. {'fɔrm-ɪŋ, ˈdɪl}

forming press [MECH ENG] A punch press for forming metal parts. {'fɔrm-ɪŋ, ˈpɜːs}

forming rolls [MECH ENG] Rolls contoured to give a desired shape to parts passing through them. {'fɔrm-ɪŋ, ˈrɔlz}

forming tool [DES ENG] A nonrotating tool that produces its inverse form on the workpiece. {'fɔrm-ɪŋ, ˈtʊl}

form process chart [IND ENG] A graphic representation of the process flow of paperwork forms. Also known as forms analysis chart, functional forms analysis chart, information process analysis chart. {'fɔrm ˈprɑːs-əs, ˈkærət}

forms analysis chart See form process chart. {'fɔrmz ˈʃɑːn-əl-ə-s, ˈkærət}

form scabbing [CIV ENG] In placing of concrete using formwork, removal of the surface layer of concrete that adheres to the form when it is removed. {'fɔrm, skæb-ɪŋ}

formwork [CIV ENG] A temporary wooden casing used to contain concrete during its placing and hardening. Also known as shuttering. {'fɔrm, ˈwɜːrk}

form factor See G, gram-force. {'fɔr}

Fortin barometer [ENG] A type of cistern barometer, provision is made to increase or decrease the volume of the cistern so that when a pressure change occurs, the level of the cistern can be maintained at the zero of the barometer scale (the ivory point). {'fɔrti-ən ˈbɑːrəm-əd-ər}

forward bias [ELECTR] A bias voltage that is applied to a pn-junction in the direction that causes a large current flow, used in some semiconductor diode circuits. {'fɔrward ˈbi-əs}

forward-looking infrared imager [ENG] An infrared imaging device which employs an opto-mechanical system to make a two-dimensional scan, and produces a visible image corresponding to the spatial distribution of infrared radiation. Abbreviated FLIR imager. Also known as framing imager. {'fɔrward ˈɪlk-ɪn, ɪn-fraˌred ˈɪm-ər-ər}

forward pass [ENG] In project management, scheduling from a known start date and calculating the finish date by proceeding from the first operation to the last. Also known as forward scheduling. {'fɔrward ˈpɑs}

forward path [CONT SYS] The transmission path from the loop actuating signal to the loop output signal in a feedback control loop. {'fɔrward ˈpɑθ}

forward scheduling See forward pass. {'fɔrward ˈfɔrwd-əl-ɪŋ}

forward transfer function [CONT SYS] In a feedback control loop, the transfer function of the forward path. {'fɔrward ˈtrænz-ərˌfɔrn ˌtæŋkˌʃɑn}

Foster’s reactance theorem [CONT SYS] The theorem that the most general driving point impedance or admittance of a network, in which every mesh contains independent inductance and capacitance, is a meromorphic function whose poles and zeros are all simple and occur in conjugate pairs on the imaginary axis, and in which these poles and zeros alternate. {'fɔstərˌtɑr rɛˈæktənˌθiərnˌəm}

Foucault pendulum [MECH] A swinging weight supported by a long wire, so that the wire’s upper support restrains the wire only in the vertical direction, and the weight is set swinging with no lateral or circular motion; the plane of the pendulum gradually changes, demonstrating the rotation of the earth on its axis. {'fuˈkɑlt ˈpɛn-də-ləm}

foul bottom [CIV ENG] A hard, uneven, rocky or obstructed bottom having poor holding qualities for anchors, or one having rocks or wreckage
fracture stress

dal "bad-un"

fouling [CHEM ENG] Deposition on the surface of a heat-transfer device of sediment in the form of scale derived from burned particles of the heated substance. {foul-in}

fouling factor [CHEM ENG] In heat transfer, the lowering of clear-film transfer rates resulting from corrosion, dirt, or roughness of the surface of tube walls of heat exchangers. {foul-in, faštar}

fouling plates [ENG] Metal plates submerged in water to allow attachment of fouling organisms, which are then analyzed to determine species, growth rate, and growth pattern, as influenced by environmental conditions and time. {foul-in, plates}

fouling point [CIV ENG] 1. The point at a switch or turnout beyond which railroad cars must be placed so as not to interfere with cars on the main track. 2. The location of insulated joints in a turnout on signaled tracks. {foul-in, point}

foundation [CIV ENG] 1. The ground that supports a building or other structure. 2. The portion of a structure which transmits the building load to the ground. {faunđašan}

foundation engineering [CIV ENG] That branch of engineering concerned with evaluating the earth's ability to support a load and designing substructures to transmit the load of superstructures to the earth. {faunđašan, enja, nirin}

foundation mat See raft foundation. {faunđašan, mat}

foundry [ENG] A building where metal or glass castings are produced. {faunđrē}

foundry engineering [ENG] The science and practice of melting and casting glass or metal. {faunđrē, enja, nirin}

four-ball tester [ENG] A machine designed to measure the efficiency of lubricants by driving one ball against three stationary balls clamped together in a cup filled with the lubricant. Performance is evaluated by measuring wear-scar diameters on the stationary balls. {för, bol'
'tes-tar}

four-bar linkage [MECH ENG] A plane linkage consisting of four links pinned tail to head in a closed loop with lower, or closed, joints. {för, bår'
'lik-kij}

Fourcouch process [ENG] A process for forming sheet glass in which the molten glass is drawn vertically upward. {för'koš, prášas}

four-channel sound system See quadraphonic sound system. {förchan-ol 'sau̯nd, sis-tam}

Fourdrinier machine [MECH ENG] A papemaking machine, a paper web is formed on an endless wire screen, the screen passes through presses and over dryers to the calendars and reels. {för'dra'nir mašen}

fourier See thermal ohm. {für-e, ā}

Fourier analyzer [ENG] A digital spectrum analyzer that provides push-button or other switch selection of averaging, coherence function, correlation, power spectrum, and other mathematical operations involved in calculating Fourier transforms of time-varying signal voltages for such applications as identification of underwater sounds, vibration analysis, oil prospecting, and brain-wave analysis. {für-e, ā 'hêt, kwažan}

Fourier heat equation See Fourier law of heat conduction, heat equation. {für-e, ā 'hêt, kwažan}

Fourier law of heat conduction [THERMO] The law that the rate of heat flow through a substance is proportional to the area normal to the direction of flow and to the negative of the rate of change of temperature with distance along the direction of flow. Also known as Fourier heat equation. {für-e, ā 'hêt, kanašan}

Fourier number [THERMO] A dimensionless number used in the study of unsteady-state heat transfer, equal to the product of the thermal conductivity and a characteristic time, divided by the product of the density, the specific heat at constant pressure, and the distance from the midpoint of the body through which heat is passing to the surface. Symbolized Ṅ. {für-e, a
'nam-bar}

four-pi counter [ENG] An instrument which measures the radiation that a radioactive material emits in all directions. {för 'pi, kaun'tar}

four-stroke cycle [MECH ENG] An internal combustion engine cycle completed in four piston strokes: includes a suction stroke, compression stroke, expansion stroke, and exhaust stroke. {för 'strökg 'stkal}

four-track tape [ENG ACOUS] Magnetic tape on which two tracks are recorded for each direction of travel, to provide stereo sound reproduction or to double the amount of source material that can be recorded on a given length of 1/4-inch (0.635-centimeter) tape. {för, trak 'tap}

four-way reinforcing [CIV ENG] A system of reinforcing rods in concrete slab construction in which the rods are placed parallel to two adjacent edges and to both diagonals of a rectangular slab. {för, wā 'reōn, fors-ig}

four-way valve [MECH ENG] A valve at the junction of four waterways which allows passage between any two adjacent waterways by means of a movable element operated by a quarter turn. {för, wā 'valv}

four-wheel drive [MECH ENG] An arrangement in which the drive shaft acts on all four wheels of the automobile. {för, 'wel 'drv}

fox lathe [MECH ENG] A lathe with a chasing bar and leaders for cutting threads; used for turning brass. {fäks, laθ}

fractionator [CHEM ENG] An apparatus used to separate a mixture by fractionation, especially by fractional distillation. {frak-sha,nád-ər}

fraction defective [IND ENG] The number of units per 100 pieces which are defective in a lot, expressed as a decimal. {frak-shan 'diltek-tiv}

fracture strength See fracture stress. {frak-shar', streŋkt}

fracture stress [MECH] The minimum tensile
fracture test

stress that will cause fracture. Also known as fracture strength. \{\text{frak-shər 'stres}\}

**fracture test**  \[\text{ENG}\] 1. Macro- or microscopic examination of a fractured surface to determine characteristics such as grain pattern, composition, or the presence of defects.  2. A test designed to evaluate fracture stress. \{\text{frak-shər 'test}\}

**fracture wear**  \[\text{MECH}\] The wear on individual abrasive grains on the surface of a grinding wheel caused by fracture. \{\text{frak-shər 'wer}\}

Frahn frequency meter  \[\text{SEE}\]  vibrating-reed frequency meter. \{\text{frəm 'frɛ-kwən-səˌmɛd-ər}\}

frame  \[\text{BUILD}\] The skeleton structure of a building. Also known as framing. \[\text{ELECTR}\] 1. One complete coverage of a television picture.  2. A rectangular area representing the size of copy handled by a facsimile system. \{\text{frãm}\}

framework  \[\text{ENG}\] The load-carrying frame of a structure, may be of timber, steel, or concrete. \{\text{frãm, wərk}\}

framing  \[\text{BUILD}\] See frame. \[\text{ELECTR}\] 1. Adjusting a television picture to a desired position on the screen of the picture tube.  2. Adjusting a facsimile picture to a desired position in the direction of line progression. Also known as phasing. \{\text{frãm-ɪŋ}\}

framing anchor  \[\text{BUILD}\] A metal device for joining elements such as studs, joists, and rafters in light wood-frame construction. \{\text{frãm-ɪŋ, ank-ər}\}

framing imager  \[\text{SEE}\] forward-looking infrared imager. \{\text{frãm-ɪŋ, im-ər-ɪŋ}\}

framing square  \[\text{DES ENG}\] A graduated carpenter's square used for cutting off and making notches. \{\text{frãm-ɪŋ, skwer}\}

Francis turbine  \[\text{MECH ENG}\] A reaction hydraullic turbine of relatively medium speed with radial flow of water in the runner. \{\text{frən-səs 'tər-bın}\}

frangible  \[\text{MECH}\] Breakable, fragile, or brittle. \{\text{frən-gəl}\}

Franklin equation  \[\text{ENG ACOUS}\] An equation for intensity of sound in a room as a function of time after shutting off the source, involving the volume and exposed surface area of the room, the speed of sound, and the mean sound-absorption coefficient. \{\text{frαn-lən 'bræs ik'stræk-shən 'meth-əd}\}

Frazer-Brace extraction method  \[\text{CHEM ENG}\] A method used to extract oil from citrus fruit; utilizes a machine which has abrasive carburendum rolls to rasp the peel from the fruit under a water spray, the water-and-peel mixture is screened and settled to allow oil separation. \{\text{frəzər 'bræs ik'stræk-shən 'meth-əd}\}

free ascent  \[\text{ENG}\] Emergency ascent by a diver by floating to the surface through natural buoyancy or through assisted buoyancy with a life jacket. \{\text{frɛ 'sɛnt}\}

freeboard  \[\text{CHEM ENG}\] In a fluidized-bed reactor, the space between the top of the reaction bed and the top of the reactor. \[\text{CIV ENG}\] The height between normal water level and the crest of a dam or the top of a flute. \[\text{ENG}\] The vertical distance in a water tank between the maximum water level and the top of the tank. \{\text{frɛ 'bɔrd}\}

free charge  \[\text{ELEC}\] Electric charge which is not bound to a definite site in a solid, in contrast to the polarization charge. \{\text{frɛ 'cʰarj}\}

free convection  \[\text{SEE}\] natural convection. \{\text{frɛ kɔn'vektən}\}

free diving  \[\text{ENG}\] Diving with the use of scuba equipment to allow freedom and maneuverability. \{\text{frɛ 'dɪv-ɪŋ}\}

free-drop  \[\text{ENG}\] To air-drop supplies or equipment without parachute. \{\text{frɛ, 'dræp}\}

free energy  \[\text{THERMO}\] 1. The internal energy of a system minus the product of its temperature and its entropy. Also known as Helmholtz free energy. \{\text{frɛn 'enθəlpaɪ}\}

fracture test  \[\text{ENG}\] A mechanical test de-
taneously to determine the strength of a material. Also known as a fracture toughness test. \{\text{fræk-tʃərkʌstəns 'tɛst}\}

free charge  \[\text{ELEC}\] Electric charge which is not bound to a definite site in a solid, in contrast to the polarization charge. \{\text{frɛ 'cʰarj}\}

free enthalpy  \[\text{SEE}\] Gibbs free energy. \{\text{frɛn 'ərə-jə}\}

free fall  \[\text{MECH}\] The ideal falling motion of a body acted upon only by the pull of the earth's gravitational field. \{\text{frɛl}\}

free falling  \[\text{MECH ENG}\] In ball milling, the peripheral speed at which part of the crop load breaks clear on the ascending side and falls clear to the toe of the charge. \{\text{frɛl, 'fɔl-iŋ}\}

free-field room  \[\text{SEE}\] anechoic chamber. \{\text{frɛf 'fild, rʊm}\}

free fit  \[\text{DES ENG}\] A fit between mating pieces where accuracy is not essential or where large variations in temperature may occur. \{\text{frɛ fɪt}\}

free flight  \[\text{MECH}\] Unconstrained or unassisted flight. \{\text{frɛ flɪt}\}

free-flight angle  \[\text{MECH}\] The angle between the horizontal and a line in the direction of motion of a flying body, especially a rocket, at the beginning of free flight. \{\text{frɛ flɪt, 'æŋ-gəl}\}

free-flight trajectory  \[\text{MECH}\] The path of a body in free fall. \{\text{frɛ flɪt 'træjərɪ-tɛrɛ}\}

free float  \[\text{IND ENG}\] The length of time, expressed as work units, that a specific activity may be delayed without delaying the start of another activity scheduled to follow immediately after. Also known as free slack. \{\text{frɛ flɔt}\}

free gyroscope  \[\text{ENG}\] A gyroscope that uses the property of gyroscopic rigidity to sense the motion of a body acted upon only by the pull of the earth's gravitational field. \{\text{frɛn 'gɪski-rəs}\}

freehand grinding  \[\text{SEE}\] offhand grinding. \{\text{frɛn 'hænd 'grɪnd-ɪŋ}\}

free instruments  \[\text{ENG}\] Instruments designed to initially sink to the ocean bottom, release their ballast, and then rise to the surface where they are retrieved with their acquired payload. \{\text{frɛn 'ɪn-sτra-ˌmæns}\}

free joint  \[\text{MECH ENG}\] A robotic articulation that has six degrees of freedom. \{\text{frɛn 'joint}\}

free-mass antenna  \[\text{ENG}\] A detector of gravitational radiation that consists of suspended,
almost inertial masses and a laser interferometer that detects their motions. {ˌfrɛ,məsˈten-ə́n}  

free-piston engine  [MECH ENG] A prime mover utilizing free-piston motion controlled by gas pressure in the cylinders. {ˌfrɛ,pɪst-ˈten-ə́n}  

free-piston gage  [ENG] An instrument for measuring high fluid pressures in which the pressure is applied to the face of a small piston that can move in a cylinder and the force needed to keep the piston stationary is determined. Also known as piston gage. {ˌfrɛ,pɪst-ˈten ˈɡæj}  

free port  [CIV ENG] An isolated, enclosed, and policed port in or adjacent to a port of entry, without a resident population. {ˌfrɛ,pɔrt}  

free slack  See free float. {ˌfrɛˌslæk}  

free-swelling index  [ENG] A test for measuring the free-swelling properties of coal; consists of heating 1 gram of pulverized coal in a silica crucible over a gas flame under prescribed conditions to form a cake button; the size and shape of which are then compared with a series of standard profiles numbered 1 to 9 in increasing order of swelling. {ˌfrɛˌswɛl-ˈɪŋ ˈɪnˌdɛks}  

free turbine  [MECH ENG] In a turbine engine, a turbine wheel that drives the output shaft and is not connected to the shaft driving the compressor. {ˌfrɛˌtʊr-bən}  

free vector  [MECH] A vector whose direction in space is prescribed but whose point of application is not prescribed. {ˌfrɛˌvɛktə́r}  

freeze  [ENG] 1. To permit drilling tools, casing, drivepipe, or drill rods to become lodged in a borehole by reason of caving walls or impaction of sand, mud, or drill cuttings, to the extent that they cannot be pulled out. Also known as bind-seize. 2. To burn in a bit. Also known as burn-in. 3. The premature setting of cement, especially when cement slurry hardens before it can be ejected fully from pumps or drill rods during a borehole cementation operation. 4. The act or process of drilling a borehole by utilizing a drill fluid chilled to minus 30–40°F, (minus 34–40°C) as a means of consolidating, by freezing, the borehole wall materials or core as the drill penetrates a water-saturated formation, such as sand or gravel. {ˌfrɛz}  

freeze drying  [ENG] A method of drying materials, such as certain foods, that would be destroyed by the loss of volatile ingredients or by drying temperatures above the freezing point; the material is frozen under high vacuum so that ice or other frozen solvent will quickly sublime and a porous solid remain. {ˌfrɛzˌdrɪ-fɪŋ}  

freezer  [MECH ENG] An insulated unit, compartment, or room in which perishable foods are quick-frozen and stored. {ˌfrɛzər}  

freez-up  [MECH ENG] Abnormal operation of a refrigerating unit because ice has formed at the expansion device. {ˌfrɛzˌʌp}  

freezing microtome  [ENG] A microtome used to cut frozen tissue. {ˌfrɛziŋˈmɪtər ikˈəmətɚ}  

frequency-response curve  [ENG] A graph showing the magnitude or the phase of the frequency response of a device or system as a function of frequency.
friction drive [MECH ENG] A drive that operates at high speed; used especially for the toothed saw that is held under tension in a frame. {'frik-shən,drīv}

friction fit [DES ENG] A perfect fit between two parts. {'frik-shən,fit}

friction force microscopy [ENG] The use of an atomic force microscope to measure the frictional forces on a surface. {'frik-shən,for-s mə-trə-skə-pə}

friction gear [MECH ENG] Gearing in which motion is transmitted through friction between two surfaces in rolling contact. {'frik-shən,ɡər}

friction horsepower [MECH ENG] Power dissipated in a machine through friction. {'frik-shən,hɔr-spə-wər}

friction loss [MECH] Mechanical energy lost because of mechanical friction between moving parts of a machine. {'frik-shən,loʊs}

friction pile [CIV ENG] A bearing pile surrounded by earth and supported entirely by friction, carries no load at its end. {'frik-shən,pil}

friction saw [MECH ENG] A toothless circular saw used to cut materials by fusion due to frictional heat. {'frik-shən,soʊ}

friction sawing [MECH ENG] A burning process to cut stock to length by using a blade saw operating at high speed; used especially for the structural parts of mild steel and stainless steel. {'frik-shən,soʊ-iŋ}

friction shoe [ENG] An adjustable friction device that holds a window sash in any desired open position. {'frik-shən,ʃu}

friction torque [MECH] The torque which is produced by frictional forces and opposes rotational motion, such as that associated with journal or sleeve bearings in machines. {'frik-shən,tɔr-k}

friction-tube viscometer [ENG] Device to determine liquid viscosity by measurement of pressure drop through a friction tube with the liquid in viscous flow, gives direct solution to Poiseuille’s equation. {'frik-shən,tuβ viˈskə-məd-ər}

friction welding [ENG] A welding process for metals and thermoplastic materials in which two members are joined by rubbing the mating faces together under high pressure. {'frik-shən,ˌwel-dıŋ}

froicorje [THERMO] A unit of rate of extraction of heat used in refrigeration, equal to 1000 fifteen-degree calories per hour, or 1.16264 ± 0.00014 watts. {'frig-ə-rē}

frigometer [ENG] A thermometer which measures low temperatures. {'frig-ə-rim-əd-ər}

fringe howl [ENG ACOUS] Squeal or howl heard when some circuit in a receiver is on the verge of oscillation. {'frin-haul}

frit seal [ENG] A seal made by fusing together metallic powders with a glass binder, for such applications as hermetically sealing ceramic packages for integrated circuits. {'frit,seıl}

fritting [ENG] Fusing materials for glass by application of heat. {'frid-iŋ}

frog [DES ENG] A hollow on one or both of the larger faces of a brick or block, reduces weight of the brick or block, may be filled with mortar. Also known as panel. [ENG] A device which permits the train or tram wheels on one rail
of a track to cross the rail of an intersecting track.  (frág)

from-to tester  [ENG] Test equipment which checks continuity or impedance between points.  (fraŵm teŵt̂-test-ar̂)

front-end loader  [MECH ENG] An excavator consisting of an articulated bucket mounted on a series of movable arms at the front of a crawler or rubber-tired tractor.  (fraŵnt end ˈlōd-ər̂)

front-end volatility  [CHEM ENG] The volatility of the lower-boiling fractions of gasoline, such as butanes.  (fraŵnt end ˌvál-ət-əl-əd-ə-

front slagging  [ENG] Skimming slag from the mixture of slag and molten metal as it flows through a taphole.  (fraŵnt ˌslag-ɪ̂g)

frosting  [ENG] Decorating a scraped metal surface with a handscraper. Also known as flaking.  (fraŵst-ɪ̂g)

frost-point hygrometer  [ENG] An instrument for measuring the frost point of the atmosphere; under air test is passed continuously across a polished surface whose temperature is adjusted so that a thin deposit of frost is formed which is in equilibrium with the air.  (frâŵst Σpɔɪ̂nt hi’gram-əd-ər̂)

froth flotation  [ENG] A process for recovery of particles of ore or other material, in which the particles adhere to bubbles and can be removed as part of the froth.  (frâŵt hlo’t-ə-shən)

ft-lb See foot-pound.

ft-lbf See foot-poundal.

ft-pdl See foot-poundal.

fuel bed  [MECH ENG] A layer of burning fuel, as on a furnace grate or a cupola.  (fyúl ˈbed)

fuel filter  [ENG] A device, as in an internal combustion engine, that removes particles from the fuel.  (fyúl ˈfil-tər)

fuel injection  [MECH ENG] The delivery of fuel to an internal combustion engine cylinder by pressure from a mechanical pump.  (fyúl in ˈjek-shən)

fuel injector  [MECH ENG] A pump mechanism that sprays fuel into the cylinder of an internal combustion engine at the appropriate part of the cycle.  (fyúl ɪnˈjekt-ar̂)

fuel pump  [MECH ENG] A pump for drawing fuel from a storage tank and delivering it to an engine or furnace.  (fyúl ˈpamp)

fuel system  [MECH ENG] A system which stores fuel for present use and delivers it as needed.  (fyúl sɪsˈtæm)

fuel tank  [MECH ENG] The operating fuel-storage component of a fuel system.  (fyúl ˌtank)

fugacity  [THERMO] A function used as an analog of the partial pressure in applying thermodynamics to real systems, at a constant temperature it is proportional to the exponential of the ratio of the chemical potential of a constituent of a system divided by the product of the gas constant and the temperature, and it approaches the partial pressure as the total pressure of the gas approaches zero.  (fyúlˈgas-əd-ə-

fulladder  [ELECTR] A logic element which operates on two binary digits and a carry digit from a preceding stage, producing as output a sum digit and a new carry digit. Also known as three-input adder.  (fyúl ˌəd-ər̂)

full-cell process  [ENG] A process of preservative treatment of wood that uses a pressure vessel and first draws a vacuum on the charge of wood and then introduces the preservative without breaking the vacuum. Also known as Bethell process.  (fyúl ˈsel ˈprās-əs)

full-face tunneling  [CIV ENG] A system of tunneling in which the tunnel opening is enlarged to desired diameter before extension of the tunnel face.  (fyúl ˈfæs ˈtan-əl-ɪ̂g)

full-gear  [MECH ENG] The condition of a steam engine when the valve is operated to the maximum extent by the link motion.  (fyúl ˈgɪr)

full-mill  [BUILD] A type of construction in which all vertical apertures open onto shafts of brick or other fireproof material; used for fire retardance.  (fyúl ˈmil)

full subtracter  [ELECTR] A logic element which operates on three binary input signals representing a minuend, subtrahend, and borrow digit, producing as output a different digit and a new borrow digit. Also known as three-input subtracter.  (fyúl ˈsæb-trak-tər)

full-track vehicle  [MECH ENG] A vehicle entirely supported, driven, and steered by an endless belt, or track, on each side; for example, a tank.  (fyúl ˌtræk ˈvɛr-ə-kəl)

full trailer  [MECH ENG] A towed vehicle whose weight rests completely on its own wheels.  (fyúl ˈtraɪl-ər̂)

fumble  [IND ENG] An unintentional sensory-motor error that may be unavoidable.  (fʌm-bəl)

fumigating  [ENG] The use of a chemical compound in a gaseous state to kill insects, nematodes, arachnids, rodents, weeds, and fungi in confined or inaccessible locations; also used to control weeds, nematodes, and insects in the field.  (fyúlˈmaˌɡəd-ɪ̂g)

funal See stibene.  (fyúnl-al)

functional analysis  [SYS ENG] A part of the design process that addresses the activities that a
system, software, or organization must perform to achieve its desired outputs, that is, the transformations necessary to turn available inputs into the desired outputs.  

functional analysis diagram  [SYS ENG] A representation of functional analysis and, in particular, the transformations necessary to turn available inputs into the desired outputs, the flow of data or items between functions, the processing instructions that are available to guide the transformation, and the control logic that dictates the activation and termination of functions.  

functional decompositon  [CONT SYS] The partitioning of a large-scale control system into a nested set of generic control functions, namely the regulatory or direct control function, the optimizing control function, the adaptive control function, and the self-organizing function.  

functional design  [SYS ENG] The aspect of system design concerned with the system's objectives and functions, rather than its specific components.  

functional forms analysis chart  See form process chart.  

function failure safety  [ENG] The capability of an electronic-mass measuring instrument to withhold the release of an incorrect measurement when there is a function failure.  

fundamental interval  [THERMO] 1. The value arbitrarily assigned to the difference in temperature between two fixed points (such as the ice point and steam point) on a temperature scale, in order to define the scale.  

fundamental motion  See elemental motion.  

fungible  [CHEM ENG] Pertaining to petroleum products whose characteristics are so similar they can be commingled.  

fungi-proofing  [ENG] Application of a protective chemical coating that inhibits growth of fungi.  

fungicidal  See fungicidal railroad.  

fungicidal polygon  [MECH] 1. The figure formed by a light string hung between two points from which weights are suspended at various points, 2. A force diagram for such a string, in which the forces (weights and tensions) acting on specific points from which weights are suspended are represented by a series of adjacent triangles.  

fungicidal railroad  [ENG] A railroad system used primarily to ascend and descend mountains, the weight of the descending train helps to move the ascending train up the mountain. Also known as funicular.  

funnel  [DES ENG] A tube with one conical end that sometimes holds a filter, the function is to direct flow of a liquid or, if a filter is present, to direct a flow that was filtered.  

funnel-flow bin  [ENG] A bin in which solid flows toward the outlet in a channel that forms within stagnant material.  

furfural extraction  [CHEM ENG] Process for the refining of lubricating oils and other organic materials by contact with furfural.  

funicular railroad  [ENG] A diode that opens under continuous or pulsating current and steam point) on a temperature scale, an electric circuit when the current therein be-in order to define the scale.  

funicular polygon  [ENG] Full prose text is not provided.
fused-junction transistor  

[fyūz ˈjaŋk-shən tranˈzis-tər]

fused semiconductor  

[fyūz ˈse-mə-kan ,dək-tər]

fused-junction transistor  

[fyūz ˈjaŋk-shən tranˈzis-tər]

See  

[fol eng]

fusion piercing  

[fyūz ˈpier-ə-sing]

fused-junction transistor  

[fyūz ˈjaŋk-shən tranˈzis-tər]

See  

[safsətər]

fused-junction transistor  

[fyūz ˈjaŋk-shən tranˈzis-tər]

See  

[fyūz ˈpier-ə-sing]

fused-junction transistor  

[fyūz ˈjaŋk-shən tranˈzis-tər]

See  

[fyūz ˈpier-ə-sing]

fused-junction transistor  

[fyūz ˈjaŋk-shən tranˈzis-tər]

See  

[fyūz ˈpier-ə-sing]

fused-junction transistor  

[fyūz ˈjaŋk-shən tranˈzis-tər]

See  

[fyūz ˈpier-ə-sing]
This page intentionally left blank.
gage point [ENG] A point used to position a part in a jig, fixture, or qualifying gage.

gage pressure [MECH ENG] The amount by which the total absolute pressure exceeds the ambient atmospheric pressure.

gage plate [CIV ENG] A plate inserted between the parallel rails of a railroad track to maintain the gage.

gage point [DES ENG] A point used to position

Copyright 2003 by The McGraw-Hill Companies, Inc. Click Here for Terms of Use.
Galitzin pendulum

**Galitzin pendulum** [MECH] A massive horizontal pendulum that is used to measure variations in the direction of the force of gravity with time, and thus serves as the basis of a seismograph. (ˈgælɪt-sən ˈpɛn-ˈlədəm)

galley [ENG] The kitchen of a ship, airplane, or trailer. (ˈgæl-ə)

gallium arsenide field-effect transistor [ELECTR] A field-effect transistor in which current between the ohmic source and drain contacts is carried by free electrons in a channel consisting of n-type gallium arsenide, and this current is modulated by a Schottky-barrier rectifying contact called the gate that varies the cross-sectional area of the channel. Abbreviated GaAs FET. (ˈgæl-ə-əm ˈɡɑːr-sənˈd id ˈfɛld ˈfɛkt tranˈzɪs-tər)

gallon [MECH] Abbreviated gal. 1. A unit of volume used in the United States for measurement of liquid substances, equal to 231 cubic inches, or to 3.785 411 784 × 10⁻¹ cubic meter, or to 3.785 411 784 liters; equal to 128 fluid ounces. 2. A unit of volume used in the United Kingdom for measurement of liquid and solid substances, usually the former, equal to 4 × 10³ cubic meter, or to 4.546 09 liters; equal to 160 fluid ounces. Also known as imperial gallon. (ˈgæl-ən)

Galton whistle [ENG ACOUS] A short cylindrical pipe with an annular nozzle, which is set into resonant vibration in order to generate ultrasonic sound waves. (ˈɡɔːl-tən ˈwɪs-əl)

galvanic [ELEC] Pertaining to electricity flowing as a result of chemical action. (ˈɡæl-vən-ɪk)

galvanic battery [ELEC] A galvanic cell, or two or more such cells electrically connected to produce energy. (ˈɡæl-vən-ɪk ˈbæt-ər-eɪ)

galvanic cell [ELEC] An electrolytic cell that is capable of producing electric energy by electrochemical action. (ˈɡæl-vən-ɪk ˈsɛl)

galvanic couple [ELEC] A pair of unlike substances, such as metals, which generate a voltage when brought into contact with an electrolyte. (ˈɡæl-vən-ɪk ˈkæp-əl)

galvanic current [ELEC] A steady direct current. (ˈɡæl-vən-ɪk ˈkɔr-ənt)

galvanometer [ENG] An instrument for indicating or measuring a small electric current by means of a mechanical motion derived from electromagnetic or electric forces produced by the current. (ˈɡæl-və-nəm-əd-ər)

galvanometer recorder [ENG ACOUS] A sound recorder in which the audio signal voltage is applied to a coil suspended in a magnetic field, the resulting movements of the coil cause a tiny attached mirror to move a reflected light beam back and forth across a slit in front of a moving photographic film. (ˈɡæl-və-nəm-əd-ər ˈrɪkərdər)

gangbræl roof [BUILD] A roof with two sloping sides stepped at different angles on each side of the center ridge; the lower slope is steeper than the upper slope. (ˈɡæŋ-bræl ˈrʊf)

gamma [MECH] A unit of mass equal to 10⁻⁶ gram or 10⁻⁹ kilogram. (ˈɡæm-ə)

**gamma camera** [ENG] An instrument consisting of a large, thin scintillation crystal or array of photomultiplier tubes, a multichannel collimator, and circuitry to analyze the pulses produced by the photomultipliers; used to visualize the distribution of radioactive compounds in the human body. (ˈɡæm-əˌkæm-ərə)

gamma counter [ENG] A device for detecting gamma radiation, primarily through the detection of fast electrons produced by the gamma rays; it either yields information about integrated intensity within a time interval or detects each photon separately. (ˈɡæm-əˌkaʊnt-ər)

gamma logging [ENG] Obtaining, by means of a gamma-ray probe, a record of the intensities of gamma rays emitted by the rock strata penetrated by a borehole. (ˈɡæm-əˌlæg-ən)

gamma-ray altimeter [ENG] An altimeter, used at altitudes under several hundred feet, that measures the photon backscatter from the earth resulting from the transmission of photons to earth from a cobalt-60 gamma source in the plane. (ˈɡæm-əˌrælˈtɪmətər)

gamma-ray detector [ENG] An instrument that registers the presence of gamma rays. (ˈɡæm-əˌrædɪˈtek-tər)

gamma-ray level indicator [ENG] A level indicator in which the rising level of the liquid or other material reduces the amount of radiation passing from a gamma-ray source through the container to a Geiger counter or other radiation detector. (ˈɡæm-əˌræˌlev-əl ˈɪnˈdɑː kəd-ər)

gamma-ray probe [ENG] A gamma-ray counter built into a watertight case small enough to be lowered into a borehole. (ˈɡæm-əˌræˌprəb)

gamma-ray tracking [ENG] Use of three tracking stations, located at the three corners of a triangle centered on a missile about to be launched, to obtain accurate azimuthal tracking of a cobalt-60 gamma source in the tail. (ˈɡæm-əˌræˌtrək-ɪn)

gamma-ray well logging [ENG] Measurement of gamma-ray intensity versus depth down the wellbore, used to identify rock strata, their position, and their thicknesses. (ˈɡæm-əˌræˌwelˈlæg-ɪn)

gammeter [ENG] A template fashioned of transparent material and marked with a calibrated scale, when positioned on a sensotometric curve it is used to determine the slope of the straight-line portion. (ˈɡæm-əˌmɛd-ər)

gang [ELEC] A mechanical connection of two or more circuit devices so that they can be varied. (ˈɡæŋ)

gang chart [IND ENG] A multiple-activity process chart used for groups of men on materials-handling operations. (ˈɡæŋˌcharṭ)

gang drill [MECH ENG] A set of drills operated together in the same machine, used in rock drilling. (ˈɡæŋˌdrɪl)

gang milling [ENG] Rolling of material by means of a composite machine with numerous cutting blades. (ˈɡæŋˌmɪl-ɪŋ)

gang saw [MECH ENG] A steel frame in which
thin, parallel saws are arranged to operate simultaneously in cutting logs. (\textsuperscript{243}gas, so\textsuperscript{2})

gantlet [CIV ENG] A stretch of overlapping railroad track, with one rail of one track being between the two rails of another track; used to narrow bridges and passes. (\textsuperscript{243}gont-lot\textsuperscript{2})
gantry [ENG] A frame erected on side supports so as to span an area and support and hoist machinery and heavy materials. (\textsuperscript{243}gan-tre\textsuperscript{2})
gantry crane [MECH ENG] A bridgelike hoisting machine having fixed supports or arranged for running along tracks on ground level. (\textsuperscript{243}gan-tre, kran\textsuperscript{2})
gantry-type robot [CONT SYS] A continuous-path, Cartesian-coordinate robot constructed in a bridge shape that uses rails to move along a single horizontal axis or along either of two perpendicular horizontal axes. (\textsuperscript{243}gan-tre \textsuperscript{2} t\textsuperscript{2}p \textsuperscript{2}r\textsuperscript{2}o\textsuperscript{2}b\textsuperscript{2})

Gantt chart [IND ENG] In production planning and control, a type of bar chart depicting the work planned and done in relation to time; each division of space represents both a time interval and the amount of work to be done during that interval. (\textsuperscript{243}gant\textsuperscript{2}, chart\textsuperscript{2})

Gantt task and bonus plan [IND ENG] A wage incentive plan in which high task efficiency is maintained by providing a percentage bonus as a reward for production in excess of standard. (\textsuperscript{243}gant\textsuperscript{2} task an b\textsuperscript{2}s\textsuperscript{2}n\textsuperscript{2}s\textsuperscript{2} ,plan\textsuperscript{2})

gap [ELEC] The spacing between two electric contacts. (gap\textsuperscript{2})
gap-filler radar [ENG] Radar used to fill gaps in radar coverage of other radar. (\textsuperscript{243}gap \textsuperscript{2}fil-ar \textsuperscript{2}ra\textsuperscript{2},dar\textsuperscript{2})
gap-framepress [MECH ENG] A punch press whose frame is open at bed level so that wide work or strip work can be inserted. (\textsuperscript{243}gap \textsuperscript{2}fram,pres\textsuperscript{2})
gap lathe [MECH ENG] An engine lathe with a sliding bed providing enough space for turning large-diameter work. (\textsuperscript{243}gap \textsuperscript{2}lat\textsuperscript{2})
gap scanning [ENG] In ultrasonic testing, a coupling technique in which a sound beam is projected through a short fluid column that flows through a nozzle on an ultrasonic search unit. (\textsuperscript{243}gap \textsuperscript{2}skan-in\textsuperscript{2})
garnet hinge [DES ENG] A hinge with a vertical bar and horizontal strap. (\textsuperscript{243}g\textsuperscript{2}r\textsuperscript{2}n\textsuperscript{2}t\textsuperscript{2}, hin\textsuperscript{2})
garret [BUILD] The part of a house just under the roof. (\textsuperscript{243}gar\textsuperscript{2}t\textsuperscript{2})
garter spring [DES ENG] A closed ring formed of helically wound wire. (\textsuperscript{243}gard-ar ,spri\textsuperscript{2})
gas absorption operation [CHEM ENG] The recovery of solute gases present in gaseous mixtures of noncondensables, this recovery is generally achieved by contacting the gas stream with a liquid that offers specific or selective solubility for the solute gas to be recovered, or with an adsorbent (for example, synthetic or natural zeolite) that accepts only specific molecule sizes or shapes. (\textsuperscript{243}gas ab, sorp-shan ,\textsuperscript{2}ap\textsuperscript{2},r\textsuperscript{2}a\textsuperscript{2}shan\textsuperscript{2})
gas bag [ENG] A bag made of gas-impermeable material and designed for insertion into a pipeline followed by inflation to halt the flow of gas. (\textsuperscript{243}gas, bag\textsuperscript{2})
gas bearing [MECH ENG] A journal or thrust bearing lubricated with gas. Also known as gas-lubricated bearing. (\textsuperscript{243}gas ,ber-in\textsuperscript{2})
gas burner [ENG] A hole or a group of holes through which a combustible gas or gas-air mixture flows and burns. (\textsuperscript{243}gas ,bar-nar\textsuperscript{2})
gas cleaning [ENG] Removing ingredients, pollutants, or contaminants from domestic and industrial gases. (\textsuperscript{243}gas ,klenn-in\textsuperscript{2})
gas-compression cycle [MECH ENG] A refrigeration cycle in which hot, compressed gas is cooled in a heat exchanger, then passes into a gas expander which provides an exhaust stream of cold gas to another heat exchanger that handles the sensible-heat refrigeration effect and exhausts the gas to the compressor. (\textsuperscript{243}gas kom\textsuperscript{2} presh-on ,st-kol\textsuperscript{2})
gas compressor [MECH ENG] A machine that increases the pressure of a gas or vapor by increasing the gas density and delivering the fluid against the connected system resistance. (\textsuperscript{243}gas kom\textsuperscript{2} pres-or\textsuperscript{2})
gas constant [THERMO] The constant of proportionality appearing in the equation of state of an ideal gas, equal to the pressure of the gas times its molar volume divided by its temperature. Also known as gas-law constant, universal gas constant. (\textsuperscript{243}gas ,k\textsuperscript{2}n\textsuperscript{2}n\textsuperscript{2}nt\textsuperscript{2})
gas cylinder [MECH ENG] The chamber in which a piston moves in a positive displacement engine or compressor. (\textsuperscript{243}gas ,sil-an\textsuperscript{2}r\textsuperscript{2})
gas dehydrator [CHEM ENG] A device or system to remove moisture vapor from a gas stream, usually incorporates desiccant-type packed towers. (\textsuperscript{243}gas d\textsuperscript{2}h\textsuperscript{2}l\textsuperscript{2},dr\textsuperscript{2}d\textsuperscript{2}r\textsuperscript{2}r\textsuperscript{2})
gas-deviation factor See compressibility factor. (\textsuperscript{243}gas ,d\textsuperscript{2}v\textsuperscript{2}l\textsuperscript{2}a\textsuperscript{2}sh\textsuperscript{2}n\textsuperscript{2} ,fak-tor\textsuperscript{2})
gas engine [MECH ENG] An internal combustion engine that uses gaseous fuel. (\textsuperscript{243}gas\textsuperscript{2} ,en-\textsuperscript{2}j\textsuperscript{2}n\textsuperscript{2})
gaseous conduction analyzer [ENG] A device to detect organic vapors in air by measuring the change in current that flows between a heated platinum anode and a concentric platinum cathode. (\textsuperscript{243}gas\textsuperscript{2} as kan-dak-shan\textsuperscript{2} ,an\textsuperscript{2}n\textsuperscript{2}z\textsuperscript{2}l\textsuperscript{2}z\textsuperscript{2})
gaseous diffusion [CHEM ENG] 1. Pressure-induced free-molecular transfer of gas through microporous barriers as in the process of making fissionable fuel. 2. Selective solubility diffusion of gas through nonporous polymers by absorption and solution of the gas in the polymer matrix. (\textsuperscript{243}gas\textsuperscript{2} as d\textsuperscript{2}fyu\textsuperscript{2}z\textsuperscript{2}n\textsuperscript{2})
gas etching [ENG] The removal of material from a semiconductor circuit by reaction with a gas that forms a volatile compound. (\textsuperscript{243}gas\textsuperscript{2} ,ech-in\textsuperscript{2})

GasFET [ENG] A gas sensor based on changes, upon exposure to hydrogen, in the surface part of the work function of a palladium component
gas-filled thermometer

that serves as the gate contact of a metal oxide semiconductor field-effect transistor (MOSFET). { 'gas ,let }

gas-filled thermometer [ENG] A thermometer which uses a gas (usually nitrogen or hydrogen), that approximately follows the ideal gas law. { 'gas ,fild thar'mäm-əd-ar }
gas filter [CHEM ENG] A device used to remove liquid or solid particles from a flowing gas stream. { 'gas fi-lər }
gas furnace [ENG] An enclosure in which a gaseous fuel is burned. { 'gas ,fərn-əs }
gas generator [CHEM ENG] A chemical plant for producing gas from coal, for example, water gas. [MECH ENG] An apparatus that supplies a high-pressure gas flow to drive compressors, air screws, and other machines. { 'gas ,len-nə ,räd-ar }
gas heater [MECH ENG] A unit heater designed to supply heat by forced convection, using gas as a heat source. { 'gas ,hēd-ar }
gas holder [ENG] Gas storage container with vertically free top section that moves up or down to adjust to the volume of gas held. { 'gas ,həl-ar }
gas hole [ENG] A cavity formed in a casting as a result of cavitation. { 'gas ,hōl }
gasification [CHEM ENG] Any chemical or heat process used to convert a substance to a gas; coal is converted by the Hgas process to a gaseous fuel. { 'gas-ə-fə-kā-kən-shən }
gasifier [CHEM ENG] A unit for producing gas, particularly synthesis gas from coal. { 'gas-ə ,fər-ar }
gas injection [MECH ENG] Injection of gaseous fuel into the cylinder of an internal combustion engine at the appropriate part of the cycle. { 'gas in-jek-shən }
gasket [ENG] A packing made of deformable material, usually in the form of a sheet or ring, used to make a pressure-tight joint between stationary parts. Also known as static seal. { 'gas-kıt }
gas law [THERMO] Any law relating the pressure, volume, and temperature of a gas. { 'gas ,lə }
gas-law constant See gas constant. { 'gas ,lə ,kən-stənt }
gas lift [CHEM ENG] Solids movement operation in which an upward-flowing gas stream in a closed conduit or vessel is used to lift and move powdered or granular solid material. { 'gas ,lɪft }
gas making [CHEM ENG] Making water gas or air gas by the action of steam and air upon hot coke. { 'gas ,mək-ən }
gas manometer [ENG] A gage for determining the difference in pressure of two gases, usually by measuring the difference in height of liquid columns in the two sides of a U-tube. { 'gas,mən-əm-əd-ar }
gas mask [ENG] A device to protect the eyes and respiratory tract from noxious gases, vapors, and aerosols, by removing contamination with a filter and a bed of adsorbent material. { 'gasˌmæsk }
gas meter [ENG] An instrument for measuring and recording the amount of gas flow through a pipe. { 'gasˌmɛd-ar }
gasoline engine [MECH ENG] An internal combustion engine that uses a mixture of air and gasoline vapor as a fuel. { 'gasˌo-ˌlen ŋən-ənən } gasoline pump [MECH ENG] A device that pumps and measures the gasoline supplied to a motor vehicle, as at a filling station. { 'gasˌoˌlenˌpəmp }
gasometer [ENG] A piece of equipment that holds and measures gas, may be used in analytical chemistry to measure the quantity of gas evolved in a reaction. { 'gasˌəˌlenˌəd-ar }
gas packing [IND ENG] Packing a material such as food in an atmosphere consisting of an oxygen-free gas. { 'gasˌpək-ən }
gas pliers [DES ENG] Pliers for gripping round objects such as pipes, tubes, and circular rods. { 'gasˌpl-ər }
gas producer [CHEM ENG] A device for complete gasification of coal by utilizing simultaneously the air and water-gas reactions. { 'gasˌprəˌdəs-ər }
gas reversion [CHEM ENG] A process which combines thermal cracking or reforming of naphtha with thermal polymerization or alkylation of hydrocarbon gases carried out in the same reaction zone. { 'gasˌrəvərən-ən }
gas scrubbing [CHEM ENG] Removal of gaseous or liquid impurities from a gas by the action of a liquid; the gas is contacted with the liquid which removes the impurities by dissolving or by chemical combination. { 'gasˌskrab-ən }
gas seal [ENG] A seal which prevents gas from leaking to or from a machine along a shaft. { 'gasˌsəl }
gassing [ELEC] The evolution of gas in the form of small bubbles in a storage battery when charging continues after the battery has been completely charged. [ENG] 1. Absorption of gas by a material. 2. Formation of gas pockets in a material. 3. Evolution of gas from a material during a process or procedure. { 'gasˌjʊŋ } gas tank [ENG] A tank for storing gas or gasoline. { 'gasˌtæŋk }
gas thermometer [ENG] A device to measure temperature by measuring the pressure exerted by a definite amount of gas enclosed in a constant volume; the gas (preferably hydrogen or helium) is enclosed in a glass or fused-quartz bulb connected to a mercury manometer. Also known as constant-volume gas thermometer. { 'gasˌtharˌmämˌəd-ar }
gas thermometry [ENG] Measurement of temperatures with a gas thermometer; used with helium down to about 1 K. { 'gasˌtharˌmämˌəˌtrərˌi }}
gas-turbine nozzle  [MECH ENG] The component of a gas turbine in which the hot, high-pressure gas expands and accelerates to high velocity.  ['gæstərbən]
gas valve  [ENG] An exhaust valve, held shut by rubber springs, used to discharge gas from the extreme top of a balloon.  ['gæsvɔlv]
gas vent  [ENG] A pipe or hole that allows gas to pass off.  ['gæsvənt]
gate  [CIV ENG] A movable barrier across an opening in a large barrier, a fence, or a wall.  ['geit]
gate-array device  [ELECTR] An integrated logic circuit that is manufactured by first fabricating a two-dimensional array of logic cells, each of which is equivalent to one or a few logic gates, and then adding final layers of metallization that determine the exact function of each cell and interconnect the cells to form a specific network when the customer orders the device.  ['gætərɛriːdviːs]

Gates crusher  [MECH ENG] A gyratory crusher which has a cone or mantle that is moved eccentrically by the lower bearing sleeve.  ['geitəkrəʃər]
gate valve  [MECH ENG] A valve with a disk-shaped closing element that fits tightly over an opening through which water passes.  ['gætvəl]
gathering iron  [ENG] A rod used to collect molten glass for glassblowing.  ['gætəriŋ]
gathering ring  [ENG] A clay ring placed on molten glass to collect impurities and thus permit high-quality glass to be taken from the center.  ['gætrərɪŋ]
gating  [ELECTR] The process of selecting those portions of a wave that exist during one or more selected time intervals or that have magnitudes between selected limits.  ['geitŋ]
gating waveform  See gate.  ['geitŋwɜːfmɔːr]
Gaussian weighing method  [ENG] A method used to determine the accuracy of equal-arm balances and to test standard weights in which the sample is placed on one pan and the comparative weights on the other, and then the weights are interchanged in a second weighing.  ['geimzweɪŋmɛθɔd]
gaussmeter  [ENG] A magnetometer whose scale is graduated in gauss or kilogauss, and usually measures only the intensity, and not the direction, of the magnetic field.  ['geimzweɪŋ]

Gauss method of weighing  See double weighing.  ['geimzweɪŋmethɔd]

Gauss’ principle of least constraint  [MECH] The principle that the motion of a system of interconnected material points subjected to any influence is such as to minimize the constraint on the system. Here, the constraint, during an infinitesimal period of time, is the sum over the points of the product of the mass of the point times the square of its deviation from the position it would have occupied at the end of the time period it had not been connected to other points.  ['geimzweǐŋpɜːrɪˈnɪnprəʊptələmətəv,kestɔŋstrænt]

Gay-Lussac’s second law  [THERMO] The law that the internal energy of an ideal gas is independent of its volume.  ['geiəlʌsækz ˈsektænd]

Gay-Lussac’s tower  [CHEM ENG] A component part in the chamber process for sulfuric acid production that absorbs nitrogen oxides to form nitrous vitriol.  ['geiəlʌsækzˈsiːks tɔʌɑːtʃ]
g-cal  [Av] calorie.  ('keɪˈkeɪl)
g-cm  [Av] centimeter.

gear  [DES ENG] A toothed machine element used to transmit motion between rotating shafts when the center distance of the shafts is not too large.  [MECH ENG] 1. A mechanism performing a specific function in a machine.  2. An adjustment device of the transmission in a motor vehicle which determines mechanical advantage, relative speed, and direction of travel.  (gɪər)
gear case  [MECH ENG] An enclosure, usually filled with lubricating fluid, in which gears operate.  (ˈgɪərˌkeɪs)
gear cutter  [MECH ENG] A machine or tool for cutting teeth in a gear.  (ˈgɪərˌkʌtər)
gear cutting  [MECH ENG] The cutting or forming of a uniform series of toothlike projections on the surface of a workpiece.  (ˈgɪərˌkʌtɪŋ)
gear down  [MECH ENG] To arrange gears so the driven part rotates at a slower speed than the driving part.  (ˈgɪərˌdaʊn)
gear drive  [MECH ENG] Transmission of motion
geared turbine

or torque from one shaft to another by means of direct contact between toothed wheels. ['gfir ,drv]

gear teeth [MECH ENG] A turbine connected to a set of reduction gears. ['gfir ,tɚ-han]

gear forming [MECH ENG] A method of gear cutting in which the desired tooth shape is produced by a tool whose cutting profile matches the tooth form. ['gfir ,fɔr-mɪŋ]

gear generating [MECH ENG] A method of gear cutting in which the tooth is produced by the conjugate or total cutting action of the tool plus the rotation of the workpiece. ['gfir ,jɛn-ɪŋ]

gear grinding [MECH ENG] A gear-cutting method in which gears are shaped by formed grinding wheels and by generation; primarily a finishing operation. ['gfir ,grɪnd-ɪŋ]

gear hobber [MECH ENG] A machine that mills gear teeth; the rotational speed of the hob has a precise relationship to that of the work. ['gfir ,hæb-ər]

gearing [MECH ENG] A set of gear wheels. ['gfir-ɪŋ]

gearing chain [MECH ENG] A continuous chain used to transmit motion from one toothed wheel, or sprocket, to another. ['gfir-ɪŋ ,tʃæn]

gearless traction [MECH ENG] Direct drive, without reduction gears. ['gfir-lɔs ,trak-ʃæn]

gear level [MECH ENG] To arrange gears so that the driven part rotates faster than the driving part. ['gfir ,lev-əl]

gear loading [MECH ENG] The power transmitted or the contact force per unit length of a gear. ['gfir ,lɑd-ɪŋ]

gear meter [ENG] A type of positive-displacement fluid quantity meter in which the rotating elements are two meshing gear wheels. ['gfir ,mɛd-ər]

gearmotor [MECH ENG] A motor combined with a set of speed-reducing gears. ['gfir ,mɔd-ər]

gear pump [MECH ENG] A rotary pump in which two meshing gear wheels contactate so that the fluid is entrained on one side and discharged on the other. ['gfir ,pæmp]

gear ratio [MECH ENG] The ratio of the angular speed of the driving member of a gear train or similar mechanism to that of the driven member, specifically, the number of revolutions made by the engine per revolution of the rear wheels of an automobile. ['gfir ,ræʃɔ]

gear shaper [MECH ENG] A machine that makes gear teeth by means of a reciprocating cutter that rotates slowly with the work. ['gfir ,ʃæp-ər]

gear-shaving machine [MECH ENG] A finishing machine that removes excess metal from machined gears by the axial sliding motion of a straight-rack cutter or a circular gear cutter. ['gfir ,ʃæv-ɪŋ ,məs-hɛn]

gearshift [MECH ENG] A device for engaging and disengaging gears. ['gfir ,ʃift]

gear teeth [DES ENG] Projections on the circumference or face of a wheel which engage with complementary projections on another wheel to transmit force and motion. ['gfir ,tɛθ]

gear train [MECH ENG] A combination of two or more gears used to transmit motion between two rotating shafts or between a shaft and a slide. ['gfir ,trʌn]

gear up [MECH ENG] To arrange gears so that the driven part rotates faster than the driving part. ['gfir ,u p]

gear wheel [MECH ENG] A wheel that meshes gear teeth with another part. ['gfir ,wɛl]

gap [ENG] See slug. ['ʃlæg]

Geiger-Müller probe [ENG] A Geiger-Müller counter in a watertight container, lowered into a borehole to log the intensity of the gamma rays emitted by radioactive substances in traversed rock. Also known as electronic logger; Geiger probe. ['jɛg-ər ,mju-lə-rɚ ,pjɔb]

Geiger probe See Geiger-Müller probe. ['jɛg-ər ,prɔb]

Geissler pump [ENG] A type of air pump that uses the principle of the Torricellian vacuum, and in which the vacuum is produced by the flow of mercury back and forth between a vertically adjustable and a fixed reservoir. ['dʒɪs-lər ,pɛmp]

gelatinize [ENG] To coat or treat with a solution of gelatin. ['dʒelət-ən ,lɪz]

gelation time [CHEM ENG] In the manufacture of a thermosetting resin, the time interval between the addition of the catalyst into a liquid adhesive system and the formation of a gel. ['dʒelə-ʃæn ,tɪm]

GEM See air-cushion vehicle.

gender [ELEC] The classification of a connector as female or male. ['dʒen-ər]

gender changer [ELEC] A small passive device that is placed between two connectors of the same gender to enable them to be joined. Also known as cable matcher. ['dʒen-ər ,tʃæn-ər]

generalized coordinates [MECH] A set of variables used to specify the position and orientation of a system, in principle defined in terms of Cartesian coordinates of the system's particles and of the time in some convenient manner, the number of such coordinates equals the number of degrees of freedom of the system. Also known as Lagrangian coordinates. ['dʒen-ər,lɪzd kəʊ ərd-ən-əts]

generalized force [MECH] The generalized force corresponding to a generalized coordinate is the ratio of the virtual work done in an infinitesimal virtual displacement, which alters that coordinate and no other, to the change in the coordinate. ['dʒen-ər,lɪzd ˈfɔrs]

generealized momentum See conjugate momentum. ['dʒen-ər,lɪzd məˈment-əm]

generealized velocity [MECH] The derivative with respect to time of one of the generalized coordinates of a particle. Also known as Lagrangian generalized velocity. ['dʒen-ər,lɪzd və ˈlaɪd-əd-ə]

genereal manager [IND ENG] The person of general authority who performs all reasonable tasks in conducting the usual and customary business
of the principal head or owner.  

**generating magnetometer** [ENG] A magnetometer in which a coil is rotated in the magnetic field to be measured with the resulting generated voltage being proportional to the strength of the magnetic field.  

**generating plant** See generating station.  

**generator set** [ENG] The aggregate of one or more generators together with the equipment and plant for producing the energy that drives them.  

**geochemical prospecting** [ENG] The use of geochemical and biogeochemical principles and data in the search for economic deposits of minerals, petroleum, and natural gases.  

**geoelectrical well logging** [ENG] Well logging dependent on geochemical analysis of the data.  

**geolectric survey** [ENG] A survey in which the figure and size of the earth are considered, it is applicable for large areas and long lines and is used for the precise location of basic points suitable for controlling other surveys.  

**geographical mile** [MECH] The length of 1 minute of arc of the Equator, or 6087.08 feet (1855.34 meters), which approximates the length of the nautical mile.  

**geologic thermometer** See geothermometer.  

**geograph** [ENG] A device that records the penetration rate of a bit during the drilling of a well.  

**geomagnetic electrokinetograph** [ENG] An instrument that can be suspended from the side of a ship to measure the direction and speed of ocean currents while the ship is under way by measuring the voltage induced in the moving conductive seawater by the magnetic field of the earth.  

**geomembrane** [CIV ENG] Any impermeable membrane (usually made of synthetic polymers in sheets) used with soils, rock, earth, or other geotechnical material in order to block the migration of fluids.  

**geometric construction** [ENG] Construction that employs only straightedge and compasses or is carried out by drawing only straight lines and circles.  

**geometric programming** [SYS ENG] A nonlinear programming technique in which the relative contribution of each of the component costs is first determined, only then are the variables in the component costs determined.  

**geophysical engineering** [ENG] A branch of engineering that applies scientific methods for locating mineral deposits.  

**geophysical prospecting** [ENG] Application of quantitative concepts and principles of physics and mathematics in geologic explorations to discover the character of and mineral resources in underground rocks in the upper portions of the earth’s crust.  

**geosynthetic** [CIV ENG] Any synthetic material used in geotechnical engineering, such as geotextiles and geomembranes.  

**geotechnics** [CIV ENG] The application of scientific methods and engineering principles to civil engineering problems through acquiring, interpreting, and using knowledge of materials of the crust of the earth.  

**geotechnology** [ENG] Application of the methods of engineering and science to exploitation of natural resources.  

**geotextiles** [CIV ENG] Woven or nonwoven fabrics used with foundations, soils, rock, earth, or other geotechnical material as an integral part of a manufactured project, structure, or system. Also known as civil engineering fabrics, erosion control cloth, filter fabrics, support membranes.  

**geothermal prospecting** [ENG] Exploration for sources of geothermal energy.  

**geothermal well logging** [ENG] Measurement of the change in temperature of the earth by means of well logging.  

**geothermometer** [ENG] A thermometer constructed to measure temperatures in boreholes or deep-sea deposits.  

**gerber beam** [CIV ENG] A long, straight beam that functions essentially as a cantilevered beam by the insertion of two hinges in alternate spans.  

**get** [IND ENG] A combination of two or more of the elemental motions of search, select, grasp, transport empty, and transport loaded, applied to time-motion studies.
getter-ion pump | ENG A high-vacuum pump that employs chemically active metal layers which are continuously or intermittently deposited on the wall of the pump, and which chemisorb active gases while inert gases are "cleaned up" by ionizing them in an electric discharge and drawing the positive ions to the wall, where the neutralized ions are buried by fresh deposits of metal. Also known as sputter-ion pump.

getter sputtering | ELECTR The deposition of high-purity thin films at ordinary vacuum levels by using a getter to remove contaminants remaining in the vacuum. { 'gäd-ar, 'pąd-ə-rigj}

gewel hinge | DES ENG A hinge consisting of a hook inserted in a loop. { 'lə-əl, 'hini}

Giaque's temperature scale | CHEM ENG Approximation method for distillation-column calculations; correlates reflux ratio and number of plates for the column as functions of minimum reflux and minimum plates. { gə-lild-ən'd, 'kə-ra, lə-ə-shan}

gill net | ENG A net that entangles the gill coverings of fish. { 'gil, net}

Gilmour heat-exchange method | ENG Thermal design method for heat exchangers by solution of five unique equations containing a minimum number of variables and involving tubeside, shell-side, tube-wall, and dirt resistance. { 'gil-mör 'hët iks, 'mëth-ad}

gimbals | MECH ENG A type of electrolytic diaphragm cell for chlorine production, with graphite electrodes and a cylindrical shape. { 'gimb', 'fər en-ər-je}

gimbals | MECH ENG A device with two mutually perpendicular and intersecting axes of rotation, thus giving free angular movement in two directions, on which an engine or other object may be mounted. { 'gim-bal}

gimbals | MECH ENG A nozzle supported on a gimbal. { 'gim-bal 'náz-əl}

gimbals | MECH ENG Of a gyro, the maximum angular displacement about the output axis of a gimbal. { 'gim-bal 'fret-dam}

gimbals | MECH ENG A condition of a two-degree-of-freedom gyro wherein the alignment of the spin axis with an axis of freedom deprives the gyro of a degree of freedom and therefore its useful properties. { 'gim-bal, 'lak}

Gimlet bit | DES ENG A small tool consisting of a threaded tip, grooved shank, and a cross handle, used for boring holes in wood. { 'gim-lat}

gimlet bit | DES ENG A bit with a threaded point and spiral flute; used for drilling small holes in wood. { 'gim-lat, 'bit}

gin | MECH ENG A hoisting machine in the form of a tripod with a windlass, pulleys, and ropes. { 'jin}

gin pole | MECH ENG A hand-operated derrick which has a nearly vertical pole supported by guy ropes, the load is raised on a rope that passes through a pulley at the top and over a winch at the foot. Also known as guyed-mast derrick; pole derrick; standing derrick. { 'jin, 'polf}

Gilbreth's micromotion study | IND ENG A time and motion study based on the concept that all work is performed by using a relatively few basic operations in varying combinations and sequences: basic elements (therbligs) include grasp, search, move, reach, and hold. { 'gil-brëths ml-
krôm-shan, štād-ə}
glue-line heating

gin tackle [MECH ENG] A tackle made for use with a gin. ('gin, tâk-əl)

Girbocal process [CHEM ENG] A regenerative absorption process to remove carbon dioxide, hydrogen sulfide, and other acid impurities from natural gas, using mono-, di-, or triethanolamine as the reagent. (gär·bó·kəl)
girder [CIV ENG] A large beam made of metal or concrete, and sometimes of wood. (gär·dr)
girder clamp See beam clip. (gär·dr, kľamp)
girder clip See beam clip. (gär·dr, kľip)
girt [CIV ENG] 1. A timber in the second-floor corner posts of a house to serve as a footing for roof rafters. 2. A horizontal member to stiffen the framework of a building frame or trestle. (girt)
gland [ENG] 1. A device for preventing leakage at a machine joint, as where a shaft emerges from a vessel containing a pressurized fluid. 2. A movable part used in a stuffing box to compress the packing. (gländ)
glare filter [ENG] A screen that is placed over the face of a cathode-ray tube to reduce glare from ambient and overhead light. ('gler, fil·tar)
glassblowing [ENG] Shaping a mass of viscous glass by inflating it with air introduced through a tube. (glas, bľô·nj)
glass cutter [ENG] A tool equipped with a steel wheel or a diamond point used to cut glass. (glas, kəd·ər)
glassed steel [CHEM ENG] Process piping or vessels lined with glass; a glass-steel composite has structural strength of steel and corrosion resistance of glass. (gľast stěl)
glass furnace [ENG] A large, covered furnace or tank for melting large batches of glass, in which heat is supplied by a flame playing over the glass surface, and regenerative heating of combustion air and gas is usually employed. Also known as glass tank. (gľas, tın·k肛)
glass heat exchanger [ENG] Any heat exchanger in which glass replaces metal, such as shell-and-tube, cascade, double-pipe, bayonet, and coil exchangers. (gľas hēt ĭks, čan·p肛r)
glass pot [ENG] A crucible used for making small amounts of glass. (gľas, pát)
glass seal [ENG] An airtight seal made by molten glass. (gľas, sěl)
glass tank See glass furnace. (gľas, tın·k肛)
glass-tube manometer [ENG] A manometer for simple indication of difference of pressure, in contrast to the metallic-housed mercury manometer, used to record or control difference of pressure or fluid flow. (gľas, túb ma·nəm·əd·ər)
glaze [ENG] A glossy coating. Also known as enamel. (gľáz)
glazed [MECH ENG] Pertaining to an abrasive surface that has become smooth and cannot be abraded efficiently. (glažd)
glazed frost See glaze. (glažd frost)
glaze ice See glaze. ('glaž, jis)
glazier's point [ENG] A small piece of sheet metal, usually shaped like a triangle, used to hold a pane of glass in place. Also known as spirig. ('glaž, point)
glazing [ENG] 1. Cutting and fitting panes of glass into frames. 2. Smoothing the lead of a taped pipe joint by passing a hot iron over it. (glaž·ing)
glazing bar See sash bar. ('glaž·ing, bår)
Gleason bevel gear system [DES ENG] The standard for bevel gear designs in the United States; employs a basic pressure angle of 20° with long and short addenda for ratios other than 1:1 to avoid undercut pinions and to increase strength. (gľes·ən, bęv·əl, găr, sīs·təm)
globe valve [MECH ENG] A device for regulating flow in a pipeline, consisting of a movable disk-type element and a stationary ring seat in a generally spherical body. (gľōb, vəl)
glory hole [CIV ENG] A funnel-shaped, fixed-crest spillway. [ENG] A furnace for resoftening or fire polishing glass during working, or an entrance in such a furnace. (gľō·r, hōl)
glossimeter [ENG] An instrument, often photoelectric, for measuring the ratio of the light reflected from a surface in a definite direction to the total light reflected in all directions. Also known as glossmeter. (gľa·sɪm·əd·ər)
glossimeter See glossimeter. (gľa·sɛd·ər)
glost firing [CHEM ENG] The process of glazing and firing ceramic ware which has previously been fired at a higher temperature. (gľóst, fər·ing)
glove box [ENG] A sealed box with gloves attached and passing through openings into the box, so that workers can handle materials in the box, used to handle certain radioactive and biologically dangerous materials and to prevent contamination of materials and objects such as germfree rats or lunar rocks. (gľaw, băks)
Glover tower [CHEM ENG] A tower in the lead chamber process for manufacturing sulfuric acid; in this tower the nitrogen oxide, sulfur dioxide, and air mixture is passed upward and sprayed with a sulfuric acid-nitrosyl sulfuric acid mixture. (gľav·ər, taw·ər)
glow-discharge microphone [ENG ACOUS] Microphone in which the action of sound waves on the current forming a glow discharge between two electrodes causes corresponding variations in the current. (gľō·dis·chăr, mit·kra·fən)
glowing combustion [CHEM ENG] A reaction between oxygen or an oxidizer and the surface of a solid fuel so that there is emission of heat and light without a flame. Also known as surface burning. (gľő·iŋ, kəm·bəs·chən)
glow plug [MECH ENG] A small electric heater, located inside a cylinder of a diesel engine, that preheats the air and aids the engine in starting. (gľő·pląg)
glue block See angle block. (gľu·błak)
glue-joint rip saw [MECH ENG] A heavy-gage rip saw used on straight-line or self-feed rip machines; the cut is smooth enough to permit gluing of joints from the saw. (gľu·jənt·rip·sō)
glue-line heating [ENG] Dielectric heating in
gold point [THERMO] The temperature of the freezing point of gold at a pressure of 1 standard atmosphere (101,325 pascals), used to define the International Temperature Scale of 1948, on which it is assigned a value of 1337.33 K or 1064.18°C. {‘gold ,point’}

Gold slide [ENG] A slide rule used on British ships to compute barometric corrections and reduction of pressure to sea level; it includes the effects of temperature, latitude, index correction, and barometric height above sea level. {‘gold ,slider’}

golf ball [ENG] A printing element used on some typewriters and serial printers, consisting of a rotating, spherically shape, replaceable type-head that skims across the printed line while the typewriter or printer carriage does not move. {‘gälf ,bol’}

gondola car [ENG] A flat-bottomed railroad car which has no top, fixed sides, and often removable ends, in which steel, rock, or heavy bulk commodities are transported. {‘gandola ,kär’}

goniometer [ENG] 1. An instrument used to measure the angles between crystal faces. 2. An instrument which uses x-ray diffraction to measure the angular positions of the axes of a crystal. 3. Any instrument for measuring angles. {‘goniometer’}

go/no-go detector [ENG] An instrument having only two operating states, such as a common fuse which is either intact or melted. {‘go ,no-go detector’}

go/no-go test [ENG] A test based on the measurement of one or more parameters but which can have only one of two possible results, to pass or reject the device under test. {‘go ,no-go test’}

good oil See raffinate. {‘gud ,oil’}

gooseneck [DES ENG] 1. A pipe, bar, or other device having a curved or bent shape resembling that of the neck of a goose. 2. See water swivel {‘gusnek’}

gopher hole [ENG] Horizontal T-shaped opening made in rock in preparation for blasting. Also known as coyote hole. {‘go−tar ,bol’}

Gordon’s formula [CIV ENG] An empirical formula which gives the collapsing load of a column in terms of its cross-sectional area, length, and least diameter. {‘gord−anz ,for−mya−la’}

gore [CIV ENG] A small triangular parcel of land. {‘gor’}

gouge [DES ENG] A curved chisel for wood, bone, stone, and so on. {‘gau’}

gouging [ENG] The removal of material by electrical, mechanical, or manual means for the formation of a groove. {‘gau−ing’}

governor [MECH ENG] A device, especially one actuated by the centrifugal force of whirling weights opposed by gravity or by springs, used to provide automatic control of speed or power of a prime mover. {‘gov−or’}

grab [ENG] An instrument for extricating broken boring tools from a borehole. {‘grab’}

grabbing crane [MECH ENG] An excavator
made up of a crane carrying a large grab or bucket in the form of a pair of half scoops, hinged to dig into the earth as they are lifted. {‘grab-in, kran, ˇgra-ba}.

grab bucket [MECH ENG] A bucket with hinged jaws or teeth that is hung from cables on a crane or excavator and is used to dig and pick up materials. {‘grab ,bak-at}

grab dredger [MECH ENG] Dredging equipment comprising a grab or grab bucket that is suspended from the jib head of a crane. Also known as grapple dredger. {‘grab ,drej-ar}

grabhook [DES ENG] A hook used for grabbing, as in lifting blocks of stone, in which case the hooks are used in pairs connected with a chain, and are so constructed that the tension of the chain causes them to adhere firmly to the rock. {‘grab,lu:k}

grade [CIV ENG] 1. To prepare a roadway or other land surface of uniform slope. 2. A surface prepared for the support of rails, a road, or a conduit. 3. The elevation of the finished surface of an engineering project. [ENG] The degree of strength of a high explosive. {grad}

gradeability [MECH ENG] The performance of earthmovers on various inclines, measured in percent grade. {‘gra-de’bil-ad-e}

grade beam [CIV ENG] A reinforced concrete beam placed directly on the ground to provide the foundation for the superstructure. {‘grad ,beim}

grade crossing [CIV ENG] The intersection of roadways, railways, pedestrian walks, or combinations of these at grade. {‘grad ,krós-iŋ}

grade line [CIV ENG] A line or slope used as a longitudinal reference for a railroad or highway. {‘grad ‘lin}

grader [MECH ENG] A high-bodied, wheeled vehicle with a leveling blade mounted between the front and rear wheels; used for fine-grading relatively loose and level earth. {‘grad-ar}

grade separation [CIV ENG] A grade crossing employing an underpass and overpass. {‘grad sep-ar,rá-shän}

grade slab [CIV ENG] A reinforced concrete slab placed directly on the ground to provide the foundation for the superstructure. {‘grad ,slab}

grade stake [CIV ENG] A stake used as an elevation reference. {‘grad ,stäk}

gradienter [ENG] An attachment placed on a surveyor’s transit to measure angle of inclination in terms of the tangent of the angle. {‘grad-en-tar}

gradient microphone [ENG ACOUS] A microphone whose electrical response corresponds to some function of the difference in pressure between two points in space. {‘gra-dé-ant ‘mi-кра,foln}

grading [IND ENG] Segregating a product into a number of adjoining categories which often form a spectrum of quality. Also known as classification. {‘gra-din}

gradimeter [ENG] Any instrument that measures the gradient of some physical quantity, such as certain types of magnetometers which are designed to measure the gradient of magnetic field, or the Eötvös torsion balance and related instruments which measure the gradient of gravitational field. {‘gra-dē-‘am-ad-ar}

graduator [ENG] An evaporation unit in which liquid is forced to flow over large surfaces which are subjected to air currents. {‘gra-jə,waď-ar}

Graetz number [THERMO] A dimensionless number used in the study of streamline flow, equal to the mass flow rate of a fluid times its specific heat at constant pressure divided by the product of its thermal conductivity and a characteristic length. Also spelled Grätz number. Symbolized NGc. {‘grets,nam-bor}

Graham’s pendulum [DES ENG] A type of compensated pendulum having a hollow bob containing mercury whose thermal expansion balances the thermal expansion of the pendulum rod. {‘græmz ‘pen-ya-lam}

grain [MECH] A unit of mass in the United States and United Kingdom, common to the avoirdupois, apothecaries’, and Troy systems, equal to 1/7000 of a pound, or to 6.479891 × 10^-5 kilogram. Abbreviated gr. {grän}

grainer process [CHEM ENG] A salt production method in which salt is produced by surface evaporation of brine in open-air flat pans. {‘grän-ar, präs-as-

graining [ENG] Simulating a grain such as wood or marble on a painted surface by applying a translucent stain, then working it into suitable patterns with tools such as special combs, brushes, and rags. {‘grän-iŋ}

grain spacing [DES ENG] Relative location of abrasive grains on the surface of a grinding wheel. {‘grän ,spás-iŋ}

gram [MECH] The unit of mass in the centimeter-gram-second system of units, equal to 0.001 kilogram. Abbreviated g. gm. {gram}

gram-calorie See calorie. {‘gram kei-ar}

gram-centimeter See centimeter. [MECH] A unit of energy in the centimeter-gram-second gravitational system, equal to the work done by a force of magnitude 1 gram force when the point at which the force is applied is displaced 1 centimeter in the direction of the force. Abbreviated g-cm. {‘gram ,sent-a,méđ-ar}

gram-force [MECH] A unit of force in the centimeter-gram-second gravitational system, equal to the gravitational force on a 1-gram mass at a specified location. Abbreviated gf. Also known as for; gram-weight; pond. {‘gram ,fors}

gram-weight See gram-force. {‘gram'wät}

granular-bed separator [ENG] Vessel or chamber in which a bed of granular material is used to remove dust from a dust-laden gas as it passes through the bed. {‘grän-yə-lar ,bed ‘sep-ar,rád-ar}

granularity [SYS ENG] The degree to which a system can be broken down into separate components, making it customizable and flexible. {‘grän-yə’lar-ad-e}
graphical statics [MECH] A method of determining forces acting on a rigid body in equilibrium, in which forces are represented on a diagram by straight lines whose lengths are proportional to the magnitudes of the forces. {\textipa{grəkələl Şad-ıks}}

graphical symbol [ELEC] A true symbol, rather than a coarse picture, representing an element in an electrical diagram. {\textipa{grəfəkələl Şim-bal}}

graphic equalizer [ENG ACOUS] A device that allows the response of audio equipment to be modified independently in several frequency bands through the use of a bank of slide controls whose positions form a graph of the frequency response. {\textipa{graf-ik e'kwə-lərəzər}}

graphic recording instrument [ENG] An instrument that makes a graphic record of one or more quantities as a function of another variable, usually time. {\textipa{graf-ik ri,kərd-ik in-strə-mənt}}

graphite anode [CHEM] One of the electrodes of graphite used in a mercury cell to produce chlorine by electrolysis. [ELECTR] 1. The rod of graphite which is inserted into the mercury-pool cathode of an ignition to start current flow. 2. The collector of electrons in a beam power tube or other high-current tube. {\textipa{grəf-ət an'əd}}

grapnel [DES ENG] An implement with claws used to recover a lost core, drill fittings, and junk from a borehole or for other grappling operations. Also known as grapple. {\textipa{graf-nəl}}
grapple See grapnel. {\textipa{graf-əl}}
grapple dredger See grab dredger. {\textipa{graf-əl ,drel-ər}}
grapple hook [DES ENG] An iron hook used on the end of a rope to snag lines, to hold one ship alongside another, or as a fishing tool. Also known as grappling iron. {\textipa{graf-əl ,hək}}
grappling iron See grapnel hook. {\textipa{graf-ləng jərn}}
grasp [IND ENG] A basic element (therblig) in time-motion study, a useful element that accomplishes work. {\textipa{grafsp}}
grasshopper linkage [MECH ENG] A straight-line mechanism used in some early steam engines. {\textipa{graf,shəpər liŋki}}

Grassot fluxmeter [ENG] A type of fluxmeter in which a light coil of wire is suspended in a magnetic field in such a way that it can rotate; the ends of the suspended coil are connected to a search coil of known area penetrated by the magnetic flux to be measured; the flux is determined from the rotation of the suspended coil when the search coil is moved. {\textipa{graf,'stəfləks ,məd-ər}}
grass-roots plant [CHEM ENG] A complete plant erected on a virgin site. {\textipa{graf′rəts 'plənt}}
grate [ENG] A support for burning solid fuels; usually made of closely spaced bars to hold the burning fuel, while allowing combustion air to rise up to the fuel from beneath, and ashes to fall away from the burning fuel. {\textipa{grä'tət}}
Grätz number See Graetz number. {\textipa{gretəz,nəm-bər}}
grav See G. {\textipa{graf}}
gravel pump [MECH ENG] A centrifugal pump with renewable impellers and lining, used to pump a mixture of gravel and water. {\textipa{graf-əl ,pump}}
gravel stop [BUILD] Metal flashing placed at the edge of a roof to prevent gravel from falling off. {\textipa{graf-əl ,stəp}}
graveyard shift [IND ENG] The shift of workers that begins at or around midnight, the last shift of the day. {\textipa{graf,vər-dər ,ʃift}}
gravimeter [ENG] A highly sensitive weighing device used for relative measurement of the force of gravity by detecting small weight differences of a constant mass at different points on the earth. Also known as gravity meter. {\textipa{graf′vəm-ərərə}}
gravimetry [ENG] Measurement of gravitational force. {\textipa{graf′vəm-ə-teərə}}
graving dock [CIV ENG] A form of dry dock consisting of an artificial basin fitted with a gate or caisson, into which a vessel can be floated and the water pumped out to expose the vessel's bottom. {\textipa{graf-ən dək}}
gravitational constant [MECH] The constant of proportionality in Newton's law of gravitation, equal to the gravitational force between any two particles times the square of the distance between them, divided by the product of their masses. Also known as constant of gravitation. {\textipa{graf′və-tə-shən-əl ˈkən-stənt}}
gravitational displacement [MECH] The gravitational field strength times the gravitational constant. Also known as gravitational flux density. {\textipa{graf′və-tə-shən-əl ˈdis-ə-pləs-mənt}}
gravitational energy See gravitational potential energy. {\textipa{graf′və-tə-shən-əl ˈen-or-eə}}
gravitational field [MECH] The field in a region in space in which a test particle would experience a gravitational force; quantitatively, the gravitational force per unit mass at the particle at a particular point. {\textipa{graf′və-tə-shən-əl ˈfild}}
gravitational flux density See gravitational displacement. {\textipa{graf′və-tə-shən-əl ˈfləks ,den-səd-ə}}
gravitational force [MECH] The force on a particle due to its gravitational attraction to other particles. {\textipa{graf′və-tə-shən-əl ˈfors}}
gravitational instability [MECH] Instability of a dynamic system in which gravity is the restoring force. {\textipa{graf′və-tə-shən-əl in-stə-bəl-əd-ə}}
gravitational potential [MECH] The amount of work which must be done against gravitational forces to move a particle of unit mass to a specified position from a reference position, usually a point at infinity. {\textipa{graf′və-tə-shən-əl ˈpətən-chəl}}
gravitational potential energy [MECH] The energy that a system of particles has by virtue of their positions, equal to the work that must be done against gravitational forces to assemble
the particles from some reference configuration, such as mutually infinite separation. Also known as gravitational energy. \( \text{[grav-\text{ad}-\text{ê} rál-tîd]} \)

**gravitational systems of units** [MECH] Systems in which length, force, and time are regarded as fundamental, and the unit of force is the gravitational force on a standard body at a specified location on the earth's surface. \( \text{[grav-\text{a-tâ}-\text{shan}-\text{ôl} sîs-tamz. az yû-nâts]} \)

**gravimeter** See densimeter. \( \text{[grav-\text{a-tâm-\text{ad}-\text{ôr} }] \)

**gravity** [MECH] The gravitational attraction at the surface of a planet or other celestial body. \( \text{[grav-\text{ad}-\text{ê}]} \)

**gravity bed** [ENG] A moving body of solids in which particles (granules, pellets, beads, or briquets) flow downward by gravity through a vessel, while process fluid flows upward; the moving-bed technique is used in blast and shaft furnaces, petroleum catalytic cracking, pellet dryers, and coolers. \( \text{[grav-\text{ad}-\text{ê} ,\text{bed}]} \)

**gravity chute** [ENG] A gravity conveyor in the form of an inclined plane, trough, or framework that depends on sliding friction to control the rate of descent. \( \text{[grav-\text{ad}-\text{ê}}, \text{ksâfsan-tâ-shan} \)

**gravity concentration** [ENG] 1. Any of various methods for separating a mixture of particles, such as minerals, based on the differences in density of the various species and on the resistance to relative motion exerted upon the particles by the fluid or semifluid medium in which separation takes place. 2. The separation of liquid-liquid dispersions based on settling out of the dense phase by gravity. \( \text{[grav-\text{ad}-\text{ê} ,\text{kansân-trâ-shan}]} \)

**gravity conveyor** [ENG] Any unpowered conveyor such as a gravity chute or a roller conveyor, which uses the force of gravity to move materials over a downward path. \( \text{[grav-\text{ad}-\text{ê} kan'vâ-\text{ôr}]} \)

**gravity corer** [ENG] Any type of corer that achieves bottom penetration solely as a result of gravitational force acting upon its mass. \( \text{[grav-\text{ad}-\text{ê} ,\text{kôr-\text{ôr}]} \)

**gravity dam** [CIV ENG] A dam which depends on its weight for stability. \( \text{[grav-\text{ad}-\text{ê} ,\text{dam}]} \)

**gravity feed** [ENG] Movement of materials from one location to another using the force of gravity. \( \text{[grav-\text{ad}-\text{ê} ,\text{fêd}]} \)

**gravity meter** [ENG] 1. U-tube-manometer type of device for direct reading of solution specific gravities in semimicro quantities. 2. An electrical device for measuring variations in gravitation through different geologic formations; used in mineral exploration. \( \text{[grav-\text{ad}-\text{ê} ,\text{mêd-\text{ôr}]} \)

**gravity prospecting** [ENG] Identifying and mapping the distribution of rock masses of different specific gravity by means of a gravity meter. \( \text{[grav-\text{ad}-\text{ê} ,\text{prâs-pêk-ti'n}]} \)

**gravity railroad** [ENG] A cable railroad in which cars descend a slope by gravity and are hauled back up the slope by a stationary engine, or there may be two tracks with cars so connected that cars going down may help to raise the cars going up and thus conserve energy. \( \text{[grav-\text{ad}-\text{ê} rál-tîd]} \)

**gravity segregation** [ENG] Tendency of immiscible liquids or multicomponent granular mixtures to separate into distinct layers in accordance with their respective densities. \( \text{[grav-\text{ad}-\text{ê} ,\text{seg-râ-gâ-shan}]} \)

**gravity separation** [ENG] Separation of immiscible phases (gas-solid, liquid-solid, liquid-liquid, solid-solid) by allowing the denser phase to settle out under the influence of gravity. Used in ore dressing and various industrial chemical processes. \( \text{[grav-\text{ad}-\text{ê} ,\text{sep-râ-gâ-shan}]} \)

**gravity setting chamber** [ENG] Chamber or vessel in which the velocity of heavy particles (solids or liquids) in a fluid stream is reduced to allow them to settle downward by gravity, as in the case of a dust-laden gas stream. \( \text{[grav-\text{ad}-\text{ê} ,\text{set-lîg châm-bâr}]} \)

**gravity station** [ENG] The site of installation of gravimeters. \( \text{[grav-\text{ad}-\text{ê} ,\text{sta-tshân}]} \)

**gravity survey** [ENG] The measurement of the differences in gravity force at two or more points. \( \text{[grav-\text{ad}-\text{ê} ,\text{soar-\text{va}]} \)

**gravity vector** [MECH] The force of gravity per unit mass at a given point. Symbolized g. \( \text{[grav-\text{ad}-\text{ê} ,\text{vek-târ}]} \)

**gravity wall** [CIV ENG] A retaining wall which is kept upright by the force of its own weight. \( \text{[grav-\text{ad}-\text{ê} ,\text{wöl}]} \)

**gravity wheel conveyor** [MECH ENG] A downward-sloping conveyor trough with closely spaced axle-mounted wheel units on which flat-bottomed containers or objects are conveyed from point to point by gravity pull. \( \text{[grav-\text{ad}-\text{ê} ,\text{wêl kan'vâ-\text{ôr}]} \)

**gravity yard** See hump yard. \( \text{[grav-\text{ad}-\text{ê} ,\text{yârd}]} \)

**graybody** [THERMO] An energy radiator which has a blackbody energy distribution, reduced by over a downward path. \( \text{[grav-\text{ad}-\text{ê} ,\text{trêd-in}]} \)

**Gray clay treating** [CHEM ENG] A fixed-bed, vapor-phase treating process used to polymerize selectively unsaturated gum-forming constituents (diolefins); a fixed bed is used of 30- to 60-mesh fuller's earth. \( \text{[grav-\text{klâ ,trêd-in}]} \)

**grease cup** [ENG] A receptacle used to apply a solid or semifluid lubricant to a bearing. The receptacle is packed with grease and the cap forces the grease to the bearing. \( \text{[grel's ,kàp]} \)

**grease gun** [ENG] A small hand-operated device that pumps grease under pressure into bearings. \( \text{[grel's ,gûn]} \)

**grease seal** [ENG] 1. Type of seal used on floating pistons of some hydropneumatic recoil systems to prevent leakage past the piston of gas or oil, also used in cylinders of some hydropneumatic equilibrators. 2. Seal used to retain grease in a case or housing, as on an axle shaft. \( \text{[grel's ,sêl] \)

**grease trap** [CIV ENG] A trap in a drain or waste pipe to stop grease from entering a sewer system. \( \text{[grel's ,trap] \)
green design  See industrial ecology.  [ˈgrɛn dɪˈzin]

grid  [DES ENG] A network of equally spaced lines forming squares, used for determining permissible locations of holes on a printed circuit board or a chassis.  [ELEC] 1. A metal plate with holes or ridges, used in a storage cell or battery as a conductor and a support for the active material.  2. Any systematic network, such as of telephone lines or power lines.  [ELECTR] An electrode located between the cathode and anode of an electron tube, which has one or more openings through which electrons or ions can pass, and serves to control the flow of electrons from cathode to anode.

grid nephoscope  [ENG] A nephoscope constructed of a grid work of bars mounted horizontally on the end of a vertical column and rotating freely about the vertical axis, the observer rotates the grid and adjusts the position until some feature of the cloud appears to move along the major axis of the grid; the azimuth angle at which the grid is set is taken as the direction of the cloud motion.  [ˈɡrid ˈnef-səˌskɒp]

grid-rectification meter  [ENG] A type of vacuum-tube voltmeter in which the grid and cathode of a tube act as a diode rectifier, and the rectified grid voltage, amplified by the tube, operates a meter in the plate circuit.  [ˈɡridˌredˌtekˈtɪʃənˌmətər]

Griffith's criterion  [MECH] A criterion for the fracture of a brittle material under biaxial stress, based on the theory that the strength of such a material is limited by small cracks.

Griffith's method  [THERMO] A method of measuring the mechanical equivalent of heat in which the temperature rise of a known mass of water is compared with the electrical energy needed to produce this rise.

grillage  [CIV ENG] A footing that consists of two or more tiers of closely spaced structural steel beams resting on a concrete block, each tier being at right angles to the one below.

grillette  [ENG] A grating or openwork barrier that is used to conceal or protect an opening in a floor, wall, or pavement.

grille cloth  [ENG ACOUS] A loosely woven cloth stretched across the front of a loudspeaker to keep out dust and provide protection without appreciably impeding sound waves.

grinder  [MECH ENG] Any device or machine that grinds, such as a pulverizer or a grinding wheel.

grinding  [ELECTR] 1. A mechanical operation performed on silicon substrates of semiconductors to provide a smooth surface for epitaxial deposition or diffusion of impurities.  2. A mechanical operation performed on quartz crystals to alter their physical size and hence their resonant frequencies.

grinding aid  [ENG] An additive to the charge in a ball mill or rod mill to accelerate the grinding process.

grinding burn  [MECH ENG] Overheating a localized area of the work in grinding operations.

grinding medium  [ENG] Any material including balls and rods, used in a grinding mill.

grinding mill  [MECH ENG] A machine consisting of a rotating cylindrical drum, that reduces the size of particles of ore or other materials fed into it; three main types are ball, rod, and tube mills.

grinding pebbles  [ENG] Pebbles of chert or quartz, used for grinding in mills, where contamination with iron has to be avoided.

grinding ratio  [MECH ENG] Ratio of the volume of ground material removed from the workpiece to the volume removed from the grinding wheel.

grinding stress  [MECH] Residual tensile or compressive stress, or a combination of both, on the surface of a material due to grinding.

grinding wheel  [DES ENG] A wheel or disk having an abrasive material such as alumina or silicon carbide bonded to the surface.

groundstone  [ENG] A stone disk on a revolving axle, used for grinding, smoothing, and shaping.

gripper  [CONT SYS] A component of a robot that grasps an object, generally through the use of suction cups, magnets, or articulated mechanisms.

gripping zone  [CONT SYS] The area in which the center of an object must be located in order for the object to be properly handled by the gripper of a robot.

grip vector  [CONT SYS] A vector from a point on the wrist socket of a robot to the point where the end effector grasps an object; describes the orientation of the object in space.

grit chamber  [CIV ENG] A chamber designed to remove sand, gravel, or other heavy solids that have subsiding velocities or specific gravities substantially greater than those of the organic solids in waste water.

grit size  [DES ENG] Size of the abrasive particles on a grinding wheel.

grizzly  [ENG] 1. A coarse screen used for rough sizing and separation of ore, gravel, or soil.  2. A grating to protect chutes, manways, and winzes, in mines, or to prevent debris from entering a water inlet.

grizzly crusher  [MECH ENG] A machine with a series of parallel rods or bars for crushing rock
and sorting particles by size. (ˈgriz-lē ˈkrash-ar)
groin [CIV ENG] A barrier built out from a sea-
shore or riverbank to protect the land from ero-
sion and sand movements, among other func-
tions. Also known as groyne; jetty; spur dike;
wing dam. (ˈgrōn)
grommet [ENG] 1. A metal washer or eyelet.
2. A piece of fiber soaked in a packing material
and used under bolt and nut heads to preserve
tightness. (ˈgräm-ət)
grommet nut [DES ENG] A blind nut with a
round head, used with a screw to attach a hinge
to a door. (ˈgräm-ət ˈnut)
groove [DES ENG] A long, narrow channel in a
surface. (ˈgrūv)
grooved drum [DES ENG] Drum with a grooved
surface to support and guide a rope. (ˈgrūv ˈdrum)
groover [ENG] A tool for forming grooves in a
slab of concrete not yet hardened. (ˈgrūv-ər)
grooving saw [MECH ENG] A circular saw for
cutting grooves. (ˈgrūv-ing, so)
gross area [BUILD] Sum of the areas of all sto-
ries included within the outside face of the exte-
rior walls of a building. (ˈgrōs ˈjer-ə-ə)
gross rubber [CHEM ENG] In rubber manufac-
turing, the total weight of salable product, in-
cluding elastomer, carbon black, extender oils,
and other materials used in compounding the
rubber. (ˈgrōs ˈrab-ər)
gross ton See ton. (ˈgrōs ˈton)
gross vehicle weight [IND ENG] A truck rating
based on the combined weight of the vehicle
and its load. Abbreviated gvw. (ˈgrōs ˈvē-ə-
kal, ˈwät)
gross weight [IND ENG] The weight of a vehicle
or container when it is loaded with goods. Ab-
reviated gr wt. (ˈgrōs ˈwät)
ground [ELEC] 1. A conducting path, inten-
tional or accidental, between an electric circuit
or equipment and the earth, or some conducting
body serving in place of the earth. Abbrevi-
ated gnd. Also known as earth (British usage); earth
connection. 2. To connect electrical equip-
ment to the earth or to some conducting body which
serves in place of the earth. (ˈgrōn
ground anchor See anchor log. (ˈgrōn-dən-
ər)
ground area [BUILD] The area of a building at
ground level. (ˈgrōn-dən-ər)
ground block [CIV ENG] A pulley fastened to the
anchor log which changes a horizontal pull to a
vertical pull on a wire line. (ˈgrōn ˈblak)
ground cable [ELEC] A heavy cable connected
to earth for the purpose of grounding electric
equipment. (ˈgrōn ˈkə-bal)
ground check [ENG] 1. A procedure followed
prior to the release of a radiosonde in order to
obtain the temperature and humidity corrections
for the radiosonde system. 2. Any instrumen-
tal check prior to the ground launch of an airborne
experiment. Also known as base-line check.
(ˈgrōn ˈchek)
ground-check chamber [ENG] A chamber that
is used to check the sensing elements of radio-
sonde equipment and that houses sources of
heat and water vapor plus instruments for mea-
suring temperature, humidity, and pressure, and
in which air circulation is maintained by a motor-
driven fan. (ˈgrōn ˈchek, ˈcham-bär)
ground circuit [ELEC] A telephone or telegraph
circuit part of which passes through the ground.
(ˈgrōn ˈsār-kat)
ground conductivity [ELEC] The effective con-
ductivity of the ground, used in calculating the
attenuation of radio waves. (ˈgrōn ˈkān-
dak-tiv-ə-dē)
ground control [CIV ENG] Supervision or direc-
tion of all airport surface traffic, except an aircraft
landing or taking off. [ENG] The marking of
survey, triangulation, or other key points or sys-
tem of points on the earth’s surface so that they
may be recognized in aerial photographs.
(ˈgrōn ˈkānˌtrōl)
ground-controlled approach radar [ENG] A
radar system providing information by which aircraft approaches may be directed
by radio communications. Abbreviated GCA ra-
dar. (ˈgrōn ˈkānˌtrōld, ˈprōch ˈrāˌdār)
ground-controlled intercept radar [ENG] A ra-
dar system by means of which a controller may
direct an aircraft to make an interception of
another aircraft. Abbreviated GCI radar.
(ˈgrōn ˈkānˌtrōld ˈin-ˌtārˌsē Sept, ˈrāˌdār)
ground controller [ENG] Aircraft controller sta-
tioned on the ground; a generic term, applied
to the controller in ground-controlled approach,
ground-controlled interception, and so on.
(ˈgrōn ˈkānˌtrōl-ər)
ground current See earth current. (ˈgrōn ˈkā-
rant)
ground data equipment [ENG] Any device lo-
cated on the ground that aids in obtaining space-
position or tracking data (including computa-
tion function); reads out data telemetry, video, and
so on, from payload instrumentation, or is capa-
tle of transmitting command and control signals
to a satellite or space vehicle. (ˈgrōn ˈdā-
ə jˌkwip-mant)
ground detector [ELEC] An instrument or equip-
ment used for indicating the presence of a
ground on an ungrounded system. Also
known as ground indicator. (ˈgrōn ˈdē-
ˈtak-tər)
ground dielectric constant [ELEC] Dielectric
constant of the earth at a given location.
(ˈgrōn ˈdī-əlek-trik ˈkān-stant)
grounded-anode amplifier See cathode follower.
(ˈgrōnd-ed ˈànˌod ˈam-pləˌfi-dər)
grounded-base amplifier [ELECTR] An ampli-
fier that uses a transistor in a grounded-base
connection. (ˈgrōnd-ed ˈbāzˌəˌməˌplaˌfi-dər)
grounded-base connection [ELECTR] A transis-
tor circuit in which the base electrode is common
to both the input and output circuits; the base
need not be directly connected to circuit ground.
Also known as common-base connection.
(ˈgrōnd-ed ˈbāz kəˌnekˌshən)
grounded-cathode amplifier

grounded-cathode amplifier [ELECTR] Electron-tube amplifier with a cathode at ground potential at the operating frequency, with input applied between control grid and ground, and with the output load connected between plate and ground. (ˈgrɑʊnd̩-kɑθd, əm-ˈplɑ,mˈfɪ-r)  

grounded-collector connection [ELECTR] A transistor circuit in which the collector electrode is common to both the input and output circuits; the collector need not be directly connected to circuit ground. Also known as common-collector connection. (ˈgrɑʊnd̩-klɛkˈtɔr ˈkeɪ,nekn̩ʃən)  

grounded-emitter amplifier [ELECTR] An amplifier that uses a transistor in a grounded-emitter connection. (ˈgrɑʊnd̩-iˈmɪd-ər əmˈplɑ,mˈfɪ-r)  

grounded-emitter connection [ELECTR] A transistor circuit in which the emitter electrode is common to both the input and output circuits; the emitter need not be directly connected to circuit ground. Also known as common-emitter connection. (ˈgrɑʊnd̩-iˈmɪd-ər ək,nekn̩ʃən)  

grounded-gate amplifier [ELECTR] Amplifier that uses thin-film transistors in which the gate electrode is connected to ground; the input signal is fed to the source electrode and the output is obtained from the drain electrode. (ˈgrɑʊnd̩-ɡɑt əmˈplɑ,mˈfɪ-r)  

grounded-grid amplifier [ELECTR] An electron-tube amplifier circuit in which the control grid is at ground potential at the operating frequency; the input signal is applied between cathode and ground, and the output load is connected between anode and ground. (ˈgrɑʊnd̩-grɪd ə ˈgrɪd əmˈplɑ,mˈfɪ-r)  

grounded-grid triode circuit [ELECTR] Circuit in which the input signal is applied to the cathode and the output is taken from the plate; the grid is at radio-frequency ground and serves as a screen between the input and output circuits. (ˈgrɑʊnd̩-grɪd ˈtrɪ,əd ˈsɑr-kɑt)  

grounded-grid triode mixer [ELECTR] Triode in which the grid forms part of a grounded electrostatic screen between the anode and cathode, and is used as a mixer for centimeter wavelengths. (ˈgrɑʊnd̩-grɪd ˈtrɪ,əd ˈmɪk-sɑr)  

grounded-plate amplifier See cathode follower. (ˈgrɑʊnd̩-plæt əmˈplɑ,mˈfɪ-r)  

grounded system [ELEC] Any conducting apparatus connected to ground. Also known as earthed system. (ˈgrɑʊnd̩-sɪd əˈsɪs-təm)  

ground-effect machine See air-cushion vehicle. (ˈgrɑʊnd̩,ɪˈfɛkt əˈmɑ,ʃən)  

ground electrode [ELEC] A conductor buried in the ground, used to maintain conductors connected to it at ground potential and dissipate current conducted to it into the earth, or to provide a return path for electric current in a direct-current power transmission system. Also known as earth electrode; grounding electrode. (ˈgrɑʊnd̩ ɪˈlektrəd)  

ground environment [ENG] 1. Environment that surrounds and affects a system or piece of equipment that operates on the ground. 2. System or part of a system, as of a guidance system, that functions on the ground, the aggregate of equipment, conditions, facilities, and personnel that go to make up a system, or part of a system, functioning on the ground. (ˈgrɑʊnd̩ ɪnˈfɛktrəmˈmɑnt)  

ground fault [ELEC] Accidental grounding of a conductor. (ˈgrɑʊnd̩ ˌfoʊl̩t)  

ground fault interrupter [ELEC] A fast-acting circuit breaker that also senses very small ground fault currents such as might flow through the body of a person standing on damp ground while touching a hot alternating-current line wire. (ˈgrɑʊnd̩ ˌfoʊl̩t ˌɪnˌtrəˌræpˈtɔr)  

ground instrumentation See spacecraft ground instrumentation. (ˈgrɑʊnd̩ ˌɪnˌstrəˌmɑntəˈʃən)  

ground joint [CIV ENG] A closely fitted masonry joint, usually set without mortar. [MECH ENG] A machined metal joint that makes a tight fit without packing or a gasket. (ˈgrɑʊnd̩ ˈdʒɔint)  

ground junction See ground junction. (ˈgrɑʊnd̩ ˈdʒɔŋkʃən)  

ground magnetic survey [ENG] A determination of the magnetic field at the surface of the earth by means of ground-based instruments. (ˈgrɑʊnd̩ ˈmæɡnɪd ˌɪkˈsɔrˌvə)  

groundman [ENG] A person employed in digging or excavating. (ˈgrɑʊnd̩ˌmɑn)  

ground noise [ENG ACOUS] The residual system noise in the absence of the signal in recording and reproducing, usually caused by inhomogeneity in the recording and reproducing media, but may also include tube noise and noise generated in resistive elements in the amplifier system. (ˈgrɑʊnd̩ ˈnɔɪz)  

ground-penetrating radar See ground-probing radar. (ˈgrɑʊnd̩ˌpɛnəˈtrædɪŋ ˈrɑ̃ˌdɑr)  

ground potential [ELEC] Zero potential with respect to the ground or earth. (ˈgrɑʊnd̩ ˈpɑrəˌchɔl)  

ground-probing radar [ENG] A nondestructive technique using electromagnetic waves to locate objects or interfaces buried beneath the earth's surface or located within a visually opaque structure. Also known as ground-penetrating radar; subsurface radar; surface-penetrating radar. (ˈgrɑʊnd̩ˌpɔrɪŋ ˈrɑ̃ˌdɑr)  

ground protection [ELEC] Protection provided a circuit by a device which opens the circuit when a fault to ground occurs. (ˈgrɑʊnd̩ ˈprəˌtɛktʃən)  

ground resistance [ELEC] Opposition of the earth to the flow of current through it, its value depends on the nature and moisture content of the soil, on the material, composition, and nature of connections to the earth, and on the electrolytic action present. (ˈgrɑʊnd̩ ˌrɪˌzɪstəns)  

ground return [ELEC] Use of the earth as the return path for a transmission line. (ˈgrɑʊnd̩ ˌrɪˌtəm)
grout pipe [ENG] A pipe that transports grout into stone blocks.

grout injector [ENG] The act or process of applying grout or of injecting grout into grout holes or voids. [THERMO] A device used in heat flow upon the surface of the earth by a flying object, and acceptor impurities that are added during the growth of a semiconductor crystal from a melt. Also known as ground junction.

grouthole [ENG] A temporary pile or a heavy, supporting the sliding ways. Also known as bar. [ELECTR] A junction transistor in which the final junctions are formed by diffusion of impurities near a grown junction.

groud trace [ENG] The theoretical mark traced upon the surface of the earth by a flying object, missile, or satellite as it passes over the surface, the mark being made vertically from the object making the trace.

ground ways [CIV ENG] Supports, usually made of heavy timbers, which are placed on the ground on either side of the keel of a ship under construction, providing a track for launching, and supporting the sliding ways. Also known as standing ways.

ground wire [CIV ENG] A small-gage, high-strength steel wire used to establish line and grade for air-blown mortar or concrete. Also known as alignment wire, screed wire. [ELEC] A conductor used to connect electric equipment to a ground rod or other grounded object.

group bus [ELEC] A scheme of electrical connections for a generating station in which more than two feeder lines are supplied by two bus-selector circuit breakers which lead to a main bus and an auxiliary bus.

group incentive [IND ENG] Any wage incentive applied to more than one employee who is engaged in group work characterized by interdependent relationship between operations with consequent physical proximity and unification of interest.

group technology [IND ENG] A manufacturing system that uses a classification and coding scheme to group parts into families based on similar manufacturing requirements, and specifies parts characteristics, process plans, setups, and manufacturing sequences.

grouser [ENG] A temporary pile or a heavy, iron-shod pole driven into the bottom of a stream to hold a drilling or dredging boat or other floating object in position. Also known as spud. [‘graus‘ər]

grouthrick [ENG] A row of vertically drilled holes filled with grout under pressure to form the cutoff wall under a dam, or to form a barrier around an excavation through which water cannot seep or flow. [‘graut,kart-on]

grouth hole [ENG] 1. One of the holes in a grout curtain. 2. Any hole into which grout is forced under pressure to consolidate the surrounding earth or rock. [‘graut,hol]

grouthing [ENG] The act or process of applying grout or of injecting grout into grout holes or crevices of a rock. [‘grautd,jig]

grouth injector [ENG] A machine that mixes the dry ingredients for a grout with water and injects it, under pressure, into a grout hole. [‘graut in,jek-tor]

grouth pipe [ENG] A pipe that transports grout under pressure for injection into a grout hole or a rock formation.

grown-diffused transistor [ELECTR] A junction transistor in which the final junctions are formed by diffusion of impurities near a grown junction.

grown junction [ELECTR] A junction produced by changing the types and amounts of donor and acceptor impurities that are added during the growth of a semiconductor crystal from a melt. Also known as ground junction.

grown-junction photodiode [ELECTR] A photodiode consisting of a bar of semiconductor material having a pn junction at right angles to its length and an ohmic contact at each end of the bar.

grown-junction transistor [ELECTR] A junction transistor in which different impurities are placed in the melt in sequence as the silicon or germanium seed crystal is slowly withdrawn, to produce the alternate pn and np junctions.

grubbing [CIV ENG] Clearing stumps and roots. [‘grub-biŋ]

grub screw [DES ENG] A headless screw with a slot at one end to receive a screwdriver. [‘grub,skrə]

gr wt Sgr weight.

g suit [ENG] A suit that exerts pressure on the abdomen and lower parts of the body to prevent or retard the collection of blood below the chest under positive acceleration. Also known as anti-g suit. [‘jei,sut]

guard [ENG] A shield or other fixture designed to protect against injury. [‘gərd]

guard circle [DES ENG] The closed loop at the end of a grooved record. [‘igərd,sər-kəl]

guard lock [CIV ENG] See entrance lock. [ENG] An auxiliary lock that must be opened before the key can be turned in a main lock. [‘igərd,læk]

guardrail [CIV ENG] 1. A handrail. 2. A rail made of posts and a metal strip used on a road as a divider between lines of traffic in opposite directions or used as a safety barrier on curves.

guard ring [ELECTR] A ring-shaped auxiliary electrode surrounding one of the plates of a parallel-plate capacitor to reduce edge effects. [ELECTR] A ring-shaped auxiliary electrode used in an electron tube or other device to modify the electric field or reduce insulator leakage, in a counter tube or ionization chamber a guard ring may also serve to define the sensitive volume. [THERMO] A device used in heat flow experiments to ensure an even distribution of heat, consisting of a ring that surrounds the specimen and is made of a similar material.

Guggenheim process

Guggenheim process [CIV ENG] A method of chemical precipitation which employs ferric chloride and aeration to prepare sludge for filtration. (gʊg-nəm, ˌnɑm-ˌbɑr)

Guiding-Waagen group [CHEM ENG] A dimensionless number used in studying chemical reactions in blast furnaces; it is given by an equation relating volumes of reacting gases and reacting products. Symbolized $N_\text{CW}$. (gʊ́l̃t̃-bərk ˈvag-o ˈgrɪp)

gull-wing door [DES ENG] A door on an automotive vehicle that is hinged at the top, opens upward, and, in the open position, resembles an airplane gull wing. (ˈgʊl̃ˌwɪŋ ˈdɔr)

gum test [CHEM ENG] A standard American Society for Testing and Materials test to determine the amount of gums in gasolines. (ˈgʌmˌtɛst)

gun barrel [CHEM ENG] An atmospheric vessel used for treatment of wastewater. (ˈgʌn ˈbær-əl)

gun burner [ENG] A burner which sprays liquid fuel into a furnace for combustion. (ˈgʌn ˈbɑr-nər)

gunite [CIV ENG] A mixture of cement, sand, and water that is sprayed on a surface for repairing portions of existing structures, lining reservoirs, and encasing steel for fireproofing. (gʊnˈnɪt)

gun-laying radar [ENG] Radar equipment specifically designed to determine range, azimuth, and elevation of a target and sometimes also to automatically aim and fire artillery or other guns. (ˈgʊnˌlæ-ɪŋ ˈrɑ,ˈdɑr)

Gunn effect [ELECTR] Development of a rapidly fluctuating current in a small block of a semiconductor (perhaps n-type gallium arsenide) when a constant voltage above a critical value is applied to contacts on opposite faces. (gʊn ˈɪlkɛt)

gunner's quadrant [ENG] Mechanical device having scales graduated in mils, with fine micrometer adjustments and leveling vials; it is a separate, unattached instrument for hand placement on a reference surface. (ˈgʌnər ˈkwɔd-ˌrɑnt)

gun pendulum [ENG] A device used to determine the initial velocity of a projectile fired from a gun in which the gun is mounted as a pendulum and its excursion upon firing is measured. (ˈɡʌnˌpɛn-də-ˌləm)

gun reaction [MECH] The force exerted on the gun mount by the rearward movement of the gun resulting from the forward motion of the projectile and hot gases. Also known as recoil. (ˈɡʌn ˈrɛ,əkˌʃən)

Gunter's chain [ENG] A chain 66 feet (20.1168 meters) long, consisting of 100 steel links, each 7.92 inches (20.1168 centimeters) long, joined by rings, which is used as the unit of length for surveying public lands in the United States. Also known as chain. (ˈɡʌntərˌkʃən)

gun-type burner [ENG] An oil burner that uses a nozzle to atomize the fuel. (ˈɡʌnˌtɪp ˈbɑr-nər)

gusset [CIV ENG] A plate that is used to strengthen truss joints. (ˈgʌs-ət)
gusset plate  [CIV ENG] A rectangular or triangular steel plate that connects members of a truss.  {'gəs-ət,plät}
gust load  [MECH] The wind load on an antenna due to gusts.  {'gast, lōd}
gustsonde  [ENG] An instrument dropped from high altitude by a stable parachute, to measure the vertical component of turbulence aloft; consists of an accelerometer and radio telemetering equipment.  {'gást, sând}
gutter [BUILD] A trough along the edge of the eaves of a building to carry off rainwater.  [CIV ENG] A shallow trench provided beside a canal, bordering a highway, or elsewhere, for surface drainage.  {'gād-ər}
guttering  [ENG] A process of quarrying stone in which channels, several inches wide, are cut by hand tools, and the stone block is detached from the bed by pinch bars.  {'gōd-ərīg}
guy  [ENG] A rope or wire securing a pole, derrick, or similar temporary structure in a vertical position.  {'gī}
guy derrick  [MECH ENG] A derrick having a vertical pole supported by guy ropes to which a boom is attached by rope or cable suspension at the top and by a pivot at the foot.  {'gī, der-ik}
gvw  See gross vehicle weight.
gyration breaker  See gyration crusher.  {'jī-ra,tôr-e 'bråk-ər}
gyration crusher  [MECH ENG] A primary breaking machine in the form of two cones, an outer fixed cone and a solid inner erect cone mounted on an eccentric bearing. Also known as gyration breaker.  {'jī-ra,tôr-e 'krāsh-ər}
gyration screen  [MECH ENG] Boxlike machine with a series of horizontal screens nested in a vertical stack with downward-decreasing mesh-opening sizes; near-circular motion causes undersized material to sift down through each screen in succession.  {'jī-ra,tôr-e 'skrēn}
gyro  See gyroscope.  {'jīrō}
gyrodymanics  [MECH] The study of rotating bodies, especially those subject to precession.  {'jīrō-dī-nam-iks}
gyropendulum  [MECH ENG] A gravity pendulum attached to a rapidly spinning gyro wheel.  {'jīrō-pend-ə-lām}
gyrorepeater  [ENG] That part of a remote indicating gyro compass system which repeats at a distance the indications of the master gyro compass system.  {'jīrō-rē-pēd-ər}
gyroscopic precession  [ENG] The turning of the axis of spin of a gyroscopic as a result of an external torque acting on the gyroscopic, the axis always turns toward the direction of the torque.  {'jīrō-skāp-ik 'pré-sesh-ən}
gyroscopic mass flowmeter  [ENG] An instrument in which the torque on a rotating pipe of suitable shape, through which a fluid is made to flow, is measured to determine the mass flow through the pipe.  {'jīrō-skāp-ik mas 'floʊ, méd-ər}
gyroscopic mass flowmeter [MECH ENG] An instrument in which the torque on a rotating pipe of suitable shape, through which a fluid is made to flow, is measured to determine the mass flow through the pipe.  {'jīrō-skāp-ik mas 'floʊ, méd-ər}
gyroscopic mass flowmeter  [ENG] An instrument used in borehole surveying which measures time, temperature, and temperature on 16-millimeter film while a gyroscopic maintains the casing on a fixed bearing.  {'jīrō-skāp-ik 'klin-ə graf, meth-, ad}
gyroscopic clinograph method  [ENG] A method used in borehole surveying which measures time, temperature, and temperature on 16-millimeter film while a gyroscopic maintains the casing on a fixed bearing.  {'jīrō-skāp-ik 'klin-ə graf, meth-, ad}
gyroscopic clinograph method  [ENG] A method used in borehole surveying which measures time, temperature, and temperature on 16-millimeter film while a gyroscopic maintains the casing on a fixed bearing.  {'jīrō-skāp-ik 'klin-ə graf, meth-, ad}
gyroscopic clinograph method  [ENG] A method used in borehole surveying which measures time, temperature, and temperature on 16-millimeter film while a gyroscopic maintains the casing on a fixed bearing.  {'jīrō-skāp-ik 'klin-ə graf, meth-, ad
This page intentionally left blank.
ha See hectare.

Haber-Bosch process [CHEM ENG] Early nitrogen-fixation process for production of ammonia from hydrogen and nitrogen, catalyzed by iron, now replaced by more efficient ammonia synthesis processes. Also known as Haber process. {ˈhæbərˈbɒʃ,ˌprɑːsəs}

Haber process See Haber-Bosch process. {ˈhæbərˈprɑːsəs}

hacking [ENG] The technique of roughening a surface by striking it with a tool. {ˈhækˈɪŋ}

hacking knife [ENG] A tool for removing old putty from a window frame prior to reglazing. Also known as hacking-out tool. {ˈhækˈɪŋˌnɪf}

hacking-out tool See hacking knife. {ˈhækˈɪŋˌɔutˌtʌl}

hacksaw [ENG] A hand or power tool consisting of a fine-toothed blade held in tension in a bow-shaped frame, used for cutting metal, wood, and other hard materials. {ˈhæksɔː}

hair hygrometer [ENG] A hygrometer in which the sensing element is a bundle of human hair, which is held under slight tension by a spring and which expands and contracts with changes in the moisture of the surrounding air or gas. {ˈhɛərˈhɪgræmˌædər}

hairline See air line. {ˈhɛərˌlɪn}

hairpin tube [DES ENG] A boiler tube bent into a hairpin, or U, shape. {ˈhɛərpɪnˌtʌb}

half-adder [ELECTR] A logic element which operates on two binary digits (but no carry digits) from a preceding stage, producing as output a sum digit and a carry digit. {ˈhæfˈædər}

half cycle [ENG] The time interval corresponding to half a cycle, or 180°, at the operating frequency of a circuit or device. {ˈhæfˈsɪkəl}

half-dog setscrew [DES ENG] A setscrew with a short, blunt point. {ˈhæfˌdɒɡˌsetˌskrʊ}

half nut [DES ENG] A nut split lengthwise so that it can be clamped around a screw. {ˈhæfnʌt}

half-round file [DES ENG] A file that is flat on one side and convex on the other. {ˈhæfrændˌfɪl}

half space [BUILD] A broad step between two half flights of a stair. {ˈhæfˌspæs}

half-subtractor [ELECTR] A logic element which operates on two digits from a preceding stage, producing as output a difference digit and a borrow digit. Also known as one-digit subtracter, two-input subtracter. {ˈhæfˈsəbˈtræktər}

half-through arch [CIV ENG] A bridge arch having the roadway running through it at an elevation midway between the base and the crown. {ˈhæfˌθruːˈɑr}
halophone

a person in regard to a specific trait to be influenced by a general impression or by another trait of the person. {'hā′lō-r, hed ,krän}  
halophone [ENG] A device that records patterns in time in a manner analogous to the way that optical holograms record space. {'hal-ə,fôn}  

Halsey premium plan [IND ENG] A wage-incentive plan which sets a guaranteed daily rate to an employee and provides for predetermined compensation for superior performance. {'hôl-zê ′pré-mê-ô,n ′plan}  

Hamiltonian function [MECH] A function of the generalized coordinates and momenta of a system, equal in value to the sum over the coordinates of the product of the generalized momentum corresponding to the coordinate, and the coordinate's time derivative, minus the Lagrangian of the system; it is numerically equal to the total energy if the Lagrangian does not depend on time explicitly; the equations of motion of the system are determined by the functional dependence of the Hamiltonian on the generalized coordinates and momenta. {'ham-əl′to-ô-ne-an ′fâŋk-shan}  

Hamilton-Jacobi theory [MECH] A theory that provides a means for discussing the motion of a dynamic system in terms of a single partial differential equation of the first order, the Hamilton-Jacobi equation. {'ham-əl′tən  ′jôkō-bê ′thê-ô-rè}  

Hamilton's equations of motion [MECH] A set of first-order, highly symmetrical equations describing the motion of a classical dynamical system, namely \( \dot{q}_j = \partial H/\partial p_j, \) \( \dot{p}_j = -\partial H/\partial q_j, \) here \( q_j (j = 1, 2, \ldots) \) are generalized coordinates of the system, \( p_j \) is the momentum conjugate to \( q_j, \) and \( H \) is the Hamiltonian. Also known as canonical equations of motion. {'ham-əl′tanz i′kwâ-zhans ə ′mô-shan}  

Hamiton's principle [MECH] A variational principle which states that the path of a conservative system in configuration space between two configurations is such that the integral of the Lagrangian function over time is a minimum or maximum relative to nearby paths between the same end points and taking the same time. {'ham-əl′tanz ˈprin-sə-pal}  

hammer [DES ENG] 1. A hand tool used for pounding and consisting of a solid metal head set crosswise on the end of a handle. 2. An arm with a striking head for sounding a bell or gong. [MECH ENG] A power tool with a metal block or a drill for the head. {'ham-ər}  

hammer drill [MECH ENG] Any of three types of fast-cutting, compressed-air rock drills (drifter, sinker, and stoper) in which a hammer strikes rapid blows on a loosely held piston, and the bit remains against the rock in the bottom of the hole, rebounding slightly at each blow, but does not reciprocate. {'ham-ər ′dril}  

hammerhead [DES ENG] The striking part of a hammer. {'ham-ər, hed}  

hammerhead crane [MECH ENG] A crane with a horizontal jib that is counterbalanced. {'ham-ər, hed ′krân}  

hammer mill  [MECH ENG] 1. A type of impact mill or crusher in which materials are reduced in size by hammers revolving rapidly in a vertical plane within a steel casing. Also known as beater mill. 2. A grinding machine which pulverizes feed and other products by several rows of thin hammers revolving at high speed. {'ham-ər ′mil}  

hammer milling  [MECH ENG] Crushing or fracturing materials in a hammer mill. {'ham-ər ′mil-iŋ}  

hand See end effector. {'hand}  

hand auger  [DES ENG] A hand tool resembling a large carpenters’ bit or comprising a short cylindrical container with cutting lips attached to a rod, used to bore shallow holes in the soil to obtain samples of it and other relatively unconsolidated near-surface materials. {'hand ′og-ər}  

handbarrow  [ENG] A flat, rectangular frame with handles at both ends, carried by two persons to transport objects. Also known as barrow. {'hand ′bar-ə}  

hand brake  [MECH ENG] A manually operated brake. {'hand ′brak}  

handcar  [MECH ENG] A small, four-wheeled, hand-pumped car used on railroad tracks to transport workers and equipment for construction or repair work; other cars for the same purpose are motor-operated. {'hand ′kær}  

hand drill  [DES ENG] A small, portable drilling machine which is operated by hand. {'hand ′dril}  

hand feed  [ENG] A drill machine in which the rate at which the bit is made to penetrate the rock is controlled by a hand-operated ratchet and lever or a hand-turned wheel meshing with a screw mechanism. {'hand ′fed}  

hand float  [ENG] A wooden tool used to fill in and smooth a plaster surface in order to produce a level base coat or a textured finish coat. {'hand ′flot}  

hand hammer drill  [ENG] A hand-held rock drill. {'hand ′ham-ər ′dril}  

hand-held scanner  [ENG] An image-reading device that is held and operated by a person. {'hand ′held ′skan-ər}  

handhole  [ENG] A shallow access hole large enough for a hand to be inserted for maintenance and repair of machinery or equipment. {'hand ′hol}  

hand lance  [ENG] A hand-held pipe with a nozzle through which steam or air is discharged; used to remove soot deposits from the external surfaces of boiler tubes. {'hand ′lans}  

handle  [MECH ENG] The arm connecting the bucket with the boom in a dipper shovel or hoe. {'hand ′lend}  

hand lead  [ENG] A light sounding lead (7–14 pounds or 3–6 kilograms) usually having a line not more than 25 fathoms (46 meters) in length. {'hand ′led}  

hand level  [ENG] A hand-held surveyor's level,
handling time  | [IND ENG] The time needed to transport parts or materials to or from a work area.  ['hand, ˌlɪŋˌtɪm]
hand punch   | [DES ENG] A hand-held device for punching holes in paper or cards.  ['hand, ˈpʌntʃ]
handrail     | [ENG] A narrow rail to be grasped by a person for support.  ['hand, ˈreɪl]
handsaw     | [DES ENG] A saw operated by hand, with a backward and forward arm movement.  ['hand, ˈsoʊ]
handset     | [DES ENG] A combination of a telephone-type receiver and transmitter, designed for holding in one hand.  ['hand, ˌset]
handset bit  | [DES ENG] A bit in which the diamonds are manually set into holes that are drilled into a malleable-steel bit blank and shaped to fit the diamonds.  ['hand, ˌset, ˈbɪt]
hand-tight   | [ENG] The extent of tightening of screwed fittings that can be accomplished without mechanical assistance.  ['hand, ˈtɪt]
hand time    | [IND ENG] The time necessary to complete a manual element. Also known as manual time.  ['hand, ˈtɪm]
hand tool    | [ENG] Any implement used by hand.  ['hand, ˈtʊl]
hand truck   | [ENG] 1. A manually operated, two-wheeled truck consisting of a rectangular frame with handles at the top and a plate at the bottom to slide under the load.  2. Any of various small, manually operated, multiwheeled platform trucks for transporting materials.  ['hand, ˈtrak]
hand winch   | [MECH ENG] A winch that is operated by hand.  ['hand, ˈwɪnʃ]
hangar       | [CIV ENG] A building at an airport specially designed in height and width to enable aircraft to be stored or maintained in it.  ['hæpˌær]
hanger       | [CIV ENG] An iron strap which lends support to a joist beam or pipe.  ['hæŋˌær]
hanger bolt  | [DES ENG] A bolt with a machine-screw thread on one end and a lag-screw thread on the other.  ['hæŋˌær, ˈbɒlt]
hangfire     | [ENG] Delay in the explosion of a charge.  ['hæŋˌfɜːr]
hanging-drop atomizer | [MECH ENG] An atomizing device used in gravitational atomization; functions by quasi-static emission of a drop from a wetted surface. Also known as pendant atomizer.  ['hæŋˌɪnˌdrep ˈdræp ˈæd-oʊˌmɪz-or]
hanging load | [MECH ENG] 1. The weight that can be suspended on a hoist line or hook device in a drum tripod or derrick without causing the members of the derrick or tripod to buckle.  2. The weight suspended or supported by a bearing.  ['hæŋˌɪnˌjɒd]
hanging scaffold | [CIV ENG] A movable platform suspended by ropes and pulleys; used by workers for above-ground building construction and maintenance.  ['hæŋˌɪn ˈskæfəld]
hang-up      | [ENG] A virtual leak resulting from the release of entrapped tracer gas from a leak detector vacuum system.  ['hæŋˌæp]

HAP  See hazardous air pollutants.  ['hæp ər ləˈpəlts]
harbor engineering | [CIV ENG] Planning and design of facilities for ships to discharge or receive cargo and passengers.  ['hɑːrˌbɔɹˌenˈpɔlˌniŋ]
harbor line | [CIV ENG] The line beyond which wharves and other structures cannot be extended.  ['hɑːrˌbɔɹˌlɪn]
hard automation | [IND ENG] Automation that makes use of specially designed equipment for production.  ['hɑrdˌɑdˌəˌmaˌʃən]
hard beach | [CIV ENG] A portion of a beach especially prepared with a hard surface extending into the water, employed for the purpose of loading or unloading directly into or from landing ships or landing craft.  ['hɑrd ˈbeɪtʃ]
hard goods | See durable goods.  ['hɑrdˌgʊdz]
Hardgrove grindability index | [ENG] The relative grindability of ores and minerals in comparison with standard coal, chosen as 100 grindability, as determined by a miniature ball-ring pulverizer. Also known as Hardgrove number.  ['hɑrˌgrʌvˌgrɪnˈdaɪbiləˌdɪˌnˌɪnˌdɛks]
Hardgrove number | See Hardgrove grindability index.  ['hɑrˌgrʌvˌnəˌnæmˌbɑr]
hard hat | [ENG] A safety hat usually having a metal crown, worn by construction workers and miners.  ['hɑrdˌhæt]
Hardinge feeder-weigher | [MECH ENG] A pivoted, short belt conveyor which controls the rate of material flow from a hopper by weight per cubic foot.  ['hɑrdˌdʒiŋ ˈfedəˌwɜːk]
Hardinge mill | [MECH ENG] A tricone type of ball mill, the cones become steeper from the feed end toward the discharge end.  ['hɑrdˌdʒiŋˌmil]
Hardinge thickener | [ENG] A machine for removing the maximum amount of liquid from a mixture of liquid and finally divided solids by allowing the solids to settle out on the bottom as sludge while the liquid overflows at the top.  ['hɑrdˌdʒiŋˌθɪkˌəˌmɑr]
hard-laid | [DES ENG] Pertaining to rope with strands twisted at a 45° angle.  ['hɑrdˌlæd]
hardness | [ENG] Property of an installation, facility, transmission link, or equipment that will prevent an unacceptable level of damage.  ['hɑrdˌnæsˌnəˌnæmˌbɑr]
hardness number | [ENG] A number representing the relative hardness of a mineral, metal, or other material as determined by any of more than 30 different hardness tests.  ['hɑrdˌnæsˌnəˌnæmˌbɑr]
hardness test | [ENG] A test to determine the relative hardness of a metal, mineral, or other material according to one of several scales, such as Brinell, Mohs, or Shore.  ['hɑrdˌnæsˌtɛst]
hardstand | [CIV ENG] 1. A paved or stabilized area where vehicles or aircraft are parked.  2. Open ground area having a prepared surface and used for storage of material.  ['hɑrdˌstænd] hard-surface | [CIV ENG] To treat a ground surface in order to prevent mudliness.  ['hɑrdˌsɔrˌfæs]
A log which consists essential-
ly of a rotator and distance registering device combined in a single unit, and towed through the water; it has been largely replaced by the taffrail log, the two types of logs are similar except that the registering device of the taffrail log is located at the taffrail and only the rotator is in the water. {här$pant\;\text{läg}}$

Harrison’s gridiron pendulum [DES ENG] A type of compensated pendulum that has five iron rods and four brass rods arranged so that the effects of their thermal expansion cancel. {\'harri-s\text{-}sanz\;\text{gård},\;\text{frän},\;\text{pen}-\text{ja}-\text{lam}}

Hartford loop [MECHENG] A condensate return arrangement for low-pressure, steam-heating systems featuring a steady water line in the boiler. {\'hârt-fârd\;\text{lûp}}

Hartmann generator [ENG ACOUS] A device in which shock waves generated at the edges of a nozzle by a supersonic gas jet resonate with the opening of a small cylindrical pipe, placed opposite the nozzle, to produce powerful ultrasonic sound waves. {\'hârt\text{-}mån\;\text{jen},\;\text{râd\text{-}ar}}

Hashe process [CHEM ENG] A thermal re-forming process for hydrocarbon fuels; it is a noncatalytic regenerative method in which a mixture of hydrocarbon gas or vapor and air is passed through a regenerative mass that is progressively hotter in the direction of the gas flow; partial combustion occurs, liberating heat to crack the remaining hydrocarbons in a combustion zone. {\'hâsh\;\text{a},\;\text{på\text{-}râ}sås}

hass [DES ENG] A two-piece fastening device having a loop on one piece and a hinged plate that fits over the loop on the other. {\'hâsp}

hatch [ENG] A door or opening, especially on an airplane, spacecraft, or ship. {\'hâch}

hatch beam [ENG] A heavy, portable beam which supports a hatch cover. {\'hâch\;\text{bëm}}

hatch cover [ENG] A steel or wooden cover for a hatch. {\'hâch\;\text{bågor}}

hatchet [DES ENG] A small ax with a short handle and a hammerhead in addition to the cutting edge. {\'hâch\;\text{at}}

haul [ENG] A single tow of a net or dredge. {\hôl}

hawk [ENG] A board with a handle underneath used by a workman to hold mortar. {\hôk}

Hayward grab bucket [MECH ENG] A clasp hook type of grab bucket used for handling coal, sand, gravel, and other flowable materials. {\'hâw\text{-}wârd\;\text{gråb},\;\text{båk-at}}

Hayward orange peel [MECH ENG] A grab bucket that operates like the clasp hook type but has four blades pivoted to close. {\'hâw\text{-}wârd\;\text{a},\;\text{rown},\;\text{peol}}

hazard [IND ENG] Any risk to which a worker is subject as a direct result (in whole or in part) of his being employed. {\'haz\text{-}ord}

hazardous air pollutants [ENG] Chemicals that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. Listed hazardous air pollutants include benzene, found in gasoline, perchlorethylene, emitted from some dry cleaning facilities, and methylene chloride, used as a solvent and paint stripper in industry, as well as dioxin, asbestos, toluene, and metals such as cadmium, mercury.
chromium, and lead compounds. Also known as air toxics. Abbreviated HAP. {ˈhaz-ər-dəs ˈ帝王 paˈlɛntəns}

hazemeter See transmissometer (ˈhæzəˌmɛtər)

H beam [CIV ENG] A beam similar to the I beam but with longer flanges. Also known as wide-flange beam. {ˈæchˌbɛm}

H bit [DES ENG] A core bit manufactured and used in Canada having inside and outside diameters of 2.875 and 3.875 inches (73.025 and 98.425 millimeters), respectively; the matching reaming shell has an outside diameter of 3.906 inches (99.2142 millimeters). {ˈæchˌbɪt}

head [BUILD] The upper part of the frame on a door or window. [ELECTR] The photoelectric unit that converts the sound track on motion picture film into corresponding audio signals in a motion picture projector. [ENG] 1. The end section of a plastics blow-molding machine in which a hollow parison is formed from the melt. 2. The section of a shell-and-tube heat exchanger from which fluid from the tube bundle is discharged. [ENG ACOUS] See cutter. {ˈhed}

headache post [MECH ENG] A post installed on a cable-tool rig for supporting the end of the walking beam when the rig is not operating. {ˈhedˌākəst}

headbox [ENG] A device for controlling the flow of a suspension of solids into a machine. {ˈhedˌbaʊks}

header [BUILD] A framing beam positioned between trimmers and supported at each end by a tail beam. [CIV ENG] Brick or stone laid in a wall with its narrow end facing the wall. [ELEC] A mounting plate through which the insulated terminals or leads are brought out from a hermetically sealed relay, transformer, transistior, tube, or other device. [ENG] A pipe, conduit, or channel which distributes fluid from a series of smaller pipes or conduits; an example is a manifold. [MECH ENG] A machine used for gathering or upsetting materials, used for screw, rivet, and bolt heads. {ˈhedər}

header bond [CIV ENG] A masonry bond consisting of header courses exclusively. {ˈhedərˌbænd}

header course [CIV ENG] A masonry course of bricks laid as headers. {ˈhedərˌkoʊrs}

header-type boiler See straight-tube boiler. {ˈhedərˌtəʊpˌboʊlər}

head gate [CIV ENG] 1. A gate on the upstream side of a lock or conduit. 2. A gate at the starting point of an irrigation ditch. {ˈhedˌgæt}

heading [CIV ENG] In tunnel construction, one or more small tunnels excavated within a large tunnel cross section that will later be enlarged to full section. {ˈhedɪŋ}

heading joint [BUILD] 1. A joint between two pieces of timber which are joined in a straight line, end to end. 2. A masonry joint formed between two stones in the same course. {ˈhedɪŋˌjɒnt}

head meter [ENG] A flowmeter that is dependent upon change of pressure head to operate. {ˈhedˌmɛdər}

head motion [MECH ENG] The vibrator on a reciprocating table concentrator which imparts motion to the deck. {ˈhedˌmoʊʃən}

headphones [ENG ACOUS] An electroacoustic transducer designed to be held against an ear by a clampl passing over the head, for private listening to the audio output of a communications, radio, or television receiver or other source of audio-frequency signals. Also known as phone. {ˈhedˌfʌn}

head pulley [MECH ENG] The pulley at the discharge end of a conveyor belt; may be either an idler or a drive pulley. {ˈhedˌpʊlə}

head-pulley-drive conveyor [MECH ENG] A conveyor having the belt driven by the head pulley without a snub pulley. {ˈhedˌpʊləˌdrɪv}

head scanning [IND ENG] Scanning of the visual field by using movement of both the head and the eyeballs. {ˈhedˌskænəŋ}

head section [ENG] That part of belt conveyor which consists of a drive pulley, a head pulley which may or may not be a drive pulley, belt idlers if included, and the necessary framing. {ˈhedˌsekʃən}

headset [ENG ACOUS] A single headphone or a pair of headphones, with a clamping strap or wires holding them in position. {ˈhedˌset}

head shaft [MECH ENG] The shaft driven by a chain and mounted at the delivery end of a chain conveyor; it serves as the mount for a sprocket which drives the drag chain. {ˈhedˌshaft}

headstock [BUILD] A horizontal beam at the top of the frame of a door or window. {ˈhedˌskɔst}

headstock [MECH ENG] 1. The device on a lathe for carrying the revolving spindle. 2. The movable head of certain measuring machines. 3. The device on a cylindrical grinding machine for rotating the work. 4. Also known as workhead. {ˈhedˌstæk}

head up [ENG] To tighten bolts on a hatch cover or access hole plate to prevent leakage from or into an operating vessel. {ˈhedˌup}

headwall [CIV ENG] A retaining wall at the outlet of a drain or culvert. {ˈhedˌwɔl}

headworks [CIV ENG] Any device or structure at the head or diversion point of a waterway. {ˈhedˌwaːks}

hearing aid [ENG ACOUS] A miniature, portable sound amplifier for persons with impaired hearing, consisting of a microphone, audio amplifier, earphone, and battery. {ˈhɪrɪŋˌæd}

heart bond [CIV ENG] A masonry bond in which two header stones meet in the middle of the wall, their joint being covered by another stone; no headers stretch across the wall. {ˈhɑːrtˌbænd}

hearth [BUILD] 1. The floor of a fireplace or brick oven. 2. The projection in front of a fireplace, made of brick, stone, or cement. {ˈhɑːrθ}

heat [THERMO] Energy in transit due to a temperature difference between the source from which the energy is coming and a sink toward which the energy is going; other types of energy in transit are called work. {hɛt}
heat balance

heat balance [THERMO] The equilibrium which is known to exist when all sources of heat gain and loss for a given region or body are accounted for. {‘hèt, bā-jì-at}  
heat budget [THERMO] The statement of the total inflow and outflow of heat for a planet, spacecraft, biological organism, or other entity. {‘hèt kā-pa-sà-á-dè}  
heat capacity [THERMO] The quantity of heat required to raise a system one degree in temperature in a specified way, usually at constant pressure or constant volume. Also known as thermal capacity. {‘hèt kān-dák-shān}  
heat conduction [THERMO] The flow of thermal energy through a substance from a higher- to a lower-temperature region. {‘hèt kān-dák-shān}  
heat conductivity See thermal conductivity. {‘hèt kān-dák-tí-vít-á-dè}  
heat content See enthalpy. {‘hèt kān-tènt}  
heat convection [THERMO] The transfer of thermal energy by actual physical movement from one location to another of a substance in which thermal energy is stored. Also known as thermal convection. {‘hèt kān-vèk-shān}  
heat cycle See thermodynamic cycle. {‘hèt sī-kāl}  
heat death [THERMO] The condition of any isolated system when its entropy reaches a maximum, in which matter is totally disordered and at a uniform temperature, and no energy is available for doing work. {‘hèt dē-thà}  
heat distortion point [ENG] The temperature at which a standard test bar (American Society for Testing and Materials test) deflects 0.010 inch (0.254 millimeter) under a load of either 66 or 264 pounds per square inch (4.55 × 10² or 18.20 × 10⁻⁹ pascals), as specified. {‘hèt dì-stōr-shān _pōint}  
heat energy See internal energy. {‘hèt _én-ar-prē}  
heat engine [MECH ENG] A machine that converts heat into work (mechanical energy). [THERMO] A thermodynamic system which undergoes a cyclic process during which a positive amount of work is done by the system; some heat flows into the system and a smaller amount flows out in each cycle. {‘hèt _en-yān}  
heat equation [THERMO] A parabolic second-order differential equation for the temperature of a substance in a region where no heat source exists. \( \frac{\partial^2 T}{\partial x^2} + \frac{\partial^2 T}{\partial y^2} + \frac{\partial^2 T}{\partial z^2} = 0 \) \( x, y, \text{ and } z \) are space coordinates, \( t \) is the time, \( i(x,y,z) \) is the temperature, \( k \) is the thermal conductivity of the body, \( \rho \) is its density, and \( C \) is its specific heat; this equation is fundamental to the study of heat flow in bodies. Also known as Fourier heat equation; heat flow equation. {‘hèt _i-kwā-zhān}  
heater [ELECTR] An electric heating element for supplying heat to an indirectly heated cathode in an electron tube. Also known as electron-tube heater. [ENG] A contrivance designed to give off heat. {‘hèd-ə-rē}  
heat exchange [CHEM ENG] A unit operation based on heat transfer which functions in the heating and cooling of fluids with or without phase change. {‘hèt iks-chān-jān}  
heat exchanger [ENG] Any device, such as an automobile radiator, that transfers heat from one fluid to another or to the environment. Also known as exchanger. {‘hèt iks-chān-jān-or}  
heat flow [THERMO] Heat thought of as energy flowing from one substance to another, quantitatively, the amount of heat transferred in a unit time. Also known as heat transmission. {‘hèt ells}  
heat flow equation See heat equation. {‘hèt _i-kwā-zhān}  
heat flux [THERMO] The amount of heat transferred across a surface of unit area in a unit time. Also known as thermal flux. {‘hèt _ells}  
heat gain [ENG] The increase of heat within a given space as a result of direct heating by solar radiation and of heat radiated by other sources such as lights, equipment, or people. {‘hèt _gān}  
heating chamber [ENG] The part of an injection mold in which cold plastic feed is changed into a hot melt. {‘hèd-īn _chām-bār}  
heating load [CIV ENG] The quantity of heat per unit time that must be provided to maintain the temperature in a building at a given level. {‘hèd-īn _lo-d}  
heating plant [CIV ENG] The whole system for heating an enclosed space. Also known as heating system. {‘hèd-īn _plānt}  
heating surface [ENG] The surface for the absorption and transfer of heat from one medium to another. {‘hèd-īn _sār-fās}  
heating system See heating plant. {‘hèd-īn _sis-tōm}  
heat-loss flowmeter [ENG] Any of various instruments that determine gas velocities or mass flows from the cooling effect of the flow on an electrical sensor such as a thermistor or resistor, a second sensor is used to compensate for the temperature of the fluid. Also known as thermal-loss meter. {‘hèt _lōs _tī-lo-méd-ər}  
heat of ablation [THERMO] A measure of the effective heat capacity of an ablating material, numerically the heating rate input divided by the mass loss rate which results from ablation. {‘hèt _v _blā-shān}  
heat of adsorption [THERMO] The increase in enthalpy when 1 mole of a substance is adsorbed upon another at constant pressure. {‘hèt _v _ad-sörp-shān}  
heat of aggregation [THERMO] The increase in enthalpy when an aggregate of matter, such as a crystal, is formed at constant pressure. {‘hèt _v _ag-rā-γā-shān}  
heat of compression [THERMO] Heat generated when air is compressed. {‘hèt _v _kām _prē-shān}  
heat of condensation [THERMO] The increase in enthalpy accompanying the conversion of 1 mole of vapor into liquid at constant pressure and temperature. {‘hèt _v _kān-dān-sā-shān}  
heat of cooling [THERMO] Increase in enthalpy during cooling of a system at constant pressure,
resulting from an internal change such as an allotropic transformation. ( 'het av 'kul-ij )

heat of crystallization [THERMO] The increase in enthalpy when 1 mole of a substance is transformed into its crystalline state at constant pressure. ( 'het av ,krist-al-'a-zA-shan )

heat of evaporation See heat of vaporization. ( 'het av i ,vap-AR-shan )

heat of fusion [THERMO] The increase in enthalpy accompanying the conversion of 1 mole, or a unit mass, of a solid to a liquid at its melting point at constant pressure and temperature. Also known as latent heat of fusion. ( 'het av 'fyU-Zhan )

heat of mixing [THERMO] The difference between the enthalpy of a mixture and the sum of the enthalpies of its components at the same pressure and temperature. ( 'het av 'mi-kij )

heat of solidification [THERMO] The increase in enthalpy when 1 mole of a solid is formed from a liquid or, less commonly, a gas at constant pressure and temperature. Also known as latent heat of sublimation. ( 'het av sa-lid-AR-fA-zA-shan )

heat of sublimation [THERMO] The increase in enthalpy accompanying the conversion of 1 mole, or unit mass, of a solid to a vapor at constant pressure and temperature. Also known as latent heat of sublimation. ( 'het av sa-bla-mA-shan )

heat of transformation [THERMO] The increase in enthalpy of a substance when it undergoes some phase change at constant pressure and temperature. ( 'het av ,tRANZ-fAR-mA-shan )

heat of vaporization [THERMO] The quantity of energy required to evaporate 1 mole, or a unit mass, of a liquid, at constant pressure and temperature. Also known as enthalpy of vaporization; heat of evaporation; latent heat of vaporization. ( 'het av va-PA-RA-zA-shan )

heat of wetting [THERMO] 1. The heat of adsorption of water on a substance. 2. The additional heat required, above the heat of vaporization of free water, to evaporate water from a substance in which it has been absorbed. ( 'het av 'wed-ij )

heat pipe [ENG] A heat-transfer device consisting of a sealed metal tube with an inner lining of wicklike capillary material and a small amount of fluid in a partial vacuum; heat is absorbed at one end by vaporization of the fluid and is released at the other end by condensation of the vapor. ( 'het ,piip )

heat pump [MECH ENG] A device which transfers heat from a cooler reservoir to a hotter one, expending mechanical energy in the process, especially when the main purpose is to heat the hot reservoir rather than refrigerate the cold one. ( 'het ,pAMP )

heat quantity [THERMO] A measured amount of heat, units are the small calorie, normal calorie, mean calorie, and large calorie. ( 'het kwAN-AD-E )

heat radiation [THERMO] The energy radiated by solids, liquids, and gases in the form of electromagnetic waves as a result of their temperature. Also known as thermal radiation. ( 'het ,RAD-e-A-shan )

heat rate [MECH ENG] An expression of the conversion efficiency of a thermal power plant or engine, as heat input per unit of work output, for example, Btu/kWh. ( 'het ,RAT )

heat release [THERMO] The quantity of heat released by a furnace or other heating mechanism per second, divided by its volume. ( 'het ri-LESH )

heat seal [ENG] A union between two thermoplastic surfaces by application of heat and pressure to the joint. ( 'het ,Sel )

heatsink [ELEC] A mass of metal that is added to a device for the purpose of absorbing and dissipating heat, used with power transistors and many types of metallic rectifiers. Also known as dissipator. [THERMO] Any (gas, solid, or liquid) region where heat is absorbed. ( 'het ,siGK )

heatsink cooling [ENG] Cooling a body or system by allowing heat to be absorbed from it by another body. ( 'het ,siGK kUL-iG )

heat source [THERMO] Any device or natural body that supplies heat. ( 'het ,siORS )

heat sterilization [ENG] An act of destroying all forms of life on and in bacteriological media, foods, hospital supplies, and other materials by means of moist or dry heat. ( 'het ,STER-al-a-zA-zA-shan )

heat transfer [THERMO] The movement of heat from one body to another (gas, liquid, solid, or combinations thereof) by means of radiation, convection, or conduction. ( 'het ,tRANZ-fAR )

heat-transfer coefficient [THERMO] The amount of heat which passes through a unit area of a medium or system in a unit time when the temperature difference between the boundaries of the system is 1 degree. ( 'het ,tRANZ-fAR ,ko-FLISH-AN )

heat transmission See heat flow. ( 'het ,tRANZ-MISH-AN )

heat transport [THERMO] Process by which heat is carried past a fixed point or across a fixed plane, as in a warm current. ( 'het ,tRANZ,PÔRT )

heat wheel [MECH ENG] In a ventilating system, a device to condition incoming air by causing it to approach thermal equilibrium with the exiting air; hot incoming air is cooled, and cold incoming air is warmed. ( 'het ,Wel )

heavy-duty [ENG] Designed to withstand excessive strain. ( 'HEV-e ,kUHD-E )

heavy-duty car [MECH ENG] A railway motorcar weighing more than 1400 pounds (635 kilograms), propelled by an engine of 12–30 horsepower (8900–22,400 watts), and designed for hauling heavy equipment and for hump-yard service. ( 'HEV-e ,KUHD-E ,KAR )

heavy-duty tool block See open-side tool block. ( 'HEV-e ,KUHD-E ,TUL ,BLAK )

heavy force fit [DES ENG] A fit for heavy steel parts or shrink fits in medium sections. ( 'HEV-e ,FØRS ,FIT )
heavy section car

[MECH ENG] A railway motorcar weighing 1200–1400 pounds (544–635 kilograms) and propelled by an 8–12 horsepower (6000–8900 watts) engine. {heɪtˈeɪ ˈsek-shan kær}

hectare [MECH] A unit of area in the metric system equal to 100 ares or 10,000 square meters. Abbreviated ha. {ˈhev-tə rərə}

hectogram [MECH] A unit of mass equal to 100 grams. Abbreviated hg. {ˈhev-təˌgræm}

hectoliter [MECH] A metric unit of volume equal to 100 liters or to 0.1 cubic meter. Abbreviated hl. {ˈhev-təˌlɛd-ər}

hectometer [MECH] A unit of length equal to 100 meters. Abbreviated hm. {ˈhev-təˌmɛd-ər}

heel See heel block. {hɛl}

heel block [MECH ENG] A block or plate that is usually fixed on the die shoe to minimize deflection of a punch or cam. Also known as heel. {ˈhel ˌblæk}

heeling adjuster [ENG] A dip needle with a sliding weight that can be moved along one of its arms to balance the magnetic force, used to determine the correct position of a heel magnet. Also known as heel error instrument; vertical force instrument. {ˈhel-ɪŋ əˌjəsˌtɑr}

heeling error instrument See heel adjuster. {ˈhel-ɪŋ ərˌərˌɪnˈstrɔmənt}

heeling magnet [ENG] A permanent magnet placed vertically in a tube under the center of a marine magnetic compass, to correct for heel error. {ˈhel-ɪŋ ˌmægˈnɔt}

heel of a shot [ENG] 1. In blasting, the front or face of a shot farthest from the charge. 2. The distance between the mouth of the drill hole and the corner of the nearest free face. 3. That portion of a drill hole which is filled with the tamping. {hel ə ˈʃæt}

heel plate [CIV ENG] A plate at the end of a truss. {ˈhel ˌplæt}

heel post [CIV ENG] A post to which are secured the hinges of a gate or door.

height equivalent of theoretical plate [CHEM ENG] In a packed fractionating column, a height of packing that makes a separation equivalent to that of a theoretical plate, used in sorption and distillation calculations. Abbreviated HETP. {ˈhɪt ˈhekˌwɪvˌələnt əˌθiˌəˌrɛdˌəˌkɔlˈplæt}

height finder [ENG] A radar equipment, used to determine height of aerial targets. {ˈhɪtˌfɪndər}

height finding [ENG] Determination of the height of an airborne object. {ˈhɪtˌfɪndɪŋ}

height-finding radar [ENG] A radar set that measures and determines the height of an airborne object. {ˈhɪtˌfɪndɪŋ ˈrɑˌdɑr}

height gage [ENG] A gage used to measure heights by either a micrometer or a vernier scale. {ˈhɪtˌgæj}

height of instrument [ENG] 1. In survey leveling, the vertical height of the line of collimation of the instrument over the station above which it is centered, or above a specified datum level.

2. In spirit leveling, the vertical distance from datum to line of sight of the instrument.

3. In stadia leveling, the height of center of transit above the station stake.

4. In differential leveling, the elevation of the line of sight of the telescope when the instrument is leveled. {ˈhɪt əv ˈɪnˌstrɔmənt}

height of transfer unit [CHEM ENG] A dimensionless parameter used to calculate countercurrent sorption tower operations; it is proportional to the apparent resident time of the fluid. Abbreviated HTU. {ˈhɪt əv ˈtrænz汰ˌfɔr ˈjʊɪˌnæt}

helical angle [MECH] In the study of torsion, the angular displacement of a longitudinal element, originally straight on the surface of an untwisted bar, which becomes helical after twisting. {ˈhel-əˌkɔlˈaŋˌɡəl}

helical conveyor [MECH ENG] A conveyor for the transport of bulk materials which consists of a horizontal shaft with helical paddles or ribbons rotating inside a stationary tube. {ˈhel-əˌkɔl ˈflɪnˌsekˌʃan}

helical-flow turbine [MECH ENG] A steam turbine in which the steam is directed tangentially and radially inward by nozzles against buckets milled in the wheel rim; the steam flows in a helical path, reentering the buckets one or more times. Also known as tangential helical-flow turbine. {ˈhel-əˌkɔl ˈfləˌtɔˌbæn}

helical gear [MECH ENG] Gear wheels running on parallel axes, with teeth twisted oblique to the gear axis. {ˈhel-əˌkɔlˈɡɪr}

helical milling [MECH ENG] Milling in which the work is simultaneously rotated and translated. {ˈhel-əˌkɔlˈmɪlˌɪŋ}

helical rake angle [DES ENG] The angle between the axis of a reamer and a plane tangent to its helical cutting edge; also applied to milling cutters. {ˈhel-əˌkɔlˈrækˌæŋˌgəl}

helical scanning [ELECTR] A method of recording on videotape and digital audio tape in which the tracks are recorded diagonally from top to bottom by wrapping the tape around the rotating-head drum in a helical path. [ENG] A method of radar scanning in which the antenna beam rotates continuously about the vertical axis while the elevation angle changes slowly from horizontal to vertical, so that a point on the radar beam describes a distorted helix. {ˈhel-əˌkɔl ˈskænˌɪŋ}

helical-spline broach [MECH ENG] A broach used to produce internal helical splines having a straight-sided or involute form. {ˈhel-əˌkɔlˌsplaɪˌbrɔʃ}

helical spring [DES ENG] A bar or wire of uniform cross section wound into a helix. {ˈhel-əˌkɔlˈsprɪŋ}

heligraph [ENG] An instrument that records the duration of sunshine and gives a qualitative
heterodyne frequency meter

method of calculation to estimate the distribution of non-key components in distillation column products. { ‘hëg-sta-bék, a-prak-sa, mä-shan}.

HEPA filter See high-efficiency particulate air filter. { ‘hep-ə-fil-tər}.

hereditary mechanics [MECH] A field of mechanics in which quantities, such as stress, depend not only on other quantities, such as strain, at the same instant but also on integrals involving the values of such quantities at previous times. { hə-rə-dər-i, ər-ə-ˈmī-tən-iks}.

hermaphrodite caliper [DES ENG] A layout tool having one leg pointed and the other like that of an inside caliper, used to locate the center of irregularly shaped stock or to lay out a line parallel to an edge. { hər-mə-pər-dət, kəl-ər}.

hermetic seal [ENG] An airtight seal. { hər-med-ikˈ-səl}.

herpolhode [MECH] The curve traced out on the invariable plane by the point of contact between the plane and the inertia ellipsoid of a rotating rigid body not subject to external torque. { hər-pə-lə-hod}.

herpolhode cone See space cone. { hər-pə-lə-hodˈ, kən}.

herringbone gear [MECH ENG] The equivalent of two helical gears of opposite hand placed side by side. { hər-ɪn-bən, ər}.

Herschel-type venturi tube [ENG] A type of venturi tube in which the converging and diverging sections are cones; the throat section is relatively short, the diverging cone is long, and the pressures preceding the inlet cone and in the throat are transferred through multiple openings into annular openings, called piezometer rings. { hər-shəlˈ-tɪp ventər-ə, ˈtub}.

Hertz's law [MECH] A law which gives the radius of contact between a sphere of elastic material and a surface in terms of the sphere's radius, the normal force exerted on the sphere, and Young's modulus for the material of the sphere. { hərtz, əl}.

heterodyne [ELECTR] To mix two alternating-current signals of different frequencies in a nonlinear device for the purpose of producing two new frequencies, the sum of and difference between the two original frequencies. { hə-tər-əˈraˈdi-nəl}.

heterodyne detector [ELECTR] A detector in which an unmodulated carrier frequency is combined with the signal of a local oscillator having a slightly different frequency, to provide an audio-frequency beat signal that can be heard with a loudspeaker or headphones; used chiefly for code reception. { hə-tər-ə-ˈra, əˈdi-təkˈtər}.

heterodyne analyzer [ENG ACOUS] A type of constant-bandwidth analyzer in which the electrical signal from a microphone beats with the signal from an oscillator, and one of the sidebands produced by this modulation is then passed through a fixed filter and detected. { hə-tər-əˈra, ənˈə-starəˈməra}.

heterodyne frequency meter [ELECTR] A frequency meter in which a known frequency, which
heterodyne measurement

may be adjustable or fixed, is heterodyned with an unknown frequency to produce a zero beat or an audio-frequency signal whose value is measured by other means. Also known as heterodyne wave-meter. ('hed-a-ra,din 'frequ-kwean-she',m) heterodyne measurement [ELECTR] A measurement carried out by a type of harmonic analyzer which employs a highly selective filter, at a frequency well above the highest frequency to be measured, and a heterodyning oscillator. ('hed-a-ra,din 'mehzh-ar-mant') heterodyne modulator See mixer. ('hed-a-ra,din 'mahi-a,lad-ar')

heterodyne oscillator [ELECTR] 1. A separate variable-frequency oscillator used to produce the second frequency required in a heterodyne detector for code reception. 2. See beat-frequency oscillator. ('hed-a-ra,din 'as-a,lad-ar')

heterodyne reception [ELECTR] Radio reception in which the incoming radio-frequency signal is combined with a locally generated rf signal of different frequency, followed by detection. Also known as beat reception. ('hed-a-ra,din r'sep-shan')

heterodyne repeater [ELECTR] A radio repeater in which the received radio signals are converted to an intermediate frequency, amplified, and reconverted to a new frequency band for transmission over the next repeater section. ('hed-a-ra,din ri-ped-ar')

heterodyne wavemeter See heterodyne frequency meter. ('hed-a-ra,din 'way-muh-med-ar')

heterogeneous strain [MECH] A strain in which the components of the displacement of a point in the body cannot be expressed as linear functions of the original coordinates. ('hed-a-ra,jen-es-stran')

heterojunction [ELECTR] The boundary between two different semiconductor materials, usually with a negligible discontinuity in the crystal structure. ('hed-a-ra,joj-kan-shan')

heterojunction bipolar transistor [ELECTR] A bipolar transistor that has two or more materials making up the emitter, base, and collector regions, giving it a much higher maximum frequency than a silicon bipolar transistor. Abbreviated HBT. ('hed-a-ra,joj-kan-shan 'bi,pol-ar tran,zi-tar')

heterojunction field-effect transistor See high-electron-mobility transistor. ('hed-a-ra,joj-kan-shan 'field,efekt tran,zi-tar')

heteromorphic transformation [THERMO] A change in the values of the thermodynamic variables of a system in which one or more of the component substances also undergo a change of state. ('hed-a-ra,mor-fik tran,tar,mah-shan')

HEFT See height equivalent of theoretical plate.

hexagonal-head bolt [DES ENG] A standard wrench head bolt with a hexagonal head. ('hek sag-ah-nal hed,beilt')

hexagonal nipple [DES ENG] A nipple for joining pipe with a hexagonal configuration around the center of the exterior surface to permit tightening with a spanner. ('hek-sag-ah-nal nip-ah')

hexagonal nut [DES ENG] A plain nut in hexagonal form. ('hek-sag-ah-nal nut')

hexapod [CONT SYS] A robot that uses six leg-like appendages to stride over a surface. ('hek-sap-ad')

hex nut [DES ENG] A nut in the shape of a hexagon. ('hekks, nat')

HF akylation [CHEM ENG] Petroleum refinery alkylation process in which olefins (C₅, C₆, C₇) are reacted with isobutane in the presence of hydrofluoric acid catalyst. ('jafl,al-ka-la-shan')

hg See hectogram.

hierarchical control [CONT SYS] The organization of controllers in a large-scale system into two or more levels so that controllers in each level send control signals to controllers in the level below and feedback to or sensing signals to controllers in the level above. Also known as control hierarchy. ('ha-ar,a,lak-kol kan-tral')

hi-fi See high fidelity. ('hi-fit')

Higbie model [CHEM ENG] Mass-transfer theory for packed absorption towers, stating that liquid flows across each packing piece in laminar flow and is mixed with other liquids meeting it at the points of continuity between packing elements. ('hi-bi,mead-al')

high-aspect-ratio micromachining [ENG] Microfabrication processes that produce tall micro-structures with vertical sidewalls. Abbreviated HARM. ('hi,ja,pekt,rasho,m-tro-ma-shen-in')

high-efficiency particulate air filter [MECH ENG] An air filter capable of reducing the concentration of solid particles (0.3 millimeter in diameter or larger) in the airstream by 99.97%. Also known as HEPA filter. ('hi,iffish-an-she par,ti,ko-lar,er,fil-tar')

high-electron-mobility transistor [ELECTR] A type of field-effect transistor consisting of gallium arsenide and gallium aluminum arsenide, with a Schottky metal contact on the gallium aluminum arsenide layer and two ohmic contacts penetrating into the gallium arsenide layer, serving as the gate, source, and drain respectively. Abbreviated HEMT. Also known as heterojunction field-effect transistor (HFET); modulation-doped field-effect transistor (MODFET); selectively doped heterojunction transistor (SDHT); two-dimensional electron gas field-effect transistor (TEGFEF). ('hi,ilek,tran mohbil-ah,tran,zi-tar')

higher pair [MECH ENG] A link in a mechanism in which the mating parts have surface (instead of line or point) contact. ('hi-ar,per')

high fidelity [ENG ACOUS] Audio reproduction that closely approximates the sound of the original performance. Also known as hi-fi. ('hi fi del-ad-eh')

high-frequency furnace [ENG] An induction furnace in which the heat is generated within the charge, within the walls of the containing crucible, or within both, by currents induced by
high-frequency magnetic flux produced by a surrounding coil. Also known as coreless-type induction furnace, high-frequency heater. (ˈhɪ ˈfreɪ-kwɔːn-sɪ ˈfɔr-nəs)

high-frequency gage [MECH ENG] A type of high-frequency gage glass.

high-frequency gage glass [ENG] A gage glass consisting of a metal tube with thick glass windows. (ˈhɪ ˈpresh-ər ɡæl ˈglass)

high-pressure [MECH ENG] A chemical process operating at elevated pressure. For example, phenol manufacture at 330 atmospheres (1 atmosphere = 101,325 pascals), ethylene polymerization at 2000 atm, ammonia synthesis at 100–1000 atm, and synthetic-diamond manufacture up to 100,000 atm. (ˈhɪ ˈpresh-ər ˈprɑː-səs)

high-pressure heat [ENG] A type of torch in which both acetylene and oxygen are delivered to the mixing chamber under pressure. (ˈhɪ ˈpresh-ər ˈtərч)

high Q [ELECTR] A characteristic wherein a component has a high ratio of reactance to effective resistance, so that its Q factor is high. (ˈhɪ ˈkyʊl)

high-pressure voltmeter [ELECTR] A voltmeter designed to measure currents alternating at high frequencies. (ˈhɪ ˈfreɪ-kwɔːn-sɪ ˈvəʊlt,ˈmɛd-ər)

high-front shovel [MECH ENG] A power shovel with a dipper stick mounted high on the boom for stripping and overburden removal. (ˈhɪ ˈfront ˈʃɔv-əl)

high-gradient magnetic separation [ENG] A magnetic separation technique applicable to weakly paramagnetic compounds and to particle sizes down to the colloidal domain. (ˈhɪ ˌɡræd-ə-nt ˈmeɪɡ-nɛd-ɪk,ˈsɛp-ə-ˈrə-sən)

high hat [ENG] A very low tripod head resembling a formal top hat in shape. (ˈhɪ ˈhæt)

high heat [THERMO] Heat absorbed by the cooling medium in a calorimeter when products of combustion are cooled to the initial atmospheric (ambient) temperature. (ˈhɪ ˈhɛt)

high-helix drill [DES ENG] A two-flute twist drill with a helix angle of 35–40°, used for drilling deep holes in metals, such as aluminum, copper, hard brass, and soft steel. Also known as fast-spiral drill. (ˈhɪ ˈhɛlɪks ˈdrɪl)

high-impedance voltmeter [ELECTR] A voltage-measuring device with a high-impedance input to reduce load on the unit under test, a vacuum-tube voltmeter is one type. (ˈhɪ ɪmˈped-əns ˈvɒlt,ˈmɛd-ər)

high-intensity atomizer [MECH ENG] A type of atomizer used in electrostatic atomization, based on stress sufficient to overcome tensile strength of the liquid. (ˈhɪ ɪnˌtɛn-səd-əl ˈæd-ər,miz-ər)

high-K capacitor [ELECTR] A capacitor whose dielectric material is a ferroelectric having a high dielectric constant, up to about 6000. (ˈhɪ kə ˈkæpəs-əd-ər)

high-lift truck [MECH ENG] A forklift truck with a fixed or telescoping mast to permit high elevation of a load. (ˈhɪ ˈlift ˈtərk)

high-pass filter [ELECTR] A filter that transmits all frequencies above a given cutoff frequency and substantially attenuates all others. (ˈhɪ ˈpas ˈfɪl-ˌtər)

high-potting [ELEC] Testing with a high voltage, generally on a production line. (ˈhɪ ˈpɒt-ɪŋ)

high-pressure gage glass [ENG] A gage glass
high voltage  [ELEC] A voltage on the order of thousands of volts. Also known as high tension. {ˈhai vɒl-tʃən} highway  [CIV ENG] A public road where traffic has the right to pass and to which owners of adjacent property have access. {ˈhaɪˌweɪ} highway engineering  [CIV ENG] A branch of civil engineering dealing with highway planning, location, design, and maintenance. {ˈhaɪˌweɪ ˈɪŋɡɪˈniʃən} Hildebrand function  [THERMO] The heat of vaporization of a compound as a function of the molar concentration of the vapor, it is nearly the same for many compounds. {ˈhɪl-dəˌbrand} hill-climbing  [MECH ENG] Adjustment, either continuous or periodic, of a self-regulating system to achieve optimum performance. {ˈhɪl-klɪmˈɪŋ} Hindley screw  [DES ENG] An endless screw or worm of hourglass shape that fits a part of the circumference of a worm wheel so as to increase the bearing area and thus diminish wear. Also known as hourglass screw; hourglass worm. {ˈhind-ləˌskrʊ} hindrance factor  See drag factor. {ˈhin-dræns ˈfər-kər} hinge  [DES ENG] A pair of metal leaves forming a jointed device on which a swinging part turns. {ˈhɪŋg} hinged arch  [CIV ENG] A structure that can rotate at its supports or in the center at both places. {ˈhɪŋd ˈɜːr ˈɑr̩k} hip  [BUILD] 1. The external angle formed by the junction of two sloping roofs or the sides of a roof. 2. A rafter that is positioned at the junction of two sloping roofs or the sides of a roof. [CIV ENG] See hip joint. {ˈhɪp} HIP  See hot isostatic pressing. {ˈhɪp ɔr ˈɑtʃɪpˈprɪŋ} hip joint  [CIV ENG] The junction of an inclined head post and the top chord of a truss. Also known as hip. {ˈhɪp ˈʃɔɪnt} hi pot  [ELEC] High potential voltage applied across a conductor to test the insulation or applied to an etched circuit to burn out tenuous conducting paths that might later fail in service. {ˈhɪˌpɔt} hip rafter  [BUILD] A diagonal rafter extending from the plate to the ridge of a roof. {ˈhɪp ˈræfər} hl  See hectoliter. hm  See hectometer. hob  [DES ENG] A master model made from hardened steel which is used to press the shape of a plastics mold into a block of soft steel. [MECH ENG] A rotary cutting tool with its teeth arranged along a helical thread; used for generating gear teeth. {ˈhɑb} hobber  See hobbing machine. {ˈhɑb-ər} hobbing  [DES ENG] In plastics manufacturing, the act of creating multiple mold cavities by pressing a hob into soft metal cavity blanks. [MECH ENG] Cutting evenly spaced forms, such as gear teeth, on the periphery of cylindrical workpieces. {ˈhɑb-ɪŋ} hobbing machine  [MECH ENG] A machine for cutting gear teeth in gear blanks or for cutting worm, spur, or helical gears. Also known as hobber. {ˈhɑb-ɪŋ maˈʃən} hobnail  [DES ENG] A short, large-headed, sharp-pointed nail; used to attach soles to heavy shoes. {ˈhɑb-nɑl} hobo connection  [ENG] A parallel electrical connection used in blasting. {ˈhɑb-əˌkənˈneksn} hod  [CIV ENG] A tray fitted with a handle by which it can be carried on the shoulder for transporting bricks or mortar. {ˈhɑd} Hodgson number  [CHEM ENG] Method of predicting the metering error during pulsating gas flow when a surge tank is located between the pulsation source (pump or compressor) and the meter (orifice, nozzle, or venturi). {ˈhɑd-sən ˌnɑmˈbɑr} Hoffmann electrometer  [ENG] A variant of the quadrant electrometer that has two sections instead of four. {ˈhɔf-mən iˌlekˈtrəmətər} hoggling  [ENG] Mechanical chipping of wood waste for fuel. {ˈhɑg-ɪŋ} hohlraum  See blackbody. {ˈhɔlˌroʊm} hoist  [MECH ENG] 1. To move or lift something by a rope-and-pulley device. 2. A power unit for a hoisting machine, designed to lift from a position directly above the load and therefore mounted to facilitate mobile service. Also known as winding engine. {ˈhɔist} hoist back-out switch  [MECH ENG] A protective switch that permits hoist operation only in the reverse direction in case of overwind. {ˈhɔist ˈbɑkˌautˈswɪtʃ} hoist cable  [MECH ENG] A fiber rope, wire rope, or chain by means of which force is exerted on the sheaves and pulleys of a hoisting machine. {ˈhɔist ˈkæbəl} hoist hook  [DES ENG] A swivel hook attached to the end of a hoist cable for securing a load. {ˈhɔist ˈhʊk} hoisting  [MECH ENG] 1. Raising a load, especially by means of tackle. 2. Either of two power-shovel operations: the raising or lowering of the boom, or the lifting or dropping of the dipper stick in relation to the boom. {ˈhɔist-ɪŋ} hoisting drum  See drum. {ˈhɔist-ɪŋˌdɹəm} hoisting machine  [MECH ENG] A mechanism for raising and lowering material with intermittent motion while holding the material freely suspended. {ˈhɔist-ɪŋ maˈʃən} hoisting power  [MECH ENG] The capacity of the hoisting mechanism on a hoisting machine. {ˈhɔist-ɪŋ ˈpɔʊər} hoistman  [ENG] One who operates steam or
electric hoisting machinery to lower and raise cages, skips, or instruments into a mine or an oil or gas well. Also known as hoist operator, winch operator.

**hoist operator** See hoistman. ('hōistˌmän)

**hoist overspeed device** [MECH ENG] A device used to prevent a hoist from operating at speeds greater than predetermined values by activating an emergency brake when the predetermined speed is exceeded. ('hōistˌōvərsprēdˌdēvəs)

**hoist overwind device** [MECH ENG] A device which can activate an emergency brake when a hoisted load travels beyond a predetermined point into a danger zone. ('hōistˌōvərwīndˌdēvəs)

**hoist slack-brake switch** [MECH ENG] A device that automatically cuts off power to the hoist motor and sets the brake if the links in the brake rigging require tightening or if the brakes require relining. ('hōistˌslākˌbrākˌswīch)

**hoist tower** [CIV ENG] A temporary shaft of scaffolding used to hoist materials for building construction. ('hōistˌtāuər)

**hoistway** [MECH ENG] A shaft for one or more elevators, lifts, or dumbwaiters. ('hōistˌwā)

**hold** [ELECTR] To maintain storage elements at core assembly of elements which support the structure of the molded plastic article in place when the mold opens. ('hōldˌdānˌgrov)

**holdup** [CHEM ENG] 1. Volume of material held or contained in a process vessel or line. 2. Liquid held up (suspended) in a vertical process vessel or line by rising gas or vapor streams. ('hōldˌdāp)

**hole conduction** [ELECTR] Conduction occurring in a semiconductor when electrons move into holes under the influence of an applied voltage and thereby create new holes. ('hōl ˌkonˌdakˌshen)

**hole deviation** [ENG] The change in the course or direction that a borehole follows. ('hōlˌdēˌvéˌāˌshen)

**hole injection** [ELECTR] The production of holes in an n-type semiconductor when voltage is applied to a sharp metal point in contact with the surface of the material. ('hōlˌinˌjekˌshen)

**hole mobility** [ELECTR] A measure of the ability of a hole to travel readily through a semiconductor, equal to the average drift velocity of holes divided by the electric field. ('hōlˌmōbiləˌdēˌē)

**hole saw** [CROWN SAW] ('hōlˌsō)

**hole trap** [ELECTR] A semiconductor impurity capable of releasing electrons to the conduction or valence bands, equivalent to trapping a hole. ('hōlˌtrāp)

**holiday** [ENG] An undesirable discontinuity or break in the anticorrosion protection on pipe or tubing. ('hālˌōˌdā)

**holiday detector** [ENG] An electrical device used to determine the location of a gap or void in the anticorrosion coating of a metal surface. ('hālˌōˌdāˌdīˌtekˌtār)

**hollander** [MECH ENG] An elongate tube with a central mid-feather and a cylindrical beater roll; formerly used for stock preparation in paper manufacture. ('hōlˌanˌdār)

**Holland formula** [ENG] A formula used to calculate the height of a plume formed by pollutants emitted from a stack in terms of the diameter of the stack exit, the exit velocity and heat emission rate of the stack, and the mean wind speed. ('hōlˌlōndˌforˌmələˌlō)
holonomic constraints

which can be lowered by cable to the ocean floor to collect sediment samples. {hömn ‘mad samplar’}

holonomic constraints [MECH] An integrable set of differential equations which describe the restrictions on the motion of a system; a function relating several variables, in the form \(f(x_1, \ldots, x_n) = 0\), in optimization or physical problems. {hölm-öhm-ik kan’stråns}

holonomic system [MECH] A system in which the constraints are such that the original coordinates can be expressed in terms of independent coordinates and possibly also the time. {hölm-öhm-ik ’sis-tam’}

holopulping process [CHEM ENG] A process for making paper pulp by alkaline oxidation of extremely thin wood chips at low temperature and pressure and then solubilization of the lignin fraction. {hölm-öp-piŋ prås-ås}

Holzer’s method [MECH] A method of determining the shapes and frequencies of the torsional modes of vibration of a system, in which one imagines the system to consist of a number of flywheels on a massless flexible shaft and, starting with a trial frequency and motion for one flywheel, determines the torques and motions of successive flywheels. {hölm-sar, met-had}

home key [ENG] One of the eight keys on a keyboard on which the typist’s fingers normally rest in the starting position for touch typing. Also known as guide key. {hömn ’kè}

homenergic flow [THERMO] Fluid flow in which the sum of kinetic energy, potential energy, and enthalpy per unit mass is the same at all locations in the fluid and at all times. {hömn’ve-nar, jik ’flö}

home row [ENG] The row on a keyboard that contains the home keys. {hömn ’ro’}

home signal [CIV ENG] A signal at the beginning of a block of railroad track that indicates whether the block is clear. {hömn ’sig-nal’}

homing device [ELECTR] A control device that automatically starts in the correct direction of motion or rotation to achieve a desired change, as in a remote-control tuning motor for a television receiver. [ENG] A device incorporated in a guided missile or the like to home it on a target. {hömn-öm-divis}

homing guidance [ENG] A guidance system in which a missile directs itself to a target by means of a self-contained mechanism that reacts to a particular characteristic of the target. {hömn-iŋ, gid-åns}

homogeneous strain [MECH] A strain in which the components of the displacement of any point in the body are linear functions of the original coordinates. {hömn-öma-jé-né-as ’strån’}

homogenizer [MECH ENG] A machine that blends or emulsifies a substance by forcing it through fine openings against a hard surface. {höm-øma-’nz-ar}

homopolar bipolar transistor [ELECTR] Any bipolar transistor that is composed entirely of one type of semiconductor. {höm-ø-må-pël’-kar tran’zis-tar}

homologous motion [IND ENG] A motion produced by one set of muscles that can be substituted for an essentially similar motion performed by another set of muscles; the substitution is usually made in order to reduce the stress needed to perform a work task. {høm-ø-gas ’mô-šan’}

homomorphous transformation [THERMO] A change in the values of the thermodynamic variables of a system in which none of the component substances undergoes a change of state. {høm-ø-môr-fås tran’z-far-øm-ø-šan}

honed [MECH ENG] A machine for honing that consists of a holding device containing several oblong stones arranged in a circular pattern. {hön}

honed-bore tube [DES ENG] Tubing manufactured to very close tolerances and having a very smooth surface in the bore. {høn’d bør ’tüb’}

honeycomb radiator [MECH ENG] A heat-exchange device utilizing many small cells, shaped like a bees’ comb, for cooling circulating water in an automobile. {høn-ø-köm ’rad-ø-èd-ar’}

honeycomb wall [BUILD] A brick wall having openings created either by allowing gaps between stretchers or by omitting bricks and used to support floor joists and provide ventilation under floors. {høn-ø-köm ,wöl}

honing [MECH ENG] The process of removing a relatively small amount of material from a cylindrical surface by means of abrasive stones to obtain a desired finish or extremely close dimensional tolerance. {hön’iŋ}

honing gage [ENG] A device for keeping a chisel steady at the proper angle while it is sharpened on a flat stone. {hön’iŋ-ø-gål’}

hood [DES ENG] An opaque shield placed above or around the screen of a cathode-ray tube to eliminate extraneous light. [ENG] 1. Close-fitting, rubber head covering that leaves the face exposed; used in scuba diving. 2. A protective covering, usually providing special ventilation to carry away objectionable fumes, dusts, and gases, in which dangerous chemical, biological, or radioactive materials can be safely handled. {hûd}

hood test [ENG] A leak detection method in which the vessel under test is enclosed by a metallic casing so that a dynamic leak test may be carried out on a large portion of the external surface. {hûd’test}

hook [DES ENG] A piece of hard material, especially metal, formed into a curve for catching, holding, or pulling something. [ELECTR] A circuit phenomenon occurring in four-zone transistors, wherein hole or electron conduction can occur in opposite directions to produce voltage drops that encourage other types of conduction. {hûk}

hookah [ENG] An air supply device used in free diving, comprising a demand regulator worn by the diver and a hose extending to a compressed air supply at the surface. {hûk’ah}

hook-and-eye hinge [DES ENG] A hinge consisting of a hook (usually attached to a gate post)
over which an eye (usually attached to the gate) is placed. {ˈhûk˘ an /ˈhîn˘}  
**hook bolt** [DES ENG] A bolt with a hook or L band at one end and threads at the other to fit a nut. {ˈhûk˘ bôlt}  
**hook collector transistor** [ELECTR] A transistor in which there are four layers of alternating n- and p-type semiconductor material and the two interior layers are thin compared to the diffusion length. Also known as hook transistor, pn hook transistor. {ˈhûk˘ kəlɛktər tranˈzisˌtar}  
**Hookean deformation** [MECH] Deformation of a substance which is proportional to the force applied to it. {ˈhûk˘-ən /ˈdɛfərəmənt}  
**Hookean solid** [MECH] An ideal solid which obeys Hooke’s law exactly for all values of stress, however large. {ˈhûk˘-ən /ˈsâldəd}  
**Hooker diaphragm cell** [CHEM ENG] A device used in industry for the electrolysis of brine (sodium chloride) to make chlorine and caustic soda (sodium hydroxide) or caustic potash (potassium hydroxide); saturated purified brine fed around the anode passes through the diaphragm to the cathode, chlorine is formed at the anode and hydrogen released at the cathode, leaving sodium hydroxide and residual sodium chloride in the cell liquor, the diaphragm prevents the products from mixing. {ˈhûk˘-ər /ˈdɪərˌframˌsəl}  
**Hooke’s joint** [MECH ENG] A simple universal joint; consists of two yokes attached to their respective shafts and connected by means of a spider. Also known as Cardan joint. {ˈhûks /ˈjoint}  
**Hooke’s law** [MECH] The law that the stress of a solid is directly proportional to the strain applied to it. {ˈhûks /ˈlo}  
**hook gage** [ENG] An instrument used to measure changes in the level of the water in an evaporation pan; it consists of a pointed metal hook, mounted in the vertical, whose position with respect to its supporting member may be adjusted by means of a micrometer arrangement; the gage is placed on the still well, and a measurement is taken when the point of the hook just breaks above the surface of the water. {ˈhûk˘ˌɡæi}  
**hook transistor** See hook collector transistor. {ˈhûk˘ tranˈzisˌtar}  
**hookup** [ELEC] An arrangement of circuits and apparatus for a particular purpose. {ˈhûk˘ˌap}  
**hook wrench** [DES ENG] A wrench with a hook for turning a nut or bolt. {ˈhûk˘ˌrɛnt}  
**hoop** [CIV ENG] A ring-shaped binder placed around the main reinforcement in a reinforced concrete column. {ˈhûp˘}  
**hooped column** [CIV ENG] A column of reinforced concrete with hoops around the main reinforcements {ˈhûpt /ˈkəm-ən}  
**Hope’s apparatus** [THERMO] An apparatus consisting of a vessel containing water, a freezing mixture in a tray surrounding the vessel, and thermometers inserted in the water at points above and below the freezing mixture, used to show that the maximum density of water lies at about 4°C. {ˈhôpsˌəpˌɑrdəs}  
**hopper** [ENG] A funnel-shaped receptacle with an opening at the top for loading and a discharge opening at the bottom for bulk-delivering materials such as grain or coal. {ˈhôpər}  
**hopper car** [ENG] A freight car with a permanent roof and a hinged floor sloping to one or more hoppers for discharging contents by gravity. {ˈhôpərˌkər}  
**hopper dryer** [ENG] In extrusion and injection molding of plastics, a combined feeding and drying device in which hot air flows through the hopper. {ˈhôpərˌdər}  
**horizon sensor** [ENG] A passive infrared device that detects the thermal discontinuity between the earth and space, used in establishing a stable vertical reference for control of the attitude or orientation of a missile or satellite in space. {ˈhɔrəznˌsənsər}  
**horizontal auger** [MECH ENG] A rotary drill, usually powered by a gasoline engine, for making horizontal drilling holes in quarries and open-cast pits. {ˈhɔrəzənəlˌəgər}  
**horizontal boiler** [MECH ENG] A water-tube boiler having a main bank of straight tubes inclined toward the rear at an angle of 5 to 15° from the horizontal. {ˈhɔrəzənəlˌbələr}  
**horizontal boring machine** [MECH ENG] A boring machine adapted for work not conveniently revolved, for milling, slotting, drilling, tapping, boring, and reaming long holes and for making interchangeable parts that must be produced without jigs and fixtures. {ˈhɔrəzənəlˌbərənjəm}  
**horizontal broaching machine** [MECH ENG] A pull-type broaching machine having the broach mounted in the horizontal plane. {ˈhɔrəzənəlˌbrəʃəm}  
**horizontal circle** [ENG] A graduated disk affixed to the base of a transit or theodolite which is used to measure horizontal angles. {ˈhɔrəzənəlˌsərlək}  
**horizontal crusher** [MECH ENG] Rotary size reducer in which the crushing cone is supported on a horizontal shaft; needs less headroom than vertical models. {ˈhɔrəzənəlˌkrəshər}  
**horizontal drilling machine** [MECH ENG] A drilling machine in which the drill bits extend in a horizontal direction. {ˈhɔrəzənəlˌdrləŋ}  
**horizontal engine** [MECH ENG] An engine with horizontal stroke. {ˈhɔrəzənəlˌɛnˌdʒən}  
**horizontal field balance** [ENG] An instrument that measures the horizontal component of the magnetic field by means of the torque that the field component exerts on a vertical permanent magnet. {ˈhɔrəzənəlˌfildˌbæləns}  
**horizontal firing** [MECH ENG] The firing of fuel in a boiler furnace in which the burners discharge fuel and air into the furnace horizontally. {ˈhɔrəzənəlˌfɪrəŋ}  
**horizontal force instrument** [ENG] An instrument used to make a comparison between the intensity of the horizontal component of the earth’s magnetic field and the magnetic field at the compass location on board a craft, basically.
horizontal intensity variometer  [ENG] A measuring accessory item for a hose. {hörn,'lodd-spekt-o:r}

horn loudspeaker  [ENG ACOUS] A loudspeaker in which the radiating element is coupled to the air or another medium by means of a horn. {hörn 'lodd-spekt-o:r}

horn socket  [DES ENG] A cone-shaped fishing tool especially designed to recover lost collared drill rods, drill pipe, or tools in bored wells. {hörn 'sak-at}

horsepower  [MECH] The unit of power in the British engineering system, equal to 550 foot-pounds per second, approximately 745.7 watts. Abbreviated hp. {horspau-ar}

hose  [DES ENG] Flexible tube used for conveying fluids. {höz}

hose clamp  [DES ENG] Band or brace to attach the raw end of a hose to a water outlet. {höz 'klaimp}

hose coupling  [DES ENG] Device to interconnect two or more pieces of hose. {höz 'kapli:j}

hose fitting  [DES ENG] Any attachment or accessory item for a hose. {höz 'fid-i:j}

hostile-environment machine  [MECH ENG] A robot capable of operating in extreme conditions of temperature, vibration, moisture, pollution, or electromagnetic or nuclear radiation. {hästal in'vi-ran-mont ma'ʃen}

hot-air engine  [MECH ENG] A heat engine in which air or other gases, such as hydrogen, helium, or nitrogen, are used as the working fluid, operating on cycles such as the Stirling or Ericsson. {hädter 'en-i:n}

hot-air furnace  [MECH ENG] An encased heating unit providing warm air to ducts for circulation by gravity convection or by fans. {hädter 'far-nas}

hot-air sterilization  [ENG] A method of sterilization using dry heat for glassware and other heat-resistant materials which need to be dry after treatment; temperatures of 160–165°C are generated for at least 2 hours. {hädter ster'a:lazə-shan}

hot-bulb  [MECH ENG] Pertaining to an ignition method used in semidiesel engines in which the fuel mixture is ignited in a separate chamber kept above the ignition temperature by the heat of compression. {hât 'balb}

hot carrier  [ELECTR] A carrier, which may be either an electron or a hole, that has relatively high energy with respect to the carriers normally found in majority-carrier devices such as thin-film transistors. {hât 'kar-e:ar}

hot-chamber die casting  [ENG] A die-casting process in which a piston is driven through a reservoir of molten metal and thereby delivers a quantity of molten metal to the die cavity. {hât 'cham-bər 'di,kast-i:j}

Hotchkiss drive  [MECH ENG] An automobile rear suspension designed to take torque reactions through longitudinal leaf springs. {häch,kis 'driv}

diaphragm and the air load. {hörn 'lodd-spekt-o:r}

it consists of a magnetized needle pivoted in a horizontal plane, as a dry-card compass; it settles in some position which indicates the direction of the resultant magnetic field, if the needle is started swinging, it damps down with a certain period of oscillation dependent upon the strength of the magnetic field. Also known as horizontal vibrating needle. {här-oːzəntal 'foːrs 'in-strə-mənt}

horizontal intensity variometer  [ENG] Essentially a declination variometer with a larger, stiffer fiber than in the standard model, there is enough torsion in the fiber to cause the magnet to turn 90° out of the magnetic meridian; the magnet is aligned with the magnetic prime vertical to within 0.5° so it does not respond appreciably to changes in declination. Also known as a horizontal vibrating needle. {här-oːzəntal in'ten-səd-e:vər-eɪ-təbəlr 'vənərənt}

horizontal lathe  [MECH ENG] A horizontally mounted lathe with which longitudinal and radial movements are applied to a workpiece that rotates. {här-oːzəntal 'lātə}

horizontal magnetometer  [ENG] A measuring instrument for ascertaining changes in the horizontal component of the magnetic field intensity. {här-oːzəntal 'mæɡ-nə'təmənt-əd-o:r}

horizontal milling machine  [MECH ENG] A knee-type milling machine with a horizontal spindle and a swiveling table for cutting helices. {här-oːzəntal 'miil-iŋ mo'she:n}

horizontal pendulum  [MECH] A pendulum that moves in a horizontal plane, such as a compass needle turning on its pivot. {här-oːzəntal 'pen-ə:lam}

horizontal return tubular boiler  [MECH ENG] A fire-tube boiler having tubes within a cylindrical shell that are attached to the end closures, products of combustion are transported under the lower half of the shell and back through the tubes. {här-oːzəntal rə'rəum 'tə-byə-lər 'boilər}

horizontal scanning  [ENG] In radar scanning, rotating the antenna in azimuth around the horizon or in a sector. Also known as searching lighting. {här-oːzəntal 'skæniŋ}

horizontal screen  [MECH ENG] Shaking screen with horizontal plates. {här-oːzəntal 'skrën}

horizontal-tube evaporator  [MECH ENG] A horizontally mounted tube-and-shell type of liquid evaporator, used most often for preparation of boiler feedwater. {här-oːzəntal 'təbə evərətər 'əd-ər}

horizontal vibrating needle  See horizontal force instrument. {här-oːzəntal 'mətrəbrə:d-iŋ 'nedəl-ə}

horn  [BUILD] A section projecting from the end of one of the members of a right-angled wood framing joint. [ENG ACOUS] A tube whose cross-sectional area increases from one end to the other, used to radiate or receive sound waves and to intensify and direct them. Also known as an acoustic horn. (horn)

horn-loaded speaker  [ENG ACOUS] A loudspeaker that has an acoustic horn between the
**Houdry hydrocracking**

Hotchkiss superdip  [ENG] A sensitive dip needle consisting of a freely rotating magnetic needle about a horizontal axis and a nonmagnetic bar with a counterweight at the end which is attached to the pivot point of the needle.  

hot-draw  [ENG] To draw a material while it is hot.  

hot editing  [CONT SYS] A method for detecting errors in the programming of a robot in which as many errors as possible are identified and resolved during testing, without setting the robotic program to its starting condition.  

hot electron  [ELECTR] An electron that is in excess of the thermal equilibrium number and, for metals, has an energy greater than the Fermi level, for semiconductors, the energy must be a definite amount above that of the edge of the conduction band.  

hot-electron transistor  [ELECTR] A transistor in which electrons tunnel through a thin emitter-base barrier ballistically (that is, without scattering), traverse a very narrow base region, and cross a barrier at the base-collector interface whose height, controlled by the collector voltage, determines the fraction of electrons coming to the collector.  

hot-gas welding  [ENG] Joining of thermoplastic materials by softening first with a jet of hot air, then joining at the softened points.  

hot hole  [ELECTR] A hole that can move at much greater velocity than normal holes in a semiconductor.  

hot house  [ENG] A greenhouse heated to grow plants out of season.  

hot isostatic pressing  [ENG] A process in which a ceramic or metal powder is consolidated by heating and compressing the powder equally from all directions inside a sealed flexible mold. Abbreviated HIP.  

hot junction  [ELECTR] The heated junction of a thermocouple.  

hot patching  [ENG] Repair of a hot refractory lining in a furnace, usually by spraying with a refractory slurry.  

hot pressing  [ENG] 1. Forming a metal-powder compact or a ceramic shape by applying pressure and heat simultaneously at temperatures high enough for sintering to occur.  

hot-runners mold  [ENG] A plastics mold in which the runners are kept hot by insulation from the chilled cavities.  

hot saw  [MECH ENG] A power saw used to cut hot metal.  

hot-solder coating  [ENG] The application of a protective finish to a printed circuit board by dip soldering in a solder bath.  

hot spot  [CHEM ENG] An area or point within a reaction system at which the temperature is appreciably higher than in the bulk of the reactor, usually locates the reaction front.  

hot spraying  [ENG] A paint-spraying technique in which paint viscosity is reduced by heat rather than a solvent.  

hot stamp  [ENG] An impression on a forging made in a heated condition.  

hot strength  See tensile strength.  

hot-water heating  [MECH ENG] A heating system for a building in which the heat-conveying medium is hot water and the heat-emitting means are radiators, convectors, or panel coils. Also known as hydronic heating.  

hot well  [MECH ENG] A chamber for collecting condensate, as in a steam condenser serving an engine or turbine.  

hot-wire ammeter  [ENG] An ammeter which measures alternating or direct current by sending it through a fine wire, causing the wire to heat and to expand or sag, deflecting a pointer. Also known as thermal ammeter.  

hot-wire anemometer  [ENG] An anemometer used in research on air turbulence and boundary layers; the resistance of an electrically heated fine wire placed in a gas stream is altered by cooling it by an amount which depends on the fluid velocity.  

hot-wire instrument  [ENG] An instrument that depends for its operation on the expansion by heat of a wire carrying a current.  

hot-wire microphone  [ENG ACOUS] A velocity microphone that depends for its operation on the change in resistance of a hot wire as the wire is cooled by varying particle velocities in a sound wave.  

hot work  [IND ENG] A task that requires working, or in proximity to, exposed energized electrical equipment or wiring.  

Houdry butane dehydrogenation  [CHEM ENG] A catalytic process for dehydrogenating light hydrocarbons from crude oil to the corresponding mono- or diolefins; chromia-alumina catalysts with inert material are used in pellet form.  

Houdry fixed-bed catalytic cracking  [CHEM ENG] A cyclic, regenerable process for cracking of petroleum distillates to produce high-octane gasoline from higher-boiling petroleum fractions; synthetic or natural bead catalysts of activated hydrosilicate of alumina may be used. Also known as Houdry process.  

Houdry hydrocracking  [CHEM ENG] A catalytic process combining cracking and desulfurization of crude petroleum oil in the presence of hydrogen; catalysts may be nickel oxide or nickel sulfide on silica alumina, and cobalt molybdate on alumina.
Houdry process

Houdry process  See Houdry fixed-bed catalytic cracking. (ˈhōd-rē ˌkā-təl-tik ˈkræk-iŋ)
hour  [MECH] A unit of time equal to 3600 seconds. Abbreviated h, hr (ˈhōr)
hourglass screw  See Hindley screw. (ˈhau̯rˌ glasˈskrŭ̯]
hourglass worm  See Hindley screw. (ˈhau̯rˌ glasˈ worm)
housed joint  See dado joint. (ˈhōzdˌ jōnt)
house drain  [CIV ENG] Horizontal drain in a basement receiving waste from stacks. (ˈhōsˌ drān)
house sewer  [CIV ENG] Connection between house drain and public sewer. (ˈhōsˌ su̯r-or)
housing  [ENG] A case or enclosure to cover and protect a structure or a mechanical device. (ˈhōzˌziŋ)
Houskeeper seal  [ENG] A vacuum-tight seal made between copper and glass by bringing the copper to a flexible feather edge before fusing it to the glass; the copper then flexes as the glass shrinks during cooling. (ˈhau̯sˌ kēpˌ arˌ sēl)
hovercraft  See air-cushion vehicle. (ˈhov̩ˌ kraft)
Howell-Bunger valve  See cone valve. (ˈhau̯lˌ bən-garˌ ˈvalv)
Howe truss  [CIV ENG] A truss for spans up to 80 feet (24 meters) having both vertical and diagonal members; made of steel or timber or both. (ˈhau̯lˌ trōs)
howl  [ENG ACOUS] Undesirable prolonged sound produced by a radio receiver or audio-frequency amplifier system because of either electric or acoustic feedback. (hau̯l)
Hoyer method of prestressing  See pretensioning. (ˈhō-yərˌ ˌmeth-ədˌ av prēˈstrəz-ən)
hp  See horsepower.
H pile  [CIV ENG] A steel pile that is H-shaped in section. (ˈhāchˌ pil)
hr  See hour.
H rod  [DES ENG] A drill rod having an outside diameter of 3-1/2 inches (8.89 centimeters). (ˈhāchˌ rōd)
HTU  See height of transfer unit.
hub  [BUILD] The core section of a building from which corridors extend. [DES ENG] 1. The cylindrical central part of a wheel, propeller, or fan. 2. A piece in a lock that is turned by the knob spindle, causing the bolt to move. 3. A short coupling that joins plumbing pipes. [ENG] In surveying, a stake that marks the position of a theodolite. (ˈhāb)
hubcap  [DES ENG] A metal cap fastened or clamped to the end of an axle, as on motor vehicles. (ˈhābˌ kāp)
Huggenberger tensometer  [ENG] A type of extensometer having a short gage length (10 to 20 millimeters) and employing a compound lever system that gives a magnification of about 1200. (ˈhōgənˌ berˌ ˈtensəˌ mətərˌ)
human engineering  See human-factors engineering. (ˈhī-manˌ ˌenˌ jaˌ nîrˌ ij)
human-factors engineering  [ENG] The area of knowledge dealing with the capabilities and limitations of human performance in relation to design of machines, jobs, and other modifications of the human's physical environment. Also known as human engineering. (ˈhī-manˌ fakˌ tərzˌ ˌenˌ jaˌ nîrˌ ij)
human-machine chart  [IND ENG] A two-column, multiple-activity process chart listing the steps performed by an operator and the operations performed by a machine and showing the corresponding idle times for each. Also known as man-machine chart. (ˈyu̯-mən ˈmāʃənˌ ˈchārt)
human-machine system  [ENG] A system in which the functions of the worker and the machine are interrelated and necessary for the operation of the system. Also known as man-machine system. (ˈyu̯-mən ˈmāʃənˌ ˈsisˌ tam)
hum-bucking coil  [ENG ACOUS] A coil wound on the field coil of an excited-field loudspeaker and connected in series opposition with the voice coil, so that hum voltage induced in the voice coil is canceled by that induced in the humbucking coil. (ˈhamˌ bākˌ iŋˌ kōl)
humidification  [ENG] The process of increasing the water vapor content of a gas. (ˈyu̯-mid-iˌ faˈkā-şan)
humidifier  [MECH ENG] An apparatus for supplying moisture to the air and for maintaining desired humidity conditions. (ˈyu̯-mid-əˌ flirˌ)
humidistat  [ENG] An instrument that measures and controls relative humidity. Also known as hygrostat. (ˈyu̯-mid-əˌ staˌ)
humidity element  [ENG] The transducer of any hygrometer that is, that part of a hygrometer that quantitatively senses atmospheric water vapor. (ˈyu̯-mid-əˌ eˌ ˌel-əˌ mant)
humidity strip  [ENG] The humidity transducing element in a Diamond-Himan radiosonde; it consists of a flat plastic strip bounded by electrodes on two sides and coated with a hygroscopic chemical compound such as lithium chloride; the electrical resistance of this coating is a function of the amount of moisture absorbed from the atmosphere and the temperature of the strip. Also known as electrolytic strip. (ˈyu̯-ˈmid-əˌ ˌstrip)
Humphrey gas pump  [MECH ENG] A combined internal combustion engine and pump in which the metal piston has been replaced by a column of water. (ˈham-fri ˈgasˌ pamp)
Humphries equation  [THERMO] An equation which gives the ratio of specific heats at constant pressure and constant volume in moist air as a function of water vapor pressure. (ˈham-friˌ isˌ ˈkwā-ˌchan)
hump yard  [CIV ENG] A switch yard in a railway system that has a hump or steep incline down which freight cars can coast to prescheduled locations. Also known as gravity yard. (ˈhampˌ ˈjardˌ)
hungry joint  See starved joint. (ˈhaŋˌ grāˌ jōnt)
hung shot  [ENG] A shot whose explosion is delayed after detonation or ignition. (ˈhaŋˌ shtəˌ)
hunting  [CONT SYS] Undesirable oscillation of
an automatic control system, wherein the controlled variable swings on both sides of the desired value. [ELECTR] Operation of a selector in moving from terminal to terminal until one is found which is idle. [MECH ENG] Irregular engine speed resulting from instability of the governing device. {ˈhant-ɪŋ}

hunting circuit See lookout circuit. {ˈhant-ɪŋˌsɔr-ˌkæt}

hunting tooth [DES ENG] An extra tooth on the larger of two gear wheels so that the total number of teeth will not be an integral multiple of the number on the smaller wheel. {ˈhant-ɪŋˌtʌθ}

hurricane beacon [ENG] An air-launched balloon designed to be released in the eye of a tropical cyclone, to float within the eye at predetermined levels, and to transmit radio signals. {ˈhɔr-əˌkænˌbɪˈnɛtɪŋ}

hurricane lamp [ENG] An oil lamp with a glass chimney and perforated lid to protect the flame, or a candle with a glass chimney. {ˈhɔr-əˌkænˌlæmp}

hurricane tracking [ENG] Recording of the movement of individual hurricanes by means of airplane sightings and satellite photography. {ˈhɔr-əˌkænˌtrakˈɪŋ}

Hutting equation [THERMO] An equation which states that the ratio of the volume of gas adsorbed on the surface of a nonporous solid at a given pressure and temperature to the volume of gas required to cover the surface completely with a unimolecular layer equals \((1 + r) / (1 + c)\), where \(r\) is the ratio of the equilibrium gas pressure to the saturated vapor pressure of the adsorbate at the temperature of adsorption, and \(c\) is the product of a constant and the exponential of \((q - q) / R T\), where \(q\) is the heat of adsorption into a first layer molecule, \(q\) is the heat of liquefaction of the adsorbate, \(T\) is the temperature, and \(R\) is the gas constant. {ˈhɑdˌliˌkɑkˈwaˌhɔn}

HVAC [CIV ENG] The abbreviation for heating, ventilation, and air conditioning systems, used in building design and construction. {ˈækˌvɪlˌerˌɛlˌæmˌdɔr}

H variometer See horizontal intensity variometer. {ˈækˌvɪlˌerˌɛlˌæmˌdɔr}

hybrid beam [ENG] A metal beam with flanges fabricated from a material that differs from that of the web plate and has a different minimum yield strength. {ˈhɪdˌbrɔdˌbɛm}

hybrid inlet noise reduction [ENG ACOUS] A method of reducing the noise from the inlet of a jet engine, which involves the use of both high-Mach-number flows to retard or block the passage of sound waves and acoustic treatment of the walls of the inlet. {ˈhɪdˌbrɔdˌɪnˌlɔtˌnəˈnoʊzˌrɪˌdɑkˌʃɔn}

hybrid integrated circuit [ELECTR] A circuit in which one or more discrete components are used in combination with integrated-circuit construction. {ˈhɪdˌbrɔdˌɪnˌtɚˌgrədˌsdˌsɔrˌkæt}

hybrid junction [ELECTR] A transformer, resistor, or waveguide circuit or device that has four pairs of terminals so arranged that a signal entering at one terminal pair divides and emerges from the two adjacent terminal pairs, but is unable to reach the opposite terminal pair. Also known as bridge hybrid. {ˈhɪdˌbrɔdˌˈjʌŋkˌʃɔn}

hybrid microcircuit [ELECTR] Microcircuit in which thin-film, thick-film, or diffusion techniques are combined with separately attached semiconductor chips to form the circuit. {ˈhɪdˌbrɔdˌˈmiˌkrɔˌsɔrˌkæt}

hybrid thin-film circuit [ELECTR] Microcircuit formed by attaching discrete components and semiconductor devices to networks of passive components and conductors that have been vacuum-deposited on glazed ceramic, sapphire, or glass substrates. {ˈhɪdˌbrɔdˌˈθɪnˌfɪlmˌsɔrˌkæt}

hydrant See fire hydrant. {ˈhɪdrənt}

hydraulic cone [DES ENG] A conical, spreading type of draft tube used on hydraulic turbine installations. {ˈhɪdˌdraˌkən}

hydraulic [ENG] Operated or effected by the action of water or other fluid of low viscosity. {ˈhɪdˌdraˌliˌkən}

hydraulic accumulator [MECH ENG] A hydraulic flywheel that stores potential energy by accumulating a quantity of pressurized hydraulic fluid in a suitable enclosed vessel. {ˈhɪdˌdraˌliˌkəˌsɔrˈkænˌmiˌləˌdærər}

hydraulic actuator [MECH ENG] A cylinder or fluid motor that converts hydraulic power into useful mechanical work; mechanical motion produced may be linear, rotary, or oscillatory. {ˈhɪdˌdraˌliˌkəˌəkˈʃuərˌkwɔdˌdærər}

hydraulic air compressor [MECH ENG] A device in which water falling down a pipe entrains air which is released at the bottom under compression to do useful work. {ˈhɪdˌdraˌliˌkəˌəkˈʃuərˌkwɔdˌdærər}

hydraulic amplifier [CONT SYS] A device which increases the power of a signal in a hydraulic servomechanism or other system through the use of fixed and variable orifices. Also known as hydraulic intensifier. {ˈhɪdˌdraˌliˌkəˌəkˈʃuərˌkwɔdˌdærər}

hydraulic backhoe [MECH ENG] A backhoe operated by a hydraulic mechanism. {ˈhɪdˌdraˌliˌkəˌˈbaʊˌhər}

hydraulic brake [MECH ENG] A brake in which the retarding force is applied through the action of a hydraulic press. {ˈhɪdˌdraˌliˌkəˌˈbræk}

hydraulic circuit [MECH ENG] A circuit whose operation is analogous to that of an electric circuit except that electric currents are replaced by currents of water or other fluids, as in a hydraulic control. {ˈhɪdˌdraˌliˌkəˌˈsɔrˌkæt}

hydraulic classification [ENG] Classification of particles in a tank by specific gravity, utilizing the action of rising water currents. {ˈhɪdˌdraˌliˌkəˌˈklɑsˌəˌfaˈkəˌʃɔn}

hydraulic classifier [MECH ENG] A classifier in which particles are sorted by specific gravity in a stream of hydraulic water that rises at a controlled rate, heavier particles gravitate down and are discharged at the bottom, while lighter ones
hydraulic clutch

are carried up and out. Also known as hydrosizer. (hi'drō-lık 'klas-ər)

hydraulic clutch See fluid drive. (hi'drō-lık 'kləst)

hydraulic conveyor [MECH ENG] A system for resisting the effects of water even under high pressure. (hi'drō-lık 'pak-ing)

hydraulic drive [MECH ENG] A mechanism in which fluid pressure is converted into mechanical energy of a rotating shaft. (hi'drō-lık 'tər-ban)

hydraulic nozzle [MECH ENG] An atomizing device in which fluid pressure is converted into fluid velocity. (hi'drō-lık 'nəz-əl)

hydraulic packing [ENG] Packing material that resists the effects of water even under high pressure. (hi'drō-lık 'pak-ing)

hydraulic power system [MECH ENG] A power transmission system comprising machinery and auxiliary components which function to generate, transmit, control, and utilize hydraulic energy. (hi'drō-lık 'pou-rər,sı-sım-ən)

hydraulic press [MECH ENG] A combination of a large and a small cylinder connected by a pipe and filled with a fluid so that the fluid pressure created by a small force acting on the small-cylinder piston will result in a large force on the large piston. Also known as hydrostatic press. (hi'drō-lık 'pレス)

hydraulic pump See hydraulic ram. (hi'drō-lık 'pam-p)

hydraulic ram [MECH ENG] A device for forcing running water to a higher level by using the kinetic energy of flow; the flow of water in the supply pipeline is periodically stopped so that a small portion of water is lifted by the velocity head of a larger portion. Also known as hydraulic lift. (hi'drō-lık 'rəm)

hydraulic robot [CONT SYS] A robot that is powered by hydraulic actuators, usually controlled by servovalves and analog resolvers. (hi'drō-lık 'rəbôt)

hydraulic rope-gearied elevator [MECH ENG] An elevator hoisted by a system of ropes and sheaves attached to a piston in a hydraulic cylinder (hi'drō-lık 'rəp-əg-'ır-ə-tən)

hydraulic scale [MECH ENG] An industrial scale in which the load applied to the load-cell piston is converted to hydraulic pressure. (hi'drō-lık 'skål)

hydraulic separation [MECH ENG] A method of separating solids from a fluid by causing them to float or sink. (hi'drō-lık 'sep-ər'é-fishən)

hydraulic shovel [MECH ENG] A revolving shovel in which hydraulic rams or motors are substituted for drums and cables. (hi'drō-lık 'shəv-al)

hydraulic sprayer [MECH ENG] A machine that sprays large quantities of insecticide or fungicide on crops. (hi'drō-lık 'sprā-ər)

hydraulic spraying See airless spraying. (hi'drō-lık 'sprə-ın)

hydraulic stacker [MECH ENG] A tiering machine whose carriage is raised or lowered by a hydraulic cylinder. (hi'drō-lık 'stāk-ər)

hydraulic swivel head [MECH ENG] In a drill machine, a swivel head equipped with hydraulically actuated cylinders and pistons to exert pressure on and move the drill rod string longitudinally. (hi'drō-lık 'swiv-əl,hed)

hydraulic transport [MECH ENG] Movement of material by water. (hi'drō-lık 'tranz-pört)

hydraulic turbine [MECH ENG] A machine which converts the energy of an elevated water supply into mechanical energy of a rotating shaft. (hi'drō-lık 'tər-ban)
hydroelectric power station
hydroelectric plant
hydroelectric generator
A trans-ik
A catalytic view. Also known as sounding sextant; survey-process in which the petroleum feedstock is re- ing sextant. 
A cyclone separator
A technique to manufacture synthetic pipeline gas from coal; pulverized coal is reacted with hot, raw, hydro- gen-rich gas containing a substantial amount of steam at 1000 pounds per square inch gage (6.9 × 10⁶ pascals, gage) to form methane. 
A separator inwaxes; the catalyst comprises cobalt oxide and 
A direct-reading instrument which a continuous flow through an orifice is for indicating the density, specific ... by a reciprocating valve system con- some similar characteristic of liquids. 
A surveying sex-
A surveying sex-tant similar to those used for celestial navigation but smaller and lighter, constructed so that the maximum angle that can be read is slightly greater than that on the navigating sextant; usu- ally the angles can be read only to the nearest minute by means of a vernier, it is fitted with a telescope with a large object glass and field of view. Also known as sounding sextant; survey- ing sextant.
A echo sounder used in mapping ocean bottoms. 
A direct-reading instrument for indicating the density, specific gravity, or some similar characteristic of liquids. 
An instrument that measures and records the rate of water discharge from a pipe or an orifice. 
See hot-water heating. 
A device which receives underwater sound waves and converts them to electric waves. 
Operated by both water and air power. 
A recoil mechanism that absorbs the energy of re- coil by the forcing of oil through orifices and returns the gun to battery by compressed gas. 
See hydroelectricity. 
A separator in which solids in suspension are agitated by hydraulic pressure or stirring devices.
hydratosizer

hydratosizer See hydraulic classifier. { 'hɪ-drə,sɪz-ər}

hydrastat See humidistat. { 'hɪ-drə,stat}

hydrostatic balance [MECH] An equal-arm balance in which an object is weighed first in air and then in a beaker of water to determine its specific gravity. { 'hɪ-drəstræd-ık 'ɪk-wà-ˌzhàn}

hydrostatic bearing [MECH ENG] A sleeve bearing in which high-pressure oil is pumped into the area between the shaft and the bearing so that the shaft is raised and supported by an oil film. { 'hɪ-drəstræd-ık 'bər-ɪŋ}

hydrostatic modulus See bulk modulus of elasticity. { 'hɪ-drəstræd-ɪk 'mæj-ə-ləs}

hydrostatic press See hydraulic press. { 'hɪ-drəstræd-ɪk 'pres}

hydrostatic pressing [ENG] Compacting ceramic or metal powders by packing them in a rubber bag which is subjected to pressure from a hydraulic press. { 'hɪ-drəstræd-ɪk 'pres-ɪŋ}

hydrostatic roller conveyor [MECH ENG] A portion of a roller conveyor that has rolls rotated with liquid to control the speed of the moving objects. { 'hɪ-drəstræd-ɪk rəl-ˈlɑr kɒnˌvɛr-sər}

hydrostatic strength [MECH] The ability of a body to withstand hydrostatic stress. { 'hɪ-drəstræd-ɪk 'strɛŋkθ}

hydrostatic stress [MECH] The condition in which there are equal compressive stresses or equal tensile stresses in all directions, and no shear stresses on any plane. { 'hɪ-drəstræd-ɪk 'stres}

hydrostatic test [ENG] Test of strength and leak-resistance of a vessel, pipe, or other hollow equipment by internal pressurization with a test liquid. { 'hɪ-drəstræd-ɪk 'tɛst}

hydrothermal crystal growth [CHEM ENG] Formation of simple crystals of quartz at elevated temperatures and pressures in an autoclave with an alkaline solution. { 'hɪ-drəθɑrˈmæl 'krɪst-əlˌgrɑθ}

hydrotreating [CHEM ENG] Oil refinery catalytic process in which hydrogen is contacted with petroleum intermediate or product streams to remove impurities, such as oxygen, sulfur, nitrogen, or unsaturated hydrocarbons. { 'hɪ-drətrət ˈtrɛd-ɪŋ}

hydrewire [ENG] A wire to which equipment is clamped so that it can be lowered over the side of the ship into the water. { 'hɪ-drəˌwɪr}

hygrodeik [ENG] A form of psychrometer with wet-bulb and dry-bulb thermometers mounted on opposite edges of a specially designed graph of the psychrometric tables, arranged so that the intersections of two curves determined by the wet-bulb and dry-bulb readings yield the relative humidity, dew-point, and absolute humidity. { 'hɪ-grəˌdɪk}

hygrogram [ENG] The record made by a hygrograph. { 'hɪ-grəˌɡrəm}

hygrograph [ENG] A recording hygrometer. { 'hɪ-grəˌɡrɑf}

hygrometer [ENG] An instrument for giving a direct indication of the amount of moisture in the air or other gas, the indication usually being in terms of relative humidity as a percentage which the moisture present bears to the maximum amount of moisture that could be present at the location temperature without condensation taking place. { 'hɪ-grəˌmɛtər}

hygrometry [ENG] The study which treats of the measurement of the humidity of the atmosphere and other gases. { 'hɪ-grəˌmətrē}

hygrothermograph [ENG] An instrument for recording temperature and humidity on a single chart. { 'hɪ-grəˈθɜr-məˌɡrɑf}

hyl See metric-technical unit of mass.

hyperbaric chamber [ENG] A specially equipped pressure vessel used in medicine and physiological research to administer oxygen at elevated pressures. { 'hɪ-pɜrˈbær-ɪk ˈkæm-ər}

hyperbolic horn [ENG] Horn whose equivalent cross-sectional radius increases according to a hyperbolic law. { 'hɪ-pɜrˈbɒl-ɪk ˈhɔrn}

hyperforming [CHEM ENG] A catalytic, petroleum-refinery hydrogenation process to improve naphtha octane number by removal of sulfur and nitrogen compounds; the catalyst is cobalt molybdate on a silica-alumina base. { 'hɪ-pɜr ˈfɔr-ˌmɪŋ}

hyperoid axle [MECH ENG] A type of rear-axle drive gear set which generally carries the pinion 1.5–2 inches (38–51 millimeters) or more below the centerline of the gear. { 'hɪ-pɜr-oɪd ˈæk-əl}

hypersonic wind tunnel [ENG] A wind tunnel in which air flows at speeds roughly in the range from 5 to 15 times the speed of sound. { 'hɪ-pɜrˈsɑn-ɪk ˈwɪndˌtʌn-əl}

hypersorption [CHEM ENG] Process with recirculating bed of activated-carbon adsorbent for continuous recovery of ethylene from methane and other low-molecular-weight gases. { 'hɪ-pɜrˈsɔr-ˌpɜr-ˌʃən}

hyperspectral imaging system [ENG] An infrared imaging system that has more than 30 spectral channels with relatively fine spectral resolution, allowing imaging spectroscopy to be carried out. { 'hɪ-pɜrˌspek-trəl ˈliːm-ˌɪdʒˌɪŋˌsɪsˌtəm}

hypervelocity [MECH] 1. Muzzle velocity of an artillery projectile of 3500 feet per second (1067 meters per second) or more. 2. Muzzle velocity of a small-arms projectile of 5000 feet per second (1524 meters per second) or more. 3. Muzzle velocity of a tank-cannon projectile in excess of 3350 feet per second (1021 meters per second). { 'hɪ-pɜrˈvɛl-ətˌlæsˌəd-ə}

hypervelocity wind tunnel [ENG] A wind tunnel in which higher airspeeds and temperatures can be attained than in a hypersonic wind tunnel. { 'hɪ-pɜrˌvɛl-ətˌlæsˌəd-əˌwɪnˌtʌn-əl}

hypochlorite sweetening [CHEM ENG] A petroleum refinery process to oxidize gasoline mercaptans by agitation with an aqueous, alkaline hypochlorite solution. { 'hɪ-pəˈklɔr-ɪt ˈswɛt-əˌnɪŋ}
hysteretic damping

**hypois gear**  [MECH ENG] Gear wheels connecting nonparallel, nonintersecting shafts, usually at right angles. (ˈhīˌpoidsˈgār)

**hypois generator**  [MECH ENG] A gear-cutting machine for making hypois gears. (ˈhīˌpoidsˈjənˌdrēdˈər)

**hypoisometer**  [ENG] 1. An instrument for measuring atmospheric pressure to ascertain elevations by determining the boiling point of liquids.
   2. Any of several instruments for determining tree heights by triangulation. (ˈhipˌsämədˈər)

**hypoisometric**  [ENG] Pertaining to hypoisometry. (ˌhipˌsäməˈmeˌtrik)

**hypoismetry**  [ENG] The measuring of elevation with reference to sea level. (ˈhipˌsäməˈtrē)

**hysteresimeter**  [ENG] A device for measuring hysteresis. (ˈhisˌterəˌsēməˈdər)

**hysteresis**  [ELECTR] An oscillator effect wherein a given value of an operating parameter may result in multiple values of output power or frequency. (ˌhisˈtəˈrēsəs)

**hysteresis clutch**  [MECH ENG] A clutch in which torque is produced by attraction between induced poles in a magnetized iron ring and the control field. (ˌhisˈtəˈrēsəsˈklutch)

**hysteresis damping**  [MECH] Damping of a vibration due to energy lost through mechanical hysteresis. (ˌhisˈtəˈrēsəsˈdamˌpik)

**hysteretic damping**  [MECH] Damping of a vibrating system in which the retarding force is proportional to the velocity and inversely proportional to the frequency of the vibration. (ˌhisˈtəˈredˈikˈdampəj)
This page intentionally left blank.
ideal gas See inside diameter.

ideal gas law [THERMO] The equation of state of an ideal gas which is a good approximation to real gases at sufficiently high temperatures and low pressures; that is, $PV = RT$, where $P$ is the pressure, $V$ is the volume per mole of gas, $T$ is the temperature, and $R$ is the gas constant. (T'dəl ˈgAs ,lɔ)
immersion coating  [ENG] A graduated glass vessel for measuring settled solids in testing the composition of sewage.  \( \{ \text{š'mär-zhăn} ,
köd-iŋ \} \)

immersion scanning  [ENG] Ultrasonic scanning in which the ultrasonic transducer and the object being scanned are both immersed in water or some other liquid that provides good coupling while the transducer is being moved around the object.  \( \{ \text{š'mär-zhăn} ,
škan-iŋ \} \)

immittance  [ELEC] A term used to denote both impedance and admittance, as commonly applied to transmission lines, networks, and certain types of measuring instruments.  \( \{ \text{i'mit-tən} \} \)

impact  [MECH] A forceful collision between two bodies which is sufficient to cause an appreciable change in the momentum of the system on which it acts. Also known as impulsive force.  \( \{ \text{i'm,pakt} \} \)

impact area  [ENG] An area with designated boundaries within which all objects that travel over a range are to make contact with the ground.  \( \{ \text{i'm,pakt} ,
er-ə \} \)

impact avalanche and transit time diode  See IMPATT diode.  \( \{ \text{i'm,pakt} ,
ˈjav-ə ,
länch ən 'trans-tət ˈjım ˈdl,əd \} \)

impact bar  [ENG] Specimen used to test the relative susceptibility of a plastic material to fracture by shock.  \( \{ \text{i'm,pakt} ,
ˈbär \} \)

impact breaker  [MECH ENG] A device that utilizes the energy from falling stones in addition to power from massive impellers for complete breaking up of stone. Also known as double impeller breaker.  \( \{ \text{i'm,pakt} ,
ˈbræk-ər \} \)

impact crusher  [MECH ENG] A machine for crushing large chunks of solid materials by sharp blows imposed by rotating hammers, or steel plates or bars; some crushers accept lumps as large as 28 inches (about 70 centimeters) in diameter, reducing them to 1/4 inch (6 millimeters) and smaller.  \( \{ \text{i'm,pakt} ,
ˈkrash-ər \} \)

impact energy  [MECH] The energy necessary to fracture a material. Also known as impact strength.  \( \{ \text{i'm,pakt} ,
ˈen-ər-je \} \)

impact force  See set forward force.  \( \{ \text{i'm,pakt} ,
ˈfoərз \} \)

impact grinding  [MECH ENG] A technique used to break up particles by direct fall of crushing bodies on them.  \( \{ \text{i'm,pakt} ,
ɡrɪn-ˈdʒın \} \)

impact load  [ENG] A force delivered by a blow, as opposed to a force applied gradually and maintained over a long period.  \( \{ \text{i'm,pakt} ,
ˈlōd \} \)

impact microphone  [ENG ACOUS] An instrument that picks up the vibration of an object impinging upon another, used especially on space probes to record the impact of small meteoroids.  \( \{ \text{i'm,pakt} ,
mɪˈkrəf ˈfɒn \} \)

impact mill  [MECH ENG] A unit that reduces the size of rocks and minerals by the action of rotating blades projecting the material against steel plates.  \( \{ \text{i'm,pakt} ,
ˈmɪl \} \)

impact-noise analyzer  [ENG] An analyzer used with a sound-level meter to evaluate the characteristics of impact-type sounds and electric noise impulses that cannot be measured accurately with a noise meter alone.  \( \{ \text{i'm,pakt} ,
nəˈziz ˈan-əˌliz-ər \} \)
impactor [ENG] A general term for instruments which sample atmospheric suspensoids by impaction, such instruments consist of a housing which constrains the air flow past a sensitized sampling plate. Also known as impactometer.

impact roll [MECH ENG] An idler roll protected by a covering of a resilient material from the shock of the loading of material onto a conveyor belt, so as to reduce the damage to the belt.

impact screen [MECH ENG] A screen designed to swing or rock forward when loaded and to stop abruptly by coming in contact with a stop.

impact strength [MECH] 1. Ability of a material to resist shock loading. 2. See impact energy.

impact stress [MECH] Force per unit area imposed on a material by a suddenly applied force.

impact test [ENG] Determination of the degree of resistance of a material by impacting, under bending, tension, and torsion loads; the energy absorbed is measured in breaking the material by a single blow.

impact tube [MECH] A tube used as a device to determine the shock resistance of materials to impact.

impact wrench [MECH ENG] A compressed-air or electrically operated wrench that gives a rapid succession of sudden torques.

IMPATT diode [ELECTR] A pn junction diode that has a depletion region adjacent to the junction, through which electrons and holes can drift, and is biased beyond the avalanche breakdown voltage. Derived from impact avalanche and transit time voltage.

impedance See electrical impedance.

impedance bridge [ELEC] A device similar to a Wheatstone bridge, used to compare impedances which may contain inductance, capacitance, and resistance.

impedance coil [ELEC] A coil of wire designed to provide impedance in an electric circuit.

impedance compensator [ELEC] Electric network designed to be associated with another network or a line with the purpose of giving the impedance of the combination a desired characteristic with frequency over a desired frequency range.

impedance component [ELEC] 1. Resistance or reactance. 2. A device such as a resistor, inductor, or capacitor designed to provide impedance in an electric circuit.

impedance coupling [ELEC] Coupling of two signal circuits with an impedance.

impedance drop [ELEC] The total voltage drop across a component or conductor of an alternating-current circuit, equal to the phasor sum of the resistance drop and the reactance drop.

impedance magnetometer [ENG] An instrument for determining local variations in magnetic field by measuring the change in impedance of a high-permeability nickel-iron wire.

impeller [MECH ENG] The rotating member of a turbine, blower, fan, axial or centrifugal pump, or mixing apparatus. Also known as rotor.

impeller pump [MECH ENG] Any pump using a mechanical agency to provide continuous power to move liquids.

imperfect gas See real gas.

imperial gallon See gallon.

impedance See impedance.

impedance drop See drop.

impact energy. See energy.

impedance magnetometer See magnetometer.

impingement [ENG] Removal of liquid droplets from a flowing gas or vapor stream by causing it to collide with a baffle plate at high velocity, so that the droplets fall away from the stream. Also known as liquid knockout.

impingement See impingement.

implanted atom [ELECTR] An atom introduced into semiconductor material by ion implantation.

impound [CIV ENG] To collect water for irrigation, flood control, or similar purpose.

impoundment [CIV ENG] A reservoir with outlets controlled by gates that release stored surface water as needed in a dry season. May also store water for domestic or industrial use or for flood control. Also known as storage reservoir.

impregnate [ENG] To force a liquid substance
impregnated bit  [DES ENG] A sintered, powder-metal matrix bit with fragmented bort or whole diamonds of selected screen sizes uniformly distributed throughout the entire crown section.  

impulse  [MECH] The integral of a force over an interval of time.  

impulse modulation  [CONT SYS] Modulation of a signal in which it is replaced by a series of impulses, equally spaced in time, whose strengths (integrals over time) are proportional to the amplitude of the signal at the time of the impulse.  

impulse response  [CONT SYS] The response of a system to an impulse which differs from zero for an infinitesimal time, but whose integral over time is unity; this impulse may be represented mathematically by a Dirac delta function.  

impulse sealing  [ENG] Heat-sealing of plastic materials by applying a pulse of intense thermal energy to the sealing area for a very short time, followed immediately by cooling.  

impulse tachometer  [ENG] A tachometer in which each rotation of a shaft generates an electric pulse and the time rate of pulses is then measured; classified as capacitive-current, inductive, or interrupted direct-current tachometer.  

impulse train  [CONT SYS] An input consisting of an infinite series of unit impulses, equally separated in time.  

impulse turbine  [MECH ENG] A prime mover in which fluid under pressure enters a stationary nozzle where its pressure (potential) energy is converted to velocity (kinetic) energy and absorbed by the rotor.  

impulse welding  [ENG] A welding process in which two layers of thermoplastic film are heated and fused to form a welded seam by clamping them together in close contact with a shielded electric heating element.  

impulsive force  See impact.  

impulsive stimulated thermal scattering  [ENG] An optical, noncontacting method for characterizing the high-frequency acoustic behavior of surfaces, thin membrane, coatings, and multilayer assemblies, in which picosecond pulses of light from an excitation laser stimulate motions which are then detected with a continuous-wave probing laser. Abbreviated ISTS. Also known as transient grating photoacoustics.
incomplete lubrication  [MECH ENG] Lubrication that takes place when the load on the rubbing surfaces is carried partly by a fluid viscous film and partly by areas of boundary lubrication; friction is intermediate between that of fluid and boundary lubrication. {in-kam’plät ,lü-brä’kà-shan’}

incompressibility  [MECH] Quality of a substance which maintains its original volume under increased pressure. {in-käm, pres-a’bil-ad-è}

increaser  [ENG] An adapter for connecting a small-diameter pipe to a larger-diameter pipe. {in’krēs’ər}

incremental cost  [IND ENG] 1. The difference between the costs and the revenues between two alternative procedures. 2. The cost of the last unit produced at a given level of production. {in’krä-mënt’əl ’kōst’}

indented bolt  [DES ENG] A type of anchor bolt that has indentations to hold better in cemented grout. {in’den-tad ’bolt’}

independent chuck  [DES ENG] A chuck for holding work by means of four jaws, each of which is moved independently of the others. {in’dà’pen-dant ’chak’}

independent contractor  [ENG] One who exercises independent control over the mode and method of operations to produce the results demanded by the contract. {in’dà’pen-dant ’kàn’trak’tar’}

independent footing  [CIV ENG] A footing that supports a concentrated load, such as a single column. {in’dà’pen-dant ’füd’iŋ}

independent suspension  [MECH ENG] In automobiles, a system of springs and guide links by which wheels are mounted independently on the chassis. {in’dà’pen-dant sà’spen-chan’}

independent wire-rope core  [DES ENG] A core of steel in a wire rope made in accordance with the best practice and design, either bright (uncoated) galvanized or drawn galvanized wire. {in’dà’pen-dant ’wir’räp’kör’}

indeterminate truss  [CIV ENG] A truss having redundant bars. {in’dà’tarm-a-nat ’tras’}

index center  [MECH ENG] One of two machine-tool centers used to hold work and to rotate it by a fixed amount. {in’deks ,sen-tar’}

index chart  [MECH ENG] 1. A chart used in conjunction with an indexing or dividing head, which correlates the index plate, hole circle, and index crank motion with the desired angular subdivisions. 2. A chart indicating the arrangement of levers in a machine to obtain desired output speed or fuel rate. {in’deks ,chärt’}

index counter  [ENG] A counter indicating revolutions of the tape supply reel, making it possible to index selections within a reel of tape. {in’deks ,kau̱nt-ar’}

index crank  [MECH ENG] The crank handle of an index head used to turn the spindle. {in’deks ’krank’}

index error  [ENG] An error caused by the misalignment of the vernier and the graduated circle (arc) of an instrument. {in’deks ’er-ar’}

index head  [MECH ENG] A headstock that can be affixed to the table of a milling machine, planer, or shaper, work may be mounted on it by a chuck or centers, for indexing. {in’deks ’hed’}

indexing  [MECH ENG] The process of providing discrete spaces, parts, or angles in a workpiece by using an index head. {in’dek-siŋ’}

indexing fixture  [MECH ENG] A fixture that changes position with regular steplike movements. {in’dek-siŋ ’fiks-chär’}

index of work tolerance  [IND ENG] A measure of the period of time during which an individual can perform a given task with the required efficiency while maintaining appropriate levels of physiological and emotional well-being. {in’deks av ’wark ,täl-a-rans’}

index plate  [DES ENG] A plate with circular graduations or holes arranged in circles, each circle with different spacing; used for indexing on machines. {in’deks ,plät’}

index thermometer  [ENG] A thermometer in which steel index particles are carried by mercury in the capillary and adhere to the capillary wall in the high and low positions, thus indicating minimum and maximum inertial scales. {in’deks that’mäm-ad-ar’}

indicated horsepower  [MECH ENG] The horsepower delivered by an engine as calculated from the average pressure of the working fluid in the cylinders and the displacement. Abbreviated lhp. {in’dà’käd-ad ‘hörss,pau-ar’}

indicating gage  [ENG] A gage consisting essentially of a case and mounting, a spindle carrying the contact point, an amplifying mechanism, a pointer, and a graduated dial, used to amplify and measure the displacement of a movable contact point. {in’dà’käd-iŋ ’gä’}

indicating instrument  [ENG] An instrument in which the present value of the quantity being measured is visually indicated. {in’dà’käd-iŋ ’in-strə-mant’}

indication  [ENG] In ultrasonic testing, determination of the presence of a flaw by detection of a reflected ultrasonic beam. {in’dà’kä-shan’}

indicator  [ELECTR] A cathode-ray tube or other device that presents information transmitted or relayed from some other source, as from a radar receiver. [ENG] An instrument for obtaining a diagram of the pressure-volume changes in a running positive-displacement engine, compressor, or pump cylinder during the working cycle. {in’dà’käd-ar’}

indicator card  [ENG] A chart on which an indicator diagram is produced by an instrument called an engine indicator which traces the real-performance cycle diagram as the machine is running. {in’dà’käd-ar’ kär德}

indicator diagram  [ENG] A pressure-volume diagram representing and measuring the work done by or on a fluid while performing the work cycle in a reciprocating engine, pump, or compressor cylinder. {in’dà’käd-ar ’drə-gram’}
induction-electrical survey  

induction charging  

[ENG] Fuel-air burner into which the fuel is fed under pressure to entrain needed air into the combustion nozzle area. ertance of the air-entrance tube and the acoustic

indirect material  

[ENG] Any material used in the manufacture of a product which does not itself become a part of the product and whose cost is indirect.  

[ENG] A system of lighting in which the burden is heated indirectly from the radiant heat from an electric arc.  

[ENG] An electric dipole produced by application of an electric field.  

[ENG] A mechanical draft produced by suction stream jets or fans at the point where air or gases leave a unit.  

[ENG] A structure for cooling water by circulating air where the load is on the suction side of the fan.  

[ENG] The average electric dipole moment per molecule which is produced by the action of an electric field on a dielectric substance.  

[Sys] A system of lighting in which heat is produced in a metal charge by electromagnetic induction.  

[Sys] An electric furnace in which the burden is heated indirectly to the field is measured.  

[Sys] Increasing the temperature in a material by induced electric current.  

[Sys] Earth inductor.  

[Sys] An alternating-current motor in which a primary winding on one member (usually the stator) is connected to the power source, and a secondary winding on the other member (usually the rotor) carries only current induced by the magnetic field of the primary.  

[Sys] Any pump operated by electromagnetic induction.  

[Sys] A device for measuring salinity by taking voltage readings of the current in seawater.  

[Sys] A device for reducing engine induction noise, which consists essentially of a low-pass acoustic filter with the iner- 

[Sys] The charge that exists
on an object as a result of its being near another charged object.  
**inductive circuit**  [ELEC] A circuit containing a higher value of inductive reactance than capacitive reactance.  
**inductive coupler**  [ELEC] A mutual inductance that provides electrical coupling between two circuits, used in radio equipment.  
**inductive coupling**  [ELEC] Coupling of two circuits by means of the mutual inductance provided by a transformer. Also known as transformer coupling.  
**inductive grounding**  [ELEC] Use of grounding connections containing an inductance in order to reduce the magnitude of short-circuit currents created by line-to-ground faults.  
**inductive load**  [ELEC] A load that is predominantly inductive, so that the alternating load current lags behind the alternating voltage of the load. Also known as lagging load.  
**inductive reactance**  [ELEC] Reactance due to the inductance of a coil or circuit.  
**inductive superconducting fault-current limiter**  See shielded-core superconducting fault-current limiter.  
**inductive susceptance**  [ELEC] In a circuit containing almost no resistance, the part of the susceptance due to inductance.  
**inductive wavefront**  [ELEC] A graph or trace of the effect of current buildup across an inductive network, proportional to the exponential of the product of a negative constant and the time.  
**inductor** See coil.  
**inductor microphone**  [ENG ACOUS] Moving-conductor microphone in which the moving element is in the form of a straight-line conductor.  
**inductor tachometer**  [ENG] A type of impulse tachometer in which the rotating member, consisting of a magnetic material, causes the magnetic flux threading a circuit containing a magnet and a pickup coil to rise and fall, producing pulses in the circuit which are rectified for a permanent-magnet, movable-coil instrument.  
**inductosyn**  [CONT SYS] A resolver whose output phase is proportional to the shaft angle.  
**Inductrack**  [ENG] A magnetic levitation concept for trains and other moving objects that uses special arrays of permanent magnets to achieve levitation forces, and is inherently stable.  
**industrial anthropometry**  [IND ENG] Application of the knowledge of physical anthropology to the design and construction of equipment for human use, such as automobiles.  
**industrial car**  [IND ENG] Any of various narrow-gauge railcars used for indoor or outdoor handling of bulk and package materials.  
**industrial cost control**  [IND ENG] A specific system or procedure used to keep manufacturing costs in line. Also known as cost control.  
**industrial ecology**  [IND ENG] The development and use of industrial processes that result in products based on simultaneous consideration of product functionality and competitiveness, natural-resource conservation, and environmental preservation. Also known as design for environment; green design.  
**industrial engineering**  [ENG] A branch of engineering concerned with the design, improvement, and installation of integrated systems of people, materials, and equipment. Also known as management engineering.  
**industrial mobilization**  [IND ENG] Transformation of industry and other productive facilities and contributory services from their peacetime activities to the fulfillment of the munitions program necessary to support a military effort.  
**industrial railway**  [IND ENG] 1. A usually short feeder line that is either owned or controlled and wholly operated by an industrial firm. 2. Narrow-gauge rail lines used on construction jobs or around industrial plants.  
**industrial revolution**  [IND ENG] A widespread change in industrial or production methods, toward production by machine and away from manual labor.  
**industrial security**  [IND ENG] The portion of internal security which refers to the protection of industrial installations, resources, utilities, materials, and classified information essential to protection from loss or damage.  
**industrial truck**  [ENG] A manually propelled or powered wheeled vehicle for transporting materials over level or slightly inclined running surfaces in a manufacturing or warehousing facility.  
**industrial waste**  [ENG] Worthless materials remaining from industrial operations.  
**inelastic**  [MECH] Not capable of sustaining a deformation without permanent change in size or shape.  
**inelastic buckling**  [MECH] Sudden increase of deflection or twist in a column when compressive stress reaches the elastic limit but before elastic buckling develops.  
**inelastic collision**  [MECH] A collision in which the total kinetic energy of the colliding particles is not the same after the collision as before it.  
**inelastic stress**  [MECH] A force acting on a
See inequality of Clausius.
In a cable excavator, the mini-infrared thermometer in infrared thermography is a method of heating by means of infrared-emitting diode. A light-emission of the projectile from its initial loaded position is known as pressure carburetor. { inˈhir-ant ˈdamp-pig

inherent noise pressure: See equivalent noise pressure. { inˈhir-ant ˈnɔɪz, ˈpresh-ər

inhibitor sweetening: Petroleum-refinery treating process to sweeten gasoline (convert mercaptans to disulfides) of low mercaptan content, uses a phenylenediamine inhibitor, air, and caustic. { inˈhib-ər ˈswɛt-ən-ɪŋ

in-house: Pertaining to an operation produced or carried on within a plant or organization, rather than done elsewhere under contract. { inˈhaʊs

initial boiling point: According to American Society for Testing and Materials petroleum-analysis distillation procedures, the recorded temperature when the first drop of distilled vapor is liquefied and falls from the end of the condenser. { inˈbɪd-ər ˈboil-ɪŋˌpɔɪnt

initial shot start pressure: In interior ballistics, the portion of the effective chamber capacity not displaced by propellant. { inˈbɪd-ər ˈʃʊt ˈstɑrtˌpresh-ər

initial yaw: The yaw of a projectile the instant it leaves the muzzle of a gun. { inˈbɪd-ər ˈjɔʊ

injection: 1. The method of applying a signal to an electronic circuit or device. 2. The process of introducing electrons or holes into a semiconductor so that their total number exceeds the number present at thermal equilibrium. [MECH ENG] The introduction of fuel, fuel and air, fuel and oxidizer, water, or other substance into an engine induction system or combustion chamber. { inˈjek-ʃən

injection blow molding: Plastics molding process in which a hollow-plastic tube is formed by injection molding. { inˈjek-ʃənˌblɔʊˌmɔl-ˈdiŋ

injection carburetor: A carburetor in which fuel is delivered under pressure into a heated part of the engine intake system. Also known as pressure carburetor. { inˈjek-ʃən ˈkɑr-ˈbʊr-ər

injection efficiency: A measure of the efficiency of a semiconductor junction when a forward bias is applied, equal to the current of injected minority carriers divided by the total current across the junction. { inˈjek-ʃən ˈfɪʃ-ənˌsjuːt

injection electroluminescence: Radiation resulting from recombination of minority charge carriers injected in a pn or pin junction that is biased in the forward direction. Also known as Losev effect: recombination electroluminescence. { inˈjek-ʃən ɪɻək-tröˌljuˈmɪns-ənˌsjuːt

representation of a decision, which may include four types of nodes (decision, chance, value, and deterministic), directed arcs between the nodes (which identify dependencies between them), a marginal or conditional probability distribution defined at each chance node, and a mathematical function associated with each of the other types of node. { ˈɪnˌflʊˈænsˌdɹəˌɡræm

influence line: A graph of the shear, stress, bending moment, or other effect of a movable load on a structural member versus the position of the load. { ˈɪnˌflʊˈænsˌlɪn

information process analysis chart: See form process chart. { ˈɪnˌfərˈmætʃən ˈpræzəsˌsɪŋˌæləˈsæsˌʃaʊnt

information systems engineering: The discipline concerned with the design, development, testing, and maintenance of information systems. { ˈɪnˌfərˈmætʃən ˈsɪstəmzˌenˌjəˈnɪŋ

infrared array: A collection of several thousand infrared detector elements arranged in a grid pattern and connected to readout electronics to display infrared images focused on the array by an astronomical telescope. { ˈɪnˌfərˈræd əˈræ

infrared-emitting diode: A light-emitting diode that has maximum emission in the near-infrared region, typically at 0.9 micrometer for pn gallium arsenide. { ˈɪnˌfərˈrædˌɪŋˌdɪd

infrared heating: Heating by means of infrared radiation. { ˈɪnˌfərˈrædˌhɪdˈɪŋ

infrared homing: Homing in which the target is tracked by means of its emitted infrared radiation. { ˈɪnˌfərˈrædˌhɔrnˌɪŋ

infrared imaging device: Any device which converts an invisible infrared image into a visible image. { ˈɪnˌfərˈrædˌɪmˌəˈjɪŋˌdɪˌvɪlɪs

infrared thermography: A method of measuring surface temperatures by observing the infrared emission from the surface. { ˈɪnˌfərˈrædˌθɔrmˈɛɡˌrəˈfɛ

infrared thermometer: An instrument that focuses and detects the infrared radiation emitted by an object in order to determine its temperature. { ˈɪnˌfərˈrædˌθɔrmˈmæmˌædˌər

Ingen-Haussz apparatus: An apparatus for comparing the thermal conductivities of different conductors; specimens consisting of long wax-coated rods of equal length are placed with one end in a tank of boiling water covered with a radiation shield, and the lengths along the rods from the wax which melts are compared. { ˈɪnˌɡənˌhɔũςˌæpˌəˌrəˌrædˈæs

inhabited building distance: The minimum distance permitted between an ammunition or explosive location and any building used for habitation or where people are accustomed to assemble, except operating buildings or magazines. { ˈɪnˌhæbˈædˌdədˌbɪlˌdɪŋˌdɪˌtæns

inhaul cable: In a cable excavator, the line that pulls the bucket to dig and bring in soil. Also known as digging line. { ˈɪnˌhɔʊlˌkɑˈbæl

inherent damping: A method of vibration damping which makes use of the mechanical hysteresis of such materials as rubber, felt, and cork. { inˈhir-ant ˈdamp-pig

inherent noise pressure: See equivalent noise pressure. { inˈhir-ant ˈnɔɪzˌpresh-ər

inhibitor sweetening: Petroleum-refinery treating process to sweeten gasoline (convert mercaptans to disulfides) of low mercaptan content, uses a phenylenediamine inhibitor, air, and caustic. { inˈhib-ər ˈswɛt-ənˌɪŋ

in-house: Pertaining to an operation produced or carried on within a plant or organization, rather than done elsewhere under contract. { inˈhaʊs

initial boiling point: According to American Society for Testing and Materials petroleum-analysis distillation procedures, the recorded temperature when the first drop of distilled vapor is liquefied and falls from the end of the condenser. { inˈbɪd-ər ˈboil-ɪŋˌpɔɪnt

initial shot start pressure: In interior ballistics, the portion of the effective chamber capacity not displaced by propellant. { inˈbɪd-ər ˈʃʊt ˈstɑrtˌpresh-ər

initial yaw: The yaw of a projectile the instant it leaves the muzzle of a gun. { inˈbɪd-ər ˈjɔʊ

injection: 1. The method of applying a signal to an electronic circuit or device. 2. The process of introducing electrons or holes into a semiconductor so that their total number exceeds the number present at thermal equilibrium. [MECH ENG] The introduction of fuel, fuel and air, fuel and oxidizer, water, or other substance into an engine induction system or combustion chamber. { inˈjek-ʃən

injection blow molding: Plastics molding process in which a hollow-plastic tube is formed by injection molding. { inˈjek-ʃənˌblɔʊˌmɔl-ˈdiŋ

injection carburetor: A carburetor in which fuel is delivered under pressure into a heated part of the engine intake system. Also known as pressure carburetor. { inˈjek-ʃən ˈkɑr-ˈbʊr-ər

injection efficiency: A measure of the efficiency of a semiconductor junction when a forward bias is applied, equal to the current of injected minority carriers divided by the total current across the junction. { inˈjek-ʃən ˈfɪʃ-ənˌsjuːt

injection electroluminescence: Radiation resulting from recombination of minority charge carriers injected in a pn or pin junction that is biased in the forward direction. Also known as Losev effect: recombination electroluminescence. { inˈjek-ʃən ɪɻək-tröˌljuˈmɪns-ənˌsjuːt

293
injection locking  [ELECTR] The capture or synchronization of a free-running oscillator by a weak injected signal at a frequency close to the natural oscillator frequency or to one of its subharmonics; used for frequency stabilization in IMPATT or magnetron microwave oscillators, gas-laser oscillators, and many other types of oscillators.  

injection luminescent diode  [ELECTR] Gallium arsenide diode, operating in either the laser or the noncoherent mode, that can be used as a visible or near-infrared light source for triggering such devices as light-activated switches.  

injection mold  [ENG] A plastics mold into which the material to be formed is introduced from an exterior heating cylinder.  

injection molding  [ENG] Molding metal, plastic, or nonplastic ceramic shapes by injecting a measured quantity of the molten material into dies.  

injection pump  [MECH ENG] A pump that forces a measured amount of fuel through a fuel line and atomizing nozzle in the combustion chamber of an internal combustion engine.  

injection ram  [ENG] In injection molding, the ram that applies force to the feed plunger in the process of either injection or transfer molding.  

injection signal  [ENG] ACOUS. The sawtooth frequency-modulated signal which is added to the inputs (excitations, stimuli) of a system and the target signal.  

injector  [ELECTR] An electrode through which charge carriers (holes or electrons) are forced to enter the high-field region in a spaciator.  

injection lock  [MECH ENG] 1. An apparatus containing a nozzle in an actuating fluid which is accelerated and thus entrains a second fluid, so delivering the mixture against a pressure in excess of the actuating fluid. 2. A plug with a valved nozzle through which fuel is metered to the combustion chambers in diesel- or full-injection engines. 3. A jet through which feedwater is injected into a boiler, or fuel is injected into a combustion chamber.  

injector torch  See low-pressure torch.  

inkometer  [ENG] An instrument for measuring adhesion of liquids by rotating drums in contact with the liquid.  

inlet  [ENG] An entrance or orifice for the admission of fluid.  

inlet box  [MECH ENG] A closure at the fan inlet or inlets in a boiler for attachment of the fan to the duct system.  

inlet valve  [MECH ENG] The valve through which a fluid is drawn into the cylinder of a positive-displacement engine, pump, or compressor. Also known as induction valve.  

in line  [ENG] 1. Over the center of a borehole and parallel with its long axis. 2. Of a drill motor, mounted so that its drive shaft and the drive rod in the drill swivel head are parallel, or mounted so that the shaft driving the drill-swivel-head bevel gear and the drill-motor drive shaft are centered in a direct line and parallel with each other. 3. Having similar units mounted together in a line.  

in-line assembly machine  [IND ENG] An assembly machine that inserts components into a wiring board one at a time as the board is moved from station to station by a conveyor or other transport mechanism.  


in-line equipment  [ENG] 1. A sequence of equipment or processing items mounted along the same vertical or horizontal plane. 2. Equipment mounted within a process line, such as an in-line pump, pressure-drop flowmeter, or nozzle mixer.  

in-line linkage  [MECH ENG] A power-steering linkage which has the control valve and actuator combined in a single assembly.  

innage  [ENG] The volume or the measured height of liquid introduced into a tank or container.  

inner barrel  See inner tube.  

inner hearth  See back hearth.  

inner tube  [ENG] A rubber tube used inside a pneumatic tire casing to hold air under pressure. Also known as tube.  

in-phase component  [ELECT] The component of the phasor representing an alternating current which is parallel to the phasor representing voltage.  

in-place value  [IND ENG] The site value of property, that is, the market value of equipment plus costs of transportation to the site and subsequent installation.  

input  [ELECTR] 1. The power or signal fed into an electrical or electronic device. 2. The terminals to which the power or signal is applied.  

input/output relation  [SYS ENG] The relation between two vectors whose components are the inputs (excitations, stimuli) of a system and the outputs (responses) respectively.  

insensitive time  See dead time.  

insert bit  [DES ENG] A bit into which inset cutting points of various preshaped pieces of hard metal (usually a sintered tungsten carbide-cobalt powder alloy) are brazed or hand-peened into slots or holes cut or drilled into a blank bit. Also known as slug bit.  

inserted-tooth cutter  [DES ENG] A milling cutter in which the teeth can be replaced.  

insertion meter  [ENG] A type of flowmeter
which measures the rotation rate of a small propeller or turbine rotor mounted at right angles to the end of a support rod and inserted into the flowing stream or closed pipe. (in'sər-ən,əd-ar)

**inside caliper** [DES ENG] A caliper that has two legs with feet that turn outward, used to measure inside dimensions, as the diameter of a hole. (in'sid 'kæ-lər)

**inside diameter** [DES ENG] The length of a line which passes through the center of a hollow cylindrical or spherical object, and whose end points lie on the inner surface of the object. Abbreviated ID. (in'sid d'ə'təm-əd-ar)

**inside face** [DES ENG] That part of the bit crown nearest to or parallel with the inside wall of an annular or coring bit. (in'sid fəs)

**inside gage** [DES ENG] The inside diameter of a bit as measured between the cutting points, such as between inset diamonds on the inside-wall surface of a core bit. (in'sid d'mə'trəm-əd-ar)

**inside micrometer** [DES ENG] A micrometer caliper with the points turned outward for measuring the internal dimensions of an object. (in'sid mə'kram-əd-ar)

**inside work** See internal work. (in'sid wərk)

**in situ foaming** [ENG] Depositing of the ingredients of a foamable plastic onto the location where foaming is to take place, for example, in situ foam insulation on equipment or walls. (in'si-chə 'fəm-əp)

**inspect** [IND ENG] To examine an object to determine whether it conforms to standards, may employ sight, hearing, touch, odor, or taste. (in'spekt)

**inspection** [IND ENG] The critical examination of a product to determine its conformance to applicable quality standards or specifications. (in'spek-shən)

**inspection by variables** [IND ENG] A quality-control inspection method in which the sampled articles are evaluated on the basis of quantitative criteria. (in'spek-shən bɪ 'vər-ə-bal)

**instability** [CONT SYS] A condition of a control system in which excessive positive feedback causes persistent, unwanted oscillations in the output of the system. (in'stəbil-əd-ə)

**installation** [ENG] Procedures for setting up equipment for use or service. (in'stəl-əshən)

**instantaneous axis** [MECH] The axis about which a rigid body is carrying out a pure rotation at a given instant in time. (in'stən-tən-tə-nəs 'ak-səs)

**instantaneous center** [MECH] A point about which a rigid body is rotating at a given instant in time. Also known as instant center. (in'stən-tən-tə-nəs 'sen-tər)

**instantaneous cut** [ENG] A cut that is set off by instantaneous detonators to be certain that all charges in the cut go off at the same time, the drilling and ignition are carried out so that all the holes break smaller top angles. (in'stən-tən-tə-nəs 'kət)

**instantaneous detonator** [ENG] A type of detonator that does not have a delay period between the passage of the electric current through the detonator and its explosion. (in'stən-tən-tə-nəs 'det-ən,əd-ar)

**instantaneous fuse** [ENG] A fuse with an ignition rate of several thousand feet per minute; an example is PCTN. (in'stən-tən-tə-nəs 'fyūz)

**instantaneous recording** [ENG] A recording intended for direct reproduction without further processing. (in'stən-tən-tə-nəs ək-ər-dən)

**instantaneous recovery** [MECH] The immediate reduction in the strain of a solid when a stress is removed or reduced, in contrast to creep recovery. (in'stən-tən-tə-nəs nək-ər-dən)

**instantaneous strain** [MECH] The immediate deformation of a solid upon initial application of a stress, in contrast to creep strain. (in'stən-tən-tə-nəs strən)

**instant center** See instantaneous center. (in'stən-tən 'sen-tər)

**instruction card** [IND ENG] A written description of the standard method used by a worker, to guide his activities. (in'strək-shən, kərd)

**instrument** [ENG] A device for measuring and sometimes also recording and controlling the value of a quantity under observation. (in-strə-mənt)

**instrumental analysis** [ENG] The use of an instrument to measure a component, to detect the completion of a quantitative reaction, or to detect a change in the properties of a system. (in-strə-men-təl ən-strə-mənt)

**instrumentation** [ENG] Designing, manufacturing, and utilizing physical instruments or instrument systems for detection, observation, measurement, automatic control, automatic computation, communication, or data processing. (in-strə-men-tən 'tən-strə-mənt)

**instrument correction** [ENG] A correction of measurements made on a unit under test for either inaccuracy of the instrument or eroding effect of the instrument. (in-strə-mənt kər-ək-'nən-sə)

**instrument housing** [ENG] A case or enclosure containing indicating meters. (in-strə-mənt həu-'nən)

**instrument panel** [ENG] A panel or board containing indicating meters. (in-strə-mənt ,pən-əl)

**instrument reading time** [ENG] The time, after a change in a measured quantity, which it takes for the indication of an instrument to come and remain within a specified percentage of its final value. (in-strə-mənt rəd-ən, təm)

**instrument science** [ENG] The systematically organized body of general concepts and principles underlying the design, analysis, and application of instruments and instrument systems. (in-strə-mənt ,sən-scən)

**instrument shelter** [ENG] A boxlike structure designed to protect certain meteorological instruments from exposure to direct sunshine, precipitation, and condensation, while providing
An instrument for state errors. Also known as lagging network, insulation sampler.

**instrument system** [ENG] A system which integrates one or more instruments with auxiliary or associated devices for detection, observation, measurement, automatic control, automatic computation, communication, or data processing.

**insulated** [ELEC] Separated from other conducting surfaces by a nonconducting material.

**insulated-gate bipolar transistor** [ELECT] A power semiconductor device that combines low forward voltage drop, gate-controlled turnoff, and high switching speed. It structurally resembles a vertically diffused MOSFET, featuring a double diffusion of a p-type region and an n-type region, but differs from the MOSFET in the use of a p+ substrate layer (in the case of an n-channel device) for the drain. The effect is to change the transistor into a bipolar device, as this p-type region injects holes into the n-type drift region. Abbreviated IGBT.

**insulated-gate field-effect transistor** See metaloxide semiconductor field-effect transistor.

**insulated-substrate monolithic circuit** [ELECT] Integrated circuit which may be either an all-diffused device or a compatible structure so constructed that the components within the silicon substrate are insulated from one another by a layer of silicon dioxide, instead of reverse-biased pn junctions used for isolation in other techniques.

**insulating strength** [ELEC] Measure of the ability of an insulating material to withstand electrical stress without breakdown; it is defined as the voltage per unit thickness necessary to initiate a disruptive discharge, usually measured in volts per centimeter.

**insulation** [BUILD] Material used in walls, ceilings, and floors to retard the passage of heat and sound. [ELEC] A material having high electrical resistivity and therefore suitable for separating adjacent conductors in an electric circuit or preventing possible future contact between conductors. Also known as electrical insulation.

**insulation resistance** [ELEC] The electrical resistance between two conductors separated by an insulating material.

**insulation sampler** [ENG] A device for collecting deep water which prevents any significant conduction of heat from the water sample so that it maintains its original temperature as it is hauled to the surface. Also known as lagging system, lag network.

**insulation testing set** [ENG] An instrument for measuring insulation resistance, consisting of a high-range ohmmeter having a hand-driven direct-current generator as its voltage source.

**insulator** [ELEC] A device having high electrical resistance and used for supporting or separating conductors to prevent undesired flow of current from them to other objects. Also known as electrical insulator.

**intake** [ENG] 1. An entrance for air, water, fuel, or other fluid, or the amount of such fluid taken in. 2. A main passage for air in a mine.

**intake chamber** [CIV ENG] A large chamber that gradually narrows to an intake tunnel; designed to avoid undesirable water currents.

**intake gate** [CIV ENG] A movable partition for opening or closing a water intake opening.

**intake manifold** [MECH ENG] A system of pipes which feeds fuel to the various cylinders of a multicylinder internal combustion engine.

**intake stroke** [MECH ENG] The fluid admission phase or travel of a reciprocating piston and cylinder mechanism as, for example, in an engine, pump, or compressor.

**intake valve** [MECH ENG] The valve which opens to allow air or an air-fuel mixture to enter an engine cylinder.

**integer programming** [SYS ENG] A series of procedures used in operations research to find maximum or minima of a function subject to one or more constraints, including one which requires that the values of some or all of the variables be whole numbers.

**integrable system** [MECH] A dynamical system whose motion is governed by an integrable differential equation.

**integral action** [CONT SYS] A control action in which the rate of change of the correcting force is proportional to the deviation.

**integral compensation** [CONT SYS] Use of a compensator whose output changes at a rate proportional to its input.

**integral control** [CONT SYS] Use of a control system in which the control signal changes at a rate proportional to the error signal.

**integral furnace boiler** [MECH ENG] A type of steam boiler which incorporates furnace watercooling in the circulatory system.

**integral-mode controller** [CONT SYS] A controller which produces a control signal proportional to the integral of the error signal.

**integral network** [CONT SYS] A compensating network which produces high gain at low input frequencies and low gain at high frequencies, and is therefore useful in achieving low steady-state errors. Also known as lagging network, lag network.
intelligent vehicle highway systems

integral square error [CONT SYS] A measure of system performance formed by integrating the square of the system error over a fixed interval of time; this performance measure and its generalizations are frequently used in linear optimal control and estimation theory. \( \text{'int-} \theta \text{-gral skwer, er-ar}' \)

integral-type flange [DES ENG] A flange which is forged or cast with, or butt-welded to, a nozzle. \( \text{'int-} \theta \text{-gral tIp 'flan'} \)

integral waterproofing [ENG] Waterproofing concrete by adding the waterproofing material to the cement or to the mixing water. \( \text{'int-} \theta \text{-gral 'wod-ar, prüf-iP'} \)

integrator [ENG] A device used for completing a integration of the art dealing with integrated circuits. \( \text{'int-} \theta \text{-graf} \)

integrated circuit [ELECTR] An interconnected array of active and passive elements integrated with a single semiconductor substrate or deposited on the substrate by a continuous series of compatible processes, and capable of performing at least one complete electronic circuit function. Abbreviated IC. Also known as integrated semiconductor. \( \text{‘int-} \theta \text{-gräd-ad 'sar-kaT'} \)

integrated electronics [ELECTR] A generic term for that portion of electronic art and technology in which the interdependence of material, device, circuit, and system-design consideration is especially significant; more specifically, that portion of the art dealing with integrated circuits. \( \text{'int-} \theta \text{-gräd-ad 'lekt-ran-iks'} \)

integrated injection logic [ELECTR] Integrated-circuit logic that uses a simple and compact bipolar transistor gate structure which makes possible large-scale integration on silicon for logic arrays, memories, watch circuits, and various analog and digital applications. Abbreviated PL. Also known as merged-transistor logic. \( \text{'int-} \theta \text{-gräd-ad in'lekt-shan 'laj-iK'} \)

integrated semiconductor See integrated circuit. \( \text{'int-} \theta \text{-gräd-ad 'isem-i-kön-dak-tar'} \)

integrated sensor [ENG] A very small device in which the sensing of some physical quantity is integrated with the functions of signal processing and information processing. \( \text{'int-} \theta \text{-gräd-ad 'sen-sar'} \)

integrating accelerometer [ENG] A device whose output signals are proportional to the velocity of the vehicle or to the distance traveled (depending on the number of integrations) instead of acceleration. \( \text{'int-} \theta \text{-gräd-iP 'fré-kwan-sè, mëd-ar'} \)

integrating frequency meter [ENG] An instrument that measures the total number of cycles through which the alternating voltage of an electric power system has passed in a given period of time, enabling this total to be compared with the number of cycles that would have elapsed if the prescribed frequency had been maintained. Also known as master frequency meter. \( \text{'int-} \theta \text{-gräd-iP 'fré-kwan-sè, mëd-ar'} \)

integrating galvanometer [ENG] A modification of the d’Arsonval galvanometer which measures the integral of current over time, it is designed to be able to measure changes of flux in an exploring coil which last over periods of several minutes. \( \text{'int-} \theta \text{-gräd-iP 'gal-van-nam-od-ar'} \)

integrating gyrooscope [ENG] A gyroscope that senses the rate of angular displacement and measures and transmits the time integral of this rate. \( \text{'int-} \theta \text{-gräd-iP 'jí-roe-skóp'} \)

integrating meter [ENG] An instrument that totalizes electric energy or some other quantity consumed over a period of time. \( \text{'int-} \theta \text{-gräd-iP 'mëd-ar'} \)

integrating water sampler [ENG] A water sampling device comprising a cylinder with a free piston whose movement is regulated by the evacuation of a charge of fresh water. \( \text{'int-} \theta \text{-gräd-iP 'wod-ar, sam-plar'} \)

integration [SYS ENG] The arrangement of components in a system so that they function together in an efficient and logical way. \( \text{'int-} \theta \text{-gräd-shan} \)

intelligent agent [IND ENG] A computing hardware- or software-based system that operates without the direct intervention of humans or other agents, examples include robots, smart sensors, and Web-search software agents. \( \text{'in'tel-} \theta \text{-jant 'ä-jant'} \)

intelligent machine [ENG] Any machine that can accomplish its specific task in the presence of uncertainty and variability in its environment. \( \text{'in'tel-} \theta \text{-jant má-shen'} \)

intelligent manufacturing [IND ENG] 1. The use of production process technology that can automatically adapt to changing environments and varying process requirements, with the capability of manufacturing various products with minimal supervision and assistance from operators. 2. The development and implementation of artificial intelligence in manufacturing. \( \text{'in'tel-} \theta \text{-jant, man-sfa-char-iP} \)

intelligent robot [CONT SYS] A robot that functions as an intelligent machine, that is, it can be programmed to take actions or make choices based on input from sensors. \( \text{'in'tel-} \theta \text{-jant 'rö, bát'} \)

intelligent sensor See smart sensor. \( \text{'in'tel-} \theta \text{-jant 'sen-sar'} \)

intelligent transportation systems [CIV ENG] The application of advanced technologies to surface transportation problems, including traffic and transportation management, travel demand management, advanced public transportation management, electronic payment, commercial vehicle operations, emergency services management, and advanced vehicle control and safety systems. Previously known as intelligent vehicle highway systems. \( \text{'in'tel-} \theta \text{-jant, trans-por-ta-shan, sis-tamz} \)

intelligent vehicle highway systems See intelligent transportation systems. \( \text{'in'tel-} \theta \text{-jant, ve-} \text{a-kol 'hi, wà, sis-tamz} \)
interaction balance method

interaction balance method See goal coordination method.

interaction prediction method [CONT SYS] A method for coordinating the subproblem solutions in plant decomposition, in which the interaction variables are specified by the second-level controller according to overall optimality conditions, and the subproblems are solved to satisfy local optimality conditions constrained by the specified values of the interaction variables. Also known as feasible method. {in-ta‘rak-shan prā’dīk-shan, meth-ād}

interbase current [ELECTR] The current that flows from one base connection of a junction transistor to the other, through the base region. {in-tar, bás ‘kā-rant}

intercepting sewer [CIV ENG] A sewer that receives flow from transverse sewers and conducts the water to a treatment plant or disposal point. {in-tar,sep-tin ‘sū-ar}

interceptometer [ENG] A rain gage which is placed under trees or in foliage to determine the rainfall in that location, by comparing this catch with that from a rain gage set in the open, the amount of rainfall which has been intercepted by foliage is found. {in-tar,sep’tām-ār-ār}

interchange [CIV ENG] A junction of two or more highways at a number of separate levels so that traffic can pass from one highway to another without the crossing at grade of traffic streams. [ELEC] The current flowing into or out of a power system which is interconnected with one or more other power systems. {in-tar,chānī}

interchangeability [ENG] The ability to replace the components, parts, or equipment of one manufacturer with those of another, without losing function or suitability. {in-tar, chānī-jā’bil-ād-ē}

intercondenser [MECH ENG] A condenser between stages of a multistage steam jet pump. {in-tar,kan’den-sar}

interconnection [ELEC] A link between power systems enabling them to draw on one another’s reserves in time of need and to take advantage of energy cost differentials resulting from such factors as load diversity, seasonal conditions, time-zone differences, and shared investment in larger generating units. {in-tar,ka’nek-shan}

intercooler [MECH ENG] A heat exchanger for cooling fluid between stages of a multistage compressor with consequent saving in power. {in-tar,ku’l-ūr}

interface resistance [THERMO] 1. Impairment of heat flow caused by the imperfect contact between two materials at an interface. 2. Quantitatively, the temperature difference across the interface divided by the heat flux through it. {in-tar,fās ńlīz-tns}

interference fit [DES ENG] A fit wherein one of the mating parts of an assembly is forced into a space provided by the other part in such a way that the completion of the maximum metal overlap is achieved. {in-tar, fir-āns, fit}

interference time [IND ENG] Idle machine time occurring when a machine operator, assigned to two or more semiautomated machines, is unable to service a machine requiring attention. {in-tar, fir-āns, tīm}

interferometric hydrophone [ENG] A hydrophone in which pressure changes act directly or indirectly to deform an optical fiber and thus produce a phase change in light from a laser or light-emitting diode; the phase change is detected in an interferometer. Also known as fiber-optic hydrophone. {in-tar, fir-ōj-me-trīk, hī-dră-fon}

interfit [ENG] The distance extended by the ends of one bit cone into the grooves of an adjacent one in a roller cone bit. Also known as intermesh. {in-tar, fit}

interior ballistics [MECH] The science concerned with the combustion of powder, development of pressure, and movement of a projectile in the bore of a gun. {in-tir, ba’lis-tiks}

interlock [ENG] A switch or other device that prevents activation of a piece of equipment when a protective door is open or some other hazard exists. {in-tar, lāk}

interlocking cutter [DES ENG] A milling cutter assembly consisting of two mating sections with uniform or alternate overlapping teeth. {in-tar, lāk-īg ‘kād-ar}

intermediate frequency [ELECTR] The frequency produced by combining the received signal with that of the local oscillator in a superheterodyne receiver. Abbreviated i-f. {in-tar ‘mēd-ē-at ‘fī-kwan-sē}

intermediate-frequency amplifier [ELECTR] The section of a superheterodyne receiver that amplifies signals after they have been converted to the fixed intermediate-frequency value by the frequency converter. Abbreviated i-f amplifier. {in-tar,mēd-ē-at ‘fī-kwan-sē əm-plō,fit-ār}

intermediate gear [MECH ENG] An idler gear interposed between a driver and driven gear. {in-tar,mēd-ē-at ‘gīr}

intermediate material [IND ENG] A manufactured product that requires additional processing before it becomes finished goods. {in-tar, mēd-ē-at ma’tir-ē-al}

intermesh See interfit. {in-tar, mesh}

intermittent current [ELEC] A unidirectional current that flows and ceases to flow at irregular or regular intervals. {in-tar,mit-ānt ‘kō-rant}

intermittent defect [ENG] A defect that is not continuously present. {in-tar,mit-ānt ‘de,fekt}

intermittent-duty rating [ENG] An output rating based on operation of a device for specified intervals of time rather than continuous duty. Also known as intermittent rating. {in-tar,mit-ānt ńdūd-ē ‘rād-īp}

intermittent firing [MECH ENG] Cyclic firing whereby fuel and air are burned in a furnace for frequent short time periods. {in-tar,mit-ānt ‘fir-īp}

intermittent operation [ENG] Condition in which a device operates normally for a time, then becomes defective for a time, with the process
internal force

intermittent rating See intermittent-duty rating.

intermittent work [IND ENG] A type of task requiring moderate to highly demanding physical effort that is interrupted by short periods of rest or light work lasting a few seconds to a few minutes. (in tense: intermittent-tect 'work')

intermodulation [ELECTR] Modulation of the components of a complex wave by each other, producing new waves whose frequencies are equal to the sums and differences of integral multiples of the component frequencies of the original complex wave. (in tense: intermittent-tect 'work')

internal biomechanical environment [IND ENG] A concept that is used in ergonomic design and considers that muscles, bones, and tissues are subject to the same Newtonian mechanical forces as are objects external to the body. (in tense: intermittent-tect 'work')

internal brake [MECH ENG] A friction brake in which an internal shoe follows the inner surface of the rotating brake drum, wedging itself between the drum and the point at which it is anchored; used in motor vehicles. (in tense: intermittent-tect 'work')

internal broaching [MECH ENG] The removal of material on internal surfaces, by means of a tool with teeth of progressively increasing size moving in a straight line or other prescribed path over the surface, other than for the origin of a hole. (in tense: intermittent-tect 'work')

internal combustion engine [MECH ENG] A prime mover in which the fuel is burned within the engine and the products of combustion serve as the thermodynamic fluid, as with gasoline and diesel engines. (in tense: intermittent-tect 'work')

internal electric field See dielectric field. (in tense: intermittent-tect 'work')

internal diffusion [CHEM ENG] The diffusion of liquid or gaseous reactants to the innermost pore depths of an adsorbent-base catalyst, necessary for full catalytic effect. (in tense: intermittent-tect 'work')

internal energy [THERMO] A characteristic property of the state of a thermodynamic system, introduced in the first law of thermodynamics; it includes intrinsic energies of individual molecules, kinetic energies of internal motions, and contributions from interactions between molecules, but excludes the potential or kinetic energy of the system as a whole; it is sometimes erroneously referred to as heat energy. (in tense: intermittent-tect 'work')

internal floating-head exchanger [MECH ENG] Tube-and-shell heat exchanger in which the tube sheet (support for tubes) at one end of the tube bundle is free to move. (in tense: intermittent-tect 'work')

internal force [MECH] A force exerted by one part of a system on another. (in tense: intermittent-tect 'work')

internal friction [MECH] 1. Conversion of mechanical strain energy to heat within a material subjected to fluctuating stress. 2. In a powder, the friction that is developed by the particles sliding over each other; it is greater than the friction of the mass of solid that comprises the individual particles. (in tense: intermittent-tect 'work')

internal furnace [MECH ENG] A boiler furnace having a firebox within a water-cooled heating surface. (in tense: intermittent-tect 'work')

internal gear [DES ENG] An annular gear having teeth on the inner surface of its rim. (in tense: intermittent-tect 'work')

internal grinder [MECH ENG] A machine designed for grinding the surfaces of holes. (in tense: intermittent-tect 'work')

internally fired boiler [MECH ENG] A fire-tube boiler containing an internal furnace which is water-cooled. (in tense: intermittent-tect 'work')

internal mechanical environment [IND ENG] A concept that considers parts of the human body, such as muscles, bones, and tissues, in terms of how they are subject to Newtonian mechanics in their interaction with the external environment. (in tense: intermittent-tect 'work')

internal mix atomizer [MECH ENG] A type of pneumatic atomizer in which gas and liquid are mixed prior to the gas expansion through the nozzle. (in tense: intermittent-tect 'work')

internal spring safety relief valve [ENG] A spring-loaded valve with a portion of the operating mechanism located inside the pressure vessel. (in tense: intermittent-tect 'work')

internal stress [MECH] A stress system within a solid that is not dependent on external forces. Also known as residual stress. (in tense: intermittent-tect 'work')

internal thread [DES ENG] A screw thread cut on the inner surface of a hollow cylinder. (in tense: intermittent-tect 'work')

internal vibrator [MECH ENG] A vibrating device which is drawn vertically through placed concrete to achieve proper consolidation. (in tense: intermittent-tect 'work')

internal work [IND ENG] Manual work done by a machine operator while the machine is automatically operating. Also known as fill-up work; inside work. [THERMO] The work done in separating the particles composing a system against their forces of mutual attraction. (in tense: intermittent-tect 'work')

international ampere [ELEC] The current that, when flowing through a solution of silver nitrate in water, deposits silver at a rate of 0.001118 gram per second; it has been superseded by the ampere as a unit of current, and is equal to approximately 0.9999850 ampere. (in tense: intermittent-tect 'work')

international ohm [ELEC] A unit of resistance, equal to that of a column of mercury of uniform cross section that has a length of 160.3 centimeters and a mass of 14.4921 grams at the temperature of melting ice; it has been superseded by the ohm, and is equal to 1.000049 ohms. (in tense: intermittent-tect 'work')

international practical temperature scale [THERMO] Temperature scale based on six
international system of electrical units

points: the water triple point, the boiling points of oxygen, water, sulfur, and the solidification points of silver and gold, designated as °C, degrees Celsius, or °K, replaced in 1990 by the international temperature scale. [ˈɪn-taːrˌseɪkʃən ˈpɔɪnt]

intersequence [ˈɪntərˌsɛkʃən] System of electrical units [ˈɛlɛktrɪk] System of electrical units based on agreed fundamental units for the ohm, ampere, centimeter, and second, in use between 1893 and 1947, inclusive; in 1948, the Giorgi, or meter-kilogram-second-absolute system, was adopted for international use. [ˈɪntərˌsɛkʃən ˈɛlˌɛktrɪk]

international table British thermal unit See British thermal unit. [ˈɪnˌtərˌsɛkʃən ˈbɜːtʃɪt ˈθɜːrəl ˈjuːt] A standardized metric system in which the pitch and diameter of the thread are related, with the thread having a rounded root and flat crest. [ˈɪnˌtərˌsɛkʃən ˈθɜːrəl]

international temperature scale [ˈθɜːrmoʊ] A standard temperature scale, adopted in 1990, that approximates the thermodynamic scale, based on assigned temperature values of 17 thermodynamic equilibrium fixed points and prescribed thermometers for interpolation between them. Abbreviated ITS-90. [ˈɪnˌtərˌsɛkʃən ˈθɜːrmoʊ]

international thread [ˌdɛs ˈɛŋɡ] A standardized metric system in which the pitch and diameter of the thread are related, with the thread having a rounded root and flat crest. [ɪntˈseɪkʃən ˈθɛrd]

international volt [ˈɛlɛktrɪk] A unit of potential difference or electromotive force, equal to 1/1.0858 of the electromotive force of a Weston cell at 20°C, it has been superseded by the volt, and is equal to 1.00034 volts. [ˈɪnˌtərˌsɛkʃən ˈvɔlt]

interrupted dc tachometer [ˈɛŋɡ] A type of impulse tachometer in which the frequency of pulses generated by the interrupted direct current of an ignition-circuit primary of an internal combustion engine is used to measure the speed of the engine. [ˈɪntərˈseɪkʃən ˈtrəɪdʒ ˈtækˌmər]

interrupted screw [ˌdɛs ˈɛŋɡ] A screw with longitudinal grooves cut into the thread, and which locks quickly when inserted into a similar mating part. [ɪntˈseɪkʃən ˈskrʊ]

interrupter [ˈɛlɛktrɪk] An electric, electronic, or mechanical device that periodically interrupts the flow of a direct current so as to produce pulses. [ɪntˈseɪkʃən ˈræpˌtər]

intersect [ˈɛŋɡ] To find a position by the triangulation method. [ˈɪnˌtərˌsɛkt]

intersection [ˈɛŋɡ] 1. A point of junction or crossing of two or more roadways. 2. A surveying method in which a plane table is used alternately at each end of a measured baseline. [ˈɪnˌtərˌsɛkʃən]

intersection angle [ˈɛŋɡ] The angle of deflection at the intersection point between the straightness of a railway or highway curve. [ˈɪnˌtərˌsɛkʃən ˈæŋˌgəl]

intersection point [ˈɛŋɡ] That point where two straight lines or tangents to a railway or road curve would meet if extended. [ˈɪnˌtərˌsɛkʃən ˈpɔɪnt]

interspace [ˈbɪld] An air space. [ˈɪnˌtərˌsɛps]

interterminal switching [ˈsɪv ˈɛŋɡ] The movement of railroad cars from one line to another within a switching area. [ˈɪnˌtərˌtɜːrˌmæn ˈsweɪtʃɪŋ]

intertube burner [ˈmɛk ˈɛŋɡ] A burner which utilizes a nozzle that discharges between adjacent tubes. [ˈɪnˌtərˌtʊbˌbərˌnər]

interval timer [ˈɛŋɡ] A device which operates a set of contacts during a preset time interval and, at the end of the interval, returns the contacts to their normal positions. Also known as timer. [ˈɪνˌtərˌtɪmˌər]

intraline distance [ˈɛŋɡ] The minimum distance permitted between any two buildings within an explosives operating line, to protect buildings from propagation of explosions due to blast effect. [ˈɪnˌtrə,ɪnˌdɪˌteɪnəns]

intrinsic-barrier diode [ˈɛlɛktrɪk] A pin diode, in which a thin region of intrinsic material separates the p-type region and the n-type region. [ɪnˈtrɪnˌsɪk ˈbærˌeər dɪˌdɪˌdʒɪˌpɜːrənt]

intrinsic contact potential difference [ˈɛlɛktrɪk] True potential difference between two perfectly clean metals in contact. [ɪnˈtrɪnˌsɪk ˈdɪˌtɛktər]

intrinsic electric strength [ˈɛlɛktrɪk] The extremely large intrinsic electric strength displayed by a substance at low temperatures. [ɪnˈtrɪnˌsɪk ɪˈdɪˌktrɪk ˈstreŋkθ]

intrinsic layer [ˈɛlɛktrɪk] A layer of semiconducting material whose properties are essentially those of the pure undoped material. [ɪnˈtrɪnˌsɪk ˈlɛɪər]

intrusion grouting [ˈɛŋɡ] A method of placing concrete by intruding the mortar component in position and then converting it into concrete as it is introduced into voids. [ɪnˈtruʒənˈɡrʊtɪŋ]

invariable line [ˈmɛk ˈɛŋɡ] A line which is parallel to the angular momentum vector of a body executing Poinsot motion, and which passes through the fixed point in the body about which there is no torque. [ɪnˈvɜːrˌeəˌbəlˈlɛɪn]

invariable plane [ˈmɛk ˈɛŋɡ] A plane which is perpendicular to the angular momentum vector of a rotating rigid body not subject to external torque, and which is always tangent to its inertia ellipsoid. [ɪnˈvɜːrˌeəˌbəlˈpɛln]

inventory [ˈɛŋɡ] The amount of plastic in the heating cylinder or barrel in injection molding or extrusion. [ˈɪnˌvɜːrˌeəˌbəl]
ion microprobe mass spectrometer
type of secondary ion mass spectrometer in which primary ions are focused on a spot 1–2 micrometers in diameter, mass-charge separation of secondary ions is carried out by a double focusing mass spectrometer or spectrograph, and a magnified image of elemental or isotopic distributions on the sample surface is produced using synchronous scanning of the primary ion beam and an oscilloscope. (Tän, 'mi-kra,prob
mas spek'tram-ad-ar)

ion migration [ELEC] Movement of ions produced in an electrolyte, semiconductor, and so on. by the application of an electric potential between electrodes. (Tän, mil'gra-shan)

ion milling See ion machining. (Tän, mil-ing)

ionogram [ENG] A record produced by an ionosonde, that is, a graph of the virtual height of the ionosphere plotted against frequency. (Tän, gram)

ionophone [ENG ACOUS] A high-frequency loudspeaker in which the audio-frequency signal modulates the radio-frequency supply to an arc maintained in a quartz tube, and the resulting modulated wave acts directly on ionized air to create sound waves. (Tän, fon)

ionosonde [ENG] A radar system for determining the vertical height at which the ionosphere reflects signals back to earth at various frequencies, a pulsed vertical beam is swept periodically through a frequency range from 0.5 to 20 megahertz, and the variation of echo return time with frequency is photographically recorded. (Tän, sänd)

ion probe See secondary ion mass spectrometer. (Tän, prob)

ion retardation [CHEM ENG] Sorbent extraction of strong electrolytes with an anion-exchange resin in which a cationic monomer has been polymerized, or vice versa. (Tän, 're-tär-da-shan)

IR drop See resistance drop. (Tän, 'dræp)

iron count [CHEM ENG] An analytic determination of the iron compounds in a product stream, reflects the occurrence and the extent of corrosion. (Tän, kaunt)

iron oxide process [CHEM ENG] A process by which a gas is passed through iron oxide and wood shavings to remove sulfides. (Tän, 'ak,sid-pra-sas)

irradiation [ENG] The exposure of a material, object, or patient to x-rays, gamma rays, ultraviolet rays, or other ionizing radiation. (i,rad-ea-shan)

irregular element [IND ENG] An element whose frequency of occurrence is irregular but predictable. Also known as incidental element. (i,reg-ya-lar-'el-o-mant)

irreversible energy loss [THERMO] Energy transformation process in which the resultant condition lacks the driving potential needed to reverse the process; the measure of this loss is expressed by the entropy increase of the system. (Tän, 'ri-var-sa-bal'en-ar-je-los)

irreversible process [THERMO] A process which cannot be reversed by an infinitesimal change in external conditions. (Tän, 'ri-var-sa-bal-pra-sas)

irreversible thermodynamics See nonequilibrium thermodynamics. (Tän, 'ri-var-sa-bal-thar-ma-di-nam-iks)

irrigation [CIV ENG] Artificial application of water to arable land for agricultural use. (Tän, 'gá-shan)

irrigation canal [CIV ENG] An artificial open channel for transporting water for crop irrigation. (Tän, 'gá-shan, nip)

isenergetic flow [THERMO] Fluid flow in which the sum of the kinetic energy, potential energy, and enthalpy of any part of the fluid does not change as that part is carried along with the fluid. (Tän, sah-er-jik 'li-lo)

isenthalpic expansion [THERMO] Expansion which takes place without any change in enthalpy. (Tän, sah-thal-mik ik'span-chan)

isenthalpic process [THERMO] A process that is carried out at constant enthalpy. (Tän, sah-thal-pik 'pra-sas)

isentrope [THERMO] A line of equal or constant entropy. (Tän, 'tröp)

isentropic [THERMO] Having constant entropy, at constant entropy. (Tän, 'tröp-ik)

isentropic compression [THERMO] Compression which occurs without any change in entropy. (Tän, 'tröp-ik kam'pres-on)

isentropic expansion [THERMO] Expansion which occurs without any change in entropy. (Tän, 'tröp-ik ik'span-chan)

isentropic flow [THERMO] Fluid flow in which the entropy of any part of the fluid does not change as that part is carried along with the fluid. (Tän, 'tröp-ik 'li-lo)

isentropic process [THERMO] A change that takes place without any increase or decrease in entropy, such as a process which is both reversible and adiabatic. (Tän, 'tröp-ik 'pra-sas)

island of automation [IND ENG] A single robotic system or other automatically operating machine that functions independently of any other machine or process. (i,länd av ,od-ö'ma-shan)

isobaric [THERMO] Of equal or constant pressure, with respect to either space or time. (i,sábär-ik)

isobaric process [THERMO] A thermodynamic process of a gas in which the heat transfer to or from the gaseous system causes a volume change at constant pressure. (i,sábär-ik 'pra-sas)

isochronism [MECH] The property of having a uniform rate of operation or periodicity, for example, of a pendulum or watch balance. (i,sá-krä-niz-om)

isochronous governor [MECH ENG] A governor that keeps the speed of a prime mover constant at all loads. Also known as astatic governor. (i,sä-krä-nas 'gav-ar-nar)
*isothermal process* [THERMO] A constant-volume, frictionless thermodynamic process in which the system is confined by mechanically rigid boundaries. [1'sa'stem-trik 'prä-sæs]

*isostatics* [MECH] In photoelasticity studies of stress analyses, those curves, the tangents to which represent the progressive change in principal-plane directions. Also known as stress trajectories. Also known as stress lines. [1'sa'stæd-ɪks]

*isostatic surface* [MECH] A surface in a three-dimensional elastic body such that at each point of the surface one of the principal planes of stress at that point is tangent to the surface. [1'sa'stæd-ɪk 'sær-fæs]

*isoteniscope* [ENG] An instrument for measuring the vapor pressure of a liquid, consisting of a U tube containing the liquid, one arm of which connects with a closed vessel containing the same liquid, while the other connects with a pressure gauge where the pressure is adjusted until the levels in the arms of the U tube are equal. [1'sa'ten-sæ,kɔp]

*isotherm* [THERMO] A curve or formula showing the relationship between two variables, such as pressure and volume, when the temperature is held constant. Also known as isothermal. [1'sa'θɔm]

*isothermal* See isotherm. [1'sa'sθɔr-ml]

*isothermal calorimeter* [THERMO] A calorimeter in which the heat received by a reservoir, containing a liquid in equilibrium with its solid at the melting point or with its vapor at the boiling point, is determined by the change in volume of the liquid. [1'sa'sθɔr-məl ,kæl-ə'rim-əd-ər]

*isothermal compression* [THERMO] Compression at constant temperature. [1'sa'sθɔr-məl 'kæm-press-ən]

*isothermal equilibrium* [THERMO] The condition in which two or more systems are at the same temperature, so that no heat flows between them. [1'sa'sθɔr-məl ,kær-ə'lɪb-ə-əm]

*isothermal expansion* [THERMO] Expansion of a substance while its temperature is held constant. [1'sa'sθɔr-məl ik'spæn-ʃæn]

*isothermal flow* [THERMO] Flow of a gas in which its temperature does not change. [1'sa'sθɔr-məl 'flɔ]

*isothermal layer* [THERMO] A layer of fluid, all points of which have the same temperature. [1'sa'sθɔr-məl 'læ-ər]

*isothermal magnetization* [THERMO] Magnetization of a substance held at constant temperature; used in combination with adiabatic demagnetization to produce temperatures close to absolute zero. [1'sa'sθɔr-məl ,mæg-nə-tə'zæ-shən]

*isothermal process* [THERMO] Any constant-temperature process, such as expansion or compression of a gas, accompanied by heat addition or removal from the system at a rate just adequate to maintain the constant temperature. [1'sa'sθɔr-məl 'præ-sæs]
isothermal transformation

isothermal transformation [THERMO] Any transformation of a substance which takes place at a constant temperature.

ISTS See impulsive stimulated thermal scattering.

IT calorie See calorie.

ITS See intelligent transportation system.

ITS-90 See international temperature scale.

Ivory point [ENG] A small pointer extending downward from the top of the cistern of a Fortin barometer; the level of the mercury in the cistern is adjusted so that it just comes in contact with the end of the pointer, thus setting the zero of the barometer scale.
Jaeger-Steinwehr method [THERMO] A refinement of the Griffiths method for determining the mechanical equivalent of heat, in which a large mass of water, efficiently stirred, is used, the temperature rise of the water is small, and the temperature of the surroundings is carefully controlled. \( \text{'yàg'-sér 'shhtín-ver, meth-ad} \)

jag bolt [DES ENG] An anchor bolt with barbs on a flaring shank. \( \text{'jag' bolt} \)
jalousie [BUILD] A window that consists of a number of long, narrow panels, each hinged at the top. \( \text{'ja'l-a-se} \)

jamb [BUILD] The vertical member on the side of an opening, as a door or window. \( \text{'jam'} \)
jamb liner [BUILD] A small strip of wood applied to the edge of a window jamb to increase its width for use in thicker walls. \( \text{'jam' ,lin-or} \)

jam nut See locknut. \( \text{'jam' ,nät} \)

Janecke coordinates [CHEM ENG] Use of a rectangular or Ponchon-type diagram to plot the solvent content of liquid-liquid equilibrium phases; used for solvent-extraction design calculations. \( \text{'ya-nak-ké kó'ord-an-at} \)

jaw [ENG] A notched part that permits a railroad-car axle box to move vertically. \( \text{'jo} \)

jawbreaker See jaw crusher. \( \text{'jo'bræk-ar} \)

jaw clutch [MECH ENG] A clutch that provides positive connection of one shaft with another by means of interlocking faces; may be square or spiral; the most common type of positive clutch. \( \text{'jo' ,klach} \)

jaw crusher [MECH ENG] A machine for breaking rock between two steel jaws; one fixed and the other swinging. Also known as jawbreaker. \( \text{'jo' ,krash-ar} \)

J bolt [DES ENG] A J-shaped bolt, threaded on length. \( \text{'ja' ,ból} \)

J box See junction box. \( \text{'ja' ,bük} \)

Jeans viscosity equation [THERMO] An equation which states that the viscosity of a gas is proportional to the temperature raised to a constant power, which is different for different gases. \( \text{'jenz vi'skääs-öd-ë ,kwâ-zhän} \)

jeep [MECH ENG] A one-quarter-ton, four-wheel-drive utility vehicle in wide use in all United States military services. \( \text{'jëp} \)

Jeremiassen crystallizer [CHEM ENG] Device used to grow solid crystals in a supersaturated liquid solution and to separate them from it. \( \text{'yer-a’mt-sa’n' krist-al, jë-pə} \)

jerk [MECH] 1. The rate of change of acceleration; it is the third derivative of position with
jet pump

respect to time. 2. A unit of rate of change of acceleration, equal to 1 foot (30.48 centimeters) per second squared per second. {jerk}  

jerk pump  [MECH ENG] A pump that supplies a precise amount of fuel to the fuel injection valve of an internal combustion engine at the time the valve opens; used for fuel injection. {'jerk, pomp}  

jet bit  [DES ENG] A modification of a drag bit or a roller bit that utilizes the hydraulic jet principle to increase drilling rate. {'jet, bit}  

jet compressor  [MECH ENG] A device, utilizing an actuating nozzle and a combining tube, for the pumping of a compressible fluid. {'jet, compres-sor}  

jet condenser  [MECH ENG] A direct-contact steam condenser utilizing the aspirating effect of a jet for the removal of noncondensables. {'jet, condenser}  

jet drilling  [MECH ENG] A drilling method that utilizes a chopping bit, with a water jet run on a string of hollow drill rods, to chop through soils and wash the cuttings to the surface. Also known as wash boring. {'jet, drill-ing}  

jet engine  [MECH ENG] Any engine that ejects a jet or stream of gas or fluid, obtaining all or most of its thrust by reaction to the ejection. {'jet, engi-ne}  

jet hole  [ENG] A borehole drilled by use of a directed, forceful stream of fluid or air. {'jet, hōl}  

jet mill  See fluid-energy mill. {'jet, mil}  

jet mixer  [MECH ENG] A type of flow mixer or line mixer, depending on impingement of one liquid on the other to produce mixing. {'jet, mix-er}  

jet molding  [ENG] Molding method in which most of the heat is applied to the material to be molded as it passes through a nozzle or jet, rather than in a conventional heating cylinder. {'jet, mold-ing}  

jet nozzle  [DES ENG] A nozzle, usually specially shaped, for producing a jet, such as the exhaust nozzle on a jet or rocket engine. {'jet, nozzle}  

jet-piercing drill  See fusion-piercing drill. {'jet, pier-sin, drill}  

jet propulsion  [ENG] Propulsion by means of a jet of fluid. {'jet, propulsion}  

jet pump  [MECH ENG] A pump in which an accelerating jet entrains a second fluid to deliver it at elevated pressure. {'jet, pump}  

jetsam  [ENG] Articles that sink when thrown overboard, particularly those jettisoned for the purpose of lightening a vessel in distress. {'jet-sam}  

jet spinning  [ENG] Production of plastic fibers in which a directed blast or jet of hot gas pulls the molten polymer from a die lip, similar to melt spinning. {'jet, spin-in}  

jetting  [CIV ENG] A method of driving piles or well points into sand by using a jet of water to break the soil. [ENG] During molding of plastics, the turbulent flow of molten resin from an undersized gate or thin section into a thicker mold section, as opposed to laminar, progressive flow. {'jetting}  

jettison  [ENG] The throwing overboard of objects, especially to lighten a craft in distress. {'jet-tən}  

jewel  [ENG] 1. A bearing usually made of synthetic corundum and used in precision timekeeping devices, gyro, and other instruments. 2. A bearing lining of soft metal, used in railroad cars, for example. {'jōl}  

J factor  [THERMO] A dimensionless equation used for the calculation of free convection heat transmission through fluid films. {'ja, fakt-or}  

JFET See junction field-effect transistor. {'ja, fet}  

jib boom  [MECH ENG] An extension that is hinged to the upper end of a crane boom. {'jīb, bōm}  

jib crane  [MECH ENG] Any of various cranes having a projecting arm (jib). {'jīb, krān}  

jig  [ENG] A machine for dyeing piece goods by moving the cloth at full width (open width) through the dye liquor on rollers. [MECH ENG] A device used to position and hold parts for machining operations and to guide the cutting tool. {'jīg}  

jig back  [MECH ENG] An aerial ropeway with a pair of containers that move in opposite directions and are loaded or stopped alternately at opposite stations but do not pass around the terminals. Also known as reversible tramway; to-and-fro ropeway. {'jīg, bak}  

jig borer  [MECH ENG] A machine tool resembling a vertical milling machine designed for locating and drilling holes in jigs. {'jīg, bor-ər}  

jiggering  [ENG] A mechanization of the ceramic-forming operation consisting of molding the outside of a piece by throwing plastic clay on a platter of paris mold, placing the mold and clay on a rotating head, and forming the inner surface by forcing a template or jigger knife against the clay; method used in mass-producing dinnerware. {'jīg-ə-rəng}  

jig grinder  [MECH ENG] A precision grinding machine used to locate and grind holes to size, especially in hardened steels and carbides. {'jīg, grin-dar}  

jigsaw  [MECH ENG] A tool with a narrow blade suitable for cutting intricate curves and lines. {'jīg, sō}  

jim crow  [DES ENG] A device with a heavy buttress screw thread used for bending rails by hand. {'jīm *krō}  

JIT See just-in-time.  

J-K flip-flop  [ELECTR] A storage stage consisting only of transistors and resistors connected as flip-flops between input and output gates, and working with charge-storage transistors; gives a definite output even when both inputs are F. {'jākə *flip, flap}  

job  [IND ENG] 1. The combination of duties, skills, knowledge, and responsibilities assigned to an individual employee. 2. A work order. {'jab}  

job analysis  [IND ENG] A detailed study of the
work performed, the facilities required, the working conditions, and the skills required to complete a specific job. Also known as job study.

jobber's reamer  [DES ENG] A machine reamer that is solid with straight or helical flutes and taper shanks.  {ˈjäbərˈriːəmər}

job breakdown  [IND ENG] Separation of an operation into elements. Also known as operation breakdown.  {ˈjäb bʁeɪkˌdau̯n̩}

job characteristic  [IND ENG] See job factor.  {ˈjäb ˌkɑːrɪˈkaʊtəˌris̩tɪk}

job class  [IND ENG] A group of jobs involving a similar type of work, difficulty of performance, or range of pay. Also known as job family.  job grade; labor grade.  {ˈjäbˌklɑːs}

job classification  [IND ENG] Designating job classes on the basis of job factors or level of pay, or on the basis of job evaluation.  {ˈjäbˌklɑːsəˌfoʊˌkɑːˌʃən}

job description  [IND ENG] A detailed description of the essential activities required to perform a task.  {ˈjäb dɪˈskrɪpˌʃən}

job design  [IND ENG] The arrangement of tasks over a work shift with the goal of achieving technological and organizational requirements as well as reducing sources of fatigue and human error. Also known as work design.  {ˈjäb diˌzɪn}

job evaluation  [IND ENG] Orderly qualitative appraisal of each job or position in an establishment either by a point system for the specific job characteristics or by comparison of job factors, used for establishing a job hierarchy and wage plans.  {ˈjäb iˌvalˌyaˈwaˌʃən}

job factor  [IND ENG] An essential job element which provides a basis for selecting and training employees and establishing the wage plan for the job. Also known as job characteristic.  {ˈjäbˌfækˈtɔːr}

job block  See Johansson block.  {ˈjoʊˌblæk}

job plan  [IND ENG] The organized approach to production management involving formal, step-by-step procedures.  {ˈjäbˌplæn}

job safety analysis  [IND ENG] A method of studying a job by breaking it down into its components to determine any possible hazards it may involve and the qualifications needed by those who perform it.  {ˈjäb ˌsæfˈtɛˌəˌnalˌsæs}

job schedule  [CONT SYS] A control program that selects from a job queue the next job to be processed.  {ˈjäbˌskɛdˈjuːl}

job shop  [IND ENG] A manufacturing facility that generates a variety of products in relatively low numbers and in batch lots.  {ˈjäbˌʃæp}

job stream  [CONT SYS] A collection of jobs in a job queue.  {ˈjäbˌstrɛm}

job study  See job analysis.  {ˈjäbˌstɛdˈe}

joggle  [DES ENG] 1. A flangelike offset on a flat piece of metal.  2. A projection or notch on a sheet of building material to prevent protrusion.  3. A dowel for joining blocks of masonry.  {ˈjɔləˌgəl}

joggle joint  [CIV ENG] In masonry or stonework, a joint between two blocks in which a projection on one fits into a recess in another.  {ˈjɔləˌgəlˌjoʊnt}

joggle piece  See joggle post.  {ˈjɔləˌgəlˌpoʊst}

joggle post  [BUILD] 1. A post constructed of two or more sections of lumber joined by joggles.  2. A king post with notches or shoulders at its lower end that provide support for the feet of the struts. Also known as joggle piece.  {ˈjɔləˌgəlˌpoʊst}

Johansson block  [DES ENG] A type of gage block ground to an accuracy of at least 1/100,000 inch (0.25 micrometer). Also known as job block.  {ˈjoʊˌhɑːnˌsɔnˌblæk}

joint  [ELEC] A juncture of two wires or other conductive paths for current.  [ENG] The surface at which two or more mechanical or structural components are united.  {ˈjoʊnt}

joint bar  [CIV ENG] A rigid steel member used in pairs to join, hold, and align rail ends.  {ˈjoʊntˌbɑːr}

joint clearance  [ENG] The distance between mating surfaces of a joint.  {ˈjoʊntˌklɪrəns}

jointed-arm robot  [CONT SYS] A robot whose arm is constructed of rigid members connected by rotary joints. Also known as revolute-coordinate robot.  {ˈjoʊntˌtɔdˌjɜːmˈtɔrˌbɑːt}

jointer  [ENG] 1. Any tool used to prepare, make, or simulate joints, such as a plane for smoothing wood surfaces prior to joining them, or a hand tool for inscribing grooves in fresh cement.  2. A file for making sawteeth the same height.  3. An attachment to a plow that covers discarded material.  4. A worker who makes joints, particularly a construction worker who cuts stone to proper fit.  5. A pipe of random length made from two joined, relatively short lengths.  {ˈjoʊntˌɔːr}

jointer gage  [DES ENG] An attachment to a bench vise that holds a board at any angle desired for planing.  {ˈjoʊntˌɔːrˌɡɛd}

jointing  [CIV ENG] Caulking of masonry joints.  [ENG] A basic woodworking process for trueing or smoothing one surface of a workpiece by using a single peripheral cutting head in order to prepare the workpiece for further processing.  {ˈjoʊntˌɪŋ}

joint pole  [ELEC] Pole used in common by two or more utility companies.  {ˈjoʊntˌpɔl}

joint ring  [DES ENG] A pipe-joint flange whose outside diameter is less than the diameter of the circle containing the connecting bolts and thus fits inside the bolts.  {ˈjoʊntˌrɪŋ}

joint space  [CONT SYS] The space defined by a vector whose components are the translational and angular displacements of each joint of a robotic link.  {ˈjoʊntˌspæs}

joist  [CIV ENG] A steel or wood beam providing direct support for a floor.  {ˈjoist}

joist anchor  See wall anchor.  {ˈjoistˌænˈkɑːr}

Jolly balance  [ENG] A spring balance used to measure specific gravity of mineral specimens by weighing a specimen when in the air and when immersed in a liquid of known density.  {ˈjɔləˌbɑləˌæns}
The heat which is evolved in a Joule experiment is equivalent to the work done by a force of 1 newton magnitude s meter-kilogram-second system of units, equal to 0.0005 joules. To make a connection between two points or terminals in a circuit or to provide a path around a break in a circuit. Also known as Joule-Thomson process. A metal housing for a journal bearing. A two-axis displacement control method. A short length of conductor used to bypass the flow of fluid in a boiler or tubular heater. A phenomenon occurring in a nonlinear system subjected to a sinusoidal input at constant frequency, in which the value of the amplitude of the forced oscillation can jump upward or downward as the input amplitude is varied through either of two fixed values, and the graph of the forced amplitude versus the input amplitude follows a hysteresis loop.
junction filter [ELECTR] A combination of a 

junction [CIV ENG] A point of intersection of roads or highways, especially where one terminals. [ELEC] See major node [ELECTR] A region of transition between two different semiconductor regions in a semiconductor device, such as a **pn** junction, or between a metal and a semiconductor. (ˈjʌŋk-ˈʃən) "junction box [ENG] A protective enclosure into which wires or cables are lead and connected to form joints. Also known as a box. (ˈjʌŋk-ˈʃən, ˈbāks) "junction capacitance [ELECTR] See barrier capacitance. (ˈjʌŋk-ˈʃən kapəˈsəd-əns) "junction capacitor [ELECTR] An integrated-circuit capacitor that uses the capacitance of a reverse-biased **pn** junction. (ˈjʌŋk-ˈʃən kæpəˈsəd-ər) "junction diode [ELECTR] A semiconductor diode in which the rectifying characteristics occur at an alloy, diffused, electrochemical, or grown junction between **n**-type and **p**-type semiconductor materials. Also known as junction rectifier. (ˈjʌŋk-ˈʃən ˈdīˌəd) "junction field-effect transistor [ELECTR] A field-effect transistor in which there is normally a channel of relatively low-conductivity semiconductor joining the source and drain, and this channel is reduced and eventually cut off by junction depletion regions, reducing the conductivity, when a voltage is applied between the gate electrodes. Abbreviated JFET. (ˈjʌŋk-ˈʃən ˈfeldˌiˌekt tranˈzɪs-ˌtər) "junction filter [ELECTR] A combination of a high-pass and a low-pass filter that is used to separate frequency bands for transmission over separate paths. (ˈjʌŋk-ˈʃən ˈfɪl-ˈtər) "junction isolation [ELECTR] Electrical isolation of a component on an integrated circuit by surrounding it with a region of a conductivity type that forms a junction, and reverse-biasing the junction so it has extremely high resistance. (ˈjʌŋk-ˈʃən, ˈtəsəˈlə-ˈʃən) "junction phenomena [ELECTR] Phenomena which occur at the boundary between two semiconductor materials, or a semiconductor and a metal, such as the existence of an electrostatic potential in the absence of current flow, and large injection currents which may arise when external voltages are applied across the junction in one direction. (ˈjʌŋk-ˈʃən ˈfaˌnæm-ənə) "junction pole [ELECTR] Pole at the end of a transposition section of an open-wire line or the pole common to two adjacent transposition sections. (ˈjʌŋk-ˈʃən ˈpōl) "junction rectifier See junction diode. (ˈjʌŋk-ˈʃən ˈrek-təˌfɪr) "junction transistor [ELECTR] A transistor in which emitter and collector barriers are formed between semiconductor regions of opposite conductivity type. (ˈjʌŋk-ˈʃən tranˈzɪs-ˌtər) "Junks engine [MECH ENG] A double- opposed-piston, two-cycle internal combustion engine with intake and exhaust ports at opposite ends of the cylinder. (ˈjʊŋk-ˈkɔr ˈen-ˈjän) "just-in-time [IND ENG] A systems approach to developing and operating a manufacturing system so that the least amount of resources is expended in producing the final products. Abbreviated JIT. (ˈjəst ˈɪn-ˈtɪm) "just ton See ton. (ˈjəst ˈtən)
This page intentionally left blank.
K

K See cathode.

Kalman filter [CONT SYS] A linear system in which the mean squared error between the desired output and the actual output is minimized when the input is a random signal generated by white noise. { kar\-man \, fil\-tar }

kanban [IND ENG] An inventory control system for tracking the flow of in-process materials through the various operations of a just-in-time production process. Kanban means "card" or "ticket" in Japanese. { kan\-ban }

Kapitza balance [THERMO] A magnetic balance for measuring susceptibilities of materials in large magnetic fields that are applied for brief periods. { kap\-it\-za \, bal\-ance }

Kapitza expander [CHEM ENG] Reciprocating-gas expander used for helium liquefaction; relies on close fit rather than packing or rings on the pistons. { kap\-it\-za \, kap\-span\-dar }

Kaplan turbine [MECH ENG] A propeller-type hydraulic turbine in which the positions of the runner blades and the wicket gates are adjustable for load change with sustained efficiency. { kap\-lan \, tar\-ban }

Karrer method [CHEM ENG] An industrial method for the chemical synthesis of riboflavin. { kar\-ar \, meth\-ad }

Kata thermometer [ENG] An alcohol thermometer used to measure low velocities in air circulation, by heating the large bulb of the thermometer above 100°F (38°C) and noting the time it takes to cool from 100 to 95°F (38 to 35°C) or some other interval above ambient temperature, the time interval being a measure of the air current at that location. { ka\-tar \, mar\-mam\-ad\-ar }

Kater’s reversible pendulum [MECH] A gravity pendulum designed to measure the acceleration of gravity and consisting of a body with two knife-edge supports on opposite sides of the center of mass. { ka\-tar \, ri\-var\-sa\-bal \, pen\-ja\-lan }

katharometer [ENG] An instrument for detecting the presence of small quantities of gases in air by measuring the resulting change in thermal conductivity of the air. Also known as thermal conductivity cell. { kath\-a\-ram\-ad\-ar }

Kawertz engine [MECH ENG] A type of cat-and-mouse rotary engine in which the pistons are vanes which are sections of a right circular cylinder; two pistons are attached to one rotor so that they rotate with constant angular velocity, while the other two pistons are controlled by a gear-and-crank mechanism, so that angular velocity varies. { kau\-e\-arts \, en\-jan }

kb See kilobar.

kcal See kilocalorie.

keel block [CIV ENG] A docking block used to support a ship’s keel. { kel\, blak }

kellinging [MECH ENG] Three-dimensional machining of a contoured surface by tracer-milling the die block or punch; the cutter path is controlled by a tracer that follows the contours on a die model. { kel\-a\-rij }

Kellogg equation [THERMO] An equation of state for a gas, of the form

\[ p = RT + \sum_{n=2}^{\infty} \frac{\beta_n T^{n-2}}{n!} |p|^n \]

where \( p \) is the pressure, \( T \) the absolute temperature, \( p \) the density, \( R \) the gas constant, and \( \beta_n \), \( b_n \), and \( c_n \) are constants. { kel\, ag\, kwa\-shan }

Kelly ball test [ENG] A test for the consistency of concrete using the penetration of a half sphere, a 1-inch (2.5-centimeter) penetration by the Kelly ball corresponds to about 2 inches (5 centimeters) of slump. { kel\-böl\, test }

kelvin [ELEC] A name formerly given to the kilowatt-hour. Also known as thermal volt. [THERMO] A unit of absolute temperature equal to 1/273.16 of the absolute temperature of the triple point of water. Symbolized K. Formerly known as degree Kelvin. { kel\-von }

Kelvin absolute temperature scale [THERMO] A temperature scale in which the ratio of the temperatures of two reservoirs is equal to the ratio of the amount of heat absorbed from one of them by a heat engine operating in a Carnot cycle to the amount of heat rejected by this engine to the other reservoir; the temperature of the triple point of water is defined as 273.16 K. Also known as Kelvin temperature scale. { kel\-von \, lab\-sa\, lu\-t \, tem\-pra\-char \, skål }

Kelvin body [MECH] An ideal body whose shearing (tangential) stress is the sum of a term proportional to its deformation and a term proportional to the rate of change of its deformation with time. Also known as Voigt body. { kel\-von \, bäd\-ë }

Copyright 2003 by The McGraw-Hill Companies, Inc. Click Here for Terms of Use.
Kelvin bridge

Kelvin bridge  [ELEC] A specialized version of the Wheatstone bridge network designed to eliminate, or greatly reduce, the effect of lead and contact resistance, and thus permit accurate measurement of low resistance. Also known as double bridge; Kelvin network; Thomson bridge. {čel·vən} [MECH] A cut made in wood, metal, or other material by a saw or cutting torch. {kerf} [CHEM] A square taper key fitted into a keyway of square section and driven from opposite ends of the hub. {KEN·DR·ē,kē} [MECH] An instrument that is inserted into a keyway of square section and driven from opposite ends of the hub. {kē·vən} [THERMO] The basic scale used for temperature definition, the triple point of water (comprising ice, liquid, and vapor) is defined as 273.16 K, given two reservoirs, a reversible heat engine is built operating in a cycle between them, and the ratio of their temperatures is defined to be equal to the ratio of the heats transferred. {čel·vən,skal} [CHEM] An electrically heated Kern counter. {kē·vən} [CIV ENG] Establishing a mechanical bond in a construction joint. {keying} [CIV ENG] A set of keys or control levers having a systematic arrangement and used to operate a machine or other piece of equipment such as a typewriter, typesetter, processing unit of a computer, or piano. {kē, bōrd} [THERMO] An equation of state of a gas which is designed to correct the van der Waals equation for the effect of surrounding molecules on the term representing the volume of a molecule. {čel·vən} [IND ENG] A device used to obtain absolute alcohol; ... and on distillation anhydrous alcohol of the displacement of the oscillator as the frequency of the applied vibration is varied. {čel·vən,skal} [IND ENG] A job that has been evaluated and is considered representative of similar jobs in the same labor market and is used as a benchmark to evaluate the similar jobs and to establish non-key-job wages. {čē,jāb} [THERMO] Acut made in wood, metal, or other material by a saw or cutting torch. {kerf} [DES ENG] A typewriter-like device that prepares punched paper tape for communications or computing equipment. {kē,bōrd} [ENG] A set of keys or control levers having a systematic arrangement and used to operate a machine or other piece of equipment such as a typewriter, typesetter, processing unit of a computer, or piano. {kē,bōrd} [THERMO] A projecting portion that serves to prevent movement of parts at a construction joint. [DES ENG] A device used to move in some manner in order to secure or tighten. {kē·vən} [ENG] A hand-operated switch used for transmitting code signals. Also known as signaling key. {čel·vən} [MECH] A hole or a slot for receiving a key. {kē,joint} [CHEM ENG] An instrument that is inserted into a keyway of square section and driven from opposite ends of the hub. {kē·vən} [IND ENG] An activity that possesses major significance. Also known as milestone activity. {čē,kaktiv·ad·e·tē} [ENG] A set of keys or control levers having a systematic arrangement and used to operate a machine or other piece of equipment such as a typewriter, typesetter, processing unit of a computer, or piano. {kē,bōrd} [THERMO] An equation of state of a gas which is designed to correct the van der Waals equation for the effect of surrounding molecules on the term representing the volume of a molecule. {čel·vən} [CIV ENG] Establishing a mechanical bond in a construction joint. {keying} [CIV ENG] A set of keys or control levers having a systematic arrangement and used to operate a machine or other piece of equipment such as a typewriter, typesetter, processing unit of a computer, or piano. {kē,bōrd} [DES ENG] A hole or a slot for receiving a key. {kē,hōl} [DES ENG] A fine compass saw 11–16 inches (28–41 centimeters) long. {kē,hōl,so} [CHEM ENG] A distillation process used to obtain absolute alcohol, benzene is added to a constant-boiling 95% alcohol-water solution, and on distillation anhydrous alcohol leaves the bottom of the column. {čē,kra·sas} [ENG] A typewriter-like device that prepares punched paper tape for communications or computing equipment. {kē,bōrd} [ENG] A set of keys or control levers having a systematic arrangement and used to operate a machine or other piece of equipment such as a typewriter, typesetter, processing unit of a computer, or piano. {kē,bōrd} [CIV ENG] A set of keys or control levers having a systematic arrangement and used to operate a machine or other piece of equipment such as a typewriter, typesetter, processing unit of a computer, or piano. {kē,bōrd} [MECH] For a harmonic oscillator subject to hysteretic damping and subjected to a sinusoidally varying force, a plot of the in-phase and quadrature components of the displacement of the oscillator as the frequency of the applied vibration is varied. {čen·drē ak·chē} [CIV ENG] Establishing a mechanical bond in a construction joint. {keying} [CIV ENG] A set of keys or control levers having a systematic arrangement and used to operate a machine or other piece of equipment such as a typewriter, typesetter, processing unit of a computer, or piano. {kē,bōrd} [DES ENG] A fine compass saw with a blade 11–16 inches (28–41 centimeters) long. {kē,hōl,so}
key seat See keyway. (ˈkēˌ sēt) keyseater [MECH ENG] A machine for milling beds or grooves in mechanical parts which receive keys. (ˈkēˌsēd-ər) keyway [DES ENG] 1. An opening in a lock for passage of a flat metal key. 2. The pocket in the driven element to provide a driving surface for the key. 3. A groove or channel for a key in any mechanical part. Also known as key seat. [ENG] An interlocking channel or groove in a cement or wood joint to provide reinforcement. (ˈkēˌwā) keyword spotting [ENG ACOUS] An approach to task-oriented speech understanding through detecting a limited number of keywords that would most likely express the intent of a speaker, rather than attempting to recognize every word in an utterance. (ˈkēˌwörˌdˌsplat-ər) kg See kilogram; kilogram force. kg-cal See kilocalorie. kgf See kilogram force. kgf-m See meter-kilogram force. kickback [MECH ENG] A backward thrust, such as the backward starting of an internal combustion engine as it is cranked, or the reverse push of a piece of work as it is fed to a rotary saw. (ˈkikˌbak) kickdown [MECH ENG] 1. Shifting to lower gear in an automotive vehicle. 2. The device for shifting. (ˈkikˌdaʊn) kick over [MECH ENG] To start firing; applied to internal combustion engines. (ˈkikˌəvr) kickpipe [BUILD] A short pipe protecting an electrical cable at the point where it emerges from a floor. (ˈkikˌpɪp) kickplate [BUILD] A plate used on the bottom of doors and cabinets or on the risers of steps to protect them from shoe marks. Also known as toe plate. (ˈkikˌplæt) Kick’s law [ENG] The law that the energy needed to crush a solid material to a specified fraction of its original size is the same, regardless of the original size of the feed material. (ˈkɪksˌloʊ) kick starter [MECH ENG] A mechanism for starting the operation of a motor by thrusting with the foot. (ˈkikˌstɑrd-ər) kick wheel [ENG] A potter’s wheel worked by a foot pedal. (ˈkikˌwel) kiln [ENG] A heated enclosure used for drying, burning, or firing materials such as ore or ceramics. (ˈkiːnl) kilobar [MECH] A unit of pressure equal to 1000 bars (100 megapascals). Abbreviated kb. (ˈkiːlˌəbər) kilocalorie [THERMO] A unit of heat energy equal to 1000 calories. Abbreviated kcal. Also known as kilogram-calorie (kg-cal); large calorie (Cal). (ˈkiːlˌəkˌeɪl əˌrər) kilogram [MECH] 1. The unit of mass in the meter-kilogram-second system, equal to the mass of the international prototype kilogram stored at Sèvres, France. Abbreviated kg. 2. See kilogram force. (ˈkiːlˌəgram) kilogram-calorie See kilocalorie. (ˈkiːlˌəgramˈkəlˌəroʊ) kilogram force [MECH] A unit of force equal to the weight of a 1-kilogram mass at a point on the earth’s surface where the acceleration of gravity is 9.80665 m/s^2. Abbreviated kgf. Also known as kilogram (kg); kilogram weight (kg-wt). (ˈkiːlˌəgramˌfɔrəs) kilogram-meter See meter-kilogram. (ˈkiːlˌəgramˌmɛd-ər) kilogram weight See kilogram force. (ˈkiːlˌəgramˌwɔt) kiloliters [MECH] A unit of volume equal to 1000 liters or to 1 cubic meter. Abbreviated kl. (ˈkiːlˌəled-ər) kilometer [MECH] A unit of length equal to 1000 meters. Abbreviated km. (ˈkiːlˌəmɛd-ər) kilowatt-hour [ELEC] A unit of energy or work equal to 1000 watt-hours. Abbreviated kWh; kW-hr. Also known as Board of Trade Unit. (ˈkiːlˌəwɔtˌərˈaʊr) kinematically admissible motion [MECH] Any motion of a mechanical system which is geometrically compatible with the constraints. (ˈkɪnˌəmədˌərˌkalˌɪdʒmɪsˌəʊbəlˈmʊʃən) kinematics [MECH] The study of the motion of ‘a system of particles without reference to the forces which act on the system. (ˈkɪnˌəmətɪkˌɪks) kinetic energy [MECH] The energy which a body possesses because of its motion, in classical mechanics, equal to one-half of the body’s mass times the square of its speed. (kəˈned-ik ˈenəˌrə) kinetic equilibrium See dynamic equilibrium. (kəˈned-ik ˌɪˌkwəˈlɪbrəˌrəm) kinetic friction [MECH] The friction between two surfaces which are sliding over each other. (kəˈned-ikˈfrɪkˌʃən) kinetic momentum [MECH] The momentum which a particle possesses because of its motion, in classical mechanics, equal to the particle’s mass times its velocity. (kəˈned-ik ˈmərəˌməntəm) kinetic potential See Lagrangian. (kəˈned-ikˈpətənˌkələn) kinetic reaction [MECH] The negative of the mass of a body multiplied by its acceleration. (kəˈned-ikˈrɛəˌkənˌʃən) kinetics [MECH] The dynamics of material bodies. (kəˈned-iks) king closer [CIV ENG] In masonry work, a rectangular brick having one corner cut diagonally to half the end of the brick and used to fill an opening in a course larger than half a brick. Also known as beveled closer. (ˈkɪŋˌkləʊzər) kingpin [MECH ENG] The pin for articulation between an automobile stub axle and an axle-beam or steering head. Also known as swivel pin. (ˈkɪŋˌpɪn) king post [BUILD] In a roof truss, the central vertical member against which the rafters abut and which supports the tie beam. (ˈkɪŋˌpɒst)
king post truss [BUILD] A wooden roof truss having two principal rafters held by a horizontal tie beam, a king post upright between tie beam and ridge, and usually two struts to the rafters from a thickening at the king post foot. {ˈkɪŋ postˌtrʌs}

kink [ENG] A tightened loop in a wire rope resulting in permanent deformation and damage to the wire. {ˈkɪŋk}

kip [MECH] A 1000-pound (453.6-kilogram) load. {ˈkɪp}

Kirchhoff formula [THERMO] A formula for the dependence of vapor pressure \( p \) on temperature \( T \), valid over limited temperature ranges; it may be written \( \log p = A - (B/T) - C \log T \), where \( A \), \( B \), and \( C \) are constants. {ˈkɜr.hɔfˌfɔːrˌmi.tʃəˌrəl}

Kirchhoff's current law [ELEC] The law that at any given instant the sum of the instantaneous values of all the currents flowing toward a point is equal to the sum of instantaneous values of all the currents flowing away from the point. Also known as Kirchhoff's first law. {ˈkɜr.hɔfˌhoʊfs ˈkɑrˌrɑntˌloʊ}

Kirchhoff's equations [THERMO] Equations which state that the partial derivative of the change of enthalpy (or of internal energy) during a reaction, with respect to temperature, at constant pressure (or volume) equals the change in heat capacity at constant pressure (or volume). {ˈkɜr.hɔfˌhoʊfs ɪˌkwɑːˈrænς}

Kirchhoff's first law [ELEC] See Kirchhoff's current law. {ˈkɜr.hɔfˌhoʊfs ˈfɑrstˌloʊ}

Kirchhoff's law [ELEC] Either of the two fundamental laws dealing with the relation of currents at a junction and voltages around closed loops in an electric network; they are known as Kirchhoff's current law and Kirchhoff's voltage law. [THERMO] The law that the ratio of the emissivity of a heat radiator to the absorptivity of the same radiator is the same for all bodies, depending on frequency and temperature alone, and is equal to the emissivity of a blackbody. Also known as Kirchhoff's principle. {ˈkɜr.hɔfˌhoʊfs ˈloʊ}

Kirchhoff's principle [ELEC] See Kirchhoff's law. {ˈkɜr.hɔfˌhoʊfs ˈprɪnˌsəˌpəl}

Kirchhoff's second law [ELEC] See Kirchhoff's voltage law. {ˈkɜr.hɔfˌhoʊfs ˈsɛkˌənˌdˌloʊ}

Kirchhoff's voltage law [ELEC] The law that at each instant of time the algebraic sum of the voltage rises around a closed loop in a network is equal to the algebraic sum of the voltage drops, both being taken in the same direction around the loop. Also known as Kirchhoff's second law. {ˈkɜr.hɔfˌhoʊfs ˈvɑlˌtɪjˌloʊ}

Kirchhoff vapor pressure formula [THERMO] An approximate formula for the variation of vapor pressure \( p \) with temperature \( T \), valid over a limited temperature range; it is \( \ln p = A - B/T - C \ln T \), where \( A \), \( B \), and \( C \) are constants. {ˈkɜr.hɔfˌvɑrˌpreˌʃərˌfɔrˌmi.tʃəˌrəl}

Kirkwood-Brinkley's theory [MECH] In terminal ballistics, a theory formulating the scaling laws from which the effect of blast at high altitudes may be inferred, based upon observed results at ground level. {ˈkɜrkˌwudˌbriŋkˌlɛz ˈθɛrˌəˌbəˌriŋklɛz}

kiss-roll coating [ENG] Procedure for coating a substrate web in which the coating roll carries a metered film of coating material; part of the film transfers to the web, part remains on the roll. {ˈkɪsˌrəlˌkədˌɪŋ}

kl See kiloliter.

klaxon [ENG ACOUS] A diaphragm horn sometimes operated by hand. {ˈklæksn}

klydonograph [ENG] A device attached to electric power lines for estimating certain electrical characteristics of lightning by means of the figures produced on photographic film by the lightning-produced surge carried over the lines; the size of the figure is a function of the potential and polarity of the lightning discharge. {ˈkliˌdɑnˌəˌgraf}

km See kilometer.

knapping hammer [ENG] A steel hammer used for breaking and shaping stone. {ˈnæpˌɪŋˌhɑmˌhɑrˌm}

knee [MECH ENGR] In a knee-and-column type of milling machine, the part which supports the saddle and table and which may move vertically on the column. {ˈnɛə}

knee brace [BUILD] A stiffener between a column and a supported truss or beam to provide greater rigidity in a building frame under transverse loads. {ˈnɛəˌbræs}

knee frequency See break frequency. {ˈnɛəˌbrɪkˈwənˌsɛ}

kneeler [CIV ENG] In masonry, a stone cut to provide a break in the horizontal-vertical pattern to begin the curve or angle of an arch or vault. {ˈnɛəˌərˌv}

knee pad [ENG] A protective cushion, usually made of sponge rubber, that can be strapped to a worker's knee. {ˈnɛəˌpæd}

knee rafter [BUILD] A brace placed diagonally between a principal rafter and a tie beam. {ˈnɛəˌrəfˈtɔr}

knee switch [ENG] A control mechanism operated with knee movements by a seated worker. {ˈnɛəˌswɪtʃ}

knee tool [MECH ENGR] A tool holder with a shape resembling a knee, such as the holder for simultaneous cutting and interval operations on a screw machine or turret lathe. {ˈnɛəˌˌtʊl}

knee wall [BUILD] A partition that forms a side wall or supports roof rafters under a pitched roof. {ˈnɛəˌwɔl}

knife [DES ENG] A sharp-edged blade for cutting. {ˈnɪf}

knife coating [ENG] Procedure for coating a continuous-web substrate in which coating thickness is controlled by the distance between the substrate and a movable knife or bar. {ˈnɪfˌkədˌɪŋ}

knife-edge [DES ENG] A sharp narrow edge resembling that of a knife, such as the fulcrum for a lever arm in a measuring instrument. {ˈnɪfˌeʃ}
An instrument for measuring very low pressures, which measures the force of a gas on a cold plate beside which there is an electrically heated plate.  

**Kullenberg piston corer**  
Kullenberg piston corer [MECH ENG] A piston-operated coring device used to obtain 2-inch-diameter (5-centimeter) core samples.
**kWh**

kWh See kilowatt-hour.

kW-hr See kilowatt-hour

**kyanize** [CHEM ENG] To saturate wood with mercuric chloride as a decay preventive. {'ki-ə,niź}

**kymograph** [IND ENG] A device used to measure extremely short work time intervals by using a system of transducers that are activated by an operator performing a job, with the impulses recorded as a function of time. {'ki-məgraf́}
lacing  [CIV ENG]  1. A lightweight metallic piece that is fixed diagonally to two channels or four angle sections, forming a composite strut.  2. A course of brick, stone, or tiles in a wall of rubble to give strength.  3. A course of upright bricks forming a bond between two or more arch rings.  4. Distribution steel in a slab of reinforced concrete.  5. A light timber fastened to supports of struts or waling in the timbering of excavations (including mines).  [ELEC] Tying insulated wires together to support each other and form a single neat cable, with separately laced branches.  [ˈlæs-ɪŋ]
lactometer  [ENG]  A hydrometer used to measure the specific gravity of milk.  [ˈlæk-təm-ər]
ladder  [ENG]  A structure, often portable, for climbing up and down, consists of two parallel sides joined by a series of crosspieces that serve as footrests.  [ˈlæd-ər]
ladder-bucket dredge  See bucket-ladder dredge.  [ˈlæd-ər ˈbæk-ət ˈdred]
ladder diagram  [CONT SYS]  A diagram used to program a programmable controller, in which power flows through a network of relay contacts arranged in horizontal rows called rungs between two vertical rails on the side of the diagram containing the symbolic power.  [ˈlæd-ər ˈdɪəgrəm]
ladder ditcher  See ladder trencher.  [ˈlæd-ər ˈdɪtʃər]
ladder dredge  See bucket-ladder dredge.  [ˈlæd-ər ˈdred]
ladder drilling  [MECH ENG]  An arrangement of retractable drills with pneumatic powered legs mounted on banks of steel ladders connected to a holding frame, used in large-scale rock tunneling, with the advantage that many drills can be worked at the same time by a small labor force.  [ˈlæd-ər ˈdrəil-iŋ]
ladder jack  [ENG]  A scaffold support which hooks onto a ladder.  [ˈlæd-ər ˈjak]
ladder track  [CIV ENG]  A main track that joins successive body tracks in a railroad yard.  [ˈlæd-ər ˈtræk]
ladder trencher  [MECH ENG]  A machine that digs trenches by means of a bucket-ladder excavator. Also known as ladder ditcher.  [ˈlæd-ər ˈtrenchər]
ladle  [DES ENG]  A deep-bowled spoon with a long handle for dipping up, transporting, and pouring liquids.  [ˈlæd-əl]
lag  [CIV ENG]  A flat piece of material, usually wood, used to wedge timber or steel supports against the ground and to make secure the space between supports.  [ELECTR] A persistence of the electric charge image in a camera tube for a small number of frames.  [lag]
lagan  [ENG]  A heavy object thrown overboard and buoyed to mark its location for future recovery.  [ˈlægən]
lag bolt  See coach screw.  [ˈlæg ˈbolt]
lagging  [CIV ENG]  1. Horizontal wooden strips fastened across an arch under construction
lagging network

to transfer weight to the centering form.

2. Wooden members positioned vertically to prevent cave-ins in earthworking. {'lag-iŋ}

lag network See integral network. {'lag ,net ,work}

lag-lead network See lead-lag network. {'lag ,led ,net,work}

lag network See integral network. {'lag ,net ,work}

Lagrange bracket [MECH] Given two functions of coordinates and momenta in a system, their Lagrange bracket is an expression measuring how coordinates and momenta change jointly with respect to the two functions. {la'græn] ,brak-at}

Lagrange function See Lagrangian. {la'græn] ,læŋk-shan}

Lagrange-Hamilton theory [MECH] The formalized study of continuous systems in terms of field variables where a Lagrangian density function and Hamiltonian density function are introduced to produce equations of motion. {la'græn] 'ham-ə-ton ,θe-ə-rē}

Lagrange's equations [MECH] Equations of motion of a mechanical system for which a classical (non-quantum-mechanical) description is suitable, and which relate the kinetic energy of the system to the generalized coordinates, the generalized forces, and the time. Also known as Lagrangian equations of motion. {la'græn] jaz i,kwažan=

Lagrangian [MECH] 1. The difference between the kinetic energy and the potential energy of a system of particles, expressed as a function of generalized coordinates and velocities from which Lagrange's equations can be derived. Also known as kinetic potential; Lagrange function. 2. For a dynamical system of fields, a function which plays the same role as the Lagrangian of a system of particles; its integral over a time interval is a maximum or a minimum with respect to infinitesimal variations of the fields, provided the initial and final fields are held fixed. {la'græn-j-ən}

Lagrangian coordinates See generalized coordinates. {la'græn-j-ən ko'ord-ənts}

Lagrangian density [MECH] For a dynamical system of fields or continuous media, a function of the fields, of their time and space derivatives, and the coordinates and time, whose integral over space is the Lagrangian. {la'græn-j-ən 'den- sad-ə}

Lagrangian equations of motion See Lagrange's equations. {'lag-ræn-j-ən i,jkwažan= əv 'mo-əshan}

Lagrangian function [MECH] The function which measures the difference between the kinetic and potential energy of a dynamical system. {la'græn-j-ən ,læŋk-shan}

Lagrangian generalized velocity See generalized velocity. {la'græn-j-ən jen-rə,lizd vəl'əs-gəd-ə}

lawn screw See coach screw. {'lag ,skrə}

lally column A hollow and nearly circular steel column that supports girders or beams. {'lāl-ə ,kāl-əm}

lambda [MECH] A unit of volume equal to 10⁻⁶ liter or 10⁻³ cubic meter. {'ləm-da}

lambda dispatch [IND ENG] The solution of the problem of finding the most economical use of generators to supply a given quantity of electric power, using the method of Lagrange multipliers, which are symbolized λ. {'ləm-da di ,spach}

lambda point [THERMO] A temperature at which the specific heat of a substance has a sharply peaked maximum, observed in many second-order transitions. {'ləm-da ,pəint}

Lambert surface [THERMO] An ideal, perfectly diffusing surface for which the intensity of reflected radiation is independent of direction. {'læm-bə łər-tə-fəs}

Lamé constants [MECH] Two constants which relate stress to strain in an isotropic, elastic material. {lə'mé jən-tənts}

lamella [CIV ENG] A thin member made of reinforced concrete, metal, or wood that is joined with similar members in an overlapping pattern to form an arch or a vault. {lə'mel-ə}

lamella arch [CIV ENG] An arch consisting basically of a series of intersecting skewed arches made up of relatively short straight members; two members are bolted, riveted, or welded to a third piece at its center. {lə'mel-ə,ər arch}

lamella roof [BUILD] A large span vault built of members connected in a diamond pattern. {lə'mel-ə ,rif}

laminated spring [DES ENG] A flat or curved spring made of thin superimposed plates and forming a cantilever or beam of uniform strength. {'lam-ə,nəd-əl 'sprang}

Lami's theorem [MECH] When three forces act on a particle in equilibrium, the magnitude of each is proportional to the sine of the angle between the other two. {lə'mi,əz ,θi-rəm}

lamp [ENG] A device that produces light, such as an electric lamp. {lamp}

lamphouse [ENG] 1. The light housing in a motion picture projector, located behind the projector head ordinarily consisting of a carbon arc lamp operating on direct current at about 60 volts, a concave reflector behind the arc which collects the light and concentrates it on the film, and cooling devices. 2. A box with a small hole containing an electric lamp and a concave mirror behind it, used as a concentrated source of light in a microscope, photographic enlarger, or other instrument. {'lamp,haus}

Lancashire boiler [MECH ENG] A cylindrical steam boiler consisting of two longitudinal furnace tubes which have internal grates at the front. {'læŋk-shər,bɔil-ər}

lance door [MECH ENG] The door to a boiler furnace through which a hand lance is inserted. {'lans ,dər}

Lancaster balancer [MECH ENG] A device for balancing four-cylinder engines; consists of two meshed gears with eccentric masses, driven by the crankshaft. {'lʌn-kəstə bal-ən-sər}

Lancaster's rule [MECH] The rule that a torque applied to a rotating body along an axis
perpendicular to the rotation axis will produce precession in a direction such that, if the body is viewed along a line of sight coincident with the torque axis, then a point on the body's circumference, which initially crosses the line of sight, will appear to describe an ellipse whose sense is that of the torque. ('lan,ches-torz, rülüz')

**land** [DES ENG] The top surface of the tooth of a cutting tool, behind the cutting edge. [ELECTR] 1. One of the regions between pits on a track on an optical disk. 2. See terminal area. [ENG] 1. In plastics molding equipment, the horizontal bearing surface of a semipositive or flash mold to allow excess material to escape, or the bearing surface along the top of the screw flight in a screw extruder, or the surface of an extrusion die that is parallel to the direction of melt flow. 2. The surface between successive grooves of a diffraction grating or phonograph record. ('land')

**land accretion** [CIV ENG] Gaining land in a wet area, such as a marsh or by the sea, by planting (between parallel disks) instead of teeth. ('land,drän-i-nı́')

**landfill** [CIV ENG] Disposal of solid waste by burying in layers of earth in low ground. ('lan,fil)'

**landing** [CIV ENG] A place where boats receive or discharge passengers, freight, and so on. ('land-iŋ)'

**landing gear** [MECH ENG] A pair of small wheels at the forward end of a semitrailer to support the vehicle when it is detached from the tractor. ('land-iŋ, gır)'

**landing stage** [CIV ENG] A platform, usually floating and attached to the shore, for the discharge and embarkation of passengers, freight, and so on. ('land-iŋ, støj)'

**landing tee** Ser wind tee. ('land-iŋ ,tee)'

**landmark** [ENG] Any fixed natural or artificial monument or object used to designate a land boundary. ('lan,märk)'

**land measure** [MECH] 1. Units of area used in measuring land. 2. Any system for measuring land. ('land,mez-h-ər)'

**land mile** See mile. ('lan,ml)'

**land reclamation** See land accretion. ('lan,rek-lma-şı-nı́)'

**landscape architecture** [CIV ENG] The art of arranging and fitting land for human use and enjoyment. ('lan,skap-ärko,tek-char)'

**landscape engineer** [CIV ENG] A person who applies engineering principles and methods to planning, design, and construction of natural scenery arrangements on a tract of land. ('lan,skap, enjın)'

**land surveyor** [CIV ENG] A specialist who measures land and its natural features and any constructed features such as buildings or roads for drawing to scale as plans or maps. ('land sırı-vü-ar)'

**land tie** [CIV ENG] A rod or chain connecting an outside structure such as a retaining wall to a buried anchor plate. ('land, tı)'

**land-use classes** [CIV ENG] Categories into which land areas can be grouped according to present or potential economic use. ('land,yüs, klas-az)'

**lane** [CIV ENG] An established route, as an air lane, shipping lane, or highway traffic lane. ('lan)'

**lang lay** [DES ENG] A wire rope lay in which the wires of each strand are twisted in the same direction as the strands. ('lan, lâ)'

**Langmuir diffusion pump** [ENG] A type of diffusion pump in which the mercury vapor emerges from a nozzle, giving it motion in a direction away from the high-vacuum side of the pump. ('lan-myûr, d'fuzyst, pəm)'

**lantern** [ENG] A portable lamp. ('lan-tərn)'

**lantern pinion** [DES ENG] A pinion with bars (between parallel disks) instead of teeth. ('lan-tərn, pın-yən)'

**lantern ring** [DES ENG] A ring or sleeve around a rotating shaft, an opening in the ring provides for forced feeding of oil or grease to bearing surfaces, particularly effective for pumps handling liquids. ('lan-tərn, rıŋ)'

**lap** [CIV ENG] The length by which a reinforcing bar must overlap the bar it will replace. ('lap)'

**lapel microphone** [ENG ACOUS] A small microphone that can be attached to a lapel or pocket on the clothing of the user, to permit free movement while speaking. ('lapel, mı-kro,fón)'

**lap joint** [ENG] A simple joint between two members made by overlapping the ends and fastening them together with bolts, rivets, or welding. ('lap ,jıŋ)'

**lapping** [ELECTR] Moving a quartz, semiconductor, or other crystal slab over a flat plate on which a liquid abrasive has been poured, to obtain a flat polished surface or to reduce the thickness a carefully controlled amount. ('lap-iŋ)'

**lap siding** [BUILD] Beveled boards used for siding that are similar to clapboards but longer and wider. [CIV ENG] Two railroad sidings, the turn of one overlapping that of the other. ('lap ,sıd-iŋ)'

**Larav viscometer** [ENG] An instrument designed to measure viscosity and other properties of ink. ('larav vi-skäm-ad-ar)'

**large calorie** See kilocalorie. ('ları̄j, kal-ar-ı̄)'

**large dyne** See newton. ('ları̄j, dın)'

**large-scale integrated circuit** [ELECTR] A very complex integrated circuit, which contains well over 100 interconnected individual devices, such as basic logic gates and transistors, placed on a single semiconductor chip. Abbreviated LSI circuit. Also known as chip circuit, multiple-function chip. ('ları̄j, şkal,int-agrud-ad sar-ı̄kot)'

**large-systems control theory** [CONT SYS] A branch of the theory of control systems concerned with the special problems that arise in
the design of control algorithms (that is, control policies and strategies) for complex systems.

Larson-Miller parameter [MECH] The effects of time and temperature on creep, being defined empirically as \( P = T (C + \log t) \times 10^{-3} \), where \( T \) = test temperature in degrees Rankine (degrees Fahrenheit + 460) and \( t \) = test time in hours, the constant C depends upon the material is frequently taken to be 20. ( \( \text{la-rzn} \), \( \text{mil}-\text{ar} \), \( \text{p} \)/\( \text{a} \)/\( \text{ra} \)/\( \text{m} \)-ad-or )

Laryngophone [ENG ACOUS] A microphone designed to be placed against the throat of a speaker, to pick up voice vibrations directly without responding to background noise. ( \( \text{l} \)/\( \text{arin} \), \( \text{ga} \), \( \text{f} \)/\( \text{n} \) )

LASCR See light-activated silicon controlled rectifier.

LASCS See light-activated silicon controlled switch.

Laser amplifier [ELECTR] A laser which is used to increase the output of another laser. Also known as light amplifier. ( \( \text{la-zar} \), \( \text{lam} \)-pla,fi-or )

Laser anemometer [ENG] An anemometer in which the wind being measured passes through two perpendicular laser beams, and the resulting change in velocity of one or both beams is measured. ( \( \text{la-zar} \), \( \text{a-n} \)/\( \text{m} \)-ad-or )

Laser ceilometer [ENG] A ceilometer in which laser anemometer is used.

Laser anemometer See fiber-optic gyroscope.

Laser gyro [ENG] A gyro in which two laser beams travel in opposite directions over a ring-shaped path formed by three or more mirrors; rotation is thus measured without the use of a spinning mass. Also known as ring laser. ( \( \text{la-zar} \), \( \text{ri} \), \( \text{ro} \) )

Laser intrusion detector [ENG] A photoelectric intrusion detector in which a laser is a light source that produces an extremely narrow and essentially invisible beam around the perimeter of the area being guarded. ( \( \text{la-zar} \), in-tru-zhan di,tek-tor )

Laser ranging [ENG] A technique for determining the distance to a target by precise measurement of the time required for a laser pulse to travel from a transmitter to a reflector on the target and return to the detector. ( \( \text{la-zar} \), ran-i )

Laser scope [ENG] A pulsed high-power laser used with appropriate scanning and imaging devices to sense objects over the sea at night or in fog and provide three-dimensional images on a viewing screen. ( \( \text{la-zar} \), skop )

Laser scriber [ENG] A laser-cutter setup used in place of a diamond scriber for dicing thin slabs of silicon, gallium arsenide, and other semiconductor materials used in the production of semiconductor diodes, transistors, and integrated circuits; also used for scribing sapphire and ceramic substrates. ( \( \text{la-zar} \), skriba-r )

Laser seismometer [ENG] A laser interferometer system that detects seismic strains in the earth by measuring changes in distance between two granite piers located at opposite ends of an evacuated pipe through which a helium-neon or other laser beam makes a round trip, movements as small as 80 nanometers (one-eighth the wavelength of the 632.8-nanometer helium-neon laser radiation) can be detected. ( \( \text{la-zar} \), slz, \( \text{m} \)-ad-or )

Laser threshold [ELECTR] The minimum pumping energy required to initiate lasing action in a laser. ( \( \text{la-zar} \), \( \text{thresh} \)-hold )

Laser tracking [ENG] Determination of the range and direction of a target by echo coherent light. ( \( \text{la-zar} \), \( \text{trak} \)-ing )

Laser transit [ENG] A transit in which a laser is mounted over the sighting telescope to project a clearly visible narrow beam onto a small target at the survey site. ( \( \text{la-zar} \), \( \text{tran} \)-zor )

Lashing [ENG] A rope, chain, or wire used for binding, fastening, or wrapping. ( \( \text{lash} \)-ing )

Last in, first out [IND ENG] A method of determining the inventory costs by transferring the costs of material to the product in reverse chronological order. Abbreviated LIFO. ( Last in, first out )

Latch [ELECTR] An electronic circuit that reverses and maintains its state each time that power is applied. [ENG] 1. Any of various closing devices on a door that fit into a hook, notch, or cavity in the frame. 2. In plastics fabrication, a device used to hold together the two members of a mold. ( \text{lach} )

Latch bolt [DES ENG] A self-acting spring bolt with a beveled head. ( \text{lach}, \text{bol} )

Latch-up phenomenon [ELECTR] In a bipolar or MOS integrated circuit, the generation of photocurrents by ionizing radiation which can provide a trigger signal for a parasitic \text{pnpn} circuit and possibly result in permanent damage or operational failure if the circuit remains in this state. ( \text{lach}, \text{op}, \text{f}, \text{n} )

Latent defect [IND ENG] A flaw or other imperfection in any article which is discovered after delivery, usually, latent defects are inherent weaknesses which normally are not detected by examination or routine tests, but which are present at time of manufacture and are aggravated by use. ( \text{l} \)/\( \text{at} \)/\( \text{ant} \) \( \text{d} \)/\( \text{e} \)/\( \text{fek} \)

Latent heat [THERMO] The amount of heat absorbed or evolved by 1 mole, or a unit mass, of a substance during a change of state (such as
fusion, sublimation or vaporization) at constant temperature and pressure. (‘lát-ənt ’hét )

latent heat of fusion See heat of fusion. (‘lát-ənt ’hét av ’fyú ə shən )

latent heat of sublimation See heat of sublimation. (‘lát-ənt ’hét av ’sə bə ’lə ’mā ’shən )

latent heat of vaporization See heat of vaporization. (‘lát-ənt ’hét av ’vər ’po ə ’rə ’zən ’shən )

latent load [MECH ENG] Cooling required to remove unwanted moisture from an air-conditioned space. (‘lát-ənt ’lōd )

lateral [ENG] In a gas distribution or transmission system, a pipe branching away from the central, primary part of the system. (‘lād-ə rəl )

lateral compliance [ENG ACOUS] That characteristic of a stylus based on the force required to move it from side to side as it follows the grooves of a phonograph record. (‘lād-ə rəl kām ’pil ’ə nəs )

lateral extensometer [ENG] An instrument used in photoelastic studies of the stresses on a plate, it measures the change in the thickness of the plate resulting from the stress at various points. (‘lād-ə rəl ri ’kōrd ’in )

lateral flow spillway See side-channel spillway. (‘lād-ə rəl ’fil ’ə ’spil ’wā )

lateral recording [ENG ACOUS] A type of disk recording in which the groove modulation is parallel to the surface of the recording medium so that the cutting stylus moves from side to side during recording. (‘lād-ə rəl ’ri ’kōrd ’in )

lateral search See profiling. (‘lād-ə rəl ’sərəch )

lateral sewer [CIV ENG] A sewer discharging into a branch or other sewer and having no tributary sewer. (‘lād-ə rəl ’sū ’ə r )

lateral support [CIV ENG] Horizontal propping applied to a column, wall, or pier across its smallest dimension. (‘lād-ə rəl sa ’pōrt )

laterlog [ENG] A downhole resistivity measurement method wherein electric current is forced to flow radially through the formation in a sheet of predetermined thickness, used to measure the resistivity in hard-rock reservoirs as a method of determining subterranean structural features. (‘lād-ə rəl lá ’g )

lath [CIV ENG] 1. A narrow strip of wood used in making a level base, as for plaster or tiles, or and also to
dynamically similar systems are proportional to the smallest dimension. (‘lād-ə rəl lá ’g )

lath [MECH ENG] A machine for shaping a workpiece by gripping it in a holding device and rotating it under power against a suitable cutting tool for turning, boring, facing, or threading. (lāth )

lathing board See backup strip. (lāth-iŋ ’bōrd )

latrine [ENG] A toilet facility, either fixed or of a portable nature, such as is maintained underground for use by miners. (lə ’trin )

lattice [CIV ENG] A network of crisscrossed strips of metal or wood. (‘lād-əs )

lattice filter [ELECTR] An electric filter consisting of a lattice network whose branches have L-C parallel-resonant circuits shunted by quartz crystals. (‘lād-əs ’fi ’lə ’trər )

lattice girder [CIV ENG] An open girder, beam, or column built from members joined and braced by intersecting diagonal bars. Also known as open-web girder. (‘lād-əs ’gərd-ər )

lattice truss [CIV ENG] A truss that resembles latticework because of diagonal placement of members connecting the upper and lower chords. (‘lād-əs ’trəs )

launching [CIV ENG] The act or process of floating a ship after only hull construction is completed, in some cases ships are not launched until after all construction is completed. (lān ’chəng )

launching cradle [CIV ENG] A framework made of wood to support a vessel during launching from sliding ways. (lān ’chəng ’kräd-əl )

launching ways [CIV ENG] Two (or more) sets of long, heavy timbers arranged longitudinally under the bottom of a ship during building and launching, with one set on each side, and sloping toward the water; the lower set, or ground ways, remain stationary and support the upper set, or sliding ways, which carry the weight of the ship after the shores and keel blocks are removed. (lān ’chəng ’wäz )

launder [ENG] An inclined channel or trough for conveying of a liquid, such as for water in mining and construction engineering or for molten metal. (lān ’dər )

Lauson engine [ENG] Single-cylinder engine used in screening tests prior to the L-series lube oil tests (such as L-1 or L-2 tests). (lā ’n zon ’en ’dən )

lawnmower [ELECTR] Type of radio-frequency preamplifier used with radar receivers. (lārn’ məw ’r )

Lawnmower [MECH ENG] A machine for cutting grass on lawns. (lān ’mōr )

law of action and reaction See Newton’s third law. (lāw av ’ak-shən ən ’rē ’ak-shən )

law of corresponding times [MECH] The principle that the times for corresponding motions of dynamically similar systems are proportional to L/V and also to √(L/G), where L is a typical dimension of the system, V a typical velocity, and G a typical force per unit mass. (lāw av ’kər ’spænd-ən ’tīms )

law of electric charges [ELEC] The law that like charges repel, and unlike charges attract. (lāw av ’jlek-trik ’chər -əz )

law of electrostatic attraction See Coulomb’s law. (lāw av ’jlek-trək-stād-ik ə ’trāk-shən )

law of gravitation See Newton’s law of gravitation. (lāw av ’grāv-ətə-shən )

lay [DES ENG] The direction, length, or angle of twist of the strands in a rope or cable. (lā )

lay off [ENG] The process of fairness a ship’s lines or an airplane’s in a mold loft in order to make molds and templates for structural units. (lā of )

lay-up [ENG] Production of reinforced plastics by positioning the reinforcing material (such as
lazy jack

glass fabric) in the mold prior to impregnation with resin. (ˈlāˌzāk)
lazy jack [ENG] A device that accommodates changes in length of a pipeline or similar structure through the motion of two linked bell cranks. (ˈlāz¨e′ˌjak)
lb See pound.
lb ap See pound.
lb apoth See pound.
lb See pound.
lb-ft See foot-pound.
lb t See pound.
lb tr See pound.
LCA See life-cycle assessment.
LCD See liquid crystal display.
LCR See less-than-carload.
L/D ratio [ENG] Length to diameter ratio, a frequently used engineering relationship. (ˈel′deʊˌræ̆-shō)
leaching [CHEM ENG] The dissolving, by a liquid solvent, of soluble material from its mixture with an insoluble solid, leaching is an industrial separation operation based on mass transfer; examples are the washing of a soluble salt from the surface of an insoluble precipitate, and the extraction of sugar from sugar beets. (ˈlēch-iŋ)
lead [DES ENG] The distance that a screw will advance or move into a nut in one complete turn.
[MELEC] A wire used to connect two points in a circuit. [ENG] A mass of lead attached to a line, as used for sounding at sea. (ˈled)
lead angle [DES ENG] The angle that the tangent to a helix makes with the plane normal to the axis of the helix. (ˈledˌaŋ-gal)
lead-chamber process [CHEM ENG] A process for the preparation of impure or dilute (60–78) sulfuric acid; sulfur dioxide is oxidized by moist air with nitrogen oxide catalysts in a series of lead-lined chambers, the Gay-Lussac tower and the Glover tower, used primarily in the manufacture of fertilizer. (ˈledˌcham′-bərˈpraˌsās)
lead compensation [CONT SYS] A type of feedback compensation primarily employed for stabilizing or for improving a system's transient response; it is generally characterized by a series compensation transfer function of the type

\[ G(s) = K \frac{s - 1}{s - p} \]

where \( z < p \) and \( K \) is a constant. (ˈlēdˌkāmˌpan′sāˌshən)
lead curve [CIV ENG] The curve in a railroad turnout between the switch and the frog. (ˈlēdˌkərv)
leader [BUILD] See downspout. [ENG] The unrecorded length of magnetic tape that enables the operator to thread the tape through the drive and onto the take-up reel without losing data or recorded music, speech, or such. [MELEC] In a hot-air heating system, a duct that conducts heated air to an outlet. (ˈlēdˌər)
leader streamer See leader. (ˈlēdˌərˌstrēmˌər)
leading edge [DES ENG] The surfaces or inset cutting points on a bit that face in the same direction as the rotation of the bit. (ˈlēdˌiŋˈej)
leaf spring  [DES ENG] A beam of cantilever design, firmly anchored at one end and with a large deflection under a load. Also known as flat spring.  ['leɪf sprɪŋ]

league  [MECH] A unit of length equal to 3 miles or 4828.032 meters.  (ˈlɛɡ)

leakage  [ENG] Undesired and gradual escape or entry of a quantity, such as loss of neutrons by diffusion from the core of a nuclear reactor, escape of electromagnetic radiation through joints in shielding, flow of electricity over or through an insulating material, and flow of magnetic lines of force beyond the working region.  (ˈlēk-ij)

leakage current  [ELEC] 1. Undesirable flow of current through or over the surface of an insulating material or insulator.  2. The flow of direct current through a poor dielectric in a capacitor. [ELECTR] The alternating current that passes through a rectifier without being rectified.  (ˈlēk-ij ,ˈkær-ənt)

leakage rate  [ENG] Flow rate of all leaks from an evacuated vessel.  (ˈlēk-ij ,ˈrāt)

leakage resistance  [ELEC] The resistance of the path over which leakage current flows; it is normally high.  (ˈlēk-ij riz-ə-toʊs)

leak detector  [ENG] An instrument used for finding small holes or cracks in the walls of a vessel; the helium mass spectrometer is an example.  (ˈlēk diˌtek-tər)

leak test pressure  [MECH ENG] The inlet pressure used for a standard quantitative seat leakage test.  (ˈlēk ˈtest ,ˈpreʃ-ər)

lean fuel mixture  See lean mixture.  (ˈlēn ˈfyʊlˌmɪks-ˈchar)

leaning wheel grader  [CIV ENG] A grader with skewed wheels to help cut or spread the soil.  (ˈlēn ˈwelˌˈɡræd-ər)

lean manufacturing  [IND ENG] A production system consisting of manufacturing cells linked together with a functionally integrated system for inventory and production control that uses less of the key resources needed to make goods.  (ˈlēnˌmæn-ər ˈfæk-tər-ij ˌselz)

lean manufacturing cells  [IND ENG] Typically U-shaped manufacturing cells in which workers, cross-trained on all the related processes, move from machine to machine in counterclockwise loops.  (ˈlēnˌmæn-ər ˈfæk-tər-ijˌselz)

lean mixture  [MECH ENG] A fuel-air mixture containing a low percentage of fuel and a high percentage of air, as compared with a normal or rich mixture. Also known as lean fuel mixture.  (ˈlēnˌmɪks-ˈchar)

lean-to  [BUILD] A single-pitched roof whose summit is supported by the wall of a higher structure.  (ˈlēnˌtū)

lear  See lehr.  (ˈlɛər)

learning control  [CONT SYS] A type of automatic control in which the nature of control parameters and algorithms is modified by the actual experience of the system.  (ˈlərn-ij ˈkənˌtrəl)

lease  [IND ENG] 1. Contract between landowner and another granting the latter the right to use the land, usually upon payment of an agreed rental, bonus, or royalty.  2. A piece of land that is leased.  (ˈlēz)

least-action principle  See principle of least action.  (ˈlēstˌæk-ʃənˌprɪn-ˈtʃprə)

least-energy principle  [MECH] The principle that the potential energy of a system in stable equilibrium is a minimum relative to that of nearby configurations.  (ˈlēst ˈen-ər-ˌjeɪˌprɪn-ˈtʃprəˌpəl)

least-work theory  [MECH] A theory of statically indeterminate structures based on the fact that when a stress is applied to such a structure the individual parts of it are deflected so that the energy stored in the elastic members is minimized.  (ˈlēstˌwerkˌðeɪˌərər-ˌrē)

LED  See light-emitting diode.

LEDE room  [ENG ACOUS] A control room in a sound-recording studio in which the rear wall is made reflective or diffusive, while the dead or sound-absorptive treatment is applied to the walls. [ENG] 1. A raised edge or molding.  2. A narrow shelf projecting from the side of a vertical structure.  3. A horizontal timber that supports the put-logs of a cladding.  (ˈleɪˌdɛr)

ledger door  See batten door.  (ˈleɪd ˈdɔr)

ledger  [CIV ENG] A main horizontal member of formwork, supported on uprights and supporting the soffit of the formwork. (ENG) The horizontal support for a scaffold platform.  (ˈleɪˌdɛr)

Ledoux bell meter  [ENG] A type of manometer used to measure the difference in pressure between two points generated by any one of several types of flow measurement devices such as a pilot tube; it is equipped with a shaped plug which makes the reading of the meter directly proportional to the flow rate.  (lɛdˌdɔˌbelˌmed-ər)

leer  See lehr.  (ˈlɛər)

Lee's disk  [THERMO] A device for determining the thermal conductivity of poor conductors in which a thin, cylindrical slice of the substance under study is sandwiched between two copper disks, a heating coil is placed between one of these disks and a third copper disk, and the temperatures of the three copper disks are measured.  (ˈlɛzˌdɪsk)

left-hand  [DES ENG] Of drilling and cutting tools, screw threads, and other threaded devices, designed to rotate clockwise or cut toward the left.  (ˈleftˌhænd)

left-handed  See left-laid.  (ˈleftˌhænd-əd)

left-hand screw  [DES ENG] A screw that advances when turned counterclockwise.  (ˈleftˌhændˈskrɪb)

left-laid  [DES ENG] The lay of a wire or fiber rope or cable in which the individual wires or fibers in the strands are twisted to the right and the
strands to the left. Also known as left-handed, regular-lay left twist. {'left lōd}

**leg** [ENG] 1. Anything that functionally or structurally resembles an animal leg. 2. One of the branches of a forked or jointed object. 3. One of the main upright members of a drill derrick or tripod. [MECH ENG] The case that encloses the vertical part of the belt carrying the buckets within a grain elevator. {'leg}

**leg wire** [ENG] One of the two wires forming a part of an electric blasting cap or squib. {'leg wir'}

**lehr** [ENG] A long oven in which glass is cooled and annealed after being formed. Also spelled leer, leer. {'ler'}

**Leidenfrost point** [THERMO] The lowest temperature at which a hot body submerged in a pool of boiling water is completely blanketed by a vapor film; there is a minimum in the heat flux from the body to the water at this temperature. {'līd-fros't }{, point}

**Leidenfrost’s phenomenon** [THERMO] A phenomenon in which a liquid dropped on a surface that is above a critical temperature becomes insolated from the surface by a layer of vapor, and does not wet the surface as a result. {'līd-fros't s} {'fros-tən, lā́nəm-ə, nā́n}

**Lenard spiral** [ENG] A type of magnetometer consisting of a spiral of bismuth wire and a Wheatstone bridge to measure changes in the resistance of the wire produced by magnetic fields and as a result of the transverse magnetoresistance of bismuth. {'lā́nərd, 'spīr-əl'}

**length** [MECH] Extension in space. {'lenkth}

**lengthening joint** [ENG] A joint between two members running in the same direction. {'lenk-thə, nin, 'joint}'

**length of lay** [DES ENG] The distance measured along a line parallel to the axis of the rope in which the strand makes one complete turn about the axis of the rope, or the wires make a complete turn about the axis of the strand. {'lenkth ãv 'lā́}

**length of shot** [ENG] The depth of the shot hole, in which powder is placed, or the size of the block of coal or rock to be loosened by a single blast, measured parallel with the hole. {'lenkth ãv 'shāt'}

**leo** [MECH] A unit of acceleration, equal to 10 meters per second per second, it has rarely been employed. {'le-ō'}

**Leslie cube** [THERMO] A metal box, with faces having different surface finishes, in which water is heated and next to which a thermopile is placed in order to compare the heat emission properties of different surfaces. {'lez-le, kyūb'}

**Leslie effect** [ENG ACOUS] A dynamic timbre-changing effect created by rotating one or more directional speakers inside a cabinet such that a mixture of Doppler-shifted reflections is generated in the output of an electronic instrument. {'lez-le, fēkt'}

**less-than-carload** [IND ENG] Too light to fill a freight car and therefore not eligible for carload rate. Abbreviated LCL. {'les than 'kār,lōd}
leaver which travels through a maximum arc of 180°. (‘leav-ər, valv)  

Levenstein process [CHEM ENG] A process for the manufacture of mustard gas from ethene, CH₂=CH₂, and sulfur chloride, S₂Cl₂. (‘lev-ənˌstēnˌprä-sāl)  

lever [ENG] A rigid bar, pivoted about a fixed point (fulcrum), used to multiply force or motion; used for raising, prying, or dislodging an object. (‘lev-ər, lē-var)  

leverage [MECH] The multiplication of force or motion achieved by a lever. (‘lev-ərij)  

lever shears [DES ENG] A shears in which the input force at the handles is related to the output force at the cutting edges by the principle of the lever. Also known as alligator shears, crocodile shears. (‘lev-ər,-shirz)  

levitated vehicle [MECH ENG] A train or other vehicle which travels at high speed at some distance above an electrically conducting track by means of levitation. (‘lev-ətəd-əd ve-ət-ə-kal)  

lewis [DES ENG] A device for hoisting heavy stones; employs a dovetailed tenon that fits into a mortise in the stone. (‘lu:əs)  

lewis bolt [DES ENG] A bolt with an enlarged, tapered head that is inserted into masonry or stone and fixed with lead; used as a foundation bolt. (‘lu:əs,bōlt)  

Lewis-Matheson method [CHEM ENG] Trial-and-error calculation method for the design of multicomponent distillation columns, or for the determination of the separating ability of an existing column. (‘lu:əsˌmæθ-ə-sənˌmēth-əd)  

L-head engine [MECH ENG] A type of four-stroke internal combustion engine having both inlet and exhaust valves on one side of the engine block which are operated by pushrods actuated by a single camshaft. (‘elˌi, hed ‘en-ˌjan)  

lie detector [ENG] An instrument that indicates or records one or more functional variables of a person’s body while the person undergoes the emotional stress associated with a lie. Also known as polygraph; psychointegrogram. (‘lī diˌtēk-ər)  

life-cycle assessment [SYS ENG] A methodology that identifies the environmental impacts associated with the life cycle of a material or product in a specific application, thus identifying opportunities for improvement in environmental performance. Abbreviated LCA. (‘liftˌsiˌkol əˌsēs-mənt)  

life-cycle cost [ENG] A measurement of the total cost of using equipment over the entire time of service of the equipment; includes initial, operating, and maintenance costs. (‘liftˌsiˌkolˌkōst)  

life expectancy [ENG] The predicted useful service life of an item of equipment. (‘lift ˈiˌspek-ˌtər-ˌsē)  

life preserver [ENG] A buoyant device that is used to prevent drowning by supporting a person in the water. (‘lift prəˌzər-ˌvər)  

life support system [ENG] A system providing atmospheric control and monitoring, such as a breathing mixture supply system, air purification and filtering system, or carbon dioxide removal system; used in oceanographic submersibles and spacecraft. (‘liftˌsaˌpɔrˌsaˌtam)  

diaphragm test [CHEM ENG] In petroleum testing, an American Society for Testing and Materials oxidation test made on inhibited steam-turbine oils to determine their stability under oxidizing conditions. (‘ENG) A test in which a device is operated under conditions that simulate a normal lifetime of use, to obtain an estimate of service life. (‘liftˌtest)  

LIFO See last in, first out. (‘lifˌō)  

lift See elevator. (‘lift)  

lift bridge [CIV ENG] A drawbridge whose movable spans are raised vertically. (‘liftˌbrij)  

lifter flight [DES ENG] Spaced plates or projections on the inside surfaces of cylindrical rotating equipment (such as rotary dryers) to lift and shower the solid particles through the gas-drying stream during their passage through the dryer cylinder. (‘liftərˌflīt)  

lifter roof [ENG] Gas storage tank in which the roof is raised by the incoming gas as the tank fills. (‘liftərˌrōf)  

lifting block [MECH ENG] A combination of pulleys and ropes which allows heavy weights to be lifted with least effort. (‘liftˌblok)  

lifting device [ENG] A device to manually open a pressure relief valve by decreasing the spring loading in order to determine if the valve is in working order. (‘liftˌdīˌvīs)  

lifting dog [ENG] 1. A component part of the overshot assembly that grasps and lifts the inner tube or a wire-line core barrel. 2. A clawlike hook for grasping cylindrical objects, such as drill rods or casing, while raising and lowering them. (‘liftˌdōg)  

lifting magnet [ENG] A large circular, rectangular, or specially shaped magnet used for handling pig iron, scrap iron, castings, billets, rails, and other magnetic materials. (‘liftˌmagn-ət)  

lifting task [IND ENG] A task that involves application of a moment to the vertebral column of the worker. (‘liftˌtæsk)  

lift pump [MECH ENG] A pump for lifting fluid to the pump’s own level. (‘liftˌpamp)  

lift-slab construction [CIV ENG] Pouring reinforced concrete roof and floor slabs at ground level, then lifting them into position after hardening. (‘liftˌslabˌkənˌstrək-ˌshən)  

lift truck [MECH ENG] A small hand- or power-operated dolly equipped with a platform or fork-lift. (‘liftˌtrak)  

lift valve [MECH ENG] A valve that moves perpendicularly to the plane of the valve seat. (‘liftˌvalv)  

ligament [ENG] The section of solid material in a tube sheet or shell between adjacent holes. (‘lig-əmənt)  

light-activated silicon controlled rectifier [ELECTR] A silicon controlled rectifier having a glass window for incident light that takes the place of, or adds to the action of, an electric gate.
light-activated silicon controlled switch

A semiconductor device that has four layers of silicon alternately doped with acceptor and donor impurities, but with all four of the p and n layers made accessible by terminals, when a light beam hits the active light-sensitive surface, the photons generate electron-hole pairs that make the device turn on, removal of light does not reverse the phenomenon, the switch can be turned off only by removing or reversing its positive bias. Abbreviated LASCs. (lit jak-ta, väd-ad sil-a-kan kantröl tek-ta-fi-ar)

light-activated silicon controlled switch [ELECTR]

A semiconductor device that has four layers of silicon alternately doped with acceptor and donor impurities, but with all four of the p and n layers made accessible by terminals, when a light beam hits the active light-sensitive surface, the photons generate electron-hole pairs that make the device turn on, removal of light does not reverse the phenomenon, the switch can be turned off only by removing or reversing its positive bias. Abbreviated LASCs. (lit jak-ta, väd-ad sil-a-kan kantröl 'switch')

light amplifier [ELECTR]

1. Any electronic device which, when actuated by a light image, reproduces a similar image of enhanced brightness, and which is capable of operating at very low light levels without introducing spurious brightness variations (noise) into the reproduced image. Also known as image intensifier. 2. See laser amplifier. (lit am-pla-fi-ar)

light-beam galvanometer [ELECTR]

See d’Arsonval galvanometer. (lit bém 'gal-van-nam-äd-ar)

light-beam pickup [ENG ACOUS]

A phonograph pickup in which a beam of light is a coupling element of the transducer. (lit bém 'pik-ap)

light blasting [ENG]

Loosening of shallow or small outcrops of rock and breaking boulders by explosives. (lit 'blast-inj)

light-emitting diode [ELECTR]

A rectifying semiconductor device which converts electrical energy into electromagnetic radiation. The wavelength of the emitted radiation ranges from the near-ultraviolet to the near-infrared, that is, from about 400 to over 1500 nanometers. Abbreviated LED. (lit i-mid-in 'dlio)

lightening hole [CIV ENG]

An opening cut into a strengthening member that decreases its weight without significantly altering its strength. (lit 'nig 'höl)

lighterage [IND ENG]

1. Loading or unloading ships by means of a lighter. 2. The fee charged for this operation. (lit-'öff-
jii)

lighting-off torch [ENG]

A torch used to ignite a fuel oil burner, it consists of asbestos cloth wrapped around an iron rod and soaked with oil. (lit-'öff-torch)

light-inspection car [MECH ENG]

A railway motorcar weighing 750–900 pounds (340–408 kilograms) and propelled by 4–6-horsepower (3000–4500-watt) engines. (lit 'sek-shän kär)

light-sensitive [ELECTR]

Having photoconductive, photoemissive, or photovoltaic characteristics. Also known as photosensitive. (lit 'sen-säd-
v)

light-sensitive cell

See photodetector. (lit 'sens-
v-së 'sel)

light-sensitive detector

See photodetector. (lit 'sens-
v-së 'dëti tek-tar)

light valve [ELECTR]

1. A device whose light transmission can be made to vary in accordance with an externally applied electrical quantity, such as voltages, current, electric field, or magnetic field, or an electron beam. 2. Any direct-view electronic display optimized for reflecting or transmitting an image with an independent collimated light source for projection purposes. (lit 'valv)

Lilly controller [MECH ENG]

A device on steam and electric winding engines that protects against overspeed, overwind, and other incidents injurious to workers and the engine. (lit-i-e kantröl-'ar)

limb [DES ENG]

1. The graduated margin of an arc or circle in an instrument for measuring angles, as that part of a marine sextant carrying the altitude scale. 2. The graduated staff of a leveling rod. (limb)

lime kiln [CHEM ENG]

Furnace-type apparatus, used as a long, tilted cylinder that is slowly rotated, heated to heat calcium carbonate, CaCO₃, above 900°C to produce lime. (lit 'kil)

limelight [ENG]

A light source once used in spotlights, it consisted of a block of lime heated to incandescence by means of an oxyhydrogen flame torch. (lit 'lim)

limestone log [ENG]

A log that employs an electrical resistivity element in the form of four symmetrically arranged current electrodes to give accurate readings in borehole surveying of hard formations. (lit 'stän 'lág)

liming [CHEM ENG]

Soaking hides and skins in milk of lime and causing them to swell, to facilitate the removal of hair. (lit-'inj)

limit control [MECH ENG]

1. In boiler operation, usually a device, electrically controlled, that shuts down a burner at a prescribed operating point. 2. In machine-tool operation, a sensing device which terminates motion of the workpiece or tool at prescribed points. (lit-at kantröl)

limit dimensioning method [DES ENG]

Method of dimensioning and tolerancing wherein the maximum and minimum permissible values for a dimension are stated specifically to indicate the size or location of the element in question. (lit-at dan-chon-nig meth-ad)

limited-access highway

See expressway. (lit-ad 'jak-sës 'hi,wä)

326
limited-degree-of-freedom robot | [CONT SYS] Robot whose end effector can be positioned and oriented in fewer than six degrees of freedom. (‘lim·ad·ad d’il·gēr av ‘fřè·dám ’rō,bāt’)

limited integrator | [ELECTR] A device used in analog computers that has two input signals and one output signal whose value is proportional to the integral of one of the input signals with respect to the other as long as this output signal does not exceed specified limits. (‘lim·ad·ad ‘int·a,grād·ar’)

limited-pressure cycle | See mixed cycle. (‘lim·ad·ad ‘presh·ar, sī·kal’)

limited-rotation hydraulic actuator | [MECH ENG] A type of hydraulic actuator that produces limited reciprocating rotary force and motion; used for lifting, lowering, opening, closing, indexing, and transferring movements; examples are the piston-ram actuator, single-vane actuator, and double-vane actuator. (‘lim·ad·ad rō·tā·shn hīl’dō-rik ‘ak·cha,wād·ar’)

limited-sequence robot | See fixed-stop robot. (‘lim·ad·ad hī·kwān ’rō,bāt’)

limiter | [ELECTR] An electronic circuit used to prevent the amplitude of an electronic waveform from exceeding a specified level while preserving the shape of the waveform at amplitudes less than the specified level. Also known as amplitude limiter, amplitude-limiting circuit, automatic peak limiter, clipper, clipping circuit, limiter circuit, peak limiter. (‘lim·ad·ar’)

limit governor | [MECH ENG] A mechanical governor that takes over control from the main governor to shut the machine down when speed reaches a predetermined excess above the allowable rate. Also known as topping governor. (‘lim·tr ,gav·ar·nār’)

limiting friction | See static friction. (‘lim·ad·iŋˌtrīk·shān’)

limit lines | [IND ENG] Lines on a chart designating specification limits. (‘lim·atˌlin’)

limit-load design | See ultimate-load design. (‘lim·atˌlod,diˌzān’)

limits | [DES ENG] In dimensioning, the maximum and minimum values prescribed for a specific dimension; the limits may be of size if the dimension concerned is a size dimension, or they may be of location if the dimension concerned is a location dimension. (‘lim·ats’)

limit state | [CIV ENG] The condition beyond which a structure or a structural member is deemed unsafe due to one or more loads or load effects. (‘lim·atˌstāt’)

limit switch | [ELEC] A switch designed to cut off power automatically at or near the limit of travel of a moving object controlled by electrical means. (‘lim·atˌswich’)

limit velocity | [MECH] In armament and projectile testing, the lowest possible velocity at which any one of the complete penetrations is obtained; since the limit velocity is difficult to obtain, a more easily obtainable value, designated as the ballistic limit, is usually employed. (‘lim·atˌvōlˈlaı̂sd-əd-e’)

limnimeter | [ENG] A type of tide gage for measuring lake level variations. (‘lim·nim·ətar’)

limnograph | [ENG] A recording made on a limnimeter. (‘lim·nəgraf’)

Linde copper sweetening | [CHEM ENG] A petroleum-refining process to treat gasolines and distillates with a slurry of clay and cupric chloride to remove mercaptans. (‘lin·də ‘kāp·ərˌswēt·ən·iŋ’)

Linde drill | See fusion-piercing drill. (‘lin·dəˌdril’)

line-and-staff organization | [IND ENG] A form of organization structure which combines functional subunits with staff officers in line functions. (‘lin·ənt stafˌgə·səˌsāləˌshən’)

linear | [CONT SYS] Having an output that varies in direct proportion to the input. (‘lin·ər’)

linear actuator | [MECH ENG] A device that converts some kind of power, such as hydraulic or electric power, into linear motion. (‘lin·ərˌæktər’)

linear control system | [CONT SYS] A linear system whose inputs are forced to change in a desired manner as time progresses. (‘lin·ərˌkənˌtrōlˌsīsˌtəm’)

linear expansivity | See coefficient of linear expansion. (‘lin·ərˌékspənˌsĭtēˌekspənˌtĭvĭtē’)

linear feedback control | [CONT SYS] Feedback control in a linear system. (‘lin·ərˌfēˌbəkˌkənˌtrōlˌsīsˌtəm’)

linear integrated circuit | [ELECTR] An integrated circuit that provides linear amplification of signals. (‘lin·ərˌintˌaˌgrādˌadˌsāˈlāˌkāt’)

linearization | [CONT SYS] 1. The modification of a system so that its outputs are approximately linear functions of its inputs, in order to facilitate analysis of the system. 2. The mathematical approximation of a nonlinear system, whose departures from linearity are small, by a linear system corresponding to small changes in the variables about their average values. (‘lin·ərˌlā·nāˌzāˈshən’)

linear meter | [ENG] A meter in which the deflection of the pointer is proportional to the quantity measured. (‘lin·ərˌmēˈtər’)

linear momentum | See momentum. (‘lin·ərˌməˈmentəm’)

linear motion | See rectilinear motion. (‘lin·ərˌmōˈshən’)

linear-quadratic-Gaussian problem | [CONT SYS] An optimal state regulator problem, containing Gaussian noise in both the state and measurement equations, in which the expected value of the quadratic performance index is to be minimized. Abbreviated LQG problem. (‘lin·ərˌkwəˌvādˈrādˌikˌgāsəˌeəˌprāˌbəˌlām’)

linear regulator problem | [CONT SYS] A type of optimal control problem in which the system to be controlled is described by linear differential equations and the performance index to be minimized is the integral of a quadratic function of the state system and control functions. Also known as optimal regulator problem, regulator problem. (‘lin·ərˌreg·yəˌlərˌprōˌbləˌpəˌlām’)

linear scanning | [ENG] Radar beam which moves with constant angular velocity through
linear strain

the scanning sector, which may be a complete 360°. \( \text{lin-\'e-\'ar} \ 's\text{kran-\'i} \)

linear strain \[ \text{MECH} \] The ratio of the change in the length of a body to its initial length. Also known as longitudinal strain. \( \text{lin-\'e-\'ar} \ 's\text{trän} \)

linear system \[ \text{CONT SYS} \] A system in which the outputs are components of a vector which is equal to the value of a linear operator applied to a vector whose components are the inputs. \( \text{lin-\'e-\'ar} \ 's\text{sis-\'tam} \)

linear system analysis \[ \text{CONT SYS} \] The study of a system by means of a model consisting of a linear mapping between the system inputs (causes or excitations), applied at the input terminals, and the system outputs (effects or responses), measured or observed at the output terminals. \( \text{lin-\'e-\'ar} \ 's\text{sis-\'tam} \ 's\text{na\'l-\'a-\'sas} \)

linear velocity \[ \text{MECH} \ \text{Vel.} \] \( \text{lin-\'e-\'ar} \ 'v\text{lás-\'að-\'e} \)

line clinometer \[ \text{ENG} \] A clinometer designed to be inserted between rods at any point in a string of drill rods. \( \text{lin} \ 'k\text{nám-\'að-\'ar} \)

line driver \[ \text{ELECR} \] An integrated circuit that acts as the interface between logic circuits and a two-wire transmission line. \( \text{lin} \ 'dri\'v-\'ar} \)

line functions \[ \text{IND ENG} \] Organizational functions having direct authority and responsibility. \( \text{lin} \ '\text{bajk-shan} \)

line hydrophone \[ \text{ENG} \ '\text{ACOUS} \] A directional hydrophone consisting of one straight-line element, an array of suitably phased elements mounted in line, or the acoustic equivalent of such an array. \( \text{lin} \ 'h\text{idra-\'fon} \)

line level \[ \text{ENG} \] A small spirit level fitted with hooks at each end so that it can be hung on a horizontally stretched line. \( \text{lin} \ '\text{lev-\'ol} \)

line loss \[ \text{ELEC} \] Total of the various energy losses occurring in a transmission line. \[ \text{ENG} \] The quantity of gas that is lost in a distribution system or pipeline. \( \text{lin} \ '\text{los} \)

line lubricator \[ \text{See line oiler.} \] \( \text{lin} \ '\text{lù-\'bara-kad-\'ar} \)

line microphone \[ \text{ENG} \ '\text{ACOUS} \] A highly directional microphone consisting of a single straight-line element or an array of small parallel tubes of different lengths, with one end of each abutting a microphone element. Also known as machine-gun microphone. \( \text{lin} \ '\text{mik-\'ra-\'fon} \)

line mixer \[ \text{See flow mixer.} \] \( \text{lin} \ '\text{mik-\'sar} \)

line of action \[ \text{MECH} \ '\text{ENG} \] The locus of contact points as gear teeth profiles go through mesh. \( \text{lin} \ '\text{av} \ '\text{ak-\'sko} \)

line of balance \[ \text{IND ENG} \] A production planning system that schedules key events leading to completion of an assembly on the basis of the delivery date for the completed system. Abbr. LOB. \( \text{lin} \ '\text{av} \ '\text{bal-\'ons} \)

line of fall \[ \text{MECH} \] The line tangent to the ballistic trajectory at the level point. \( \text{lin} \ '\text{av} \ '\text{föl} \)

line of flight \[ \text{MECH} \] The line of movement, or the intended line of movement, of an aircraft, guided missile, or projectile in the air. \( \text{lin} \ '\text{av} \ '\text{flyt} \)

line of impact \[ \text{MECH} \] A line tangent to the trajectory of a missile at the point of impact. \( \text{lin} \ '\text{av} \ '\text{im-pakt} \)

line-of-sight velocity \[ \text{MECH} \ '\text{Vel.} \] See radial velocity. \( \text{lin} \ '\text{av} \ '\text{sit} \ '\text{vó-\'lað-\'að-\'e}} \)

line of thrust \[ \text{MECH} \] Locus of the points through which the resultant forces pass in an arch or retaining wall. \( \text{lin} \ '\text{av} \ '\text{thraßt} \)

line of tunnel \[ \text{ENG} \] The width marked by the exterior lines or sides of a tunnel. \( \text{lin} \ '\text{av} \ '\text{tun-\'ol} \)

line oiler \[ \text{MECH ENG} \] An apparatus inserted in a line conducting air or steam to an air- or steam-activated machine that feeds small controllable amounts of lubricating oil into the air or steam. Also known as air-line lubricator, line lubricator. \( \text{lin} \ '\text{öl-\'ar} \)

line pack \[ \text{ENG} \] The actual amount of gas in a pipeline or distribution system. \( \text{lin} \ '\text{påk} \)

liner \[ \text{DES ENG} \] A replaceable tubular sleeve inside a hydraulic or pump-pressure cylinder in which the piston travels. \[ \text{ENG} \] A string of casing in a borehole. \( \text{lin} \ '\text{ar} \)

liner bushing \[ \text{DES ENG} \] A bushing, provided with or without a head, that is permanently installed in a jig to receive the renewable wearing bushings. Also known as master bushing. \( \text{lin} \ '\text{ar} \ '\text{bush-\'ijn} \)

line rod \[ \text{See range rod.} \] \( \text{lin} \ '\text{råd} \)

liner plate cofferdam \[ \text{CIV ENG} \] A cofferdam made from steel plates about 16 inches (41 centimeters) high and 3 feet (91 centimeters) long, and corrugated for added stiffness. \( \text{lin} \ '\text{ar} \ '\text{plät} \ '\text{kof-\'darn} \)

line scanner \[ \text{ENG} \] An infrared imaging device which utilizes the motion of a moving platform, such as an aircraft or satellite, to scan infrared radiation from the terrain. Also known as thermal mapper. \( \text{lin} \ '\text{skan-\'ar} \)

line shafting \[ \text{MECH ENG} \] One or more pieces of assembled shafting to transmit power from a central source to individual machines. \( \text{lin} \ '\text{shaft-\'ijn} \)

linesman \[ \text{ENG} \] 1. A worker who sets up and repairs communication and power lines. 2. An assistant to a surveyor. \( \text{lin} \ '\text{man} \)

line space lever \[ \text{MECH ENG} \] A lever on a typewriter used to move the carriage to a new line. \( \text{lin} \ '\text{spås} \ '\text{lev-\'ar} \)

line voltage \[ \text{ELEC} \] The voltage provided by a power line at the point of use. \( \text{lin} \ '\text{vol-\'ij} \)

lining bar \[ \text{DES ENG} \] A crowbar with a pinch, wedge, or diamond point at its working end. \( \text{lin} \ '\text{in-\'i} \ '\text{bår} \)

lining pole \[ \text{See range rod.} \] \( \text{lin} \ '\text{in-\'i} \ '\text{pol} \)

link \[ \text{CIV ENG} \] A standardized part of a surveyor's chain, which is 7.92 inches (20.1168 centimeters) in the Gunter's chain and 1 foot (30.48 centimeters) in the engineer's chain. \[ \text{DES ENG} \] 1. One of the rings of a chain. 2. A connecting piece in the moving parts of a machine. \( \text{lin} \ '\text{kik} \)

linkage \[ \text{MECH ENG} \] A mechanism that transfers motion in a desired manner by using some combination of bar links, slides, pivots, and rotating members. \( \text{lin} \ '\text{kik} \)

link V belt \[ \text{DES ENG} \] A V belt composed of a large number of rubberized-fabric links joined by metal fasteners. \( \text{lin} \ '\text{vē} \ '\text{belt} \)
liquid-sorbent dehumidifier

liquid-in-metal thermometer [ENG] A thermometer in which the thermally sensitive element is a liquid contained in a metal envelope, frequently in the form of a Bourdon tube. { *lik-wad in 'med-al thar'mām-ād-ār* }

liquid knockout See impingement. { *lik-wad 'nā,kaūt* }

liquid level control [ENG] Regulation of the linear vertical distance between the surface of a liquid and some reference point. { *lik-wad 'lev-āl kān,trūl* }

liquid-liquid extraction [CHEM ENG] The removal of a soluble component from a liquid mixture by contact with a second liquid, immiscible with the carrier liquid in which the component is preferentially soluble. { *lik-wad 'lik-wad ik 'strak-shan* }

liquid measure [MECH] A system of units used to measure the volumes of liquid substances in the United States; the units are the fluid dram, fluid ounce, gill, pint, quart, and gallon. { *lik-wad 'mēzh-ār* }

liquid penetran test [ENG] A penetrant method of nondestructive testing used to locate defects open to the surface of nonporous materials; penetrating liquid is applied to the surface, and after 1–30 minutes excess liquid is removed, and a developer is applied to draw the penetrant out of defects, thus showing their location, shape, and size. { *lik-wad 'pen-ə-trant ,test* }

liquid-phase hydrogenation [CHEM ENG] Hydrogen reaction with liquid-phase hydrogenatable material, such as unsaturated aliphatic or aromatic hydrocarbons. { *lik-wad ,fāz ,hī-dro-ja'pā̃-nā̃son* }

liquid pint See pint. { *lik-wad 'pīnt* }

liquid piston rotary compressor [MECH ENG] A rotary compressor in which a multiblade rotor revolves in a casing partly filled with liquid, for example, water. { *lik-wad 'pis-ton ōd-ə-rē-kām'pres-ār* }

liquid seal [CHEM ENG] 1. The depth of liquid above an opening from which gas or vapor issues, as for a riser in a distillation-column tray. 2. Product drawoff in which a depth of liquid prevents the outflow of gas or vapor. { *lik-wad 'sēl* }

liquid-sealed meter [ENG] A type of positive-displacement meter for gas flows consisting of a cylindrical chamber that is more than half filled with water and divided into four rotating compartments formed by trailing vanes, gas entering through the center shaft into one compartment after another forces rotation that allows the gas then to exhaust out the top as it is displaced by the water. Also known as drum meter. { *lik-wad ,seld 'mēd-ār* }

liquid semiconductor [ELECTR] An amorphous material in solid or liquid state that possesses the properties of varying resistance induced by charge carrier injection. { *lik-wad 'sem-i-kōn,dak-ār* }

liquid-sorbent dehumidifier [MECH ENG] A sorbent type of dehumidifier consisting of a main circulating fan, sorbent-air contactor, sorbent
liquid sulfur dioxide-benzene process

A clay atmometer in

livesteam

live-roller conveyor

The permissible load Also known as load stabilization. { live-load allowance

live-end-dead-end room

liquid line

live axle

liquid center

live load

live load allowance

live roller conveyor

live steam

Livingstone sphere

the instrument is supposed to be somewhat representative of that from plant growth. { liv•i•j•stan ,sfir

livre { MECH ENG } A unit of mass, used in France, equal to 0.5 kilogram. { liv•r•a

lixivate { CHEM ENG } To extract a soluble component from a solid mixture by washing or percolation processes. { lik•sv•i•v•ä

lixuration See leaching. { lik•sy•u•r•ä•shän

Ljungström heater { MECH ENG } Continuous, regenerative, heat-transfer air heater (recuperator) made of slow-moving rotors packed with closely spaced metal plates or wires with a housing to confine the hot and cold gases to opposite sides. { yun•ström ,hed•ro

Ljungström steam turbine { MECH ENG } A radial outward-flow turbine having two opposed rotation rotors. { yun•ström •stäm •tar•ban

load { ELEC } 1. A device that consumes electric power. 2. The amount of electric power that is drawn from a power line, generator, or other power source. 3. The material to be heated by an induction heater or dielectric heater. Also known as work. { ELECTR } The device that receives the useful signal output of an amplifier, oscillator, or other signal source. { ENG } 1. To place ammunition in a gun, bombs on an airplane, explosives in a missile or borehole, fuel in a fuel tank, cargo or passengers into a vehicle, and the like. 2. The quantity of gas delivered or required at any particular point on a gas supply system; develops primarily at gas-consuming equipment. { MECH } 1. The weight that is supported by a structure. 2. Mechanical force that is applied to a body. 3. The burden placed on any machine, measured by units such as horsepower, kilowatts, or tons. { lód

load-and-carry equipment { MECH ENG } Earth-moving equipment designed to load and transport material. { lôd an •kar•ë i,kwip•mant

load-carrying capacity { MECH ENG } The greatest weight that the end effector of a robot can manipulate without reducing its level of performance. { lôd •kar•ë in •kä,pa•s•ä•d•ë

load chart { IND ENG } A graph showing the amount of work still to be performed by a factory producing unit such as a machine or assembly group. { lôd •chärt

load compensation { CONT SYS } Compensation in which the compensator acts on the output signal after it has generated feedback signals. Also known as load stabilization. { lôd kämp•än's•shän

load deflection { MECH ENG } The change in position of a body when a load is applied to it. { lôd di•flek•shän

load diagram { CIV ENG } A diagram showing the distribution and intensity of loads on a structure. { lôd •di•gräm

loaded Q { ELEC } The Q factor of an impedance which is connected or coupled under working conditions. Also known as working Q. { lôd•ad•kyü

loaded wheel { ENG } A grinding wheel that is
null as a result of becoming filled with particles from the material being ground. (ˈlōd-əd-ˈwēl) 

**loader** [MECH ENG] A machine such as a mechanical shovel used for loading bulk materials. (ˈlōd-ər) 

**load factor** [ELEC] The ratio of average electric load to peak load, usually calculated over a 1-hour period. [MECH] The ratio of load to the maximum rated load. (ˈlōd fər′tər) 

**loading** [CHEM ENG] Condition of vapor overcapacity in a liquid-vapor-contact tower, in which rising vapor lifts or holds falling liquid. [ELEC] The addition of inductance to a transmission line to improve its transmission characteristics throughout a given frequency band. Also known as electrical loading. [ENG] 1. Buildup on a cutting tool of the material removed in cutting. 2. Filling of the pores of a grinding wheel with material removed in the grinding process. [ENG ACOUS] Placing material at the front or rear of a loudspeaker to change its acoustic impedance and thereby alter its radiation. (ˈlōd-əj) 

**loading board** [ENG] A device that holds preforms in positions corresponding to the multiple cavities in a compression mold, thus facilitating the simultaneous insertion of the preforms. (ˈlōd-əbŏrd) 

**loading density** [ENG] The number of pounds of explosive per foot length of drill hole. (ˈlōd-ən, ˈsōd-ə) 

**loading head** [MECH ENG] The part of a loader which gathers the bulk materials. (ˈlōd-əhēd) 

**loading rack** [ENG] The shelter and associated equipment for the withdrawal of liquid petroleum or a chemical product from a storage tank and loading it into a railroad tank car or tank truck. (ˈlōd-ərak) 

**loading space** [ENG] Space in a compression mold for holding the plastic molding material before it is compressed. (ˈlōd-əspās) 

**loading station** [MECH ENG] A device which receives material and puts it on a conveyor, may be one or more plates or a hopper. (ˈlōd-ən, ˈstā-əshən) 

**loading tray** [ENG] A tray with a sliding bottom used to simultaneously load the plastic charge into the cavities of a multicavity mold. (ˈlōd-ən,ˈtrā) 

**loading weight** [ENG] Weight of a powder put into a container. (ˈlōd-ən,ˈwät) 

**load limit** [CIV ENG] The maximum weight that can be supported by a structure. [MECH ENG] The maximum recommended or permitted overall weight of a container or a cargo-carrying vehicle that is determined by combining the weight of the empty container or vehicle with the weight of the load. (ˈlōd,ˈlim-ət) 

**load profile** [ENG] A measure of the time distribution of a building's energy requirements, including the heating, cooling, and electrical loads. (ˈlōdˈprəfl) 

**load stabilization** See load compensation. (ˈlōdˌstāˈbəlˌəˌzāˈshən) 

**load stress** [MECH] Stress that results from a pressure or gravitational load. (ˈlōdˌstrēs) 

LOB See line of balance. 

**load** [DES ENG] A projection on a cam wheel or a noncircular gear wheel. [ENG ACOUS] A portion of the directivity pattern of a transducer representing an area of increased emission or response. (ˈlōb) 

**lobed impeller** [ENG] A type of positive displacement meter in which a fluid stream is separated into discrete quantities by rotating, meshing impellers driven by interlocking gears. (ˈlōb id′məlʿərˌəˌmēdˌər) 

**local buckling** [MECH] Buckling of thin elements of a column section in a series of waves or wrinkles. (ˈlō-kalˌbək′l̩ŋ) 

**local coefficient of heat transfer** [THERMO] The heat transfer coefficient at a particular point on a surface, equal to the amount of heat transferred to an infinitesimal area of the surface at the point by a fluid passing over it, divided by the product of this area and the difference between the temperatures of the surface and the fluid. (ˈlō-kalˌkoˌfətˌiŋ′fənd ən tən ˈhētˌtranzˌfər) 

**local controller** See first-level controller. (ˈlō-kalˌkənˈtrolər) 

**localized vector** [MECH] A vector whose line of application or point of application is prescribed, in addition to its direction. (ˈlō-kāˌläd′vĕktor) 

**local networking** [CONT SYS] The system of communication linking together the components of a single robot. (ˈlō-kāˌnét′wörk′əŋ) 

**local structural discontinuity** [MECH] The effect of intensified stress on a small portion of a structure. (ˈlō-kāˌstrakˌʃərəl dīsˌkant′ənˈəˌədˈeɪ) 

**locating** [MECH ENG] A function of tooling operations accomplished by designing and constructing the tooling device so as to bring together the proper contact points or surfaces between the workpiece and the tooling. (ˈlōkəˌkādˌəŋ) 

**locating hole** [MECH ENG] A hole used to position the part in relation to a cutting tool or to other parts and gage points. (ˈlōkəˌkādˌəŋˌhōl) 

**locating surface** [MECH ENG] A surface used to position an item being manufactured in a numerical control or robotic system for clamping. (ˈlōkəˌkādˌəŋˌsärdës) 

**location analysis** [DES ENG] An initial step in the design of a robotic system consisting of a detailed study of all aspects of the placement of components such as work stations, buffers, and materials-handling equipment, as well as accessories, tools, and workpieces within a work station. (ˈlōkəˌshən əˌnälˌəˌsæs) 

**location dimension** [DES ENG] A dimension which specifies the position or distance relationship of one feature of an object with respect to another. (ˈlōkəˌshən daˈmənˌshən) 

**location fit** [DES ENG] The characteristic wherein mechanical sizes of mating parts are such that, when assembled, the parts are accurately positioned in relation to each other. (ˈlōkəˌshənˌfɪt)
locator

locator  [ENG]  A radar or other device designed to detect and locate airborne aircraft.  ['ləkətor]

lock  [CIV ENG]  A chamber with gates on both ends connecting two sections of a canal or other waterway, to raise or lower the water level in each section.  [DES ENG]  A fastening device in which a releasable bolt is secured.  [ELECTR]  To fasten onto and automatically follow a target by means of a radar beam.  [ENG]  See air lock.  {lākt}

lock bolt  [ENG]  1. The bolt of a lock.  2. A bolt equipped with a locking collar instead of a nut.  3. A bolt for adjusting and securing parts of a machine.  {lākt, bólt}

lock chamber  [CIV ENG]  A compartment between lock gates in a canal.  {lāk, chām-bār}

locked-coil rope  [DES ENG]  A completely smooth wire rope that resists wear, made of specially formed wires arranged in concentric layers about a central wire core. Also known as locked-wire rope.  {lākt, köil, rōp}

locked groove  [DES ENG]  A blank and continuous groove placed at the end of the modulated grooves on a disk recording to prevent further travel of the pickup. Also known as concentric groove.  {lākt, grūv}

locked-wire rope  See locked-coil rope.  {lākt, wir, rōp}

lock front  [DES ENG]  On a door lock or latch, the plate through which the latching or locking bolt (or bolts) projects.  {lākt, frōnt}

lock gate  [CIV ENG]  A movable barrier separating the water in an upper or lower section of waterway from that in the lock chamber.  {lākt, gāt}

locking  [ELECTR]  Controlling the frequency of an oscillator by means of an applied signal of constant frequency.  [ENG]  Automatic following of a target by a radar antenna.  {lākt-ing}

locking fastener  [DES ENG]  A fastening used to prevent loosening of a threaded fastener in service, for example, a seating lock, spring stop nut, interference wedge, blind, or quick release.  {lākt-ing, fas-nōr}

lock joint  [DES ENG]  A joint made by interlocking the joined elements, with or without other fastening.  {lākt, jōnt}

locknut  [DES ENG]  1. A nut screwed down firmly against another or against a washer to prevent loosening. Also known as jam nut.  2. A nut that is self-locking when tightened.  3. A nut fitted to the end of a pipe to secure it and prevent leakage.  {lāk, nat}

lockout circuit  [ELECTR]  A switching circuit which responds to concurrent inputs from a number of external circuits by responding to one, and only one, of these circuits at any time. Also known as finding circuit, hunting circuit.  {lāk, ou̇t, sār-kāt}

lock rail  [BUILD]  An intermediate horizontal structural member of a door, between the vertical stiles, at the height of the lock.  {lāk, rāl}

lockset  [ENG]  1. A complete lock including the lock mechanism, keys, plates, and other parts.
loop control

repeatedly without interruption. 2. A closed circuit of pipe in which materials and components may be placed to test them under different conditions of temperature, irradiation, and so forth. (lüp)

loop control  See photoelectric loop control.  (lüp kanˌtröl)

loop filter  [ELECTR] A low-pass filter, which may be a simple RC filter or may include an amplifier, and which passes the original modulating frequencies but removes the carrier-frequency components and harmonics from a frequency-modulated signal in a locked-oscillator detector. (lüpˌfilˌtar)

loop gain  [CONT SYS] The ratio of the magnitude of the primary feedback signal in a feedback control system to the magnitude of the actuating signal. [ELECTR] Total usable power gain of a carrier terminal or two-wire repeater; maximum usable gain is determined by, and may not exceed, the losses in the closed path. (lüpˌgän)

looping  [ENG] Laying a parallel pipeline along another, or along just a section of it, to increase capacity. (lüpˌing)

loop ratio  See loop transfer function. (lüpˌraˌshō)

loop seal  [CHEM ENG] Antivapor seal for liquid drawoffs from process or storage vessels; liquid drawoff is made to flow through an immersed loop or beneath an obstruction, thus sealing off vapor flow. (lüpˌsēl)

loop strength  See loop tenacity. (lüpˌstrɛŋθ)

loop tenacity  [ENG] A measure of the strength of a fibrous material determined by a test in which two linked loops of the material are pulled against each other to determine if the material will cut or crush itself. Also known a loop strength. (lüpˌtəˌnasˌədˌé)

loop transfer function  [CONT SYS] For a feedback control system, the ratio of the Laplace transform of the primary feedback signal to the Laplace transform of the actuating signal. Also known as loop ratio. (lüpˌtranzˌtəˌfəŋkˈshan)

loop transmittance  [CONT SYS] 1. The transmittance between the source and sink created by the splitting of a specified node in a signal flow graph. 2. The transmittance between the source and sink created by the splitting of a node which has been inserted in a specified branch of a signal flow graph in such a way that the transmittance of the branch is unchanged. (lüpˌtranzˌmitˌəˌns)

loop tunnel  [ENG] A tunnel which is looped or folded back on itself to gain grade in a tunnel location. (lüpˌtəŋˈal)

loose-detail mold  [ENG] A plastics mold with parts that come out with the molded piece. (lüsˌdēˌtālˌmold)

loose fit  [DES ENG] A fit with enough clearance to allow free play of the joined members. (lüsˌfıt)

loose-joint butt  [DES ENG] A knuckle hinge in which the pin on one half slides easily into a slot on the other half. (lüsˌjöintˈbat)

loop control

loop gain  [CONT SYS] The ratio of the magnitude of the primary feedback signal in a feedback control system to the magnitude of the actuating signal. [ELECTR] Total usable power gain of a carrier terminal or two-wire repeater; maximum usable gain is determined by, and may not exceed, the losses in the closed path. (lüpˌgän)

looping  [ENG] Laying a parallel pipeline along another, or along just a section of it, to increase capacity. (lüpˌing)

loop ratio  See loop transfer function. (lüpˌraˌshō)

loop seal  [CHEM ENG] Antivapor seal for liquid drawoffs from process or storage vessels; liquid drawoff is made to flow through an immersed loop or beneath an obstruction, thus sealing off vapor flow. (lüpˌsēl)

loop strength  See loop tenacity. (lüpˌstrɛŋθ)

loop tenacity  [ENG] A measure of the strength of a fibrous material determined by a test in which two linked loops of the material are pulled against each other to determine if the material will cut or crush itself. Also known a loop strength. (lüpˌtəˌnasˌədˌé)

loop transfer function  [CONT SYS] For a feedback control system, the ratio of the Laplace transform of the primary feedback signal to the Laplace transform of the actuating signal. Also known as loop ratio. (lüpˌtranzˌtəˌfəŋkˈshan)

loop transmittance  [CONT SYS] 1. The transmittance between the source and sink created by the splitting of a specified node in a signal flow graph. 2. The transmittance between the source and sink created by the splitting of a node which has been inserted in a specified branch of a signal flow graph in such a way that the transmittance of the branch is unchanged. (lüpˌtranzˌmitˌəˌns)

loop tunnel  [ENG] A tunnel which is looped or folded back on itself to gain grade in a tunnel location. (lüpˌtəŋˈal)

loose-detail mold  [ENG] A plastics mold with parts that come out with the molded piece. (lüsˌdēˌtālˌmold)

loose fit  [DES ENG] A fit with enough clearance to allow free play of the joined members. (lüsˌfıt)

loose-joint butt  [DES ENG] A knuckle hinge in which the pin on one half slides easily into a slot on the other half. (lüsˌjöintˈbat)

loop control

loop gain  [CONT SYS] The ratio of the magnitude of the primary feedback signal in a feedback control system to the magnitude of the actuating signal. [ELECTR] Total usable power gain of a carrier terminal or two-wire repeater; maximum usable gain is determined by, and may not exceed, the losses in the closed path. (lüpˌgän)

looping  [ENG] Laying a parallel pipeline along another, or along just a section of it, to increase capacity. (lüpˌing)

loop ratio  See loop transfer function. (lüpˌraˌshō)

loop seal  [CHEM ENG] Antivapor seal for liquid drawoffs from process or storage vessels; liquid drawoff is made to flow through an immersed loop or beneath an obstruction, thus sealing off vapor flow. (lüpˌsēl)

loop strength  See loop tenacity. (lüpˌstrɛŋθ)

loop tenacity  [ENG] A measure of the strength of a fibrous material determined by a test in which two linked loops of the material are pulled against each other to determine if the material will cut or crush itself. Also known a loop strength. (lüpˌtəˌnasˌədˌé)

loop transfer function  [CONT SYS] For a feedback control system, the ratio of the Laplace transform of the primary feedback signal to the Laplace transform of the actuating signal. Also known as loop ratio. (lüpˌtranzˌtəˌfəŋkˈshan)

loop transmittance  [CONT SYS] 1. The transmittance between the source and sink created by the splitting of a specified node in a signal flow graph. 2. The transmittance between the source and sink created by the splitting of a node which has been inserted in a specified branch of a signal flow graph in such a way that the transmittance of the branch is unchanged. (lüpˌtranzˌmitˌəˌns)

loop tunnel  [ENG] A tunnel which is looped or folded back on itself to gain grade in a tunnel location. (lüpˌtəŋˈal)

loose-detail mold  [ENG] A plastics mold with parts that come out with the molded piece. (lüsˌdēˌtālˌmold)

loose fit  [DES ENG] A fit with enough clearance to allow free play of the joined members. (lüsˌfıt)

loose-joint butt  [DES ENG] A knuckle hinge in which the pin on one half slides easily into a slot on the other half. (lüsˌjöintˈbat)

looping shears  [DES ENG] Long-handled shears used for pruning branches. (lüpˌingˌshirz)

loss  [ENG] Power that is dissipated in a device or system without doing useful work. Also known as internal loss. (lüsˌɔs)

loss coefficient  See injection electroluminescence. (lüsˌɔsˌfəˌlɛkt)

loss factor  [ELEC] The power factor of a material multiplied by its dielectric constant, determines the amount of heat generated in a material. (lüsˌfəˈfækˈtar)

loss-in-weight feeder  [MECH ENG] A device to apportion the output of granulated or powdered solids at a constant rate from a feed hopper; weight-measured decrease in hopper content actuates further opening of the discharge chute to compensate for flow loss as the hopper overburden decreases; used in the chemical, fertilizer, and plastics industries. (lüsˌinsˈwētˌfəˌdər)

loss-of-head gage  [ENG] A gage on a rapid sand filter, which indicates loss of head for a filtering operation. (lüsˌəsˌvəˈhedˌgāˈj)

lost motion  [MECH ENG] The delay between the movement of a driver and the movement of a follower. (lüsˌəstəˈmōʃən)

lost time  [ENG ACOUS] The period in a frequency-modulation sonar, just after flyback, during which the sound field must be reestablished; its duration equals travel time of the signal to and from the target. (lüsˌəstˈtām)

lot  [CIV ENG] A piece of land with fixed boundaries. [IND ENG] A quantity of material, such as propellant, the units of which were manufactured under identical conditions. Also known as lot batch. (lüt)

lot batch  See batch. (lütˌbäť)

lot line  [CIV ENG] The legal boundary line of a piece of property. (lütˌlain)

lot number  [IND ENG] Identification number assigned to a particular quantity or lot of material from a single manufacturer. (lütˌnəmˈbər)

lot plot method  [IND ENG] A variables acceptance sampling plan based on the frequency plot of a random sample of 50 items taken from a lot. (lütˌplətˌmethˈəd)

lot tolerance percent defective  [IND ENG] The percent of defectives in a lot which is considered bad and should be rejected for some specified fraction, usually 90, of the time. (lütˌtəˈtələrˈpərsəntˈdɪfəˈlektɪv)

loudness control  [ENG ACOUS] A combination volume and tone control that boosts bass frequencies when the control is set for low volume, to compensate automatically for the reduced response of the ear to low frequencies at low volume levels. Also known as compensated volume control. (lüdənˌnəsˌkænˌtröl)

loudspeaker  [ENG ACOUS] A device that converts electrical signal energy into acoustical
energy, which it radiates into a bounded space, such as a room, or into outdoor space. Also known as speaker.

loudspeaker dividing network See crossover network.

loudspeaker voice coil See voice coil.

louver [BUILD] An opening in a wall or ceiling with slanted or sloping slats to allow sunlight and ventilation and exclude rain; may be fixed or adjustable, and may be at the opening of a ventilating duct. Also known as outlet ventilator.

[ENG] Any arrangement of fixed or adjustable slat-like openings to provide ventilation. [ENG ACOUS] An arrangement of concentric or parallel slats or equivalent grille members used to conceal and protect a loudspeaker while allowing sound waves to pass.

lowboy [MECH ENG] A trailer with low ground clearance for hauling construction equipment.

Lowenhertz thread [DES ENG] A screw thread that differs from U.S. Standard form in that the angle between the flanks measured on an axial plane is 53°7′; height equals 0.75 times the pitch, and width of flats at top and bottom equals 0.125 times the pitch.

lower chord [CIV ENG] The bottom member of a truss.

lower control limit [IND ENG] The horizontal line drawn on a control chart at a specified distance below the central line, points plotted below the lower control limit indicate that the process may be out of control.

lower half-power frequency [ELECTR] The frequency on an amplifier response curve which is smaller than the frequency at which the output voltage is 1/\sqrt{2} of its midband or other refer.

lower heating value See low heat value.

lower pair [MECH ENG] A link in a mechanism in which the mating parts have surface (instead of line or point) contact.

lowest safe waterline [MECH ENG] The lowest water level in a boiler drum at which the burner may safely operate.

low-frequency compensation [ELECTR] Compensation that serves to extend the frequency range of a broad-band amplifier to lower frequencies.

low-frequency current [ELECTR] An alternating current having a frequency of less than about 300 kilohertz.

low-frequency cutoff [ELECTR] A frequency below which the gain of a system or device decreases rapidly.

low-frequency gain [ELECTR] The gain of the voltage amplifier at frequencies less than those frequencies at which this gain is close to its maximum value.

low-frequency impedance corrector [ELEC] Electric network designed to be connected to a basic network, or to a basic network and a building-out network, so that the combination will simulate, at low frequencies, the sending-end impedance, including dissipation, of a line.

low-frequency induction furnace [ENG] An induction furnace in which current flow at the commercial power-line frequency is induced in the charge to be heated.

low heat value [THERMO] The heat value of a combustion process assuming that none of the water vapor resulting from the process is condensed out, so that its latent heat is not available. Also known as lower heating value, net heating value.

low-helix drill [DES ENG] A two-flute twist drill with a lower helix angle than a conventional drill. Also known as slow-spiral drill.

low-impedance measurement [ELECTR] The measurement of an impedance which is small enough to necessitate use of indirect methods.

low-loss [ELEC] Having a small dissipation of electric or electromagnetic power.

low-noise preamplifier [ELECTR] A low-noise amplifier placed in a system prior to the main amplifier, sometimes close to the source, used to establish a satisfactory noise figure at an early point in the system.

low-pass filter [ELEC] A filter that transmits alternating currents below a given cutoff frequency and substantially attenuates all other currents.

low-pass filter

"low-pass filter"
low-population zone

low-population zone [ENG] An area of low population density sometimes required around a nuclear installation; the number and density of residents is of concern in providing, with reasonable probability, that effective protection measures can be taken if a serious accident should occur. (lou 'vol-tju)

low-pressure area [MECH ENG] The point in a bearing where the pressure is the least and the area or space for a lubricant is the greatest. (lou 'pre-shar 'er-e-a)

low-pressure torch [ENG] A type of torch in which acetylene enters a mixing chamber, where it meets a jet of high-pressure oxygen; the amount of acetylene drawn into the flame is controlled by the velocity of this oxygen jet. Also known as injector torch. (lou 'pre-shar 'torch)

low-Q filter [ELECTR] A filter in which the energy dissipated in each cycle is a fairly large fraction of the energy stored in the filter. (lou 'kejy 'fil-tar)

low-reactance grounding [ELEC] Use of grounding connections with a moderate amount of inductance to effect a moderate reduction in derived from limited space-charge accumulation. (lou 'reks 'ground)

Lowry process [ENG] A system for wood preservation which uses atmospheric pressure at the start and then introduces preservative into the wood in a vacuum. (lou-ru-ru, pr-as-as)

low-speed wind tunnel [ENG] A wind tunnel that has a speed up to 300 miles (480 kilometers) per hour and the essential features of most wind tunnels. (lou 'sped 'win 'an-al)

low-technology robot [CONT SYS] The simplest type of robot, with only two or three degrees of freedom, and only the end points of motion specified, using fixed and adjustable stops. (lou 'tek-nal-je 'ro-bat)

low-temperature carbonization [CHEM ENG] Low-temperature destructive distillation of coal to produce liquid products. (lou 'tem-pra-char 'kar-bo-na-za-shan)

low-temperature hygrometry [ENG] The study that deals with the measurement of water vapor at low temperatures, the techniques used differ from those of conventional hygrometry because of the extremely small amounts of moisture present at low temperatures and the difficulties imposed by the increase of the time constants of the standard instruments when operated at these temperatures. (lou 'tem-pra-char hii 'gram-er-te)

low-temperature separation [CHEM ENG] Liquid condensate recovery from wet gases at temperatures of 20 to −20°F (−6.7 to −28.9°C), the temperature range at which the gas-oil separator operates. (lou 'tem-pra-char 'sep-ar-a-shan)

low velocity [MECH] Muzzle velocity of an artillery projectile of 2499 feet (762 meters) per second or less. (lou 'vo-las-ad-e)

low voltage [ELEC] 1. Voltage which is small enough to be regarded as safe for indoor use, usually 120 volts in the United States. 2. Voltage which is less than that needed for normal operation; a result of low voltage may be burnout of electric motors due to loss of electromotive force. (lou 'vok-tju)

low-water fuel cutoff [MECH ENG] A float device which shuts off fuel supply and burner when boiler water level drops below the lowest safe waterline. (lou 'wo-d-ar 'fyul ka-dof)

lozenge file [DES ENG] A small file with four sides and a lozenge-shaped cross section, used in forming dies. (lou-zenj 'fil)

L pad [ENG ACOUS] A volume control having essentially the same impedance at all settings. (el 'pad)

LP record See long-playing record. (elp 'rek-ar)

LQG problem See linear-quadratic-Gaussian problem. (elp 'kyuljul 'prab-lam)

LSA diode [ELECTR] A microwave diode in which a space charge is developed in the semiconductor by the applied electric field and is dissipated during each cycle before it builds up appreciably, thereby limiting transit time and increasing the maximum frequency of oscillation. Derived from limited space-charge accumulation diode. (lou 'seza 'di-ofod)

LSI circuit See large-scale integrated circuit. (elp 'siz 'sarek-at)

L-1 test [ENG] A 480-hour engine test in a single-cylinder Caterpillar diesel engine to determine the detergent of heavy-duty lubricating oils. (el 'wan 'test)

L-2 test [ENG] An engine test made in a single-cylinder Caterpillar diesel engine to determine the oiliness of an engine oil. Also known as scoring test. (el 'two 'test)

L-3 test [ENG] An engine test in a four-cylinder Caterpillar engine to determine stability of crankcase oil at high temperatures and under severe operating conditions. (el 'three 'test)

L-4 test [ENG] An engine test in a six-cylinder spark-ignition Chevrolet engine to evaluate crankcase oil oxidation stability, bearing corrosion, and engine deposits. (el 'fur 'test)

L-5 test [ENG] An engine test in a General Motors diesel engine to determine detergent, corrosiveness, ring sticking, and oxidation stability properties of lubricating oils. (el 'fly 'test)

LTPD See lot tolerance percent defective. (elp-tehp-d)

lubricator [ENG] A device for applying a lubricant. (lou-'brak-ad-er)

Luckiesh-Moss visibility meter [ENG] A type of photometer that consists of two variable-density filters (one for each eye) that are adjusted so that an object seen through them is just barely discernible; the reduction in visibility produced by the filters is read on a scale of relative visibility related to a standard task. (lukyesh 'moss 'vits 'bil-ad-e, med-ad-er)

Ludwig-Soret effect [THERMO] A phenomenon in which a temperature gradient in a mixture of substances gives rise to a concentration gradient. (lu'dejiik 'sor-ad-eket)

Luenberger observer [CONT SYS] A compensator driven by both the inputs and measurable outputs of a control system. (luen 'borg-ad-ah-zar-var)
Lug [DES ENG] A projection or head on a metal part to serve as a cap, handle, support, or fitting connection. (lág)

Lug bolt [DES ENG] 1. A bolt with a flat extension or hook instead of a head. 2. A bolt designed for securing a lug. (ˈlág ′bőlt)

Lung-governed breathing apparatus [ENG] A breathing apparatus in which the oxygen that is supplied to the wearer is governed by the wearer's demand. (ˈlæŋ ′gəv-ənd ′brēthin ap·ə·rad·əs)

Lyapunov stability criterion [CONT SYS] A method of determining the stability of systems (usually nonlinear) by examining the sign-definitive properties of an associated Lyapunov function. (le̞p·ən ə ˈnɔf ˈstā·bil·e·tə kri̞təˌrē·ən)

Lyophilization [CHEM ENG] Rapid freezing of a material, especially biological specimens for preservation, at a very low temperature followed by rapid dehydration by sublimation in a high vacuum. (ˌli̞fəl·əˌli̞fəl·ən)

Lygometer [ENG] An instrument for measuring the water percolating through soils and determining the materials dissolved by the water. (ˈlɪsɪmətər)
m Se meter
macadam [CIV ENG] Uniformly graded stones consolidated by rolling to form a road surface, may be bound with water or cement, or coated with tar or bitumen. (ma'kad'am)
maceration [CHEM ENG] The process of extracting fragrant oils from flower petals by immersing them in hot molten fat. (,mä·sär·ə·shən)
machete [DES ENG] A knife with a broad blade 2 to 3 feet (60 to 90 centimeters) long. (ma'ched-e or ma'ched-e)
mach indicator See Machmeter. ('mäk ,in·da·rər)
machine [MECH ENG] A combination of rigid or resistant bodies having definite motions and capable of performing useful work. (ma'šən)
machine attention time [IND ENG] Time during which a machine operator must observe the machine's functioning and be available for immediate servicing, while not actually operating or servicing the machine. Also known as service time. (ma'šən ,ət·ten·chan ·tım)
machine bolt [DES ENG] A heavy-weight bolt with a square, hexagonal, or flat head used in the automotive, aircraft, and machinery fields. (ma'šən ,bòlt)
machine capability [IND ENG] A qualitative or quantitative statement of the performance potential of a specific item of power equipment. (ma'šən ,kä·pər·bil·ə·də)
machine controlled time [IND ENG] The time necessary for a machine to complete the automatic portion of a work cycle. Also known as independent machine time, machine element, machine time. (ma'šən ,kən·trəld ·tım)
machine design [DES ENG] Application of science and invention to the development, specification, and construction of machines. (ma'šən ,diz·ən)
machine drill [MECH ENG] Any mechanically driven diamond, rotary, or percussive drill. (ma'šən ,drl)
machine element [DES ENG] Any of the elementary mechanical parts, such as gears, bearings, fasteners, screws, pipes, springs, and bolts used as essentially standardized components for most devices, apparatus, and machinery. See machine controlled time. (ma'šən ,el·ə·mənt)
machine file [DES ENG] A file that can be clamped in the chuck of a power-driven machine. (ma'šən ,flə)
machine-gun microphone See line microphone. (ma'šən ,gən ,mə·lin·krə·fon)
machine-hour [IND ENG] A unit representing the operation of one machine for 1 hour, used in the determination of costs and economics. (ma'šən ,hər·ə)
machine idle time [IND ENG] Time during a work cycle when a machine is idle, awaiting completion of manual work. (ma'šən ,'i·dəl ,tım)
machine interference [IND ENG] A situation in which two or more units of equipment simultaneously require service. (ma'šən ,i·n·ter·fərs·ənz)
machine key [DES ENG] A piece inserted between a shaft and a hub to prevent relative rotation. Also known as key. (ma'šən ,ki)
machine loading [IND ENG] 1. Feeding work into a machine. 2. Planning the amount of use of a unit of equipment during a given time period. (ma'šən ,lod·iŋ)
machine-paced operation [IND ENG] The proportion of an operation cycle during which the machine controls the speed of work progress. (ma'šən ,pæst ·i·pər·rə·də·sən)
machine rating [MECH ENG] The power that a machine can draw or deliver without overheating. (ma'šən ,rəttɪŋ)
machine run See run. (ma'šən ,rən)
machinery [MECH ENG] A group of parts or machines arranged to perform a useful function. (ma'šən·rə)
machine screw [DES ENG] A blunt-ended screw with a standardized thread and a head that may be flat, round, fillister, or oval, and may be slotted, or constructed for wrenching, used to fasten machine parts together. (ma'šən ,skrə)
machine setting See mechanical setting. (ma'šən ,set·iŋ)
machine shop [ENG] A workshop in which work, metal or other material, is machined to specified size and assembled. (ma'šən ,ʃəp)
machine shot capacity [ENG] In injection molding, the maximum weight of a given thermoplastic resin which can be displaced by a single stroke of the injection ram. (ma'šən ,ʃət ·kə,pas·ə·də)
machine taper

machine taper  [MECH ENG] A taper that provides a connection between a tool, arbor, or center and its mating part to ensure and maintain accurate alignment between the parts; permits easy separation of parts.  (məshən, tā′par)

machine-tight  [ENG] The extent of the tightening of a screwed fitting that can be accomplished without damaging or stripping the thread.  (məshən, tīl)

machine time  See machine controlled time.  (məshən, tīm)

machine tool  [MECH ENG] A stationary power-driven machine for the shaping, cutting, turning, boring, drilling, grinding, or polishing of solid parts, especially metals.  (məshən, tūl)

machine utilization  [ENG] The percentage of time that a machine is actually in use.  (məshən, yüdəl-ə-zə-shən)

machining  [MECH ENG] Performing various cutting or grinding operations on a piece of work.  (məshən-ənj)

machining center  [MECH ENG] Manufacturing equipment that removes metal under computer numerical control by making use of several axes and a variety of tools and operations.  (məshən-ənj, sen-tər)

machinist's file  [DES ENG] A type of double-cut file that removes metal fast and is used for rough metal filing.  (məshə-nəsths, fiil)

Machmeter  [ENG] An instrument that measures and indicates speed relative to the speed of sound, that is, indicates the Mach number. Also known as Mach indicator.  (ˈmæk, méd-ər)

macroanalytical balance  [ENG] A relatively large type of analytical balance that can weigh loads of up to 200 grams to the nearest 0.1 milligram.  (ˈmək-rən, án-ə-līd-ə-kal ˈbal-ənəs)

macroelement  [IND ENG] An element of a work cycle whose time span is long enough to be observed and measured with a stopwatch.  (ˈmək-rəl-ə-mənt)

macromechanics  See composite macromechanics.  (ˈmək-rə-mə-kə-rən-iks)

macrorheology  [MECH] A branch of rheology in which materials are treated as homogeneous or quasi-homogeneous, and processes are treated as isothermal.  (ˈmək-rə-rē′l-ə-jē)

macroscopic anisotropy  [ENG] Phenomenon in electrical downhole logging wherein electric current flows more easily along sedimentary strata beds than perpendicular to them.  (ˈmək-rəskæp-ək, ən-ə-sä′tə-pee)

macroscopic property  See thermodynamic property.  (ˈmək-rəskæp-ək ˈpræp-ərd-ə)

macrotome  [ENG] A device for making large anatomical sections.  (ˈmək-rətəm)

madistor  [ELECTR] A cryogenic semiconductor device in which injection plasma can be steered or controlled by transverse magnetic fields, to give the action of a switch.  (mədĭs-tər)

Madsen impedance meter  [ENG] An instrument for measuring the acoustic impedance of normal and deaf ears, based on the principle of the Wheatstone bridge.  (məd-sən ɪm-pəd-ənəs ˈməd-ər)

MADT  See microalloy diffused transistor.

MAG  See maximum available gain.

magazine  [ENG] 1. A storage area for explosives.  2. A building, compartment, or structure constructed and located for the storage of explosives or ammunition.  (ˈməg-əzən)

magnesite wheel  [ENG] A grinding wheel made with magnesium oxchloride as the bonding agent.  (ˈməg-nəsət, wél)

magnetic balance  [ENG] 1. A device for determining the repulsion or attraction between magnetic poles, in which one magnet is suspended and the forces needed to cancel the effects of bringing a pole of another magnet close to one end are measured.  2. Any device for measuring the small forces involved in determining paramagnetic or diamagnetic susceptibility.  (ˈməg-nəd-ik ˈbɑl-ənəs)

magnetic bearing  [MECH ENG] A device incorporating magnetic forces to cause a shaft to levitate and float in a magnetic field without any contact between the rotating and stationary elements.  (ˈməg-nəd-ik ˈber-ıj)

magnetic brake  [MECH ENG] A friction brake under the control of an electromagnet.  (ˈməg-nəd-ik ˈbraık)

magnetic chuck  [MECH ENG] A chuck in which the workpiece is held by magnetic force.  (ˈməg-nəd-ik ˈchāk)

magnetic clutch  See magnetic fluid clutch, magnetic friction clutch, [ˈməg-nəd-ik ˈklāch]

magnetic cutter  [ENG ACOUS] A cutter in which the mechanical displacements of the recording stylus are produced by the action of magnetic fields.  (ˈməg-nəd-ikˈkəd-ər)

magnetic drag dynamometer  See eddy-current brake.  (ˈməg-nəd-ikˈdrēd ˈdrə-nəmˈəd-ər)

magnetic drum  See drum.  (ˈməg-nəd-ikˈdrəm)

magnetic drum storage  See drum.  (ˈməg-nəd-ikˈdrəmˈstōr-ıj)

magnetic earphone  [ENG ACOUS] An earphone in which variations in electric current produce variations in a magnetic field, causing motion of a diaphragm.  (ˈməg-nəd-ikˈɪfˈfən)

magnetic element  [ENG] That part of an instrument producing or influenced by magnetism.  (ˈməg-nəd-ikˈɛl-ə-mənt)

magnetic field sensor  [ENG] A proximity sensor that uses a combination of a Reed switch and a magnet to detect the presence of a magnetic field.  (ˈməg-nəd-ik fild ˈsen-tər)

magnetic filter  [CHEM ENG] Filtration device in which the filter screen is magnetized to trap and remove fine iron from liquids or liquid suspensions being filtered.  (ˈməg-nəd-ikˈflər-ər)

magnetic fluid clutch  [MECH ENG] A friction clutch that is engaged by magnetizing a liquid suspension of powdered iron located between pole pieces mounted on the input and output shafts. Also known as magnetic clutch.  (ˈməg-nəd-ikˈfil-ərd ˈklāch)

magnetic flux quantum  [ELEc] A fundamental unit of magnetic flux, the total magnetic flux in a fluxoid in a type II superconductor, equal to $\hbar/(2e)$, where $\hbar$ is Planck's constant and $e$ is the
magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics

magnetoelectronics
magnetometer

magnetometric devices. Also known as spin electronics, spintronics. { mag-néd-ə-i-lek-trán-iks }
magnetometer [ENG] An instrument for measuring the magnitude and sometimes also the direction of a magnetic field, such as the earth’s magnetic field. { mag-ná-tém-ad-ər }
magneto-optic recording [ENG] An erasable data storage technology in which data are stored on a rotating disk in a thin magnetic layer that may be switched between two magnetization states by the combination of a magnetic field and a pulse of light from a diode laser. { mag-néd-ə-ap-tik ri’kórd-iŋ }
magnetoresistance [ELECTR] The change in magnetic field susceptibility that support the crankshaft in an internal combustion engine. { män }main bearing [MECH ENG] One of the bearings that support the crankshaft in an internal combustion engine. { män ’ber-iŋ }
maintainability [ENG] The ability of equipment to meet operational objectives with a minimum expenditure of maintenance effort under operational environmental conditions in which scheduled and unscheduled maintenance is performed. 2. Quantitatively, the probability that an item will be restored to specified conditions within a given period of time when maintenance action is performed in accordance with prescribed procedures and resources. { män-tá-nil-ən }
maintenance [IND ENG] The upkeep of industrial facilities and equipment. { män-tán-əns }
maintenance engineering [IND ENG] The function of providing policy guidance for maintenance activities, and of exercising technical and management review of maintenance programs. { män-tán-əns ,en-jär-nér-iŋ }
maintenance kit [ENG] A collection of items not all having the same basic name, which are of a supplementary nature to a major component or equipment; the items within the collection may provide replacement parts and facilitate such functions as inspection, test, repair, or preventive maintenance, for the specific purpose of restoring and improving the operational status of a component or equipment comparable to its original capacity and efficiency. { män-tán-əns ,kit }
maintenance vehicle [ENG] Vehicle used for carrying parts, equipment, and personnel for maintenance or evacuation of vehicles. { män-tán-əns ,vé-a-kal }
major assembly [ENG] A self-contained unit of individual identity, a completed assembly of component parts ready for operation, but utilized as a portion of, and intended for further installation in, an end item or major item. { mă-jår ’ás-em-plé }
major defect [IND ENG] Defect which causes serious malfunctioning of a product. { mă-jår ’dë Fiji }
magnet wire [ELEC] The insulated copper or aluminum wire used in the coils of all types of electromagnetic machines and devices. { ‘mag-nat ,wir }
Manhattan Project [MECH ENG] The largest project of a screw thread, measured at the crest for an external (male) thread and at the root for an internal (female) thread. (ˈmə-ˈjär dəm-əd-ər)

majority carrier [ELECTR] The type of carrier, that is, electron or hole, that constitutes more than half the carriers in a semiconductor. (ˈmə-ˈjär kār-ər)

majority emitter [ELECTR] Of a transistor, an electrode from which a flow of minority carriers enters the interelectrode region. (ˈmə-ˈjär ˈi-mid-ər)

major repair [ENG] Repair work on items of material or equipment that need complete overhaul or substantial replacement of parts, or that require special tools. (ˈmə-jər ˈrē-pər)

makeup air [ENG] The volume of air required to replace air exhausted from a given space. (ˈmāk-ˌwıər)

makeup water [CHEM ENG] Water feed needed to replace that which is lost by evaporation or leakage in a closed-circuit, recycle operation. (ˈmākˌwōd-ər)

male connector [ELEC] An electrical connector with protruding contacts for joining with a female connector. (ˈmāl ˈkän-ək-tər)

mallet [DES ENG] An implement with a barrel-shaped head made of wood, rubber, or other soft material; used for driving another tool, such as a chisel, or for striking a surface without causing damage. (ˈmāl-ət)

Mallory bonding [DES ENG] Hermetically sealing polished silicon chips to polished glass plates by placing the two pieces together, heating them to about 350°C (662°F), and applying approximately 8000 volts across the assembly. (ˈmāl-ə-ˌrē bān-əd-ıə)

management control system [IND ENG] Any one of the various systems used by a contractor to plan, control the cost, and schedule the work required to undertake and complete a project. (ˈmān-ˌıd-stəm ˈkan-trōlˌsəm-ˌtəm)

management engineering See industrial engineering. (ˈmān-ˌıd-stəm ˈen-ˈjaŋ-ər-əj)

management game [IND ENG] A training exercise in which prospective decision makers act out managerial decision-making roles in a simulated environment. Also known as business game; operational game. (ˈmān-ˌıd-stəm ˌgām)

mandrel [ENG] The core around which continuous strands of impregnated reinforcement materials are wound to fabricate hollow objects made of composite materials. [MECH ENG] A shaft inserted through a hole in a component to support the work during machining. (ˈmān-drl)

mandrel press [MECH ENG] A press for driving mandrels into holes. (ˈmān-drl ˈprēz)

mangle gearing [MECH ENG] Gearing for producing reciprocating motion, a pinion rotating in a single direction drives a rack with teeth at the ends and on both sides. (ˈmän-gal ˈgır-əj)

Manhattan Project [ENG] A United States project lasting from August 1942 to August 1946, which developed the atomic energy program, with special reference to the atomic bomb. (ˈmän-ˌhät-ənˌprəˌjekt)

manhole [ENG] See manhole. (ˈmän-hōl)

manifold [ENG] An opening to provide access to a tank or boiler, to underground passages, or in a deck or bulwark of a ship; usually covered with a cast iron or steel plate. Also known as access hole; manhead. (ˈmän-ˌhōl)

man-hour [IND ENG] A unit of measure representing one person working for one hour. (ˈmän-ˌhōr)

manifold [ENG] The branch pipe arrangement which connects the valve parts of a multicylinder engine to a single carburetor or to a muffler. (ˈmän-ˌıld)

manifolding [ENG] The gathering of multiple-line fluid inputs into a single intake chamber (intake manifold), or the division of a single fluid supply into several outlet streams (distribution manifold). (ˈmän-ˌıld-ıə)

manifold pressure [MECH ENG] The pressure in the intake manifold of an internal combustion engine. (ˈmän-ˌıldˌprē-shər)

manikin [ENG] A correctly proportioned doll-like figure that is jointed and will assume any human position and hold it, useful in art to draw a human figure in action, or in medicine to show the relations of organs by means of movable parts. (ˈmän-ˌän-kin)

manipulative grasp See tripodal grasp. (ˈmän-ˌıp-ə-ləd-əv ˈgrāp)

manipulative skill [IND ENG] The ability of a worker to handle an object with the appropriate control and speed of movement required by a task. (ˈmän-ˌıp-ə-ləd-əv ˈskīl)

manipulators [CONT SYS] An arm-like mechanism on a robotic system that consists of a series of segments, usually sliding or jointed which grasp and move objects with a number of degrees of freedom, under automatic control. See remote manipulator. (ˈmän-ˌıp-ə-ləd-əv ˌrē-mən-ˌpə-ləd-ər)

man-machine chart See human-machine chart. (ˈmän ˌmän-ˌšên ˈchārt)

man-machine system See human-machine system. (ˈmän ˌmän-ˌšênˌsəm-ˌtəm)

manocryometer [THERMO] An instrument for measuring the change of a substance’s melting point with change in pressure; the height of a mercury column in a U-shaped capillary supported by an equilibrium between liquid and solid in an adjoining bulb is measured, and the whole apparatus is in a thermostat. (ˌmän-oˌkrē-əm-əd-ər)

manometer [ENG] A double-leg liquid-column gauge used to measure the difference between two fluid pressures. (ˈmän-əmətər)

manometry [ENG] The use of manometers to measure gas and vapor pressures. (ˈmän-əmətərē)

manostat [ENG] Fluid-filled, upside-down manometer-type device used to control pressures within an enclosure, as for laboratory analytical distillation systems. (ˈmän-əstāt)

M-A-N scavenging system [MECH ENG] A system for removing used oil and waste gases from
a cylinder of an internal combustion engine in which the exhaust ports are located above the intake ports on the same side of the cylinder, so that gases circulate in a loop, leaving a dead spot in the center of the loop. | 'mɛnˈtʃɛn ˈskɑːvənˌiŋˌsɪstəmˈmɛnt\n
mantle \[ENG\] A lacelike hood or envelope (sack) of refractory material which, when positioned over a flame and heated to incandescence, gives light. \( 'mæntəl \)

manual control unit \[CONT SYS\] A portable, hand-held device that allows an operator to program and store instructions related to robot motions and positions. Also known as programming unit. \( 'mæn-yə-wəl ˈkɑːntrəlˌjʊər-nət \)

manual element \[IND ENG\] A specific measurable subdivision of a work cycle or operation that is completed entirely by hand or with the use of tools. \( 'mæn-yə-wəl ˈɛl-ə-mænt \)

manually controlled work See effort-controlled cycle. \( 'mæn-yə-ly-ə ˈkɒntrəldˌwɜrk \)

manual time See hand time. \( 'mæn-yə-wəl ˈtɪm \)

manual tracking \[ENG\] System of tracking a target in which all the power required is supplied manually through the tracking handwheels. \( 'mæn-yə-wəl ˈtrækˌɪŋ \)

manufacturer's part number \[IND ENG\] Identification number of symbol assigned by the manufacturer to a part, subassembly, or assembly. \( 'mæn-ə-fæk-tʃərˌɑːr-əˌpɔrtˌnɛm-bər \)

many-body problem \[MECH\] The problem of predicting the motions of three or more objects obeying Newton's laws of motion and attracting each other according to Newton's law of gravitation. Also known as n-body problem. \( 'mɛn-əˈbɛd-ə,ˈprəb-lɛm \)

Marangoni effect \[CHEM ENG\] The effect that a disturbance of the liquid-liquid interface (due to interfacial tension) has on mass transfer in a system. \( 'mɑːr-ənˈgoʊnəˌlikt \)

marbling \[ENG\] The use of antiquing techniques to achieve the appearance of marble in a paint mask. \( 'mɑːr-əlɪŋ \)

marginal cost \[IND ENG\] The extra cost incurred for an extra unit of output. \( 'mɑːr-ən-əlˈkɔst \)

marginal product \[IND ENG\] The extra unit of output obtained by one extra unit of some factor, all other factors being held constant. \( 'mɑːr-ən-əlˈprədˌɛkt \)

marginal revenue \[IND ENG\] The extra revenue achieved by selling an extra unit of output. \( 'mɑːr-ən-əlˈrɛvˌənˌnɪl \)

margin of safety \[DES ENG\] A design criterion, usually the ratio between the load that would cause failure of a member or structure and the load that is imposed upon it in service. \( 'mɑːr-ən-əvˌsæft-əˌnɪv \)

Margouxis number See Stanton number. \( 'mɑːr-gəˌliəsˌnɛmˌbɑr \)

marigraph \[ENG\] A self-registering gage that records the heights of the tides. \( 'mɑːr-əˌgreɪft \)

marina \[CIV ENG\] A harbor facility for small boats, yachts, and so on, where supplies, repairs, and various services are available. \( 'mɑːr-ənərəˌnɪˌmɛnt\)

marine engineering \[ENG\] The design, construction, installation, operation, and maintenance of main power plants, as well as the associated auxiliary machinery and equipment, for the propulsion of ships. \( 'mɑːr-ənˌənˌrəˌnəˌrɪŋˌmɑːntˌənˌmɛnt\)

marine railway \[CIV ENG\] A type of dry dock consisting of a cradle of wood or steel with rollers on which the ship may be hauled out of the water along a fixed inclined track leading up the bank of a waterway. \( 'mɑːr-ənˌrəˌnəˌrɪŋˌmɑːntˌənˌmɛnt\)

marine terminal \[CIV ENG\] That part of a port or harbor with facilities for docking, cargo-handling, and storage. \( 'mɑːr-ənˌtɛrmənˌənˌmɛnt\)

market analysis \[IND ENG\] The collection and evaluation of data concerned with the past, present, or future attributes of potential consumers for a product or service. \( 'mɑr-əˌkætˌənˌmɛntˌənˌmɛnt\)

marmon clampband \[DES ENG\] A metal band that wraps around the circumference of a special cylindrical joint between two structures, holding the structures together. \( 'mær-mənˌklampˌbænd \)

Marvin sunshine recorder \[ENG\] A sunshine recorder in which the time scale is supplied by a chronograph, and consisting of two bulbs (one of which is blackened) that communicate through a glass tube of small diameter, which is partially filled with mercury and contains two electrical contacts; when the instrument is exposed to sunshine, the air in the blackened bulb is warmed more than that in the clear bulb, the warmed air expands and forces the mercury through the connecting tube to a point where the electrical contacts are shorted by the mercury; this completes the electrical circuit to the pen on the chronograph. \( 'mɑːr-ənˌvənˌʃənˌʃɪn ˌrɪˌkɔrdərˌɑrˌmɑːnˌmənˌtənˌmɛnt\)

mask \[DES ENG\] A frame used in front of a television picture tube to conceal the rounded edges of the screen. \( 'mæskˌdəmˌmɑːskˌdəmˌmɑːskˌdəmˌmɑːskˌdəm\)

masking \[ELECTR\] 1. Using a covering or coating on a semiconductor surface to provide a masked area for selective deposition or etching. 2. A programmed procedure for eliminating radar coverage in areas where such transmissions may be of use to the enemy for navigation purposes, by weakening the beam in appropriate directions or by use of additional transmitters on the same frequency at suitable sites to interfere with homing, also used to suppress the beam in areas where it would interfere with television reception. \( 'mɑːskˌɪŋˌmɑːskˌɪŋˌmɑːskˌɪŋˌmɑːskˌɪŋˌmɑːskˌɪŋ\)

masonry \[CIV ENG\] A construction of stone or similar materials such as concrete or brick. \( 'mɑːs-əˌnɛrəˌnɪˌmɛnt\)

masonry dam \[CIV ENG\] A dam constructed of stone or masonry, usually the ratio between the load that would cause failure of a member or structure and the load that is imposed upon it in service. \( 'mɑːr-ən-əlˈkɔst \)

mantle
stone or concrete blocks set in mortar.  {\textquoteleft}mås-
ann-ré \,dám\textquoteright}
masonry drill  {DES ENG} A drill tipped with cemen-
tmented carbide for drilling in concrete or ma-
sonry.  {\textquoteleft}mås-an-nré \,drij\textquoteright}
masonry nail  {DES ENG} Spiral-fluted nail de-
signed to be driven into mortar joints in masonry.  {\textquoteleft}mås-an-nré \,nål\textquoteright}

Mason’s theorem  {CONT SYS} A formula for the overall transmittance of a signal flow graph in
terms of transmittances of various paths in the
graph.  {\textquoteleft}mås-an-zë,\,thir-an\textquoteright}

mass  {MECH} A quantitative measure of a body’s resistance to being accelerated, equal to the
inverse of the ratio of the body’s acceleration to the acceleration of a standard mass under
otherwise identical conditions.  {mas\textquoteright}

mass burning rate  {CHEM ENG} The loss in
mass per unit time by materials burning under
specified conditions.  {\textquoteleft}mas \,børn-i\,åt\textquoteright}
mass concrete  {CIV ENG} Concrete set without
structural reinforcement.  {\textquoteleft}mas \,kän,kret\textquoteright}
mass-distance  {ENG} The mass carried by a ve-
hicle multiplied by the distance it travels.  {\textquoteleft}mas \,dis-
tans\textquoteright}
mass flow  {ENG} A pattern of powder flow oc-
curring in hoppers that is characterized by the
powder flowing at every point, including points
adjacent to the hopper wall.  {\textquoteleft}mas \,fló\textquoteright}
mass-flow bin  {ENG} A bin whose hopper walls
are sufficiently steep and smooth to cause flow of
all the solid, without stagnant regions, whenever
any solid is withdrawn.  {\textquoteleft}mas \,fló,bin\textquoteright}
mass flowmeter  {ENG} An instrument that
measures the mass of fluid that flows through a
pipe, duct, or open channel in a unit time.  {\textquoteleft}mas \,fló,\,måd-år\textquoteright}
mass-haul curve  {CIV ENG} A curve showing the
quantity of excavation in a cutting which is avail-
able for fill.  {\textquoteleft}mas \,hól,\,kær\textquoteright}

Massieu function  {THERMO} The negative of the
Helmholtz free energy divided by the tempera-
ture.  {na\textquoteleft}syú\,\,fju\textquoteright}

mass law of sound insulation  {CIV ENG} The rule
stating that sound insulation for a single wall is
determined almost wholly by its weight per unit area, doubling the weight of the partit-
tion increases the insulation by 5 decibels.  {\textquoteleft}mas \,ló \,av \,s\acute{a}\textquoteright}

mass spectrograph  {ENG} A mass spectro-
scope in which the ions fall on a photographic plate which after development shows the distri-
bution of particle masses.  {\textquoteleft}mas \,spek-trå \,graf\textquoteright}

mass spectrometer  {ENG} A mass spectro-
scope in which a slit moves across the paths of
particles with various masses, and an electrical
detector behind it records the intensity distribu-
tion of masses.  {\textquoteleft}mas \,spek\textquoteright}t\textquoteright}ræm\textquoteright}måd-år\textquoteright}

mass spectroscopy  {ENG} An instrument used for
determining the masses of atoms or mole-
cules, in which a beam of ions is sent through a combination of electric and magnetic fields so
arranged that the ions are deflected according to their masses.  {\textquoteleft}mas \,spek\textquoteright}t\textquoteright}ræ\textquoteright}sköp\textquoteright}

mass units  {MECH} Units of measurement hav-
ing to do with masses of materials, such as
pounds or grams.  {\textquoteleft}mas \,yû\textquoteright}
mast  {ENG} 1. A vertical metal pole serving as
an antenna or antenna support. 2. A slender
vertical pole which must be held in position by
guy lines. 3. A drill, derrick, or tripod mounted
on a drill unit, which can be raised to operating
position by mechanical means. 4. A single
pole, used as a drill derrick, supported in its
upright or operating position by guys.  {MECH
ENG} A support member on certain industrial
trucks, such as a forklift, that provides guidewa-
ties for the vertical movement of the carriage.
{mast\textquoteright}

master  {ENG} 1. A device which controls sub-
сидиary devices. 2. A precise workpiece through
which duplicates are made.  {ENG ACOUS} See
master phonograph record.  {\textquoteleft}mas\textquoteright}t\textquoteright}r-tår\textquoteright}
master arm  {ENG} A component of a remote
manipulator whose motions are automatically
duplicated by a slave arm, sometimes with
changes of scale in displacement or force.  {\textquoteleft}mas\textquoteright}t\textquoteright}r\textquoteright}årm\textquoteright}
master bushing  See liner bushing.  {\textquoteleft}mas\textquoteright}t\textquoteright}r\textquoteright}bush-\,i\textquoteright}
master cylinder  {MECH ENG} The container for
the fluid and the piston, forming part of a device
such as a hydraulic brake or clutch.  {\textquoteleft}mas\textquoteright}t\textquoteright}r\textquoteright}sil-an-dar\textquoteright}
master frequency meter  See integrating frequency
meter.  {\textquoteleft}mas\textquoteright}t\textquoteright}r\textquoteright}fré-kwan-sé,\,\,måd-år\textquoteright}
master gage  {DES ENG} A locating device with fixed
hole locations or part positions, located in
three dimensions and generally occupies the
same space as the part it represents.  {\textquoteleft}mas-
tår\textquoteright}gåi\textquoteright}
master layout  {DES ENG} A permanent tem-
plate record laid out in reference planes and used
as a standard of reference in the develop-
ment and coordination of other templates.  {\textquoteleft}mas-
tår\textquoteright}få\textquoteright}åt\textquoteright}

master mechanic  {ENG} The supervisor, as at
the mine, in charge of the maintenance and in-
stallation of equipment.  {\textquoteleft}mas\textquoteright}t\textquoteright}r\textquoteright}må\textquoteright}kå\textquoteright}r-\textquoteright}ik\textquoteright}
master phonograph record  {ENG ACOUS} The
negative metal counterpart of a disk recording,
produced by electroforming as one step in the
production of phonograph records. Also known
as master.  {\textquoteleft}mas\textquoteright}t\textquoteright}r\textquoteright}få\textquoteright}na\textquoteright}graf\textquoteright},\,\,ré-k\textquoteright}r-\textquoteright}ård\textquoteright}
master/slave manipulator  {ENG} A mechanical,
electromechanical, or hydromechanical device
which reproduces the hand or arm motions of
an operator, enabling the operator to perform
manual motions while separated from the site of
the work.  {\textquoteleft}mas\textquoteright}t\textquoteright}r\textquoteright}\,må\textquoteright}n\textquoteright}t\textquoteright}r\textquoteright}y\textquoteright}tår\textquoteright}vå\textquoteright},\,\,låd-år\textquoteright}
masticate  {CHEM ENG} To process rubber on a
machine to make it softer and more pliable be-
fore mixing with other substances.  {\textquoteleft}mas-
tår\textquoteright}kåt\textquoteright}
mat  {CIV ENG} 1. A steel or concrete footing
under a post. 2. Mesh reinforcement in a concrete
slab. 3. A heavy steel-mesh blanket used to
suppress rock fragments during blasting.
{mat\textquoteright}
match  | [ENG]  1. A charge of gunpowder put in a paper several inches long and used for igniting explosives.  2. A short flammable piece of wood, paper, or other material tipped with a combustible mixture that bursts into flame through friction.  | [mach] |

matched edges  | [ENG] Die face edges machined at right angles to each other to provide for alignment of the dies in machining equipment.  | [‘match ‘ei-ə] |

matched-metal molding  | [ENG] Forming of reinforced-plastic articles between two close-fitting metal molds mounted in a hydraulic press.  | [‘macht ‘med-əl ,mold-ə] |

material balance  | [CHEM ENG] A calculation to inventory material inputs versus outputs in a process system.  | [ma-tir-ə-əl ‘bal-ən] |

material particle  | [MECH] An object which has rest-mass and an observable position in space, but has no geometrical extension, being confined to a single point.  Also known as particle.  | [ma-tir-ə-əl ‘pərt-ə] |

material requirements planning  | [IND ENG] A formal computerized approach to inventory planning, manufacturing scheduling, supplier scheduling, and overall corporate planning. Abbreviated MRP.  | [ma-tir-ə-əl ri’kwir-ən] ,plän-ə] |

materials control  | [IND ENG] Inventory control of materials involved in manufacturing or assembly.  | [ma-tir-ə-əl kan,trəl] |

materials handling  | [ENG] The loading, moving, and unloading of materials.  | [ma-tir-ə-əl ‘hænd-ləp] |

materials science  | [ENG] The study of the nature, behavior, and use of materials applied to science and technology.  | [ma-tir-ə-əl ,sən-ə] |

material well  | [CHEM ENG] In a plastics process, the space provided in a compression or transfer mold to allow for the bulk factor.  | [ma-tir-ə-əl ,wel] |

mat foundation  | [CIV ENG] A large, thick, usually reinforced concrete mat which transfers loads from a number of columns, or columns and walls, to the underlying rock or soil.  Also known as raft foundation.  | [‘mat fəun’də-ən] |

Matheson joint  | [DES ENG] A wrought-pipe joint made by enlarging the end of one pipe length to receive the male end of the next length.  | [‘mæθ-ən] ,jənt] |

matrix  | [ELECTR]  1. The section of a color television transmitter that transforms the red, green, and blue camera signals into color-difference signals and combines them with the chrominance subcarrier.  Also known as color coder, color encoder, encoder.  2. The section of a color television receiver that transforms the color-difference signals into the red, green, and blue signals needed to drive the color picture tube.  Also known as color decoder, decoder.  | [‘mætriks] |

matrix sound system  | [ENG ACOUS] A quadraphonic sound system in which the four input channels are combined into two channels by a coding process for recording or for stereo frequency-modulation broadcasting and decoded back into four channels for playback of records or for quadraphonic stereo reception.  | [‘mæ-triks] ‘sænd, ‘siz-əm] |

matte feeder  | [IND ENG] A heavy-duty apron feeder composed of thick steel flights attached to a solid chain-link mat supported by closely spaced rollers.  | [‘mat ,fəd-ə] |

Matthiessen sinker method  | [THERMO] A method of determining the thermal expansion coefficient of a liquid, in which the apparent weight of a sinker when immersed in the liquid is measured for two different temperatures of the liquid.  | [ma-thə-san ‘siŋ-kər ,meth-əd] |

mattock  | [DES ENG] A tool with the combined features of an adz, an ax, and a pick.  | [‘mat-ək] |

mattress  | [CIV ENG] A woven mat, often of wire and cement blocks, used to prevent erosion of dikes, jetties, or river banks.  | [‘mat-trəs] |

maul See rammer.  | [mol] |

Maupertius’ principle  | [MECH] The principle of least action is sufficient to determine the motion of a mechanical system.  | [mo’par-shəs ,prin-ə-sə-pəl] |

max-flow min-cut theorem  | [IND ENG] In the analysis of networks, the concept that for any network with a single source and sink, the maximum feasible flow from source to sink is equal to the minimum cut value for any of the cuts of the network.  | [‘mæk-fləs ,mən-ət ,θər-əm] |

maximal flow  | [IND ENG] Maximum total flow from the source to the sink in a connected network.  | [‘mæk-sə-məl ‘flə] |

maximum allowable working pressure  | [MECH ENG] The maximum gage pressure in a pressure vessel at a designated temperature, used for the determination of the set pressure for relief valves.  | [‘mæk-sə-mən ‘ɑl-ə-əl ,‘wərk-əj ,presh-ə] |

maximum-and-minimum thermometer  | [ENG] A thermometer that automatically registers both the maximum and the minimum temperatures attained during an interval of time.  | [‘mæk-sə-ən ‘mən-ə-ən ] ,θər-əm] |

maximum angle of inclination  | [MECH ENG] The maximum angle at which a conveyor may be inclined and still deliver an amount of bulk material within a given time.  | [‘mæk-sə-mən ‘ɑŋ-gəl əv ,in-kla-nə-ən] |

maximum available gain  | [ELECTR] The theoretical maximum power gain available in a transistor stage; it is seldom achieved in practical circuits because it can be approached only when feedback is negligible. Abbreviated MAG.  | [‘mæk-sə-mən əv-əl-əl ,gən] |

maximum belt slope  | [MECH ENG] A slope beyond which the material on the belt of a conveyor tends to roll downhill.  | [‘mæk-sə-mən ,bɛlt ,sloʊ] |

maximum belt tension  | [MECH ENG] The total of the starting and operating tensions in a conveyor.  | [‘mæk-sə-mən ‘bɛlt ,tən-ən] |

maximum continuous load  | [MECH ENG] The maximum load that a boiler can maintain for a
mean stress

states that the difference between the specific heat of a gas at constant pressure and its specific heat at constant volume is equal to the gas constant divided by the molecular weight of the gas.

\[ \text{mean stress} = \frac{C_v - C_p}{M} \]
the maximum and minimum values of a periodically varying stress. 2. See octahedral normal stress.

**mean temperature difference** [CHEM ENG] In heat exchange calculations, a pseudo average temperature difference between the warmer and colder fluids at inlet and outlet conditions.

**mechanical time to failure** [ENG] A measure of reliability of a piece of equipment, giving the average time before the first failure. (mēn′ chē′ məl tīm tō ē′ fāl-yār)

**mechanical time to repair** [ENG] A measure of reliability of a piece of repairable equipment, giving the average time between repairs. (mēn′ chē′ məl tīn tō rē′ pər)

**mechanical trajectory** [MECH] The trajectory of a missile that passes through the center of impact or center of burst. (mēn′chē′ məl trə-jek′trē)

**measured daywork** [IND ENG] Work done for an hourly wage on which specific productivity levels have been determined but which provides no incentive pay. (mi′chē′ mərd′ dā′ wōrk)

**measured drilling depth** [ENG] The apparent depth of a borehole as measured along its longitudinal axis. (mi′chē′ mərd′ drīl′ ēn′ dēp th)

**measured mile** [CIV ENG] The distance of 1 mile (1609.344 meters), the units of which have been accurately measured and marked. (mi′chē′ mərd′ mīl′)

**measured relieving capacity** [DES ENG] The measured amounts of fluid which can be exhausted through a relief device at its rated operating pressure. (mi′chē′ mərd′ rē′ lēv′ ēn′ kə′ pās′ ād′ ē)

**measured work** [IND ENG] Work, operations, or cycles for which a standard has been set. (mi′chē′ mərd′ wōrk)

**measurement ton** See ton. (mi′chē′ mər′ mānt′ tōn)

**measuring machine** [ENG] A device in which an astronomical photographic plate is viewed through a fixed low-power microscope with cross-hairs and which is mounted on a carriage that is moved by micrometer screws equipped with scales, in order to measure the relative positions of images on the plate. (mi′chē′ mər′ mā′ shēn)

**measuring tank** [ENG] A tank that has been calibrated and fitted with devices to measure a volume of liquid and then release it. Also known as dump tank, metering tank. (mi′chē′ mər′ mā′ shēn)

**mechanical** [ENG] Of, pertaining to, or concerned with machinery or tools. (mi′kān′ kāl)

**mechanical advantage** [MECH ENG] The ratio of the force produced by a machine such as a lever or pulley to the force applied to it. Also known as force ratio. (mi′kān′ kāl ād′ vān′ tīj)

**mechanical analog** [IND ENG] A mechanical model of a nonmechanical system that responds to an input with an output corresponding to the response of the real system. (mi′kān′ i′ kāl ān′ kāl ālāg)

**mechanical analysis** [MECH ENG] Mechanical separation of soil, sediment, or rock by sieving, screening, or other means to determine particle-size distribution. (mi′kān′ kāl ār′ nāl′ sās)

**mechanical area** [BUILD] The areas in a building that include equipment rooms, shafts, stacks, tunnels, and closets used for heating, ventilating, air conditioning, piping, communication, hoisting, conveying, and electrical services. (mi′kān′ kāl ēr′ ə nē ar)

**mechanical bearing cursor** See bearing cursor. (mi′kān′ kāl bē′ ēr′ ēn′ kār′ sār)

**mechanical classification** [MECH ENG] A sorting operation in which mixtures of particles of mixed sizes, and often of different specific gravities, are separated into fractions by the action of a stream of fluid, usually water. (mi′kān′ kāl klas′ ə′ fā′ kā′ sān nē ar)

**mechanical comparator** [ENG] A contact comparator in which movement is amplified usually by a rack, pinion, and pointer or by a parallelogram arrangement. (mi′kān′ kāl kām′ pār′ ād′ ē nē ar)

**mechanical damping** [ENG ACOUS] Mechanical resistance which is generally associated with the moving parts of an electromagnetically transducer such as a cutter or a reproducer. (mi′kān′ kāl dām′ ēn′ jē)

**mechanical draft** [MECH ENG] A draft that depends upon the use of fans or other mechanical devices; may be induced or forced. (mi′kān′ kāl dāf′ ē nē ar)

**mechanical-draft cooling tower** [MECH ENG] Cooling tower that depends upon fans for introduction and circulation of its air supply. (mi′kān′ kāl dāf′ kō′ līng tō′ lō′ ē r)

**mechanical efficiency** [MECH ENG] In an engine, the ratio of brake horsepower to indicated horsepower. (mi′kān′ kāl fī′ shō′ ō nē sē nē ar)

**mechanical engineering** [MECH ENG] The branch of engineering concerned with energy conversion, mechanics, and mechanisms and devices for diverse applications, ranging from automotive parts through nanomachines. (mi′kān′ kāl ēn′ ə′ nē nir′ ē nē ar)

**mechanical equivalent of heat** [THERMO] The amount of mechanical energy equivalent to a unit of heat. (mi′kān′ kāl ī′ kwīv′ ē lān′ ē vō′ hēt)

**mechanical expression** See expression. (mi′kān′ kāl ik′ spresh′ ē nē ar)

**mechanical gripper** [MECH ENG] A robot component that uses movable, fingerlike levers to grasp objects. (mi′kān′ kāl gri′ pē rōr)

**mechanical hygrometer** [ENG] A hygrometer in which an organic material, most commonly a bundle of human hair, which expands and contracts with changes in the moisture in the surrounding air or gas is held under slight tension.
by a spring, and a mechanical linkage actuates a pointer. (mi'kan-o-kal h'il\'gräm-ad-ər)

mechanical hysteresis  [MECH] The dependence of the strain of a material not only on the instantaneous value of the stress but also on the previous history of the stress; for example, the elongation is less at a given value of tension when the tension is increasing than when it is decreasing. (mi'kan-o-kal hìs-tər-e-səs)

mechanical impedance [MECH] The complex ratio of a phasor representing a sinusoidally varying force applied to a system to a phasor representing the velocity of a point in the system. (mi'kan-o-kal im\'péd-əns)

mechanical lift dock  [CIV ENG] A type of dry dock or marine elevator in which a vessel, after being placed on the keel and bilge blocks in the dock, is bodily lifted clear of the water so that work may be performed on the underwater body. (mi'kan-o-kal lîft \dak)

mechanical linkage  [MECH ENG] A set of rigid bodies, called links, joined together at pivots by means of pins or equivalent devices. (mi'kan-o-kal lîg-kì)

mechanical loader  [MECH ENG] A power machine for loading mineral, coal, or dirt. (mi 'kan-o-kal lôd-ar)

mechanical mucking  [ENG] Loading of dirt or stone in tunnels or mines by machines. (mi 'kan-o-kal nôk-i)

mechanical ohm  [MECH] A unit of mechanical resistance, reactance, and impedance, equal to a force of 1 dyne divided by a velocity of 1 centimeter per second. (mi'kan-o-kal ôme)

mechanical oscillograph  See direct-writing recorder. (mi'kan-o-kal ə-strə-fə-graf)

mechanical patent  [ENG] A patent granted for an inventive improvement in a process, manufacture, or machine. (mi 'kan-o-kal pat\-ənt)

mechanical press  [MECH ENG] A press whose slide is operated by mechanical means. (mi 'kan-o-kal ə-pres)

mechanical property  [MECH] A property that involves a relationship between stress and strain or a reaction to an applied force. (mi'kan-o-kal \prāp\-ərd-ə)

mechanical pulley  See vibration pulley. (mi'kan-o-kal pōd\-li)

mechanical pulping  [MECH ENG] Mechanical, rather than chemical, recovery of cellulose fibers from wood; unpurified, finely ground wood is made into newsprint, cheap Manila papers, and tissues. (mi'kan-o-kal ə-pōl\-i)

mechanical pump  [MECH ENG] A pump through which fluid is conveyed by direct contact with a moving part of the pumping machinery. (mi'kan-o-kal ə-pəmp)

mechanical reactance  [MECH] The imaginary part of mechanical impedance. (mi'kan-o-kal \rē\-ək\-əns)

mechanical refrigeration  [MECH ENG] The removal of heat by utilizing a refrigerant subjected to cycles of refrigerating thermodynamics and employing a mechanical compressor. (mi'kan-o-kal r̩ Uruguay shən)

mechanical resistance  See resistance. (mi'kan-o-kal r̩'zis\-əns)

mechanical rotational impedance  See rotational impedance. (mi'kan-o-kal r̩\'tə-shən\-əl im\'péd-əns)

mechanical rotational reactance  See rotational reactance. (mi'kan-o-kal r̩\'tə-shən\-əl rē\-ək\-əns)

mechanical rotational resistance  See rotational resistance. (mi'kan-o-kal r̩\'tə-shən\-əl r̩'zis\-əns)

mechanical scale  [ENG] A weighing device that incorporates a number of levers with precisely located fulcrums to permit heavy objects to be balanced with counterweights or counterpoises. (mi'kan-o-kal skəl)

mechanical seal  [MECH ENG] Mechanical assembly that forms a leakproof seal between flat, rotating surfaces to prevent high-pressure leakage. (mi'kan-o-kal sēl)

mechanical separation  [MECH ENG] A group of industrial operations by means of which particles of solid or drops of liquid are removed from a gas or liquid, or are separated into individual fractions, or both, by gravity separation (settling), centrifugal action, and filtration. (mi 'kan-o-kal sep\-ə-rə-shən)

mechanical setting  [MECH ENG] Producing bits by setting diamonds in a bit mold into which a cast or powder metal is placed, thus embedding the diamonds and forming the bit crown, opposed to hand setting. Also known as cast setting, machine setting, sinter setting. (mi 'kan-o-kal sēd\-i)

mechanical shovel  [MECH ENG] A loader limited to level or slightly graded drivages; when full, the shovel is swung over the machine, and the load is discharged into containers or vehicles behind. (mi'kan-o-kal shəv\-əl)

mechanical splice  [ENG] A splice made to terminate wire rope by pressing one or more metal sleeves over the rope junction. (mi'kan-o-kal spəlis)

mechanical spring  See spring. (mi'kan-o-kal spri̇ŋ)

mechanical stage  [ENG] A stage on a microscope provided with a mechanical device for positioning or changing the position of a slide. (mi'kan-o-kal stāj)

mechanical stepping motor  [ELEC] A device in which a voltage pulse through a solenoid coil causes reciprocating motion by a solenoid plunger, and this is transformed into rotary motion through a definite angle by ratchet-and-pawl mechanisms or other mechanical linkages. (mi'kan-o-kal stēp\-əj \mōd\-ər)

mechanical stoker  See automatic stoker. (mi 'kan-o-kal stōk\-ər)

mechanical torque converter  [MECH ENG] A torque converter, such as a pair of gears, that transmits power with only incidental losses. (mi'kan-o-kal tork\-ən yar\-əd\-ər)

mechanical units  [MECH] Units of length, time, and mass, and of physical quantities derivable from them. (mi'kan-o-kal \yū\-nats)
mechanical vibration [MECH] The continuing motion, often repetitive and periodic, of parts of machines and structures. (ˈmeɪˈkənɪk(ə)rɪˈveɪʃən) mechanical vibration

mechanism [MECH ENG] That part of a machine which contains two or more pieces so arranged that the motion of one compels the motion of the others. (ˈmekənɪzəm)

mechanize [MECH ENG] 1. To substitute machinery for human or animal labor. 2. To produce or reproduce by machine. (ˈmekənɪz) mechanize

mechanized dew-point meter See dew-point recorder. (ˈmekənɪzed, ˈdjuːˌpɔɪnt ,mekənɪ̆zd) mechanized dew-point meter

mechanomotive force [MECH] The root-mean-square value of a periodically varying force. (ˈmeɪˌkənəˌmətɪv) mechanomotive force

mechanooptical vibrometer [ENG] A vibrometer in which the motion given to a probe by a surface whose vibration amplitude is to be measured is used to rock a mirror; a light beam reflected from the mirror and focused onto a scale provides an indication of the vibration amplitude. (ˈmekənəˌɑpˈtɪskəl vɪˈbɹəmətər) mechanooptical vibrometer

mechatronics [ENG] A branch of engineering that incorporates the ideas of mechanical and electronic engineering into a whole, and, in particular, covers those areas of engineering concerned with the increasing integration of mechanical, electronic, and software engineering into a production process. (ˈmekəˈtrɒnɪkz) mechatronics

media migration [CHEM ENG] Carryover of fines or other filter material by liquid effluent from a filter unit. (ˈmiːdɪəˌmɪɡreɪʃən) media migration

media mill See shot mill. (ˈmiːdɪəˌmɪl) media mill

median strip [CIV ENG] A paved or planted section dividing a highway into lanes according to direction of travel. (ˈmedɪənˈstrɪp) median strip

medical chemical engineering [CHEM ENG] The application of chemical engineering to medicine, frequently involving mass transport and separation processes, especially at the molecular level. (ˈmedɪˈkæl kəˈmɛntrɪk(ə)l ˈsiːrənstrəpər̩) medical chemical engineering

medium [CHEM ENG] 1. The carrier in which a chemical reaction takes place. 2. Material of controlled pore size used to remove foreign particles or liquid droplets from fluid carriers. (ˈmiːdɪəm) medium

medium-technology robot [CONT SYS] An automatically controlled machine that employs servomechanisms and microprocessor control units. (ˈmiːdɪəˌteknələrɪˈveɪʃən) medium-technology robot

megasecond [MECH] A unit of time, equal to 1,000,000,000 seconds. Abbreviated Ms; Msec. (ˈmeɪˌsɛkˌəns) megasecond

megawatt [MECH] A unit of power, equal to 1,000,000 watts. Abbreviated MW. (ˈmeɪˌɡɔʊm) megawatt

megohm [ELEC] A unit of resistance, equal to 1,000,000 ohms. (ˈmeɪˌgɔʊm) megohm

megohmmeter [ELEC] An instrument which is used for measuring the high resistance of electrical materials of the order of 20,000 megohms at 1000 volts; one direct-reading type employs a permanent magnet and a moving coil. (ˈmeɪˌgɔʊmˌmɪtrər) megohmmeter

Melde's experiment [MECH] An experiment to study transverse vibrations in a long, horizontal thread when one end of the thread is attached to a prong of a vibrating tuning fork, while the other passes over a pulley and has weights suspended from it to control the tension in the thread. (ˈmeɪldəz ˌɛksˈperɪment) Melde's experiment

meltback transistor [ELECTR] A junction transistor in which the junction is made by melting a properly doped semiconductor and allowing it to solidify again. (ˈmeltbæk ˈtrænzɪstər) meltback transistor

melter [ENG] A chamber used for melting. (ˈmelta(r)l) melter

melt extractor [ENG] A device used to feed an injection mold, separating molten feed material from partially molten pellets. (ˈmelta(r)lstrækˈtər) melt extractor

melt fracture [MECH] Melt flow instability through a die during plastics molding, leading to helicoidal, rippled surface irregularities on the finished product. (ˈmelt,ˈfræktʃər) melt fracture

melt index [ENG] Number of grams of thermoplastic resin at 190°C that can be forced through a 0.0825-inch (2.0955-millimeter) orifice in 10 minutes by a 2160-gram force. (ˈmeltˌɪndeks) melt index

melting furnace [ENG] A furnace in which the material is melted. (ˈmeltɪŋˈfɜːnəs) melting furnace

melting point [THERMO] 1. The temperature at which a solid of a pure substance changes to a liquid. Abbreviated mp. 2. For a solution of two or more components, the temperature at which the first trace of liquid appears as the solution is heated. (ˈmeltɪŋˌpɔɪnt) melting point

melt instability [MECH] Instability of the plastic melt flow through a die. (ˈmeltˌɪnˌstæbɪlətɪ) melt instability

melt strength [MECH] Strength of a molten plastic. (ˈmeltˌstreŋθ) melt strength

member [CIV ENG] A structural unit such as a wall, column, beam, or tie, or a combination of any of these. (ˈmiːmbər) member

membrane [BUILD] In built-up roofing, a weather-resistant (flexible or semiflexible) covering consisting of alternate layers of felt and bitumen, fabricated in a continuous covering and surfaced with aggregate or asphaltic material. (ˈmiːmbrən) membrane

membrane analogy [MECH] A formal identity between the differential equation and boundary conditions for a stress function for torsion of an elastic prismatic bar, and those for the deflection of a uniformly stretched membrane with the same boundary as the cross section of the bar, subjected to a uniform pressure. (ˈmiːmbrənˌænələˈrɪ) membrane analogy

membrane curing See membrane waterproofing. (ˈmiːmbrənˌkɜrˈjuːrɪŋ) membrane curing

membrane distillation [CHEM ENG] A separation method that uses a nonwetting, microporous membrane, with a liquid feed phase on one side and a condensing permeate phase on the other. (ˈmiːmbrənˌdɪstəˌlɪteɪʃən) membrane distillation
other. Also known as membrane evaporation, thermopervaporation, transmembrane distillation.

membrane evaporation See membrane distillation.

membrane separation [CHEM ENG] The use of thin barriers (membranes) between miscible fluids for separating a mixture, a suitable driving force across the membrane, for example concentration or pressure differential, leads to preferential transport of one or more feed components. (membrane, separation)

membrane stress [MECH] Stress which is equivalent to the average stress across the cross section involved and normal to the reference plane.

membrane waterproofing [CIV ENG] Curing concrete, especially in pavements, by spraying a liquid material over the surface to form a solid, impervious layer which holds the mixing water in the concrete. Also known as membrane curing.

mememotion study [IND ENG] A technique of work measurement and methods analysis using a motion picture camera operated at less than normal camera speed. Also known as camera study; micromotion study.

MEMS See micro-electro-mechanical system.

MEMS microphone [ENG ACOUS] A very small microphone, generally less than 1 millimeter, that can be incorporated directly onto an electronic chip and commonly uses a small thin membrane fabricated on the chip to detect sound.

MEP See mean effective pressure.

Mercer engine [MECH ENG] A revolving-block engine in which two opposing pistons operate in a single cylinder with two rollers attached to each piston; intake ports are uncovered when the pistons are closest together, and exhaust ports are uncovered when they are farthest apart.

Mercury barometer [ENG] An instrument which determines atmospheric pressure by measuring the height of a column of mercury which the atmosphere will support; the mercury in a glass tube closed at one end and placed, open end down, in a well of mercury. Also known as Torricellian barometer.

Mercury-cathode cell [CHEM ENG] Electrolytic cell used to manufacture chlorine and caustic soda from sodium chloride brine; includes Castner and DeNora cells.

Mercury jet magnetometer [ENG] A type of magnetometer in which the magnetic field strength is determined by measuring the electromotive force between electrodes at opposite ends of a narrow pipe made of insulating material, through which mercury is forced to flow.

Mercury manometer [ENG] A manometer in which the instrument fluid is mercury, used to record or control difference of pressure or fluid flow.

Mercury switch [ELEC] A switch that is closed by making a large globule of mercury move up to the contacts and bridge them; the mercury is usually moved by tilting the entire switch.

Mercury thermometer [ENG] A liquid-in-glass thermometer or a liquid-in-metal thermometer using mercury as the liquid.

Meridian circle See transit circle.

Meridian transit See transit circle.

Merit [ELECTR] A performance rating that governs the choice of a device for a particular application; it must be qualified to indicate type of rating, as in gain-bandwidth merit or signal-tonoise merit.

Merit pay plan [IND ENG] Work performed for a set hourly wage that varies from one pay period to another as a function of the worker's productivity, but never declines below a guaranteed minimum wage.

Mersenne's law [MECH] The fundamental frequency of a vibrating string is proportional to the square root of the tension and inversely proportional both to the length and the square root of the mass per unit length.

Merton nut [DES ENG] A nut whose threads are made of an elastic material such as cork, and are formed by compressing the material into a screw.

Mesa device [ELECTR] Any device produced by diffusing the surface of a germanium or silicon wafer and then etching down all but selected areas, which then appear as physical plateaus or mesas.

Mesa diode [ELECTR] A diode produced by diffusing the entire surface of a large germanium or silicon wafer and then delineating the individual diode areas by a photore sist-controlled etch that removes the entire diffused area except the island or mesa at each junction site.

Mesa transistor [ELECTR] A transistor in which a germanium or silicon wafer is etched down in steps so the base and emitter regions appear as physical plateaus above the collector region.

MESFET See metal semiconductor field-effect transistor.

Mesh [DES ENG] A size of screen or of particles passed by it in terms of the number of openings occurring per linear inch in each direction. Also known as mesh size.

Mesh [ELEC] A set of branches forming a closed path in a network so that if any one branch is omitted from the set, the remaining branches of the set do not form a closed path. Also known as loop.

Messenger [ENG] A small, cylindrical metal
metabolic cost

weight that is attached around an oceanographic wire and sent down to activate the tripping mechanism on various oceanographic devices.

metabolic cost [IND ENG] The amount of energy consumed as the result of performing a given work task; usually expressed in calories. \( \text{[med-a, bāl-ik 'kost]} \)

metal lath [ENG] A mesh of metal used to provide a base for plaster. \( \text{[med-āl 'lath]} \)

metallic disk rectifier See metallic rectifier. \( \text{[mātal-ik 'disk rek-tār]} \)

metalize [ENG] To coat or impregnate a metal or nonmetal surface with a metal, as by metal spraying or by vacuum evaporation. \( \text{[med-āl, tız]} \)

metalized slurry blasting [ENG] The breaking of rocks by using slurried explosive medium containing a powdered metal, such as powdered aluminum. \( \text{[med-āl, tız 'slar-ē 'blast-iŋ]} \)

metallurgical engineer [ENG] A person who specializes in metallurgical engineering. \( \text{[med-āl-ar'ja-kal, 'en-'ja-'nir]} \)

metallurgical engineering [ENG] Application of the principles of metallurgy to the engineering sciences. \( \text{[med-āl-ar'ja-kal 'en-'ja-'nir-iŋ]} \)

metallurgical microscope [ENG] A microscope used in the study of metals, usually optical. \( \text{[med-āl-ar'ja-kal 'mi-kr-ō'skōp]} \)

metal oxide semiconductor field-effect transistor [ELECTR] A field-effect transistor having a gate that is insulated from the semiconductor substrate by a thin layer of silicon dioxide. Abbreviated MOSFET, MOST; MOS transistor. Formerly known as insulated-gate field-effect transistor (IGFET). \( \text{[med-āl 'jāk,ɔdā 'sem-'i-'kōn, dək-'tār 'fēld ē, 'fekt tran'zi's-tər]} \)

metal oxide semiconductor integrated circuit [ELECTR] An integrated circuit using metal oxide semiconductor transistors; it can have a higher density of equivalent pins than a bipolar integrated circuit. \( \text{[med-āl 'jāk-,sid 'sem-'i-'kōn, dək-'tār 'ln-'tā,ɡrād-əd 'sar-'kat]} \)

metal rolling See rolling. \( \text{[med-āl, 'tul-iŋ]} \)

metal semiconductor field-effect transistor [ELECTR] A field-effect transistor that uses a thin film of gallium arsenide, with a Schottky barrier gate formed by depositing a layer of metal directly onto the surface of the substrate. Abbreviated MESFET. \( \text{[med-āl 'sem-'i-'kōn, dək-'tār 'fēld ē, 'fekt tran'zi's-tər]} \)

metal-slitting saw [MECH ENG] A milling cutter similar to a circular saw blade but sometimes with side teeth as well as teeth around the circumference, used for deep slotting and sinking in cuts. \( \text{[med-āl 'sid-íŋ 'so'o]} \)

metal spinning See spinning. \( \text{[med-āl, 'spin-iŋ]} \)

metal spraying [ENG] Coating a surface with droplets of molten metal or alloy by using a compressed gas stream. \( \text{[med-āl 'sprā-iŋ]} \)

metarheology [MECH] A branch of rheology whose approach is intermediate between those of acrourheology and microrheology; certain processes that are not isothermal are taken into consideration, such as kinetic elasticity, surface tension, and rate processes. \( \text{[med-ā-rē'äl-ə-rēj]} \)

meteorogram [ENG] A record obtained from a meteorograph. \( \text{[med-ē'ör-ə-gram]} \)

meteorograph [ENG] An instrument that measures and records meteorological data such as air pressure, temperature, and humidity. \( \text{[med-ē'ör-ə-graf]} \)

meteorological balloon [ENG] A balloon, usually of high-quality neoprene, polyethylene, or Mylar, used to lift radiosondes to high altitudes. \( \text{[med-ē-ə-'ra-lāj-ə-kal 'ba-lūn]} \)

meteorological instrumentation [ENG] Apparatus and equipment used to obtain quantitative information about the weather. \( \text{[med-ē-ə-'ra-lāj-ə-kal in-'strə-man'tā-shən]} \)

meteorological rocket [ENG] Small rocket system used to extend observation of atmospheric character above feasible limits for balloon-borne observing and telemetering instruments. Also known as rocketsonde. \( \text{[med-ē-ə-'ra-lāj-ə-kal 'rāk-'tər]} \)

meter [MECH] The international standard unit of length, equal to the length of the path traveled by light in vacuum during a time interval of 1/299,792,458 of a second. Abbreviated m. \( \text{[med-'ær]} \)

meter bar [ENG] A metal bar for mounting a gas meter, having fittings at the ends for the inlet and outlet connections of the meter. \( \text{[med-'ær, bær]} \)

meter density [ENG] In an energy distribution system, the number of meters per unit area or per unit length. \( \text{[med-'ær, 'den-sad-ē]} \)

meter factor [ENG] A factor used with a meter to correct for ambient conditions, for example, the factor for a fluid-flow meter to compensate for such conditions as liquid temperature change and pressure shrinkage. \( \text{[med-'ær 'fak-'tär]} \)

metering pin See metering rod. \( \text{[med-'ær-iŋ 'pin]} \)

metering pump [CHEM ENG] Plunger-type pump designed to control accurately small-scale fluid-flow rates, used to inject small quantities of materials into continuous-flow liquid streams. Also known as proportioning pump. \( \text{[med-'ær-iŋ, 'pomp]} \)

metering rod [ENG] A device consisting of a long metallic pin of graduated diameters fitted to the main nozzle of a carburetor (on an internal combustion engine) or passage leading thereto in such a way that it measures or meters the amount of gasoline permitted to flow by it at various speeds. Also known as metering pin. \( \text{[med-'ær-iŋ, 'rād]} \)

metering screw [MECH ENG] An extrusion-type screw feeder or conveyor section used to feed pulverized or doughy material at a constant rate. \( \text{[med-'ær-iŋ, 'skrē]} \)

metering tank See measuring tank. \( \text{[med-'ær-iŋ, 'tāŋ]} \)

metering valve [MECH ENG] In an automotive
hydraulic braking system, a valve that momentarily delays application of the front disk brakes until the rear drum brakes begin to act. (‘mèd-ə-vŏr, válv)

determination of

cal gasification, is measured in terms of the angular deflection of a microaccelerometer. (‘meth-ə-vŏr, ’miks-ˌchərz)


methods engineering [IND ENG] A technique used by management to improve working methods and reduce labor costs in all areas where human effort is required. (‘meth-ədəz, ’en-ə’nir-əp)

methods study [IND ENG] An analysis of the methods in use, of the means and potentials for their improvement, and of reducing costs. (‘meth-ədəz, ’stād-e)

metric center [MECH] 1. A unit of mass equal to 50 kilograms. 2. A unit of mass equal to 100 kilograms. Also known as quintal. (‘me-trik ’sent-nər)

metric grain [MECH] A unit of mass, equal to 50 milligrams, used in commercial transactions in precious stones. (‘me-trik ’grän)

metric line See millimeter. (‘me-trik ’lin)

metric ounce See mounce. (‘me-trik ’ənəns)

metric slug See metric-technical unit of mass. (‘me-trik ’slib)

metric system [MECH] A system of units used in scientific work throughout the world and employed in general commercial transactions and engineering applications; its units of length, time, and mass are the meter, second, and kilogram, respectively, or decimal multiples and submultiples thereof. (‘me-trik ’sis-təm)

metric-technical unit of mass [MECH] A unit of mass, equal to the mass which is accelerated by 1 meter per second per second by a force of 1 kilogram-force. It is equal to 9.80665 kilograms. Abbreviated TME. Also known as hyl; metric slug. (‘me-trik ’tek-ni-kal ’jyə-nət ’av-’mas)

metric thread gearing [DES ENG] Gears that may be interchanged in change-gear systems to provide feeds suitable for cutting metric and module threads. (‘me-trik ’thred ’gir-əp)

metric ton See tonne. (‘me-trik ’tən)

m₉ See milligram. (m₉)

mg See milligramal. (m₉)

mho See siemens. (m₀)

mi See mile.

MIC See microwave integrated circuit.

Michaelson actinograph [ENG] A pyrheliometer of the bimetallic type used to measure the intensity of direct solar radiation; the radiation is measured in terms of the angular deflection of a blackened bimetallic strip which is exposed to the direct solar beams. (‘mɪ-kal-sən ək ‘tin-ə-graf)

microaccelerometer [ENG] A MEMS device developed for the automotive industry to control air-bag inflation. (‘mi-kro-ik, sel-ə-rə’tám-əd-ər)
microactuator  [ENG] A very small actuator, with physical dimensions in the submicrometer to millimeter range, generally batch-fabricated from silicon wafers. 

micro air vehicle  [ENG] A very small airborne autonomous vehicle that can operate inside a building using primarily visual and other sensory information to navigate.  

microalloy diffused transistor  [ELECTR] A microalloy transistor in which the semiconductor wafer is first subjected to gaseous diffusion to produce a nonuniform base region. Abbreviated MADT.  

microalloy transistor  [ELECTR] A transistor in which the emitter and collector electrodes are formed by etching depositions, then electroplating and alloying a thin film of the impurity metal to the semiconductor wafer, somewhat as in a surface-barrier transistor.  

microangstrom  [MECH] A unit of length equal to one-millionth of an angstrom, or 10^{-10} meter. Abbreviated Å.  

microbalance  [ENG] An instrument for making accurate measurements of small masses. Also known as microscales or microgram balances.  

microbar  [ENG] An instrument for measuring very small amounts of heat, in which the heat source and a small heating coil are placed in the medium to be heated. The amount of current through the coil is varied until the temperatures of the vessels are identical, as indicated by the thermocouples.  

microbarograph  [ENG] The record or trace made by a microbarograph.  

microcapsule  [CHEM ENG] Enclosing of a material in a polymer or waxlike coating having a diameter anywhere from well below 1 micrometer to over 2000 micrometers in diameter.  

microcircuit  [ELECTR] A circuit consisting of a thin film of dielectric material sandwiched between electrodes.  

microcontroller  [ELECTR] A microcomputer, microprocessor, or other equipment used for precise process control in data handling, communication, and manufacturing.  

microdiffusion  [ENG] A type of diffusion meter in which diffusion is measured over microscopic distances, greatly reducing the time required for the measurement and the effects of vibration and temperature changes.  

microelectro-mechanical system  [ENG] A system in which micromechanisms are coupled with microelectronics, most commonly fabricated as microsensors or microactuators. Abbreviated MEMS. Also known as microsystem.  

microelectronics  [ELECTR] The technology of constructing circuits and devices in extremely small packages by various techniques. Also known as microminiaturization, microsystem electronics.  

microelement  [ELECTR] Resistor, capacitor, transistor, diode, inductor, transformer, or other electronic element or combination of elements mounted on a ceramic wafer 0.025 centimeter thick and about 0.75 centimeter square, individual microelements are stacked, interconnected, and potted to form micromodules.  

microengineering  [ENG] The design and production of small, three-dimensional objects, usually for manufacture in high volumes at low cost.  

microfabrication  [ENG] The technology of fabricating Microsystems from silicon wafers, using standard semiconductor process technologies in combination with specially developed processes.  

microfiltration  [CHEM ENG] A membrane separation process in which particles greater than about 20 nanometers in diameter are screened out of a liquid in which they are suspended.  

microfluorescope  [ENG] A fluorescence microscope in which a very fine-grained fluorescent screen is optically enlarged.  

microforge  [ENG] In micromanipulation techniques, an optical-mechanical device for controlling the position of needles or pipets in the field of a low-power microscope by a simple micromanipulator.  

microgram  [MECH] A unit of mass equal to one-millionth of a gram. Abbreviated μg.  

micrograph  [ENG] An instrument for making very tiny writing or engraving.  

microsystem  See microsystem.  

microsystem  See microsystem.  

microtechnology  See microtechnology.  

microtechnology  See microtechnology.
microgravity  [MECH] A state of very weak gravity, such that the gravitational acceleration experienced by an observer inside the system in question is of the order of one-millionth of that on earth.  

microgroove record See long-playing record.  

micro heat pipe  [ENG] A very small heat pipe that has a diameter between about 100 micrometers and 2 millimeters (0.004 and 0.08 inch) and a triangular cross section or other cross section with sharp corners, and that uses the sharp corner regions instead of a wick to return the electronics cooling fluid from the condenser to the evaporator, it has potential applications in the electronics (cooling circuit chips), medical, space, and aircraft industries.  

micromachining [ENG] The use of standard semiconductor process technologies in combination with specially developed processes to fabricate miniature mechanical devices and components on silicon and other materials.  

cryogenic micrometer  [MECH] Any manometer that is designed to measure very small pressure differences.  

micromechanical display  [ENG] A video display based on an array of mirrors on a silicon chip that can be deflected by electrostatic forces. Abbreviated MMD.  

micromechanics  [ENG] 1. The design and fabrication of micromechanisms. 2. See composite micromechanics.  

micromechanism  [ENG] A mechanical component with submillimeter dimensions and corresponding tolerances of the order of 1 micrometer or less.  

micromechatronics  [ENG] The branch of engineering concerned with micro-electro-mechanical systems.  

cryogenic micrometer  [MECH] A device for holding and moving fine instruments for the manipulation of microscopic specimens under a microscope.  

micromanometer  [ENG] Any manometer that is designed to measure very small pressure differences.  

micromechanical study  [ENG] 1. A record of a specific task made with motion picture film or video tape in which each component of the activity is recorded in an individual frame.  

micromotion film  [IND ENG] A record of a specific task made with motion picture film or video tape in which each component of the activity is recorded in an individual frame.  

microwatt  See picowatt.  

micromolding  [ENG] An alternative technique to micromachining for fabricating microsystems, in which a sacrificial material serves as a mold to which a deposited material conforms.  

micro-opto-electro-mechanical system  [ENG] A microsystem that combines the functions of optical, mechanical, and electronic components in a single, very small package or assembly. Abbreviated MOEMS.  

microphone  [ENG ACOUS] An electroacoustic device containing a transducer which is actuated by sound waves and delivers essentially equivalent electric waves.  

microscope  [MECH] A device attached to liquids with a high degree of accuracy; types include lambda, straight-bore, and Lang-Levy.  

microreactor  [CHEM ENG] A microsystem for chemical and biochemical reactions, including separation, fluid handling, and unit operations of chemical engineering, as well as analytical

micrometer  [MECH] 1. A unit of length equal to one-millionth of a meter. Abbreviated μm. Also known as micron (μ).  

micrometer caliper  See micrometer.  

micrometer of mercury  See micron.  

cryogenic micrometer  [MECH] A unit of length equal to one-millionth of a meter. Abbreviated μm. Also known as micron (μ).  

micropipet  See micrometer.  

micropipet  [ENG] 1. A pipet with capacity of 0.5 milliliter or less, to measure small volumes of liquids with a high degree of accuracy, types include lambda, straight-bore, and Lang-Levy. 2. A fine-pointed pipette used for microinjection.  

microporous barrier  [CHEM ENG] A metallic or plastic membrane with micrometer-sized pores used for dialysis and other membrane-separation processes.  

micropump  [ELECTR] A single silicon chip on which the arithmetic and logic functions of a computer are placed.  

micropump  [ENG] A very small pump designed to measure very small pressure differences.  

micropump  [MECH] A device which converts variation in the position or velocity of some body into corresponding variations of some electrical quantity, in a microphone.  

micropump  [MECH] A unit of pressure exerted by a column of mercury 1 meter high, having a density of 13.5951 grams per cubic centimeter, under the standard acceleration of gravity; equal to 0.73322387415 pascal, it differs from the millitorr by less than one part in seven million. Also known as micrometer of mercury.  

microrheology  [ENG] A study of the flow of fluids at the microscopic level.  

microradiation  [MECH] A system for chemical and biochemical reactions, including separation, fluid handling, and unit operations of chemical engineering, as well as analytical
micro-reciprocal-degree

systems. Its small reaction volumes and high heat and mass transfer rates allow for precise adjustment of process conditions, short response times, and defined residence times, resulting in greater process control and higher yields and selectivity. \( \text{milkr}^{-2} \text{aktar} \)

micro-reciprocal-degree See mired. \( \text{milkr}^{-2} \text{isp-raka} \text{digr} \)

microrhoeology [MECH] A branch of rheology in which the heterogeneous nature of dispersed systems is taken into account. \( \text{milkr}^{-2} \text{al} \text{e} \text{j} \)

microsecond [MECH] A unit of time equal to one-millionth of a second. Abbreviated \( \mu \text{sec} \).

microsensitivity [ENG] A submicrometer-to-millimeter-size device that converts a nonelectrical physical or chemical quantity, such as pressure, acceleration, temperature, or gas concentration, into an electrical signal, it is generally able to offer better sensitivity, accuracy, dynamic range, and reliability, as well as lower power consumption, compared to larger counterparts. \( \text{milkr}^{-2} \text{sen-sor} \)

microsystem See micro-electro-mechanical system. \( \text{milkr}^{-2} \text{sism-tom} \)

micron [MECH] A unit of mass equal to one-millionth of a gram. Abbreviated \( \text{mil} \)g.

microwatt [MECH] A unit of power equal to one-millionth of a watt. Abbreviated \( \mu \text{W} \).

microwave early warning [ENG] High-power, long-range radar with a number of indicators, giving high resolution, and with a large traffic-handling capacity, used for early warning of missiles. \( \text{milkr}^{-2} \text{wavjarlewor} \text{noij} \)

microwave impedance measurement [ENG] The determination of parameters, associated with microwave propagation in transmission lines or waveguides, which are generalizations of the impedance concept at lower frequencies and are derived from ratios of electric- or magnetic-field amplitudes. \( \text{milkr}^{-2} \text{wawim} \text{ped} \text{ans} \text{mehor} \text{t} \text{mant} \)

microwave integrated circuit [ELECTR] A microwave circuit that uses integrated-circuit production techniques involving such features as thick or thin films, substrates, dielectrics, conductors, resistors, and microstrip lines, to build passive assemblies on a dielectric. Abbreviated MIC. \( \text{milkr}^{-2} \text{waw} \text{intgradod} \text{korat} \)

microwave noise standard [ENG] An electrical noise generator of calculable intensity that is used to calibrate other noise sources by using comparison methods. \( \text{milkr}^{-2} \text{wavnoizst} \text{nd} \text{ard} \)

microwave oven [ENG] An oven that uses microwave heating for fast cooking of meat and other foods. \( \text{milkr}^{-2} \text{wavvonan} \)

microwave solid-state device [ELECTR] A semiconductor device for the generation or amplification of electromagnetic energy at microwave frequencies. \( \text{milkr}^{-2} \text{wawjsaladjstatd} \text{vir} \)

middle-third rule [CIV ENG] The rule that no tension is developed in a wall or foundation if the resultant force lies within the middle third of the structure. \( \text{mil} \text{al} \text{thord} \text{mil} \)

midrange [ENG ACOUS] A loudspeaker designed to reproduce medium audio frequencies, generally used in conjunction with a crossover network, a tweeter, and a woofer. Also known as squawker. \( \text{milran} \)

Mie-Grüneisen equation [THERMO] An equation of state particularly useful at high pressure, which states that the volume of a system times the difference between the pressure and the pressure at absolute zero equals the product of the number which depends only on the volume times the difference between the internal energy and the internal energy at absolute zero. \( \text{mi} \text{e} \text{grunzranj} \)

migration See bleeding. \( \text{milgrimashan} \)

mil [MECH] 1. A unit of length, equal to 0.001 inch, or to 2.54 \( 10^{-3} \) meter. Also known as milli-inch; thou. 2. See milliliter. \( \text{mil} \)

mile [MECH] A unit of length in common use in the United States, equal to 5280 feet, or 1609.344 meters. Abbreviated mi. Also known as land mile; statute mile. \( \text{mil} \)

milepost [CIV ENG] 1. A post placed a mile away from a similar post. 2. A post indicating mileage from a given point. \( \text{milpost} \)

milestone activity See key activity. \( \text{milstonakayen} \text{adgh} \)

military engineering [ENG] Science, art, and practice involved in design and construction of defensive and offensive military works as well as construction and maintenance of transportation systems. \( \text{milterenjinirinij} \)

military geology [ENG] The application of the earth sciences to such military concerns as terrain analysis, water supply, foundations, and construction of roads and airfields. \( \text{milterenj} \text{ealad} \text{adje} \)

military technology [ENG] The technology needed to develop and support the armament used by the military. \( \text{milterenjtek} \text{nial} \text{adje} \)

mill [IND ENG] 1. A machine that manufactures paper, textiles, or other products by the continuous repetition of some simple process or action. 2. A building that houses machinery for manufacturing processes. \( \text{mil} \)

mill building [CIV ENG] A steel-frame building in which roof trusses span columns in the outside wall, originally, this type of building housed milling machinery, as for wood or metal, hence the name. \( \text{mil} \text{bilda} \text{inij} \)

miller See milling machine. \( \text{mil} \text{ar} \)

millbar [MECH] A unit of pressure equal to one-thousandth of a bar. Abbreviated mb. Also known as vac. \( \text{milbar} \)

miller See tonne. \( \text{mil} \text{yam} \)

milligram [MECH] A unit of acceleration commonly used in geodetic measurements, equal to \( 10^{-3} \) galileo, or \( 10^{-5} \) meter per second per second. Abbreviated mgal. \( \text{mil} \text{gal} \)

milligram [MECH] A unit of mass equal to one-thousandth of a gram. Abbreviated mg \( \text{mil} \text{gram} \)
millihg See millimeter of mercury.

milli-inch See mil.

milliliter [MECH] A unit of volume equal to 10⁻³ liter or 10⁻⁶ cubic meter. Also known as ml. (mil, m, mL)

millimeter [MECH] A unit of length equal to one-thousandth of a meter. Also known as metric line; strich. (mil, mm, mmér-

millimeter of mercury [MECH] A unit of pressure, equal to the pressure exerted by a column of mercury 1 millimeter high with a density of 13.5951 grams per cubic centimeter under the standard acceleration of gravity; equal to 133.22387415 pascals; it differs from the torr by less than 1 part in 7,000,000. Also known as milig.

millimicron See nanometer. (mil, mic, Hm)

milling [MECH ENG] Mechanical treatment of materials to produce a powder, to change the size or shape of metal powder particles, or to coat one powder mixture with another. (mil-

milling cutter [DES ENG] A rotary tool-steel cutting tool with peripheral teeth, used in a milling machine to remove material from the workpiece through the relative motion of workpiece and cutter. (mil-

milling machine [MECH ENG] A machine for the removal of metal by feeding a workpiece through the periphery of a rotating circular cutter. Also known as miller. (mil-

milling planer [MECH ENG] A planer that uses a rotary cutter rather than single-point tools. (mil-

millisecond [MECH] A unit of time equal to one-thousandth of a second. Also known as millisecond. (ms, mil-

millisecond delay cap [ENG] A delay cap with an extremely short (20–500 thousandths of a second) interval between passing of current and explosion. Also known as short-delay detonator. (mil-

milliwatt [MECH] A unit of power equal to one-thousandth of a watt. (mil-

mill length See random length. (mil, length)

millrace [CIV ENG] A canal filled with water that flows to and from a waterwheel acting as the power supply for a mill. (mil,

millwright [ENG] 1. A person who plans, builds, or sets up the machinery for a mill. 2. A person who repairs milling machines.

min See minimum. (min)

mine car [MECH ENG] An industrial car, usually of the four-wheel type, with a low body; the door is at one end, pivoted at the top with a latch at the bottom used for hauling bulk materials. (min, kár)

mineral engineering See mining engineering. (min-

minimum [MECH] A unit of volume in the apothecaries’ measure, equals 1/60 fluidram (approximately 0.061612 cubic centimeter) or about 1 drop of water. Also known as minim. (min-

minimal realization [CONT SYS] In linear system theory, a set of differential equations, of the smallest possible dimension, which have an input/output transfer function matrix equal to a given matrix function G(s). (min-

mini-maxi regret [CONT SYS] In decision theory, a criterion which selects that strategy which has the smallest maximum difference between its payoff and that of the best hindsight choice. (min-

minimum metal condition [DES ENG] The condition corresponding to the removal of the greatest amount of material permissible in a machined part. (min-

minimum-phase system [CONT SYS] A linear system for which the poles and zeros of the transfer function all have negative or zero real parts. (min-

minimum reflux ratio [CHEM ENG] The smallest reflux ratio in a two-component liquid distillation system that will produce the desired overhead and bottom compositions. (min-

minimum resolvable temperature difference [THERMO] The change in equivalent blackbody temperature that corresponds to a change in radianse which will produce a just barely resolvable change in the output of an infrared imaging device, taking into account the characteristics of the device, the display, and the observer. (min-

minimum thermometer [ENG] A thermometer that automatically registers the lowest temperature attained during an interval of time. (min-

minimum turning circle [ENG] The diameter of the circle described by the outermost projection of a vehicle when the vehicle is making its shortest possible turn. (min-

minimum wetting rate [CHEM ENG] The smallest liquid-flow rate through a packed column that will thoroughly wet the column packing. (min-

mining engineering [ENG] Engineering concerned with the discovery, development, and exploitation of coal, ores, and minerals, as well as the cleaning, sizing, and dressing of the product. Also known as mineral engineering. (min-

minor defect [IND ENG] A defect which reduces the effectiveness of the product, without causing serious malfunctioning. (min-

minor diameter [DES ENG] The diameter of a
cylinder bounding the root of an external thread or the crest of an internal thread. \{ \text{minor loop} \}

**minor loop** \[ \text{CONT SY} \] A portion of a feedback control system that consists of a continuous network containing both forward elements and feedback elements. \{ \text{minor loop} \}

**minus angle** See angle of depression. \{ \text{minus angle} \}

**minus sight** See foresight. \{ \text{minus sight} \}

**minute** \[ \text{MECH} \] A unit of time, equal to 60 seconds. \{ \text{minute} \}

**mired** \[ \text{THERMO} \] A unit used to measure the reciprocal of color temperature, equal to the reciprocal of a color temperature of 10° kelvins. Derived from micro-reciprocal-degree. \{ \text{mired} \}

**mirror interferometer** \[ \text{ENG} \] An interferometer used in radio astronomy, in which the sea surface acts as a mirror to reflect radio waves up to a single antenna, where the reflected waves interfere with the waves arriving directly from the source. \{ \text{mirror interferometer} \}

**mirror nephoscope** \[ \text{ENG} \] A nephoscope in which the motion of a cloud is observed by its reflection in a mirror. Also known as cloud mirror, reflecting nephoscope. \{ \text{mirror nephoscope} \}

**mirror scale** \[ \text{ENG} \] A scale with a mirror used to align the eye perpendicular to the scale and pointer when taking a reading, improves accuracy by eliminating parallax. \{ \text{mirror scale} \}

**mirror transit circle** \[ \text{ENG} \] A development of the conventional transit circle in which light from a star is reflected into fixed horizontal telescopes pointing due north and south by a plane mirror that is mounted on a horizontal east-west axis and attached to a large circle with accurately calibrated markings to determine the mirror's position. \{ \text{mirror transit circle} \}

**mismatch** \[ \text{ELEC} \] The condition in which the impedance of a source does not match or equal the impedance of the connected load or transmission line. \{ \text{mismatch} \}

**missed hole** See failed hole. \{ \text{missed hole} \}

**missed round** \[ \text{ENG} \] A round in which all or part of the explosive has failed to detonate. \{ \text{missed round} \}

**missle attitude** \[ \text{MECH} \] The position of a missile as determined by the inclination of its axes (roll, pitch, and yaw) in relation to another object, as to the earth. \{ \text{missile attitude} \}

**missile site radar** \[ \text{ENG} \] Phased array radar located at a missile launch area to provide a guidance link with interceptor missiles enroute to their targets. \{ \text{missile site radar} \}

**mist extractor** \[ \text{ENG} \] A device that removes liquid mist or droplets from a gas stream via impingement, flow-direction change, velocity change, centrifugal force, filters, or coalescing packs. \{ \text{mist extractor} \}

**mistuning** \[ \text{MECH} \] The difference between the square of the natural frequency of vibration of a vibrating system, without the effect of damping, and the square of the frequency of an external, oscillating force. \{ \text{mistuning} \}

**miter bend** \[ \text{DES ENG} \] A pipe bend made by mitering (angle cutting) and joining pipe ends. \{ \text{miter bend} \}

**miter box** \[ \text{ENG} \] A troughlike device of metal or wood with vertical slots set at various angles in the upright sides, for guiding a handsaw in making a miter joint. \{ \text{miter box} \}

**miter gate** \[ \text{CIV ENG} \] Either of a pair of canal lock gates that swing out from the side walls and meet at an angle pointing toward the upper level. \{ \text{miter gate} \}

**miter gear** \[ \text{DES ENG} \] A bevel gear whose bevels are in 1:1 ratio. \{ \text{miter gear} \}

**miter joint** \[ \text{DES ENG} \] A joint, usually perpendicular, in which the mating ends are beveled. \{ \text{miter joint} \}

**miter saw** \[ \text{DES ENG} \] A hollow-ground saw in diameters from 6 to 16 inches (15.24 to 40.64 centimeters), used for cutting off and mitering on light stock such as moldings and cabinet work. \{ \text{miter saw} \}

**miter valve** \[ \text{DES ENG} \] A valve in which a disk fits in a seat making a 45° angle with the axis of the valve. \{ \text{miter valve} \}

**mixed cycle** \[ \text{MECH ENG} \] An internal combustion engine cycle which combines the Otto cycle constant-volume combustion and the Diesel cycle constant-pressure combustion in high-speed compression-ignition engines. Also known as combination cycle; commercial Diesel cycle; limited-pressure cycle. \{ \text{mixed cycle} \}

**mixed flow** \[ \text{CHEM ENG} \] Flow stream existing in two or more phases, such as gas, hydrocarbon, and water. Also known as mixed-phase flow. \{ \text{mixed flow} \}

**mixed-flow impeller** \[ \text{MECH ENG} \] An impeller for a pump or compressor which combines radial- and axial-flow principles. \{ \text{mixed-flow impeller} \}

**mixed-phase flow** See mixed flow. \{ \text{mixed-phase flow} \}

**mixer-settler** \[ \text{CHEM ENG} \] Solvent-extraction system with alternating or combined arrangement of mixers and settlers; used for chemicals extraction, lubricating-oil refining, and uranium oxide recovery. Also known as mixer-settler extractor. \{ \text{mixer-settler} \}

**mixer-settler extractor** See mixer-settler. \{ \text{mixer-settler extractor} \}

**mixing** \[ \text{CHEM ENG} \] The intermingling of different materials (liquid, gas, solid) to produce a homogeneous mixture. \{ \text{mixing} \}

**mixing chamber** \[ \text{ENG} \] The space in a welding torch in which the gases are mixed. \{ \text{mixing chamber} \}

**mixing valve** \[ \text{ENG} \] Multi-inlet valve used to mix two or more fluid intakes to give a mixed
product of desired composition. (ˈmɪk-sɪŋˌvɔlv) 

m-kg See meter-kilogram.

mks system See meter-kilogram-second system. (ˈmɛkˈkiːˌesˌsɪdˌˈteɪm) 

ml See milliliter.

mm See millimeter.

MMD See micromechanical display.

M meter [ENG] A class of instruments which measure the liquid water content of the atmosphere. (ˈmɛmˌmɛdˌər) 

mmHg See millimeter of mercury.

mmH₂O See millimeter of water.

MMSCFD [CHEM ENG] Abbreviation for million standard cubic feet per day; usually refers to gas flow.

MMSCFH [CHEM ENG] Abbreviation for million standard cubic feet per hour; usually refers to gas flow.

MMSCFM [CHEM ENG] Abbreviation for million standard cubic feet per minute; usually refers to gas flow.

mobile crane [MECH ENG] 1. A cable-controlled crane mounted on crawlers or rubber-tired carriers. 2. A hydraulically-powered crane with a telescoping boom mounted on truck-type carriers or as self-propelled models. (ˈmɔlˈbælˈkraʊn) 

mobile hoist [MECH ENG] A platform hoist mounted on a pair of pneumatic-tired road wheels, so it can be towed from one site to another. (ˈmɔlˈbælˈhɔɪst) 

mobile loader [MECH ENG] A self-propelling power machine for loading coal, mineral, or dirt. (ˈmɔlˈbælˈlɑʊdər) 

mobile robot [CONT SYS] A robot mounted on a movable platform that transports it to the area where it carries out tasks. (ˈmɔlˈbælˈrɑʊbət) 

mobility [ENG] The ability of an analytical balance to react to small load changes; affected by friction and degree of looseness in the balance components. (ˈmɔbɪlˈɪdʒ) 

mobility threshold [ENG] On an analytical balance, the smallest load change that will cause a noticeable change in the weight measurement. (ˈmɔˈbɪlɪt̬ ′θresˌhəld) 

mockup [ENG] A model, often full-sized, of a piece of equipment, or installation, so devised as to expose its parts for study, training, or testing. (ˈmɑkˌæp) 

model basin [ENG] A large basin or tank of water where scale models of ships can be tested. Also known as model tank; towing tank. (ˈmɔdəlˈbæsən) 

model-following problem [CONT SYS] The problem of determining a control that causes the response of a given system to be as close as possible to the response of a model system, given the same input. (ˈmɔdəlˈfəʊləˈfɒlɪŋˌprəʊˈbləm) 

model reduction [CONT SYS] The process of discarding certain modes of motion while retaining others in the model used by an active control system, in order that the control system can compute control commands with sufficient rapidity. (ˈmɔdəlˈrɛdʌktʃən) 

model reference system [CONT SYS] An ideal system whose response is agreed to be optimum; computer simulation in which both the model system and the actual system are subjected to the same stimulus is carried out, and parameters of the actual system are adjusted to minimize the difference in the outputs of the model and the actual system. (ˈmɔdəlˈrɛfərsˌsɪstəm) 

model tank See model basin. (ˈmɔdəlˌtæŋk) 

modem [ELECTR] A combination modulator and demodulator at each end of a telephone line to convert binary digital information to audio tone signals suitable for transmission over the line, and vice versa. Also known as dataset. Derived from modulator-demodulator. (ˈmɔdəm) 

mode of oscillation See mode of vibration. (ˈmɔdəvˌɔvˌvərˌveɪʃən) 

mode of vibration [MECH] A characteristic manner in which a system which does not dissipate energy and whose motions are restricted by boundary conditions can oscillate; having a characteristic pattern of motion and one of a discrete set of frequencies. Also known as mode of oscillation. (ˈmɔdəvˌɔvˈvərˌveɪʃən) 

modern control [CONT SYS] A control system that takes account of the dynamics of the processes involved and the limitations on measuring them, with the aim of approaching the condition of optimal control. (ˈmɔdərnˌkənˈtɹəl) 

MODFET See high-electron-mobility transistor. (ˈmɔdəuf̩) 

modification [ENG] A major or minor change in the design of an item, effected in order to correct a deficiency, to facilitate production, or to improve operational effectiveness. (ˌmɔdərˈəʊtʃən) 

modification kit [ENG] A collection of items not all having the same basic name which are employed individually or conjunctively to alter the design of a component or equipment. (ˌmɔdərˈəʊtʃənˈkɪt) 

MODF room [ENG ACOUS] A control room in a sound-recording studio in which the acoustic treatment comprises a uniform disposition of the sound-absorbent material all about the room. (ˈmɔdərˈrʊm) 

modular structure [BUILD] A building that is constructed of preassembled or presized units of standard sizes; uses a 4-inch (10.16-centimeter) cubical module as a reference. [ELECTR] 1. An assembly involving the use of integral multiples of a given length for the dimensions of electronic components and electronic equipment, as well as for spacings of holes in a chassis or printed wiring board. 2. An assembly made from modules. (ˌmɑdərˈəʊtʃər ˈstrækˌchar) 

modulate [ELECTR] To vary the amplitude, frequency, or phase of a wave, or vary the velocity of the electrons in an electron beam in some characteristic manner. (ˌmɔdəlˈətə) 

modulation [MECH ENG] Regulation of the fuel-air mixture to a burner in response to fluctuations of load on a boiler. (ˌmɔdəlˈəʊtʃən)
modulation-doped field-effect transistor

modulation-doped field-effect transistor See high-electron-mobility transistor (英: field-effect transistor, MECH: field-effect transistor)

modulation meter [ENG] A device for measuring the degree of modulation (modulation factor) of a modulated wave train, usually expressed in percent.

modulation of rupture in bending [MECH] The maximum stress per unit area that a specimen can withstand without breaking when it is bent, as calculated from the breaking load under the assumption that the specimen is elastic until rupture takes place. (英: modulus of rupture in bending)

modulus of rupture in torsion [MECH] The maximum stress per unit area that a specimen can withstand without breaking when its ends are twisted, as calculated from the breaking load under the assumption that the specimen is elastic until rupture takes place. (英: modulus of rupture in torsion)

modulus of simple longitudinal extension See axial modulus.

Moehl cubic centimeter [CHEM ENG] A unit of volume used in saccharimetry, equal to the volume of 1 gram of water at a specified temperature, usually 17.5°C, in which case, it is equal to 100238 cubic centimeters. (英: cubic centimeter)

Möhr liter [CHEM ENG] A unit of volume, equal to 1000 Moehl cubic centimeters. (英: liter)

Möhler's circle [MECH] A graphical construction making it possible to determine the stresses in a cross section if the principal stresses are known.

moiré interferometry [ENG] An optical technique that measures the components of deformation of a specimen surface in the plane of the surface by superposing a reference grating and a diffraction grating that is applied to, and deforms with, the surface.

moist heat sterilization [ENG] Sterilization with steam under pressure, as in an autoclave, pressure cooker, or retort; most bacteriological media are sterilized by autoclaving at 121°C, with 15 pounds (103 kilopascals) of pressure, for 20 minutes or more. (英: moist heat sterilization)

moist room [ENG] An enclosed space that is maintained at a specified temperature, usually 73°F (23°C), with the humidity maintained at 98% or above and that is used to cure and store test specimens of cementitious material. (英: moist room)

moisture content [MECH] The quantity of water in a mass of soil, sewage, sludge, or screenings, expressed in percentage by weight of water in the mass. (英: moisture content)

moisture gradient [ENG] The difference in moisture content between the surface and the inner portion of a section of wood. (英: moisture gradient)

moisture loss [MECH ENG] The difference in heat content between the moisture in the boiler and the moisture in the wood.
monostatic radar  [CIV ENG] A single rail used as a track; [ENG] Radar in which directional information is obtained with high precision by using a receiving antenna system having two or more partially overlapping lobes in the radiation patterns.  

monochromatic emissivity  [THERMO] The ratio of the energy radiated by a body in a very narrow band of wavelengths to the energy radiated by a blackbody in the same band at the same temperature. Also known as color emissivity.  

monochromatic temperature scale  [THERMO] A temperature scale based upon the amount of power radiated from a blackbody at a single wavelength.  

monolithic  [CIV ENG] Pertaining to concrete construction which is cast in one jointless piece.  

monophonic sound  [ENG ACOUS] Sound produced by a system in which one or more microphones feed a single transducing channel which is coupled to one or more loudspeakers.  

monopulse radar  [ENG] Radar in which directional information is obtained with high precision by using a receiving antenna system having two or more partially overlapping lobes in the radiation patterns.  

monorail  [CIV ENG] A single rail used as a track; usually elevated, with cars straddling or hanging from it.  

monostat  [ENG] Fluid-filled, upside-down manometer-type device used to control pressures within an enclosure, as for laboratory analytical distillation systems.  

monostatic radar  [ENG] Conventional radar, in which the transmitter and receiver are at the same location and share the same antenna, in contrast to bistatic radar.  

momentum conservation

light.  

monitor  [ENG] 1. An instrument used to measure continuously or at intervals a condition that must be kept within prescribed limits, such as radioactivity at some point in a nuclear reactor, a variable quantity in an automatic process control system, the transmissions in a communication channel or bank, or the position of an aircraft in flight. 2. To use meters or special techniques to measure such a condition. 3. A person who watches a monitor.  

monkey wrench  [DES ENG] A wrench having one jaw fixed and the other adjustable, both of which are perpendicular to a straight handle.  

monocular  [MECH ENG] An aerial ropeway that uses one rope to both support and haul a load.  

monochromatic  [THERMO] A modification of the Ramsey-Shields equation, in which the expression for the molar surface energy is set equal to a quadratic function of the temperature rather than to a linear one.  

Morgan equation  [THERMO] A modification of the Ramsey-Shields equation, in which the expression for the molar surface energy is set equal to a quadratic function of the temperature rather than to a linear one.  

Morse taper reamer  [DES ENG] A machine reamer with a taper shank.  

mortise  [ENG] A groove or slot in a timber for holding a tenon.  

mortise and tenon  [DES ENG] A type of joint, principally used for wood, in which a hole, slot, or groove (mortise) in one member is fitted with a projection (tenon) from the second member.  

mortise lock  [DES ENG] A lock designed to be installed in a mortise rather than on a door's surface.  

mortising machine  [MECH ENG] A machine employing an auger and a chisel to produce a square or rectangular mortise in wood.  

MOS-controlled thyristor  [ELECTR] A type of thyristor in which there is a very thin metal oxide semiconductor (MOS) integrated circuit in the top surface of the high-power thyristor components, so that only a small gate current is needed.
moving-coil galvanometer
moving-coil loudspeaker  See dynamic loudspeaker.  (ˈmuv-ˌing ˈköil ˈlaud,spēk-ˌor)  moving-coil microphone  See dynamic microphone.  (ˈmuv-ˌing ˈköil ˈmi-ˈkra-ˌfon)  moving-coil voltmeter  [ENG] A voltmeter in which the current, produced when the voltage to be measured is applied across a known resistance, is sent through coils pivoted in the magnetic field of permanent magnets, and the resulting torque on the coils is balanced by control springs so that the deflection of a pointer attached to the coils is proportional to the current.  (ˈmuv-ˌing ˈköil ˈvōlt,ˈmed-ər)  moving-coil wattmeter  See electrodynamic wattmeter.  (ˈmuv-ˌing ˈköil ˈvāt,ˈmed-ər)  moving-conductor loudspeaker  [ENG ACOUS] A loudspeaker in which the mechanical forces result from reactions between a steady magnetic field and the magnetic field produced by the current flow through a moving conductor.  (ˈmuv-ˌing ˈkəndək-ˈtor ˈlāud,spēk-ˌor)  moving constraint  [MECH] A constraint that changes with time, as in the case of a system on a moving platform.  (ˈmuv-ˌing ˈkōnˈstrānt)  moving-iron meter  [ENG] A meter that depends on current in one or more fixed coils acting on one or more pieces of soft iron, at least one of which is movable.  (ˈmuv-ˌing ˈir-ərn ˈmed-ər)  moving-iron voltmeter  [ENG] A voltmeter in which a field coil is connected to the voltage to be measured through a series resistor, current in the coil causes two vanes, one fixed and one attached to the shaft carrying the pointer, to be similarly magnetized; the resulting torque on the shaft is balanced by control springs.  (ˈmuv-ˌing ˈir-ərn ˈvōlt,ˈmed-ər)  moving load  [MECH] A load that can move, such as vehicles or pedestrians.  (ˈmuv-ˌing ˈlōd)  moving-magnet voltmeter  [ENG] A voltmeter in which a permanent magnet aligns itself with the resultant magnetic field produced by the current in a field coil and another permanent control magnet.  (ˈmuv-ˌing ˈmagnˌæt ˈvōlt,ˈmed-ər)  moving sidewalk  [CIV ENG] A sidewalk constructed on the principle of an endless belt, on which pedestrians are moved.  (ˈmuv-ˌing ˈsidˌwōk)  mp  See mean effective pressure, melting point.  MRI  See magnetic resonance imaging.  MRP  See material requirements planning.  MRTD  See minimum resolvable temperature difference.  ms  See millisecond.  Ms  See megasecond.  MSCFD  [CHEM ENG] Abbreviation for thousand standard cubic feet per day; usually refers to gas flow.  MSCFH  [CHEM ENG] Abbreviation for thousand standard cubic feet per hour; usually refers to gas flow.  MSCFM  [CHEM ENG] Abbreviation for thousand standard cubic feet per minute, usually refers to gas flow.  msec  See millisecond.  Msec  See megasecond.  MSI  See magnetic source imaging.  M synchronization  [ENG] A linking arrangement between a camera lens and the flash bulb unit to allow a 15-millisecond delay of the shutter so that the bulb burns to its brightest point before the shutter opens.  (ˈmēz, ˈsin-krəˌnō ˈză-ˌshən)  MTTF  See mean time to failure.  muck  [CIV ENG] Rock or earth removed during excavation.  (ˈmak)  mucking  [ENG] Clearing and loading broken rock and other excavated materials, as in tunnels or mines.  (ˈmakˌing)  mud  See slime.  (ˈmad)  mud auger  [DES ENG] A diamond-point bit with the wings of the point twisted in a shallow augerlike spiral. Also known as clay bit; diamond-point bit; mud bit.  (ˈmadˌəugər)  mud berth  [CIV ENG] A berth where a vessel rests on the bottom at low water.  (ˈmadˌberth)  mud bit  See mud auger.  (ˈmadˌbit)  mud blasting  [ENG] The detonation of sticks of explosive stuck on the side of a boulder with a mud covering, so that little of the explosive energy is used in breaking the boulder.  (ˈmadˌblas-ˌing)  mud cake  [ENG] A caked layer of clay adhering to the walls of a well or borehole, formed where the water in the drilling mud filtered into a porous formation during rotary drilling. Also known as filter cake.  (ˈmadˌkák)  mudcap  [ENG] A quantity of wet mud, wet earth, or sand used to cover a charge of dynamite or other high explosive fired in contact with the surface of a rock in mud blasting.  (ˈmadˌkap)  mud pit  See slushpit.  (ˈmadˌpit)  mudsill  [CIV ENG] The lowest sill of a structure, usually embedded in the earth.  (ˈmadˌsil)  mud still  [ENG] An instrument used to separate oil, water, and other volatile materials in a mud sample by distillation, permitting determination of the quantities of oil, water, and total solid contents in the original sample.  (ˈmadˌstil)  mud sump  [CHEM ENG] Upstream area in a process vessel where, because of a velocity drop, entrained solids drop out and are collected in a sump.  (ˈmadˌsump)  mu factor  [ELECTR] Ratio of the change in one electrode voltage to the change in another electrode voltage under the conditions that a specified current remains unchanged and that all other electrode voltages are maintained constant; a measure of the relative effect of the voltages on two electrodes upon the current in the circuit of any specified electrode.  (ˈmyōˌ fakˈtər)  muffle furnace  [ENG] A furnace with an externally heated chamber, the walls of which radially heat the contents of the chamber.  (ˈmuflˌərnˌchər)  muffer  [ENG] A device to deaden the noise produced by escaping gases or vapors.  (ˈmufər)  mull  [ENG] To mix thoroughly or grind.  (ˈmal)
multilevel control theory [CONT SYS] An approach to the control of large-scale systems based on decomposition of the complex overall control problem into simpler and more easily managed subproblems, and coordination of the subproblems so that overall system objectives and constraints are satisfied. 

multimeter See volt-ohm-milliammeter. 

multiphase flow [CHEM ENG] Mixture of two or more distinct phases (such as oil, water, and gas) flowing through a closed conduit. 

multiple-activity process chart [IND ENG] A chart showing the coordinated synchronous or simultaneous activities of a work system comprising one or more machines or individuals; separate, parallel columns indicate each machine's or person's activities as related to the other parts of the work system. 

multiple-arch dam [CIV ENG] A dam composed of a series of arches inclined at about 45° and carried on parallel buttresses or piers. 

multiple cartridges [CHEM ENG] Filter medium made up of two or more filter cartridges, either fastened end to end or arranged side by side (in series or parallel flow respectively). 

multiple connector [ENG] A flow chart symbol that indicates the merging of several flow lines into one line or the dispersal of a flow line into several lines. 

multiple-effect evaporation [CHEM ENG] Series operation energy economizer system in which heat from the steam generated (evaporated liquid) in the first stage is used to evaporate additional liquid in the second stage (by reducing system pressure), and so on, up to 10 or more effects; commonly used in the pulp and paper industry. 

multiple-effect evaporator [CHEM ENG] An evaporation system in which a series of evaporator bodies are connected so that the vapors from one body act as a heat source for the next body. 

multiple-factor incentive plan [IND ENG] A wage incentive plan based on productivity and other factors such as yield, material usage, and reduction of scrap. 

multiple firing [ENG] Electrically firing with delay blasting caps in a number of holes at one time. 

multiple-function chip See large-scale integrated circuit. 

multiple-loop system [CONT SYS] A system whose block diagram has at least two closed paths, along each of which all arrows point in the same direction. 

multiple piece rate plan [IND ENG] A wage incentive plan wherein increasingly higher unit pay rates are given to the worker as his productivity increases. 

multiple-purpose tester See volt-ohm-milliammeter.
multiple-row blasting [ENG] The drilling, charging, and firing of rows of vertical bores. {''mal-ta-pal [no 'blast-im]''

multiple sampling [IND ENG] A plan for quality control in which a given number of samples from a group are inspected, and the group is either accepted, resampled, or rejected, depending on the number of failures found in the samples. {''mal-ta-pal [sam-plin]''

multiple series [ENG] A method of wiring a large group of blasting charges by connecting small groups in series and connecting these series in parallel. Also known as parallel series. {''mal-ta-pal [sir-ez]''

multiple shooting [ENG] The firing of an entire face at one time by means of connecting shot holes in a single series and shooting all holes at the same instant. {''mal-ta-pal [shud-im]''

multiple-slide press [MECH ENG] A press with individual adjustable slides built into the main slide or connected independently to the main shaft. {''mal-ta-pal [sild 'pres]''

multiple-strand conveyor [MECH ENG] A conveyor with two or more spaced strands of chain, belts, or cords as the supporting or propelling medium. {''mal-ta-pal [strand kan'va-ar]''

multiplex [ENG] Stereoscopic device to project aerial photographs onto surfaces so that the images may be viewed in three dimensions by using anaglyphic spectacles; used to prepare topographic maps. {''mal-ta-plek's''

multiplexer [ELECTR] A device for combining two or more signals, as for multiplex, or for creating the composite color video signal from its components in color television. Also spelled multiplexor. {''mal-ta-plek-sar''

multiplexer See multiplexer. {''mal-ta-plek-sar''

multiple x-y recorder [ENG] Recorder that plots a number of independent charts simultaneously, each showing the relation of two variables, neither of which is time. {''mal-ta-pal [jeks'vi ri,kord-ar]''

multiplication [ELECTR] An increase in current flow through a semiconductor because of increased carrier activity. {''mal-ta-plek'ka-shan''

multiplier [ELEC] A resistor used in series with a voltmeter to increase the voltage range. Also known as multiplier resistor. [ELECTR] 1. A device that has two or more inputs and an output that is a representation of the product of the quantities represented by the input signals. Voltages are the quantities commonly multiplied. 2. See electron multiplier; frequency multiplier. {''mal-ta-pli-ar''

multiport burner [ENG] A burner having several nozzles which discharge fuel and air. {''mal-ta-port 'bar-nar''

multiport network analyzer [ENG] A linear, passive microwave network having five or more ports which is used for measuring power and the complex reflection coefficient in a microwave circuit.

Also known as multiport reflectometer. {''mal-ta-port [net,wark 'an-o,liz-ar]''

multiport reflectometer See multiport network analyzer. {''mal-ta-port, re,plek'tam-'ad-ar''

multirole programmable device [CONT SYS] A device that contains a programmable memory to store data on positioning robots and sequencing their motion. {''mal-ta-rol proglram-'a-bal di'vis''

multirope friction winder [MECH ENG] A winding system in which the drive to the winding ropes is the frictional resistance between the ropes and the driving sheaves. {''mal-ta-rop 'frik'shan ,win-dar''

multistage [ENG] Functioning or occurring in separate steps. {''mal-te,stai''

multistage compressor [MECH ENG] A machine for compressing a gaseous fluid in a sequence of stages, with or without intercooling between stages. {''mal-te,stai kom'pres-ar''

multistage pump [MECH ENG] A pump in which the head is developed by multiple impellers operating in series. {''mal-te,stai 'pemp''

multistage queueing [IND ENG] A situation involving two or more sequential stages in a process, each of which involves waiting in line. {''mal-te,stai 'kyu-iq''

multistatic radar [ENG] Radar in which successive antenna lobes are sequentially engaged to provide a tracking capability without physical movement of the antenna. {''mal-te,stad-ik 'ra,dar''

multitrack recording system [ENG] Recording system which provides two or more recording paths on a medium, which may carry either related or unrelated recordings in common time relationship. {''mal-te,trak ri'kord-iq ,sis-tam''

multivariable system [CONT SYS] A dynamical system in which the number of either inputs or outputs is greater than 1. {''mal-te'ver-e-o-bal sis-tam''

municipal engineering [CIV ENG] Branch of engineering dealing with the form and functions of urban areas. {''myun'nis-o,pal ,en-ja'niriq''

muntin See sash bar. {''man-tin''

Murphree efficiency [CHEM ENG] In a plate-distillation column, the ratio of the actual change in vapor composition when the vapor passes through the liquid on a tray (plate) to the composition change of the vapor if it were in vapor-liquid equilibrium with the tray liquid. {''mar-fre 'ilfish-on-sed''

Muskhelishvili's method [MECH] A method of solving problems concerning the elastic deformation of a planar body that involves using methods from the theory of functions of a complex variable to calculate analytic functions which determine the plane strain of the body. {''ma'skel-ish,vil-'ez ,meth-ad''

mW See milliwatt. MW See megawatt.

myotome [ENG] An instrument used to divide a muscle. {''mi'tar,tem''}
N

N See newton.
nail [DES ENG] A slender, usually pointed fastener, designed for insertion by impact. [ENG] To drive nails in a manner that will position and hold two or more members, usually of wood, in a desired relationship. {nål}
nail coat See devil float. {'nål ,kōt}
nailer [ENG] A wood strip or block which serves as a backing into which nails can be driven. {'nål ,ær}
nailhead [DES ENG] Flat protuberance at the end of a nail opposite the point. {'nål, hed}
nail set [DES ENG] A small cylindrical steel tool, usually tapered at one end, that is used to drive a nail or a brad below or flush with a wood surface. Also known as punch. {'nål ,set}
NAND circuit [ELECTR] A logic circuit whose output signal is a logical 1 if any of its inputs is a logical 0, and whose output signal is a logical 0 if all of its inputs are logical 1. {'nánd ,sɚ,kət}
nanoelectronics [ELECTR] The technology of electronic devices whose dimensions range from atoms up to 100 nanometers. {ˌnən-ō-i, lek 'trän-əs}
nanogram [MECH] One-billionth (10\(^{-9}\)) of a gram. Abbreviated ng. {ˌnən-ə,grăm}
nanometer [MECH] A unit of length equal to one-billionth of a meter, or 10\(^{-9}\) meter. Also known as millimicron (\(\mu\)m); nanon. {ˌnən-ə, mɛd-ər}
nanon See nanometer. {‘na,nän}
nanosecond [MECH] A unit of time equal to one-billionth of a second, or 10\(^{-9}\) second. {ˌnən-ə, sek-ænd}
nanotechnology [ENG] 1. Systems for transforming matter, energy, and information that are based on nanometer-scale components with precisely defined molecular features. 2. Techniques that produce or measure features less than 100 nanometers in size. {ˌnən-ə-tek'nal-ə,jē}
Nansen bottle [ENG] A bottlelike water-sampling device with valves at both ends that is lowered into the water by wire, at the desired depth it is activated by a messenger which strikes the reversing mechanism and inverts the bottle, closing the valves and trapping the water sample inside. Also known as Petterson-Nansen water bottle; reversing water bottle. {ˌnən-ə, ˌbād-əl}
narrow-band pyrometer [ENG] A pyrometer in which light from a source passes through a color filter, which passes only a limited band of wavelengths, before falling on a photoelectric detector. Also known as spectral pyrometer. {ˌnar-ə, ˌbänd ˈprəm-əd-ər}
narrow gage [CIV ENG] A railway gage narrower than the standard gage of 4 feet 8 1/2 inches (143 51 centimeters). {ˌnar-ə, ˈgæj}
natural convection [THERMO] Convection in which fluid motion results entirely from the presence of a hot body in the fluid, causing temperature and hence density gradients to develop, so that the fluid moves under the influence of gravity. Also known as free convection. {ˌnætər-ral kənˈvɛkʃən}
natural-draft cooling tower [MECH ENG] A cooling tower that depends upon natural convection of air flowing upward and in contact with the water to be cooled. {ˌnætər-ral ˈdraft ˈkᵲlɪŋ ˌtɔːr-ər}
natural-gasoline plant [CHEM ENG] Compression, distillation, and absorption process facility used to remove natural gasoline (mostly butanes and heavier components) from natural gas. {ˌnætər-ral ˈgæs-əˌlɛnˌplænt}
nautical chain [MECH] A unit of length equal to 15 feet or 4 572 meters. {ˌnəd-əˌkæl ˈʃæn}
naval architecture [ENG] The study of the physical characteristics and the design and construction of buoyant structures, such as ships, boats, barges, submarines, and floats, which operate in water, includes the construction and operation of the power plant and other mechanical equipment of these structures. {ˌnəvər ˈɑr-əˌkæ,təkˈʃər}
Navier's equation [MECH] A vector partial differential equation for the displacement vector of an elastic solid in equilibrium and subjected to a body force. {ˌnəvərˈvæz əˌkwɪlɪˈbriəm ˌsədʒəktədˌtə ˈboʊdi ˈfɔrz}

navigation [ENG] The process of directing the movement of a craft so that it will reach its intended destination; subprocesses are position fixing, dead reckoning, pilotage, and homing. {ˌnævərˈvæz əˌkwɪlɪˈbriəm ˌsədʒəktədˌtə ˈboʊdi ˈfɔrz}

navigation dam [CIV ENG] A structure designed to raise the level of a stream to increase the...
n-body problem

A slender, pointed load. Needle valve

A streamlined hydraulic turbine nozzle with a movable element for converting the pressure and kinetic energy in the pipe leading from the reservoir to the turbine into a smooth jet of variable diameter and discharge but practically constant velocity. Needle nozzle

A type of frame weir in which the wooden barrier is constructed of vertical square-section timbers placed side by side against the iron frames. Needle weir

Underpinning the upper part of a building with horizontally placed timber or steel beams. Needling

In a direction opposite to the velocity, or in the direction of the negative axis of a coordinate system. Negative acceleration

Acceleration in a direction opposite to the velocity, or in the direction of the negative axis of a coordinate system. Negative charge

The type of charge which is possessed by electrons in ordinary matter, and which may be produced in a resin object by rubbing with wool. Also known as negative electricity. Negative g

In designating the direction of acceleration on a body, the opposite of positive g, for example, the effect of flying an outside loop in the upright seated position. Negative terminal

The terminal of a battery or other voltage source that has more electrons than normal; electrons flow from the negative terminal through the external circuit to the positive terminal. Negative work

Work that is performed with the assistance of gravity so that the muscular effort required involves only control of the load. Negotiated contract

A purchase or
Nelson diaphragm cell [CHEM ENG] Obsolete carbon-electrode type of electrolytic diaphragm cell once widely used to produce chlorine and caustic soda from brine. { 'nel-sän ,d'r-ə,fra'm ,səl}

eohexane alkylation [CHEM ENG] A noncata-
ytic petroleum-refinery alkylation process that forms neohexane from a feed of ethylene and iso-butane. { 'ne-ô-hek,sän ,al'käl-shan}

nepheloscope [ENG] An instrument for the production of clouds in the laboratory by condensation or expansion of moist air. { 'nɛf-ə,ləskəp}

nephometer [ENG] A general term for instruments designed to measure the amount of cloudiness; an early type consists of a convex hemispherical mirror mapped into six parts; the amount of cloud coverage on the mirror is noted by the observer. { 'nɛf-əm-əd-rə}

nephroscope [ENG] An instrument for determining the direction of cloud motion. { 'nɛf-ə,skəp}

Nernst approximation formula [THERMO] An equation for the equilibrium constant of a gas reaction based on the Nernst heat theorem and certain simplifying assumptions. { 'nɛrnst ə-prək-sən-mən shan ,fo'r-myə-lə}

Nernst heat theorem [THERMO] The theorem expressing that the rate of change of free energy of a homogeneous system with temperature, and also the rate of change of enthalpy with temperature, approaches zero as the temperature approaches absolute zero. { 'nɛrnst ʰet ,θir̥-əm}

Nernst-Lindemann calorimeter [ENG] A calorimeter for measuring specific heats at low temperatures, in which the heat reservoir consists of a metal of high thermal conductivity such as copper, to promote rapid temperature equalization; none of the material under study is more than a few millimeters from a metal surface, and the whole apparatus is placed in an evacuated vessel and heated by current through a platinum heating coil. { 'nɛrnst ˈlin-də-mən ,kəl-ər-iməd-rə}

Nernst-Simon statement of the third law of thermodynamics [THERMO] The statement that the change in entropy which occurs when a homogeneous system undergoes an isothermal reversible process approaches zero as the temperature approaches absolute zero. { 'nɛrnst ˈsɪl-mən ˈstæt-ənənt əv əv ˈθərd ˈloʊ əv ɹər-məd-di'nam-əks}

nesting [IND ENG] A production technique in which parts with similar patterns are manufactured together. { 'nɛst-ɨŋ}

net [ENG] 1. Threads or cords tied together at regular intervals to form a mesh. 2. A series of surveying or leveling stations that have been interconnected in such a manner that closed loops or circuits have been formed, or that are arranged so as to provide a check on the consistency of the measured values. Also known as network. { 'net}

NETD See noise equivalent temperature difference.

net floor area [BUILD] Gross floor area of a building, excluding the area occupied by walls and partitions, the circulation area (where people walk), and the mechanical area (where there is mechanical equipment). { 'net ˈflɔr ,ər-ə-

net flow area [DES ENG] The calculated net area which determines the flow after the complete bursting of a rupture disk. { 'net ˈflər ,er-ə-

net heating value See low heat value. { 'net ˈhed-

net line See neat line. { 'net ,ln}

net load capacity [ENG] The weight of a material that can be handled, without failure, by a machine or process plus the weight of the container or device. { 'net ,ləd kəpəs-əd-

net positive suction head [MECH ENG] The minimum suction head required for a pump to operate, depends on liquid characteristics, total liquid head, pump speed and capacity, and impeller design. Abbreviated NPSH. { 'net ˈpəz-

net radiometer [ENG] A Moll thermopile modified so that both sides are sensitive to radiation and the resulting electromotive force is proportional to the difference in intensities of radiation incident on the two sides; used to measure the difference in intensity between radiation entering and leaving the earth's surface. { 'net ,rədi-

net ton See ton. { 'net ˈtən}

network [ELEC] A collection of electric elements, such as resistors, coils, capacitors, and sources of energy, connected together to form several interrelated circuits. Also known as electric network. See net. { 'net ,wərk}

network analysis [ELEC] Derivation of the electrical properties of a network, from its configuration, element values, and driving forces. [IND ENG] An analytic technique used during project planning to determine the sequence of activities and their interrelationship within the network of activities that will be required by the project. Also known as network planning. { 'net ,wərk ə-nəl-ə-səz}

Neuegbauer effect [ELEC] A small change in the polarization of an optically isotropic medium in an external electric field, related to the electrotroopical Kerr effect. { 'nəʊ-ə-gə,ba:n-ə,ɪˌfekt}

Neumann-Kopp rule [THERMO] The rule that the heat capacity of 1 mole of a solid substance is approximately equal to the sum over the elements forming the substance of the heat capacity of a gram atom of the element times the number of atoms of the element in a mole of the substance. { 'nəʊ-ə,mən kəp ,rəl}

neuristor [ELECTR] A device that behaves like a nerve fiber in having attenuationless propagation of signals; one goal of research is development of a complete artificial nerve cell, containing many neuristors, that could duplicate
neuromorphic engineering

the function of the human eye and brain in recognizing characters and other visual images. (nútnǐ-tār)

neuromorphic engineering [ENG] Use of the functional principles of biological nervous systems to inspire the design and fabrication of artificial nervous systems, such as vision chips and roving robots. (nútnŕ-ńor-fik, en-nǐ-tān-rī-nīn)

neuronal interface [ENG] An artificial synapse capable of reversible chemical-to-electrical transduction processes between neural tissue and conventional solid-state electronic devices for applications such as visual, auditory, and mechanical prostheses, as well as expanding human memory and intelligence. (nűtrōn-āl in-när-tān-fās)

neurotechnology [ENG] The application of microlithographic devices to achieve direct contact with the electrically active cells of the nervous system (neurons). (nűtřō-tēk-nāl-ō-jē)

neutral [ELEC] Referring to the absence of a net electric charge. (MECH ENG) That setting in an automotive transmission in which all the gears are disengaged and the output shaft is disconnected from the drive wheels. (nűtřō-l)

neutral atmosphere [ENG] An atmosphere which neither oxidizes nor reduces immersed materials. (nűtřō-l at-mā-sē-fīr)

neutral axis [MECH] In a beam bent downward, the line of zero stress below which all fibers are in tension and above which they are in compression. (nűtřō-l āk-sē-sēs)

neutral fiber [MECH] A line of zero stress in cross section of a bent beam, separating the region of compressive stress from that of tensile stress. (nűtřō-l ē-fīr-bār)

neutrally buoyant float See swallow float. (nűtřō-l ē-fū-sō-ant ē-fīōt)

neutral stability [CONT SYS] Condition in which the natural motion of a system neither grows nor decays, but remains at its initial amplitude. (nűtřō-l stā-bi-lōd-ē)

neutral surface [MECH] A surface in a bent beam along which material is neither compressed nor extended. (nűtřō-l sōr-fās)

neutron-gamma well logging [ENG] Neutron well logging in which the varying intensity of gamma rays produced artificially by neutron bombardment is recorded. (nűt ě-trān ē-gām-ō, wel ē-lāg-īn)

neutron logging See neutron well logging. (nűt ě-trān ē-lāg-īn)

neutron shield [ENG] A shield that protects personnel from neutron irradiation. (nűt ě-trān shīl-do̱d)

neutron soil-moisture meter [ENG] An instrument for measuring the water content of soil and rocks as indicated by the scattering and absorption of neutrons emitted from a source, and resulting gamma radiation received by a detector, in a probe lowered into an access hole. (nűt ě-trān sōil, mōis-chār, mēd-ār)

neutron well logging [ENG] Study of formation fluid-content properties down a wellbore by neutron bombardment and detection of resultant radiation (neutrons or gamma rays). Also known as neutron logging. (nűt ě-trān wel ē-lāg-īn)

newel post [CIV ENG] 1. A pillar at the end of an oblique retaining wall of a bridge. 2. The post about which a circular staircase winds. (nűtō-l ē-pōst)

newton [MECH] The unit of force in the meter-kilogram-second system, equal to the force which will impart an acceleration of 1 meter per second squared to the International Prototype Kilogram mass. Symbolized N. Formerly known as large dyne. (nűt-ān)

Newtonian attraction [MECH] The mutual attraction of any two particles in the universe, as given by Newton's law of gravitation. (nűtō-nē-ān ē-rēd-kran-shōn)

Newtonian mechanics [MECH] The system of mechanics based upon Newton's laws of motion in which mass and energy are considered as separate, conservative, mechanical properties, in contrast to their treatment in relativistic mechanics. (nętō-nē-ān ni-kān-āk)

Newtonian reference frame [MECH] One of a set of reference frames with constant relative velocity and within which Newton's laws hold, the frames have a common time, and coordinates are related by the Galilean transformation rule. (nętō-nē-ān ē-rē-d-rānsīm)

Newtonian velocity [MECH] The velocity of an object in a Newtonian reference frame, S, which can be determined from the velocity of the object in any other such frame, S', by taking the vector sum of the velocity of the object in S1 and the velocity of the frame S1 relative to S. (nętō-nē-ān va-lās-ād-ē)

newton-meter of energy See joule. (nęt-ān mēd-ār ē vēn-ēr-ījē)

newton-meter of torque [MECH] The unit of torque in the meter-kilogram-second system, equal to the torque produced by 1 newton of force acting at a perpendicular distance of 1 meter from an axis of rotation. Abbreviated N-m. (nęt-ān, mēd-ār ē vē tōrk)

Newton's equations of motion [MECH] Newton's laws of motion expressed in the form of mathematical equations. (nęt-ān īk-wā-zhōn ē vē mō-shōn)

Newton's first law [MECH] The law that a particle not subjected to external forces remains at rest or moves with constant speed in a straight line. Also known as first law of motion, Galileo's law of inertia. (nęt-ān ī-fēst ē-lō)

Newton's law of cooling [THERMO] The law that the rate of heat flow out of an object by both natural convection and radiation is proportional to the temperature difference between the object and its environment, and to the surface area of the object. (nęt-ān ī-lō ē vē kū-lī-nī)

Newton's law of gravitation [MECH] The law that every two particles of matter in the universe attract each other with a force that acts along
the line joining them, and has a magnitude propor- 
tional to the product of their masses and 
versely proportional to the square of the dis- 
tance between them. Also known as law of 
gravitation. (ˈnùt·ə́n·zə lˈoʊ ˌgræv·ər-təˌshən)

Newton’s laws of motion  [MECH] Three funda- 
mental principles (called Newton’s first, second, 
and third laws) which form the basis of classical, 
or Newtonian, mechanics, and have proved valid 
for all mechanical problems not involving speeds 
comparable with the speed of light and not in-
volving atomic or subatomic particles. (ˈnùt-
ə́n·zə lˈoz ˌgræv·ərˌtəˌshən)

Newton’s second law  [MECH] The law that the 
acceleration of a particle is directly proportional 
to the resultant external force acting on the 
particle and is inversely proportional to the mass 
of the particle. Also known as second law of 
motion. (ˈnùt·ə́n·zə ˈsek·ənd lˈoʊ)

Newton’s third law  [MECH] The law that, if two 
particles interact, the force exerted by the first 
particle on the second particle (called the action 
force) is equal in magnitude and opposite in 
direction to the force exerted by the second 
particle on the first particle (called the reaction 
force). Also known as law of action and reaction; third 
law of motion. (ˈnùt·ə́n·zə ˈthɜːrd lˈoʊ)

ng Ser nanogram.

nib  [ENG] A small projecting point. (ˈnib)

nibbling  [MECH ENG] Contour cutting of mate-
rial by the action of a reciprocating punch that 
takes repeated small bites as the work is passed 
below it. (ˈnɪb·lɪŋ)

Nichol’s chart  [CONT SYS] A plot of curves 
along which the magnitude M or argument α of 
the frequency control ratio is constant on a graph 
whose ordinate is the logarithm of the magni-
tude of the open-loop transfer function, and 
whose abscissa is the open-loop phase angle. (ˈnɪk·əlˈzɛ rˈχɑːrt)

Nicholson’s hydrometer  [ENG] A modification of 
Fahrenheit’s hydrometer in which the lower 
end of the instrument carries a scale pan to per-
mit the determination of the relative density of 
asolid. (ˈnɪk·əlˌsæn hɪˈdɪrəmˌd-ər)

Nichols radiometer  [ENG] An instrument, used 
to measure the pressure exerted by a beam of 
light, in which there are two small, silvered glass 
mirrors at the ends of a light rod that is sus-
pended at the center from a fine quartz fiber 
within an evacuated enclosure. (ˈnɪkˌəlˌzd rəˈdɛ.əmˌd-ər)

nigre  [CHEM ENG] Dark-colored layer formed 
between neat soap and lye during soap manufac-
ture, contains more soap than lye, and a high con-
tent of salts with colors and stained impurities. (ˈnɪɡər)

nine-light indicator  [ENG] A remote indicator 
for wind speed and direction used in conjunction 
with a contact anemometer and a wind vane; the 
indicator consists of a center light, connected to 
the contact anemometer, surrounded by eight 
equally spaced lights which are individually con-
ected to a set of similarly spaced electrical con-
tacts on the wind vane; wind speed is determined 
by counting the number of flashes of the center 
light during an interval of time, direction, indi-
cated by the position of illuminated outer bulbs, 
is given to points of the compass. (ˈnìn ˈliː ˈin-
dəˌkɑːdˌɑr)

Nipher shield  [ENG] A conically shaped, cop-
per, rain-gage shield; used to prevent the forma-
tion of vertical wind eddies in the vicinity of the 
mouth of the gage, thereby making the rainfall 
catch a representative one. (ˈnɪfərˌʃiːld)

nippers  [DES ENG] Small pincers or pliers for 
cutting or gripping. (ˈnɪp·ər)

nipple  [DES ENG] A short piece of tubing, usu-
ally with an internal or external thread at each 
end, used to couple pipes. Also known as bush-
ing. (ˈnɪp·əl)

nipple chaser  [ENG] A member of a drilling 
crew who procures and delivers the tools and 
equipment necessary for an operation. (ˈnɪp·əlˌchaˌsər)

nitrogen fixation  [CHEM ENG] Conversion of 
atmospheric nitrogen into compounds such as 
ammonia, calcium cyanamide, or nitrogen ox-
ides by chemical or electric-arc processes. (ˈnɪtroˌneɪʃənˌfaɪˈkæməˌdɛmˌnɪtrəˌʃən)

NLGI number  [ENG] One of a series of numbers 
developed by the National Lubricating Grease 
Institute and used to classify the consistency 
range of lubricating greases; NLGI numbers are 
based on the American Society for Testing and 
Materials cone penetration number. (ˈnɛnˌleɪˈɡæmˌnəmˌbər)

N-m Ser newton-meter of torque.

NMOS  [ELECTR] Metal-oxide semiconductors 
that are made on p-type substrates, and whose 
active carriers are electrons that migrate be-
tween n-type source and drain contacts. Derived 
from n-channel metal-oxide semiconductor. (ˈɛnˌməʊs)

nn junction  [ELECTR] In a semiconductor, a re-
gion of transition between two regions having 
different properties in n-type semiconducting 
material. (ˈɛnˌenˌjɑːŋkˌʃæn)

no-bottom sounding  [ENG] A sounding in the 
ocean in which the bottom is not reached. (ˈnəʊˌbʌt·əmˌsɔʊnd·ɪŋ)

node  [ELEC] See branch point [ELECTR] A junc-
tion point within a network. [IND ENG] On a graphic presentation of a project, a sym-
bol placed at the intersection of arrows that rep-
resent activities to identify the completion or 
start of an activity. (ˈnəʊd)

nodulizing  [ENG] Creation of spherical lumps 
from powders by working them together, coales-
cing them with binders, drying fluid-solid mix-
tures, heating, or chemical reaction. (ˈnɔdˌəˌlɪz·ɪŋ)

no-go gage  [ENG] A limit gage designed not to 
fit a part being tested; usually employed with a 
gage set to take the acceptable maximum and 
minimum dimension limits of the part. (ˈnəʊˌgəˌgæj)

noise  [ELEC] Interfering and unwanted currents 
or voltages in an electrical device or system. (ˈnɔɪz)
noise-canceling microphone

noise-canceling microphone See close-talking microphone. \( \text{'nôiz kəns-lîn 'mîr-kra,'fûn} \)
noise equivalent temperature difference [THERMO] The change in equivalent blackbody temperature that corresponds to a change in radiance which will produce a signal-to-noise ratio of 1 in an infrared imaging device. Abbreviated NETD. \( \text{'nôiz kəwiv-ə-lînt 'tem-pra-'char ,dîf-râns} \)
noise radial [ENG] The brightening of all range points on a particular plan position indicator bearing on a radar screen caused by noise reception from the indicated direction. \( \text{'nôiz 'râd-e-al} \)
noise reduction [ENG ACOUS] A process whereby the average transmission of the sound track of a motion picture print, averaged across the track, is decreased for signals of low level; since background noise introduced by the sound track is less at low transmission, this process reduces noise during soft passages. \( \text{'nôiz ri,dâk-shân} \)
noise-type flowmeter [ENG] A flowmeter that measures the noise generated in a selected frequency band. \( \text{'nôiz 'tîp 'flo,med-'ar} \)
no-load current [ELEC] The current which flows in a network when the output is open-circuited. \( \text{'nô lôd 'ka-ran} \)
no-load loss [ELEC] The power loss of a device that is operated at rated voltage and frequency but is not supplying power to a load. \( \text{'nô lôd 'fôs} \)
no-load voltage See open-circuit voltage. \( \text{'nô lôd 'vôil-tîj} \)
nominal bandwidth [ENG] The difference between the nominal upper and lower cutoff frequencies of an acoustic or electric filter. \( \text{'nôm-nôl 'bân,'wînd-th} \)
nominal pass-band center frequency [ENG] The geometric mean of the nominal upper and lower cutoff frequencies of an acoustic or electric filter. \( \text{'nôm-nôl 'pas 'bân, 'sen-tôr 'frêk-won-sê} \)
nominal size [DES ENG] Size used for purposes of general identification, the actual size of a part will be approximately the same as the nominal size but need not be exactly the same, for example, a rod may be referred to as 1/4 inch, although the actual dimension on the drawing is 0.2495 inch, and in this case 1/4 inch is the nominal size. \( \text{'nôm-nôl 'sîz} \)
nondiabatic See diabatic.
nonaesthetic system See causal system. \( \text{'nôn-an-tîs-'ô-pô,tôr-e,sis-tôm} \)
nonbearing wall [CIV ENG] A wall that bears no vertical weight other than its own. \( \text{'nôn,ber-in-j'n 'wôl} \)
nonblackbody [THERMO] A body that reflects some fraction of the radiation incident upon it; all real bodies are of this nature. \( \text{'nôn,bläk-bë} \)
noncontact sensor See proximity sensor. \( \text{'nôn 'kân,tâkt 'sen-sôr} \)
noncontact thermometer See radiation pyrometer. \( \text{'nôn'kân,tâkt thôr'mîm-nôd-'ôr} \)
noncoring bit [ENG] A general type of bit made in many shapes which does not produce a core and with which all the rock cut in a borehole is ejected as sludge, used mostly for blasthole drilling and in the unmineralized zones in a borehole where a core sample is not wanted. Also known as borehole bit, plug bit. \( \text{'nân,krô-i'n 'bît} \)
noncyclic element [IND ENG] An element of an operation or process that does not occur in every cycle but has a frequency of occurrence that is specified by the method. \( \text{'nân,di, strak-tîv ,i,vâl-yå-wå-shôn} \)
nondestructive evaluation [IND ENG] A technique for probing and sensing material structure and properties without causing damage (as opposed to revealing flaws and defects). \( \text{'nân,di, strak-div 'test-iq} \)
nondestructive testing [ENG] A technique for revealing flaws and defects in a material or device without damaging or destroying the test sample, includes use of x-rays, ultrasonics, radiography, and magnetic flux. \( \text{'nân-di, strak-div 'test-iq} \)
nondissipative muffler See reactive muffler. \( \text{'nân,dîs-'ô-pâd-'îv 'mâf-lar} \)
nondurable goods [ENG] Products that are serviceable for a very short time or are consumed or destroyed in a comparatively small usage. \( \text{'nân,dûr-'ô-bal 'gûdz} \)
nonequilibrium thermodynamics [THERMO] A quantitative treatment of irreversible processes and of rates at which they occur. Also known as irreversible thermodynamics. \( \text{'nân,ê-kwîl'ri-bo-àm thôr-mô-di'nam-iks} \)
nonexpendable [ENG] Pertaining to a supply item or piece of equipment that is not consumed, and does not lose its identity, in use, as a weapon, vehicle, machine, tool, piece of furniture, or instrument. \( \text{'nân,îk,spen-'ô-bal} \)
nonfeasible method See goal coordination method. \( \text{'nân-fe-ô-bal 'meth-'ad} \)
nonflowing well [ENG] A well that yields water at the land surface only by means of a pump or other lifting device. \( \text{'nân,flo-ing 'wel} \)
nonholonomic system [MECH] A system of particles which is subjected to constraints of such a nature that the system cannot be described by independent coordinates; examples are a rolling hoop, or an ice skate which must point along its path. \( \text{'nân,hôl-ô-nâm-iks 'sis-tôm} \)
nonhoming [CONT SYS] Not returning to the starting or home position, as when the wipers of a stepping relay remain at the last-used set of contacts instead of returning to their home position. \( \text{'nân,hôm-i'n} \)
noinintegrable system [MECH] A dynamical system whose motion is governed by an equation that is not an integrable differential equation. \( \text{'nân,înt-e-grô-bal 'sis-tôm} \)
noninteracting control [CONT SYS] A feedback control in a system with more than one input and more than one output, in which feedback transfer functions are selected so that each input
influences only one output. \(\text{nān, in- tar'ak-tīn kan'trōl}\)

**nonrelativistic kinematics** [MECH] The study of the dynamics of systems in which all speeds are small compared to the speed of light. \(\text{nān, rel-a-tā'vis-tik mi'kan-iks}\)

**nonreturn valve** See check valve. \(\text{nān-ri'tām yāl}\)

**nonservo robot** See fixed-stop robot. \(\text{nān-sar-vo' rō, bāt}\)

**nonselective radiator** See graybody. \(\text{nān-si'lēk-tiv 'rād-ē, ād-or}\)

**nonselective radiator** See graybody. \(\text{nān-sar-vo' rō, bāt}\)

**nonselective radiator** See graybody. \(\text{nān-sar-vo' rō, bāt}\)

**normal-incidence pyrheliometer** [ENG] An instrument that measures the energy in the solar beam; it usually measures the radiation that strikes a target at the end of a tube equipped
normal inspection

with a shutter and baffles to collimate the beam. ( 'nôr-mal [jîn-sad-han] [pîr, hê-lê-am-ad-ar]

normal inspection [IND ENG] The number of items inspected as specified by the sampling inspection plan at the outset; if the quality of the product improves, the number of units to be inspected is reduced; if quality deteriorates, the number of units inspected is increased. ( 'nôr-mal inspek-shaṅ)

normal mode of vibration [MECH] Vibration of a coupled system in which the value of one of the normal coordinates oscillates and the values of all the other coordinates remain stationary. ( 'nôr-mal [môd av vrîbra-shaṅ]

normal operation [MECH ENG] The operation of a boiler or pressure vessel at or below the conditions of coincident pressure and temperature for which the vessel has been designed. ( 'nôr-mal 'ap-ôr-râ-shaṅ)

normal pace [IND ENG] The manual pace achieved by normal effort. ( 'nôr-mal 'pâs)

normal pitch [MECH ENG] The distance between working faces of two adjacent gear teeth, measured between the intersections of the line of action with the faces. ( 'nôr-mal 'pîch)

normal-plate anemometer [ENG] A type of pressure-plate anemometer in which the plate, restrained by a stiff spring, is held perpendicular to the wind; the wind-activated motion of the plate is measured electrically; the natural frequency of this system can be made high enough so that resonance magnification does not occur. ( 'nôr-mal [plât, an-ôl-mâm-ad-ar]

normal reaction [MECH] The force exerted by a surface on an object in contact with it which prevents the object from passing through the surface, the force is perpendicular to the surface, and is the only force that the surface exerts on the object in the absence of frictional forces. ( 'nôr-mal rêl-ak-shaṅ)

normal stress [MECH] The stress component at a point in a structure which is perpendicular to the reference plane. ( 'nôr-mal 'strês)

normal time [IND ENG] 1. The time required by a trained worker to perform a task at a normal pace. 2. The total of all the normal elemental times constituting a cycle or operation. Also known as base time; leveled time. ( 'nôr-mal 'tîm)

north-stabilized plan-position indicator [ENG] A heading-upward plan-position indicator; this term is deprecated because it may be confused with azimuth-stabilized plan-position indicator, a north-upward plan-position indicator. ( 'nôrth [stâ-bô, lîzd] [plan pâzîsh-an] [in-da, kâd-ôr]

north-upward plan position indicator [ENG] A plan position indicator on which north is maintained at the top of the indicator, regardless of the heading of the craft. ( 'nôrth 'ap-war-plan pâzîsh-an) [in-da, kâd-ar]

nose [ENG] The foremost point or section of a bomb, missile, or something similar. ( ˥ oձ)

nose radius [MECH ENG] The radius measured in the back rake or top rake plane of a cutting tool. ( ˥ oձ, răd-ə-aş)

nose sill [ENG] A short timber located under the end of the main sill of a standard rig front of a well. ( ˥ oձ, sîl)

nosing [BUILD] Projection of a tread of a stair beyond the riser below it. ( CIV ENG) A transverse, horizontal motion of a locomotive that exerts a lateral force on the track. ( ˥ oձ-ij)

notch [ELECTR] Rectangular depression extending below the sweep line of the radar indicator in some types of equipment. [ENG] A V-shaped indentation or cut in a surface or edge. ( nâch)

notching [ELEC] Term indicating that a predetermined number of separate impulses are required to complete operation of a relay. [MECH ENG] Cutting out various shapes from the ends or edges of a workpiece. ( 'nâch-iŋ)

notching press [MECH ENG] A mechanical press for notching straight or rounded edges. ( 'nâch-iŋ, pres)

NOT circuit [ELECTR] A logic circuit with one input and one output that inverts the input signal at the output; that is, the output signal is a logical 1 if the input signal is a logical 0, and vice versa. Also known as inverter circuit. ( 'nât 'sâr-kat)

nozzle [DES ENG] A tubelike device, usually streamlined, for accelerating and directing a fluid, whose pressure decreases as it leaves the nozzle. ( 'nâz-əl)

nozzle-contraction-area ratio [DES ENG] Ratio of the cross-sectional area for gas flow at the nozzle inlet to that at the throat. ( 'nâz-əl kəntrak-shaṅ) [jər-ə-ə, râ-sho]

nozzle efficiency [MECH ENG] The efficiency with which a nozzle converts potential energy into kinetic energy, commonly expressed as the ratio of the actual change in kinetic energy to the ideal change at the given pressure ratio. ( 'nâz-əl [fish-an-sê]

nozzle exit area [DES ENG] The cross-sectional area of a nozzle available for gas flow measured at the nozzle exit. ( 'nâz-əl [leg-zot] [er-ə-a]

nozzle-expansion ratio [DES ENG] Ratio of the cross-sectional area for gas flow at the exit of a nozzle to the cross-sectional area available for gas flow at the throat. ( 'nâz-əl [ik'pan-shan]) [râ-sho]

nozzle-mix gas burner [ENG] A burner in which injection nozzles mix air and fuel gas at the burner tile. ( 'nâz-əl, mik's gas bar-nôr)

nozzle throat [DES ENG] The portion of a nozzle with the smallest cross section. ( 'nâz-əl, throt)

nozzle throat area [DES ENG] The area of the minimum cross section of a nozzle. ( 'nâz-əl [throt] [er-ə-a]

npn transistor [ELECTR] An npn transistor which has a layer of high-purity germanium between the base and collector to extend the frequency range. ( 'en pin trâns'zîr-tar)

N-P-K [CHEM ENG] The code identifying the components in a fertilizer mixture: nitrogen (N),
nuclear magnetic resonance flowmeter

nuclear magnetic resonance gyroscope

nuclear magnetometer

nuclear power plant

nuclear resonance magnetometer

nuclear snow gage

nucleate boiling

nucleonics

nucleus counter

null-balance recorder

null detector

null indicator

null method

Nusselt equation
Nusselt number

Equation used to calculate convection heat transfer for heating or cooling of fluids outside a bank of 10 or more rows of tubes to which the fluid flow is normal. \( \text{Nusselt number} \)

Nyquist contour [CONT SYS] A directed closed path in the complex frequency plane used in constructing a Nyquist diagram, which runs upward, parallel to the whole length of the imaginary axis at an infinitesimal distance to the right of it, and returns from \(+j\omega\) to \(-j\omega\) along a semicircle of infinite radius in the right half-plane.

Nyquist diagram [CONT SYS] A plot in the complex plane of the open-loop transfer function as the complex frequency is varied along the Nyquist contour, used to determine stability of a control system.

Nyquist stability criterion [ELECTR] See Nyquist stability theorem. Nu¨ta¨z"ı ng"ı ng"

Nyquist stability theorem [CONT SYS] The theorem that the net number of counterclockwise rotations about the origin of the complex plane carried out by the value of an analytic function of a complex variable, as its argument is varied around the Nyquist contour, is equal to the number of poles of the variable in the right half-plane minus the number of zeros in the right half-plane. Also known as Nyquist stability criterion.


Nutation [MECH] A bobbing or nodding up-and-down motion of a spinning rigid body, such as a top, as it precesses about its vertical axis.

Nutator [ENG] A mechanical or electrical device used to move a radar beam in a circular, conical, spiral, or other manner periodically to obtain greater air surveillance than could be obtained with a stationary beam.

Nyquist’s theorem [ELECTR] The mean square noise voltage across a resistance in thermal equilibrium is four times the product of the resistance, Boltzmann’s constant, the absolute temperature, and the frequency range within which the voltage is measured.

Nystagmogram [IND ENG] A recording of sac-cadic eye movements, that is, quick, rhythmic, and usually involuntary oscillations of the eyes.
oblique valve [MECH] A type of globe valve having an inclined orifice that serves to reduce the disruption of the flow pattern of the working fluid. \( \text{oblēk}'\text{valv}'\)
obiterated corner [CIV ENG] In surveying, a corner for which visible evidence of the previous surveyor’s work has disappeared, but whose original position can be established from other physical evidence and testimony. \( \text{oblēd}'\text{rād}-\text{ad}' \)
observability [CONT SYS] Property of a system for which observation of the output variables at all times is sufficient to determine the initial values of all the state variables. \( \text{obvā}'\text{bil}-\text{dē}'\)
observation spillover [CONT SYS] The part of the sensor output of an active control system caused by modes that have been omitted from the control algorithm in the process of model reduction. \( \text{obvā}'\text{spil}'\text{ār}'\)
observation \( \text{obvā}'\text{var}'\)
obsolescence [ENG] Decreasing value of functional and physical assets or value of a product or facility from technological changes rather than deterioration. \( \text{ob}'\text{sa}'\text{les}-\text{ans}'\)
obsolete [ENG] No longer satisfactory for the purpose for which obtained, due to improvements or revised requirements. \( \text{ob}'\text{sa}'\text{let}'\)
occlusion [ENG] The retention of undissolved gas in a solid during solidification. \( \text{oklū}'\text{zhon}'\)
occupational ecology [IND ENG] A discipline concerned with the interaction of workers with the environment, and with matching humans with the environment in the most ergonomically efficient way and with minimal disturbance of the environment. \( \text{okk}'\text{yōp}'\text{shēn}-\text{al}' \text{i}'kāl-\text{ə}'\)
occur [ENG] To set a surveying instrument over a point for the purpose of making observations or measurements. \( \text{ək}'\text{ya}'\text{pl}'\)
ocean engineering [ENG] A subfield of engineering involved with the development of new equipment concepts and the methodological improvement of techniques which allow humans to operate successfully beneath the ocean surface in order to develop and utilize marine resources. \( \text{ōshān}'\text{en}-\text{ja}'\text{nir}-\text{iŋ}'\)
oceanographic dredge [ENG] A device used aboard ship to bring up large samples of deposits and sediments from the ocean bottom. \( \text{ōshā}'\text{nā}'\text{graf}'\text{-ik}'\text{drel}'\)
oceanographic platform [ENG] A construction with a flat horizontal surface higher than the water, on which oceanographic equipment is suspended or installed. \( \text{ōshā}'\text{nā}'\text{graf}'\text{-ik}'\text{plā}'\text{form}'\)
ocean thermal-energy conversion [MECH ENG] The conversion of energy arising from the temperature difference between warm surface water of oceans and cold deep-ocean current into electrical energy or other useful forms of energy. Abbreviated OTEC. \( \text{ōshā}'\text{thār}'\text{-mōl}'\text{en}-\text{ar}'\text{jē}'\text{kōn}'\text{vār}-\text{zhon}'\)
octahedral normal stress [MECH] The normal component of stress across the faces of a regular octahedron whose vertices lie on the principal axes of stress; it is equal in magnitude to the spherical stress across any surface. Also known as mean stress. \( \text{āk}'\text{tāhē}'\text{-dral}'\text{nor}'\text{-mōl}'\text{stres}'\)
octahedral shear stress [MECH] The tangential component of stress across the faces of a regular octahedron whose vertices lie on the principal axes of stress; it is a measure of the strength of the deviatoric stress. \( \text{āk}'\text{tāhē}'\text{-dral}'\text{shir}'\text{stres}'\)
octane number [ENG] A rating that indicates the tendency to knock when a fuel is used in a standard internal combustion engine under standard conditions; n-heptane is 0, isoctane is 100; different test methods yield other values variously known as research octane, motor octane, and road octane. \( \text{āk}'\text{tān}'\text{ñōm}-\text{bər}'\)
occurrence requirement [MECH ENG] The fuel octane number needed for efficient operation (without knocking or spark retardation) of an internal combustion engine. \( \text{āk}'\text{tān}'\text{ri}'\text{kwif'-\text{mənt}'\}
occurrence scale [ENG] Series of arbitrary numbers from 0 to 120.3 used to rate the octane number of a gasoline; n-heptane is 0 octane, isoctane is 100, and isoctane + 6 milliliters TEL (tetra-ethylleplead) is 120.3. \( \text{āk}'\text{tān}'\text{skāl}'\)
octave-band analyzer  [ENG ACOUS] A portable sound analyzer which amplifies a microphone signal, feeds it into one of several band-pass filters selected by a switch, and indicates the magnitude of sound in the corresponding frequency band on a logarithmic scale, all the bands except the highest and lowest span an octave in frequency. Abbreviated OBA.  {ˈɑːk-tɪv ˈbænd ˈɑn-ə,ˈlɪz-ər}

octave-band filter  [ENG ACOUS] A band-pass filter in which the upper cutoff frequency is twice the lower cutoff frequency.  {ˈɑːk-tɪv ˈbænd ˈfɪl-tər}

tool  [DES ENG] Pertaining to a gear tooth form used to generate the teeth in bevel gears; the tooth form closely resembles the involute form.  {'əktəuld}

OD  See outside diameter.

odd-leg caliper  [DES ENG] A caliper in which the legs bend in the same direction instead of opposite directions.  {ˈɔdˌlɛg ˈkæl-ərər}

odograph  [ENG] An instrument installed in a vehicle to automatically plot on a map the course and distance traveled by the vehicle.  {ˈoʊ-dəˌgrɑf}

odometer  [ENG] 1. An instrument for measuring distance traversed, as of a vehicle.  2. The indicating gage of such an instrument.  3. A wheel pulled by surveyors to measure distance traveled.  {ˈoʊ-dəˌmətər}

odorize  [CHEM ENG] To add an unpleasant odor as a safety measure to an odorless material such as fuel gas.  {ˈoʊ-dəˌzaɪz}

Oehman’s survey instrument  [ENG] A drill-hole surveying apparatus that makes a photographic record of the compass and clinometer readings.  {əˈmæn,zaɪˈsɔrˌvəˌɪnˌstraˌmɑnt}

off  [ENG] Designating the inoperative state of Oehman’s survey instrument.  {ˈɔf}

off-count mesh  [DES ENG] A mesh in a wire cloth in which the count is not the same for both directions.  {ˈɔfˌkəunt ˈmesh}

offhand grinding  [MECH ENG] Grinding operations performed with hand-held tools. Also known as freehand grinding.  {ˈɔfˌhænd ˈɡrɪndˌɪŋ}

off-highway vehicle  [MECH ENG] A bulk-handling machine, such as an earthmover or dump truck, that is designed to operate on steep or rough terrain and has a height and width that may exceed highway legal limits.  {ˈɔfˌhɪˈwɔr ˈveɪˌəˌkɔl}

off-line  [ENG] 1. A condition existing when the drive rod of the drill swivel head is not centered and parallel with the borehole being drilled.  2. A borehole that has deviated from its intended course.  3. A condition existing wherein any line in any profile, measured from the detector, of a point in which the strain surpasses by a specific amount the initial linear portion of the stress-strain curve and a parallel line that intersects the stress-strain curve of an arbitrary value of strain, used as an index of yield stress; a value of 0.2% is common.  {ˈɔfˌlайн}

offset  [BUILD] A horizontal ledge on the face of a wall or other member that is formed by diminishing the thickness of the wall at that point. Also known as setback.  [CONT SYS] The steady-state difference between the desired control point and that actually obtained in a process control system.  [ENG] 1. A short perpendicular distance measured to a traverse course or a surveyed line or principal line of measurement in order to locate a point with respect to a point on the course or line.  2. In seismic prospecting, the horizontal distance between a shothole and the line of profile, measured perpendicular to the line.  3. In seismic refraction prospecting, the horizontal displacement, measured from the detector, of a point for which a calculated depth is relevant.  4. In seismic reflection prospecting, the correction of a reflecting element from its position on a preliminary working profile to its actual position in space.  [MECH] The value of strain between the initial linear portion of the stress-strain curve and a parallel line that intersects the stress-strain curve of an arbitrary value of strain, used as an index of yield stress; a value of 0.2% is common.  {ˈɔffˌsett}

offset cab  [ENG] Operator’s cab positioned to one side of earthmoving equipment for greater visibility and safety.  {ˈɔfˌsett ˈkeb}

offset cylinder  [MECH ENG] A reciprocating part in which the crank rotates about a center off the centerline.  {ˈɔfˌsett ˈsɪl-ən-ˈdɔr}

offset line  [ENG] A secondary line established close to and roughly parallel with the primary survey line to which it is referenced by measured offsets.  {ˈɔfˌsett ˈlайн}

offset screwdriver  [DES ENG] A screwdriver with the blade set perpendicular to the shank for access to screws in otherwise awkward places.  {ˈɔfˌsett ˈsəkrˌdrivˌər}

offset voltage  [ELECTR] The differential input voltage that must be applied to an operational amplifier to return the zero-frequency output voltage to zero volts, due to device mismatching at the input stage.  {ˈɔfˌsett ˈvʊlˌtɪj}

offset yield strength  [MECH] That stress at which the strain surpasses by a specific amount (called the offset) an extension of the initial proportional portion of the stress-strain curve, usually expressed in pounds per square inch.  {ˈɔfˌsett ˈyɛldˌˌstrenkθ}

offshore mooring  [CIV ENG] An anchorage serving an area for which it is not considered feasible or cost-effective to construct a dock or provide a protected harbor, and providing equipment to which ships can attach mooring lines.  {ˈɔfˌshɔr ˈmʊrˌɪŋ}

off-site facility  [CHEM ENG] In a chemical process plant, any supporting facility that is not a direct part of the reaction train, such as utilities,
steam, and waste-treatment facilities. {'őːʃɨt fəʊsil-ədɛ́ɛ́
off-the-shelf [IND ENG] Available for immediate shipment. {'of ɪf ədɛ́ɛ́
ohm [ELEC] The unit of electrical resistance in the rationalized meter-kilogram-second system of units, equal to the resistance through which a current of 1 ampere will flow when there is a potential difference of 1 volt across it. Symbolized Ω (ˈɒm)
ohmic [ELEC] Pertaining to a substance or circuit component that obeys Ohm's law. (ˈɒmɪk)
ohmic dissipation [ELECTR] Loss of electric energy when a current flows through a resistance due to conversion into heat. Also known as ohmic loss. (ˈōmɪk驮s ˌdis-pə-ʃən)
ohm loss See ohmic dissipation. (ˈōmɪk ˈlɒs)
ohmometer [ENG] An instrument for measuring electric resistance; scale may be graduated in ohms or megsomhs. (ˈōmɪˌmɛdər)
Ohm's law [ELEC] The law that the direct current flowing in an electric circuit is directly proportional to the voltage applied to the circuit, it is valid for metallic circuits and many circuits containing an electrolytic resistance. (ˈɒməz ˌlɒ)
ohms per volt [ENG] Sensitivity rating for measuring instruments, obtained by dividing the resistance of the instrument in ohms at a particular range by the full-scale voltage value at that range. (ˈɒmz ˈpɜr ˈvɒlt)
OHV engine See overhead-valve engine. (ˈɑʃˈdər ˈenˈdʒən)
oil bath [ENG] 1. Oil, in a container, within which a mechanism works or into which it dips. 2. Oil in which a piece of apparatus is submerged. 3. Oil that is poured on a cutting tool. (ˈoil ˌbɑθ)
oil burner [ENG] Liquid-fuel burner device using a mixture of air and vaporized or atomized oil for combustion. (ˈoil ˌbɑrnər)
oil cooler [MECH ENG] A small radiator used to cool the oil that lubricates an automotive engine. (ˈoil ˌkələr)
oil cup [ENG] A permanently mounted cup used to feed lubricant to a gear, usually with some means of regulating the flow. (ˈoil ˌkɒp)
oil dilution valve [MECH ENG] A valve used to mix gasoline with engine oil to permit easier starting of the gasoline engine in cold weather. (ˈoil dɪˌləʊʃən ˌvæl)
oil filter [ENG] Cartridge-type filter used in automotive oil-lubrication systems to remove metal particles and products of heat decomposition from the circulating oil. (ˈoil ˌfɪltər)
oil fogging [ENG] Spraying a fine oil mist into the gas stream of a distribution system to alleviate the drying effects of gas on certain kinds of distribution and utilization equipment. (ˈoil ˌfɔgɪŋ)
oil furnace [MECH ENG] A combustion chamber in which oil is the heat-producing fuel. (ˈoil ˌfərˈnɔs)
oil-gas process [CHEM ENG] Process to manufacture high-caloric-value fuel gas by the destructive distillation of high-boiling petroleum oils. (ˈoil ˌgæs ˌprəˈgas)
oil groove [DES ENG] One of the grooves in a bearing which distribute and collect lubricating oil. (ˈoil ˌgrʊv)
oil hole [ENG] A small hole for injecting oil for a bearing. (ˈoilˌhoʊl)
oil-hole drill [DES ENG] A twist drill containing holes through which oil can be fed to the cutting edges. (ˈoilˌhoʊlˌdril)
oilliness [ENG] The effect of a lubricant to reduce friction between two solid surfaces in contact; the effect is more than can be accounted for by viscosity alone. (ˈoilˌlɛnəs)
oilless bearing [MECH ENG] A self-lubricating bearing containing solid or liquid lubricants in its material. (ˈoilˌlesˈberˌɪp)
oil lift [MECH ENG] Hydrostatic lubrication of a journal bearing by using oil at high pressure in the area between the bottom of the journal and the bearing itself so that the shaft is raised and supported by an oil film whether it is rotating or not. (ˈoilˌlɪft)
oil pump [MECH ENG] A pump of the gear, vane, or plunger type, usually an integral part of the automotive engine; it lifts oil from the sump to the upper level in the splash and circulating systems, and in forced-feed lubrication it pumps the oil to the tubes leading to the bearings and other parts. (ˈoilˌpʌmp)
oil reclaiming [ENG] 1. A process in which oil is passed through a filter as it comes from equipment and then returned for reuse, in the same manner that crank case oil is cleaned by an engine filter. 2. A method in which solids are removed from oil by treatment in settling tanks. (ˈoilˌriˈklæmˌɪp)
oil ring [MECH ENG] 1. A ring located at the lower part of a piston to prevent an excess amount of oil from being drawn up onto the piston during the suction stroke. 2. A ring on a journal, dipping into an oil bath for lubrication. (ˈoilˌrɪŋ)
oil seal [ENG] 1. A device for preventing the entry or return of oil from a chamber. 2. A device using oil as the sealing medium to prevent the passage of fluid from one chamber to another. (ˈoilˌsɛl)
Oldham coupling See slider coupling. (ˈɒldəmˌkɒpˈlɪŋ)
oleometer [ENG] 1. A device for measuring specific gravity of oils. 2. An instrument for determining the proportion of oil in a substance. (ˌoʊˈleəmərˌædər)
oleo strut [MECH ENG] A shock absorber consisting of a telescoping cylinder that forces oil into an air chamber, thereby compressing the air, used on aircraft landing gear. (ˌoʊˈleəˌstrʌt)
ombrometer See rain gauge. (əˌmɒbrəmˌædər)
ombroscope [ENG] An instrument consisting of a heated, water-sensitive surface which indicates by mechanical or electrical techniques the occurrence of precipitation; the output of the
one-sided acceptance sampling test

omnibearing converter [ENG] An electromechanical device which combines an omnirange signal with heading information to furnish electrical signals for the operation of the pointer of a radio magnetic indicator. {‘äm-na, ber-iŋ kon’vərd-or}

omnibearing converter [ENG] An electromechanical device which combines an omnirange signal with heading information to furnish electrical signals for the operation of the pointer of a radio magnetic indicator. {‘äm-na, ber-iŋ kon’vərd-or}

omnibearing indicator [ENG] An instrument providing automatic and continuous indication of omnibearing. {‘äm-na, ber-iŋ ‘in-da, käd-ar}

omnibearing selector [ENG] A device capable of being set manually to any desired omnibearing, or its reciprocal, to control a course-line deviation indicator. Also known as radial selector. {‘äm-na, ber-iŋ ‘s’il-kək-tər}

omnidirectional hydrophone [ENG ACOUS] A hydrophone whose response is fundamentally independent of the incident sound wave’s angle of arrival. {‘äm-na-di’trek-shan-əl ‘h’t-dra,ən}

omnigraph [ENG] An automatic acetylene cutter controlled by a mechanical pointer that traces a pattern; capable of cutting several duplicates simultaneously. {‘äm-na, graf}

omnimeter [ENG] A theodolite with a microscope that can be used to observe vertical angular movement of the telescope. {‘äm’n-im’əd-or}

on [ENG] Designating the operating state of a device or one of two possible conditions (the other being “off”) in a circuit. {‘on}

on center [BUILD] The measurement made between the centers of two adjacent members. {‘on ‘sen-tər}

once-through boiler [MECH ENG] A boiler in which water flows, without recirculation, sequentially through the economizer, furnace wall, and evaporating and superheating tubes. {‘wəns t’hruˌbōil-or}

on composition See on grade. {‘onˌkäm-pə’nəz̩-ən}

on-condition maintenance [IND ENG] Examination of those aspects of an installation that are predictive of pending failure, followed by performance of preventative maintenance activities before occurrence of total failure. {‘onˌkänˌdish-ənˌmänt-ənəns}

one-digit substractor See half-substractor. {‘wanˌdij-ət səb’træk-tər}

one-hundred-percent premium plan [IND ENG] A wage incentive plan wherein each unit produced by an employee in excess of standard is compensated at the same rate paid for each unit of standard production. Also known as straight piecework system. {‘wanˌhän-drəd pərsəntˈprɛr-mənˌplən}

one-shot molding [ENG] Production of urethane-plastic foam in which the isocynate, polylol, and catalyst and other additives are mixed directly together and a foam is produced immediately. {‘wanˌshət ‘məld-iŋ}

one-sided acceptance sampling test [IND ENG] A test against a single specification only, in which permissible values in one direction are not limited. {‘wanˌsīd-əd ik’sep-təns ‘samp-lənˌtəst}

one-way slab [CIV ENG] A concrete slab in which the reinforcing steel runs perpendicular to the supporting beams, that is, one way. {‘wanˌwə sləb}

on grade [CIV ENG] 1. At ground level. 2. Supported directly on the ground. {‘onˌgrəd}

onion diagram [SYS ENG] A schematic diagram of a system that is composed of concentric circles, with the innermost circle representing the core, and all the outer layers dependent on the core. {‘onˌyaŋˌdriˌgəm}

on-off control [CONT SYS] A simple control system in which the device being controlled is either fully on or fully off, with no intermediate operating positions. Also known as on-off system. {‘onˌofˌkänˌtəl}

on-off system See on-off control. {‘onˌofˌsɪstəm}

Onsager reciprocal relations [THERMO] A set of conditions which state that the matrix, whose elements express various fluxes of a system (such as diffusion and heat conduction) as linear functions of the various conjugate affinities (such as mass and temperature gradients) for systems close to equilibrium, is symmetric when certain definitions are chosen for these fluxes and affinities. {‘onˌsəgər nəˈsɪp-rə-kəl nəˈlɑːshən}

on stream [CHEM ENG] Of a plant or process operations unit, being in operation. {‘onˌstrəm}

on-stream factor [IND ENG] The ratio of the number of operating days to the number of calendar days per year. {‘onˌstrəmˌfak-tər}

on-stream time [CHEM ENG] In plant or process operations, the actual time that a unit is operating and producing product. {‘onˌstrəmˌtəm}

OPDAR [ENG] A laser system for measuring elevation angle, azimuth angle, and slant range of a missile during its firing period. Derived from optical direction and ranging. Also known as optical radar. {ˌəpˈdər}

open [ELEC] 1. Condition in which conductors are separated so that current cannot pass. 2. Break or discontinuity in a circuit which can normally pass a current. {ˈəpˌpæn}

open-belt drive [DES ENG] A belt drive having both shafts parallel and rotating in the same direction. {ˈəpˌpænˌbeltˌdriv}

open berth [CIV ENG] An anchorage berth in an open roadstead. {ˈəpˌpænˌbærθ}

open caisson [CIV ENG] A caisson in the form of a cylinder or shaft that is open at both ends; it is set in place, pumped dry, and filled with concrete. {ˈəpˌpænˌkəˌsən}

open-center plan position indicator [ENG] A plan position indicator on which no signal is displayed within a set distance from the center. {ˈəpˌpænˌsen-tərˌplənˌpəzənˌinˈdaˌkäd-ar}

open circuit [ELEC] An electric circuit that has been broken, so that there is no complete path for current flow. {ˈəpˌpænˌsərˈkət}

open-circuit grinding [MECH ENG] Grinding system in which material passes through the
operation process chart

grinder without classification of product and without recycle of oversize lumps; in contrast to closed-circuit grinding. \( \text{open-timbered roof} \) [BUILD] A roof in which the supporting timbers are left uncovered, forming part of the ceiling. \( \text{open traverse} \) [ENG] A surveying traverse in which the last leg, because of error, does not terminate at the origin of the first leg. \( \text{open valley} \) [BUILD] A valley formed at the intersection of two roof surfaces and lined with either metal or a mineral-surfaced roofing material; the lining is exposed at the intersection.

open-circuit scuba [ENG] The simplest type of scuba equipment, in which all exhaled gas is discharged directly into the water and the utilization of gas is therefore equal to the mass exhaled. \( \text{open-cycle engine} \) [MECH ENG] An engine in which new mass enters the boundaries of the system in which the system outputs are controlled by system inputs only, and no account is taken of actual system output. \( \text{open-cycle gas turbine} \) [MECH ENG] A gas turbine prime mover in which air is compressed in the compressor element, fuel is injected and burned in the combustor, and the hot products are expanded in the turbine element and exhausted to the atmosphere.

open-end wrench [DES ENG] A wrench consisting of fixed jaws at one or both ends of a handle. \( \text{open traverse} \) [ENG] A graphic representation that gives an overall view of an operational game. \( \text{open traverse} \) [ENG] A surveying traverse in which the last leg, because of error, does not terminate at the origin of the first leg.

open cycle [THERMO] A thermodynamic cycle in which new mass enters the boundaries of the system and spent exhaust leaves it, the automotive engine and the gas turbine illustrate this process.

open cut [CIV ENG] An open trench, such as across a hill. \( \text{open traverse} \) [ENG] A surveying traverse in which the last leg, because of error, does not terminate at the origin of the first leg.

open hole [ENG] 1. A well or borehole, or a portion thereof, that has not been lined with steel tubing at the depth referred to. 2. An unobstructed borehole. 3. A borehole being drilled without cores. \( \text{open circuit} \) [MECH ENG] A system across whose boundaries matter and energy may pass.

open cycle [THERMO] A thermodynamic cycle in which air is compressed in the compressor element, fuel is injected and burned in the combustor, and the hot products are expanded in the turbine element and exhausted to the atmosphere.

open-door [DES ENG] A job, usually performed by one person, consisting of one or more work elements.

open-loop control system [CONTSYS] A control system in which the system outputs are controlled by system inputs only, and no account is taken of actual system output.

open plan [BUILD] Arrangement of the interior of a building without distinct barriers such as partitions.

open shop [IND ENG] A shop in which employment is not restricted to members of a labor union.

open-side planer [DES ENG] A planer constructed with one upright or housing to support the crossrail and tools.

open-side tool block [DES ENG] A toolholder on a cutting machine consisting of a T-slot clamp, a C-shaped block, and two or more tool clamping screws. Also known as heavy-duty tool block.

open system [THERMO] A system across whose boundaries matter and energy may pass.

open-web girder [BUILD] A valley formed at the intersection of two roof surfaces and lined with either metal or a mineral-surfaced roofing material; the lining is exposed at the intersection.

open well [CIV ENG] 1. A well whose diameter is great enough (1 meter or more) for a person to descend to the water level. 2. An artificial pond filling a large excavation in the zone of saturation up to the water table.

operating line [CHEM ENG] In the graphical solution of equilibrium processes (such as distillation absorption extraction), the actual liquid-vapor relationship of a key component, in contrast to a true equilibrium relationship.

operating pressure [ENG] The system pressure at which a process is operating.

operating stress [MECH] The stress to which a structural unit is subjected in service.

operational [ENG] Of equipment such as aircraft or vehicles, being in such a state of repair as to be immediately usable.

operational game [MECH] See management game.

operational maintenance [ENG] The cleaning, servicing, preservation, lubrication, inspection, and adjustment of equipment, it includes that minor replacement of parts not requiring high technical skill, internal alignment, or special locative training.

operational analysis [IND ENG] An analysis of all procedures concerned with the design or improvement of production, the purpose of the operation, inspection standards, materials used and the manner of handling them, the setup, tool equipment, and working conditions and methods.

operation breakdown See job breakdown.

operation process chart [IND ENG] A graphic representation that gives an overall view of an
optical direction and ranging

optical sequence [CONT SYs] The logical series of procedures that constitute the task for a robot. ['ap-ta-kal fi-bar 'sen-sar']

operator [ENG] A person whose duties include the operation, adjustment, and maintenance of a piece of equipment. ['ap-ta-rad-ar']

operator process chart [IND ENG] A chart of the time relationship of the movements made by the body members of a workman performing an operation. ['ap-ta-rad-ar par-sas chart']

operator productivity [IND ENG] The ratio of standard hours to actual hours for a given task. ['ap-ta-rad-ar tran-ing]

operator utilization [IND ENG] The ratio of working time to total clock time; a ratio of 1.00 (or 100) indicates full utilization of the operator's work time. ['ap-ta-rad-ar yuul-dal aza-shan']

opisometer [ENG] An instrument for measuring the length of curved lines, such as those on a map, a wheel on the instrument is traced over the line. ['ap-ta-sam-ad-ar']

opposed engine [MECH ENG] A reciprocating engine having the pistons on opposite sides of the crankshaft, with the piston strokes on each side working in a direction opposite to the direction of the strokes on the other side. ['ap-pozd en-jan']

optical amplifier [ENG] An optoelectronic amplifier in which the electric input signal is converted to light, amplified as light, then converted back to an electric signal for the output. ['ap-ta-kal am-pla-flar']

optical bench [ENG] A rigid horizontal bar or track for holding optical devices in experiments; it allows device positions to be changed and adjusted easily. ['ap-ta-kal bench']

optical comparator [ENG] Any comparator in which movement of a measuring plunger tilts a small mirror which reflects light in an optical system. Also known as visual comparator. ['ap-ta-kal kam-par-ad-ar']

optical coupler See optoisolator. ['ap-ta-kal kap-lar']

optical coupling [ELECTR] Coupling between two circuits by means of a light beam or light pipe having transducers at opposite ends, to isolate the circuits electrically. ['ap-ta-kal kap-lin]

optical direction and ranging See OPDAR. ['ap-ta-kal direk-shan an ran-ing']

optical-fiber sensor [ENG] An instrument in which the physical quantity to be measured is made to modulate the intensity, spectrum, phase, or polarization of light from a light-emitting diode or laser diode traveling through an optical fiber; the modulated light is detected by a photodiode. Also known as fiber-optic sensor. ['ap-ta-kal krak sim-ad-esen-sar']

optical flow-flow measurement [ENG] Any method of measuring the varying densities of a fluid in motion, such as schlieren, interferometer, or shadowgraph, which depends on the fact that light passing through a flow field of varying density is retarded differently through the field, resulting in refraction of the rays, and in a relative phase shift among different rays. ['ap-ta-kal flu-fl fio mezhr-mant']

optical gage [ENG] A gage that measures an image of an object, and does not touch the object itself. ['ap-ta-kal gaj']

optical indicator [ENG] An instrument which makes a plot of pressure in the cylinder of an engine as a function of piston (or volume) displacement, using the principles of opto-electrical systems and photographic recording, for example, the small motion of a pressure diaphragm may be transmitted to a mirror to deflect a beam of light. ['ap-ta-kal in-da-kad-ar']

optical isolator See optoisolator. ['ap-ta-kal t sa,lad-ar']

optical lantern [ENG] A device for projecting positive transparent pictures from glass or film onto a reflecting screen; it consists of a concentrated source of light, a condenser system, a holder (or changer) for the slide, a projection lens, and (usually) a blower for cooling the slide. Also known as slide projector. ['ap-ta-kal lan-tarn']

optical lithography [ELECTR] Lithography in which an integrated circuit pattern is first created on a glass plate or mask and is then transferred to the resist by one of a number of optical techniques by using visible or ultraviolet light. ['ap-ta-kal lit-thag-ra-fe']

optically coupled isolator See optoisolator.

optically pumped magnetometer [ENG] A type of magnetometer that measures total magnetic field intensity by observation of the precession frequency of magnetic atoms, usually gaseous rubidium, cesium, or helium, which are magnetized by irradiation with circularly polarized light of a suitable wavelength. ['ap-ta-kal pampt magn-tam-ad-ar']

optical mask [ELECTR] A thin sheet of metal or other substance containing an open pattern, used to suitably expose to light a photoresistive substance overlaid on a semiconductor or other surface to form an integrated circuit. ['ap-ta-kal mask']

optical microphone [ENG ACOUS] A microphone in which the motion of a membrane is detected using a light beam reflected from it, either with the aid of an interferometer or by detecting the deflection of the beam. ['ap-ta-kal mi-frak-fon']

optical proximity sensor [ENG] A device that uses the principle of triangulation of reflected infrared or visible light to measure small distances in a robotic system. ['ap-ta-kal prak sim-ad-esen-sar']

optical pyrometer [ENG] An instrument which
determines the temperature of a very hot surface from its incandescent brightness; the image of the surface is focused in the plane of an electrically heated wire, and current through the wire is adjusted until the wire blends into the image of the surface. Also known as disappearing filament pyrometer. {'āp-ta-kal pê'râm-âd-ar}

**optical radar** See OPDAR. {'āp-ta-kal 'râ,dâr}

**optical rangerfinder** [ENG] An optical instrument for measuring distance, usually from its position to a target point, by measuring the angle between rays of light from the target, which enter the rangerfinder through the windows spaced apart, the distance between the windows being termed the baselength of the rangerfinder, the two types are coincidence and stereoscopic. {'āp-ta-kal 'ranj,find-ar}

**optical recording** [ENG] Production of a record by focusing on photographic paper a beam of light whose position on the paper depends on the quantity to be measured, as in a light-beam galvanometer. {'āp-ta-kal rî'lôr-dîr-i j}

**optical reflectometer** [ENG] An instrument which measures on surfaces the reflectivity of electromagnetic radiation at wavelengths in or near the visible region. {'āp-ta-kal 'rê,flek'tâm-âd-ar}

**optical relay** [ELECTR] An optoisolator in which the output device is a light-sensitive switch that provides the same on and off operations as the contacts of a relay. {'āp-ta-kal 'rê,lâr}

**optical square** [ENG] A surveyor's hand instrument used for laying of right angles; employs single wafer to obtain highly functional circuits. {'āp-ta-kal 'trak-i j}

**optician** [ENG] A maker of optical instruments or lenses. {'āp-tish-an}

**optimal control theory** [CONT SYS] An extension of the calculus of variations for dynamic systems with one independent variable, usually time, in which control (input) variables are determined to maximize (or minimize) some measure of the performance (output) of a system while satisfying specified constraints. {'āp-ta-mal ken'trôl ,thê-rê}

**optimal feedback control** [CONT SYS] A subfield of optimal control theory in which the control variables are determined as functions of the current state of the system. {'āp-ta-mal 'led ,bak ken,trol}

**optimal programming** [CONT SYS] A subfield of optimal control theory in which the control variables are determined as functions of time for a specified initial state of the system. {'āp-ta-mal 'prô,gram-i j}

**optimal regulator problem** See linear regulator problem. {'āp-ta-mal 'reg-yà,lâd-ar ,prâb-lam}

**optimal smoother** [CONT SYS] An optimal filter algorithm which generates the best estimate of a dynamical variable at a certain time based on all available data, both past and future. {'āp-ta-mal 'sîrn-thôr}

**optimization** [SYS ENG] 1. Broadly, the efforts and processes of making a decision, a design, or a system as perfect, effective, or functional as possible. 2. Narrowly, the specific methodology, techniques, and procedures used to decide on the one specific solution in a defined set of possible alternatives that will best satisfy a selected criterion. Also known as system optimization. {'āp-ta-mâ'zâ-shân}

**optimizing control function** [CONT SYS] That level in the functional decomposition of a large-scale control system which determines the necessary relationships among the variables of the system to achieve an optimal, or suboptimal, performance based on an approximate model of the plant and its environment. {'āp-ta,mîz-i j kan'trôl ,fànj,shân}

**optical reflectometer** [ENG] An instrument in which the input and output signals and the selected criterion. Also known as system optimization. {'āp-ta-ma-zâ-shân}

**optical rangefinder** [ENG] The angular position pyrometer. {'āp-ta-i,jek'trân-ik 'am-pla,fir-âr}

**optoelectronic integration** [ELECTR] A technology that combines optical components with electronic components such as transistors on a single wafer to obtain highly functional circuits. {'āp-tô-i,jek'trân-ik jÎn-to-grâ-shân}

**optoelectronic isolator** See optoisolator. {'āp-tô-i,jek'trân-ik 't'sô,lad-ar}

**optoelectronics** [ELECTR] 1. The branch of electronics that deals with solid-state and other electronic devices for generating, modulating, transmitting, and sensing electromagnetic radiation in the ultraviolet, visible-light, and infrared portions of the spectrum. 2. See photonics. {'āp-tô-i,jek'trân-iks}

**optoelectronic shutter** [ENG] A shutter that uses a Kerr cell to modulate a beam of light. {'āp-tô-i,jek'trân-ik 'sâh-dôr}

**optoisolator** [ELECTR] A coupling device in which a light-emitting device, energized by the input signal, is optically coupled to a photodetector such as a light-sensitive output device, transistor, or silicon controlled rectifier. Also known as optical coupler, optical isolator, optically coupled isolator, optocoupler, optoelectronic isolator, photocoupler, photoisolator. {'āp-tôtô-i,sô,lad-ar}

**optophone** [ENG ACOUS] A device with a photoelectric cell to convert ordinary printed letters into a series of sounds; used by the blind. {'āp-tô-fôn}

**orange-peel bucket** [DES ENG] A type of grab bucket that is multileaved and generally round in configuration. {'ārîn, pêl ,bak-o r}

**orbital angular momentum** [MECH] The angular momentum associated with the motion of a particle about an origin, equal to the cross product
of the position vector with the linear momentum. Also known as orbital momentum. {ˈɔr-bəd-əl ˈsaŋ ˈgər ˈmər-ˈmen-tam}

orbital moment {ˈɔr-bəd-əl ˈmən-ˈtəm}

orbital angular momentum

orbital plane {MECH} The plane which contains the orbit of a body or particle in a central field, it passes through the center of force. {ˈɔr-bəd-əl ˈplān}

orbital sander {MECH ENG} An electric sander which moves the abrasive in an elliptical pattern. {ˈɔr-bəd-əl ˈsān-ˈdār}

OR circuit {ELECTR} See OR gate. {ˈɔr-ˈsār-kāt}

order of phase transition {THERMO} A phase transition in which there is a latent heat and an abrupt change in properties, such as in density, is a first-order transition; if there is not such a change, the order of the transition is one greater than the lowest derivative of such properties with respect to temperature which has a discontinuity. {ˈord-ər əv ˈfāz ˈtrān,ˈziш-nən}

order point {IND ENG} The inventory level at which a replenishment order must be placed. {ˈord-ər ˌpəʊnt}

order quantity {IND ENG} The number of pieces ordered to replenish the inventory. {ˈord-ər ˈkwān-əd-ə}

ordinary gear train {MECH ENG} A gear train in which all axes remain stationary relative to the frame. {ˈord-ən-ər-ə ˈgər ˈtrān}

ordnance {ENG} Military materiel, such as combat weapons of all kinds, with ammunition and equipment for their use, vehicles, and repair tools and machinery. {ˈord-nans}

organic bonded wheel {DES ENG} A grinding wheel in which organic bonds are used to hold the abrasive grains. {ˈɔrg-an-ɪk ˈbān-ˈdād ˈwel}

organizational reengineering {SYS ENG} The study, capture, and modification of the internal mechanisms or functionality of existing system-management processes and practices in an organization in order to reconstitute them in a new form and with new features, often to take advantage of newly emerged organizational competitiveness requirements, but without changing the inherent purpose of the organization itself. Also known as systems management reengineering. {ˈɔr-ga-ˈnəz-ə-ˈʃən-əl ˈrɛn-ˈjaɲ-ər-ɪn}

organization chart {IND ENG} Graphic representation of the interrelationships within an organization, depicting lines of authority and responsibility and provisions for control. {ˈɔr-ga-ˈnəz-ə-ˈʃən ˈʃart}

OR gate {ELECTR} A multiple-input gate circuit whose output is energized when any one or more of the inputs is in a prescribed state, performs the function of the logical inclusive-or, used in digital computers. Also known as OR circuit. {ˈɔr-ˈgāt}

orient {ENG} 1. To place or set a map so that the map symbols are parallel with their corresponding ground features. 2. To turn a transit so that the direction of the 0° line of its horizontal circle is parallel to the direction it had in the preceding or initial setup, or parallel to a standard reference line. {ˈɔr-ənt}

orientation {ENG} Establishment of the correct relationship in direction with reference to the points of the compass. {ˈɔr-ən-ˈtən-sən}

orientation vector {MECH ENG} A vector whose direction indicates the orientation of a robot gripper. {ˈɔr-ən-ˈtən-sən ˈvek-tər}

oriented core {ENG} A core that can be positioned on the surface in the same way that it was arranged in the borehole before extraction. {ˈɔr-ənts-əd ˈkōr}

orifice meter {ENG} An instrument that measures fluid flow by recording differential pressure across a resistance placed in the flow stream and the static or actual pressure acting on the system. {ˈɔr-əf-səs ˌmed-ər}

orifice mixer {MECH ENG} Arrangement in which two or more liquids are pumped through an orifice constricted to cause turbulence and consequent mixing action. {ˈɔr-əf-səs ˈmik-ˈsəl-ər}

orifice plate {DES ENG} A disk, with a hole, placed in a pipeline to measure flow. {ˈɔr-əf-səs ˌplaːt}

original duration {IND ENG} The initial estimate of length of time required to complete a given activity. {əˈrɪj-ən-əl ˈdɔr-tən-sən}

O ring {DES ENG} A flat ring made from synthetic rubber, used as an airtight seal or a seal against high pressures. {ˈər-ˌriŋ}

orograph {ENG} A machine that records both distance and elevations as it is pushed across land surfaces; used in making topographic maps. {ˈɔr-əˌgraf}

ometer {ENG} A barometer with a scale that indicates elevation above sea level. {ˈɔr-təˌmər}

orthometric correction {ENG} A systematic correction that must be applied to a measured difference in elevation since level surfaces at varying elevations are not absolutely parallel. {ˈɔr-thəm-ə-Trīk ˈkərɛkt-sən}

orthometric height {ENG} The distance above sea level measured along a plumb line. {ˈɔr-thəm-ə-Trīk ˈhɪt}

orthotropic {MECH} Having elastic properties such as those of timber, that is, with considerable variations of strength in two or more directions perpendicular to one another. {ˈɔr-thə-trəp-ək}

orthotropic deck {CIV ENG} A bridge deck constructed typically of flat steel plate and longitudinal and transverse ribs; functions in carrying traffic and acting as top flanges of floor beams. {ˈɔr-thə-trəp-ək ˈdek}

oscillating conveyor {MECH ENG} A conveyor on which pulverized solids are moved by a pan or trough bed attached to a vibrator or oscillating mechanism. Also known as vibrating conveyor. {ˈɔs-əˌləd-əŋ ˈkænˈvər}

oscillating granulator {MECH ENG} Solids size-reducer in which particles are broken by a set of oscillating bars arranged in cylindrical form over
a screen of suitable mesh. \( \text{\`a\text-\'s\text-a\text-,l\text-\'d\text-a\text-in\text-} \text{\`gra\text-n\text-\'ya\text-,l\text-\'d\text-\'ar} \)  

oscillating screen  [MECH ENG] Solids separator in which the sifting screen oscillates at 300 to 400 revolutions per minute in a plane parallel to the screen. \( \text{\`a\text-\'s\text-a\text-,l\text-\'d\text-a\text-in\text-} \text{\`skr\text-en} \)  

oscillation  See cycling. \( \text{\`a\text-\'s\text-a\text-,\text-\'l\text-\'a\text-\'sh\text-an} \)  

oscillator  [ELECTR] 1. An electronic circuit that converts energy from a direct-current source to a periodically varying electric output. 2. The stage of a superheterodyne receiver that generates a radio-frequency signal of the correct frequency to mix with the incoming signal and produce the intermediate-frequency value of the receiver. 3. The stage of a transmitter that generates the carrier frequency of the station or some fraction of the carrier frequency.  \( \text{\`a\text-\'s\text-a\text-,l\text-\'d\text-a\text-ar} \)  

oscillatory circuit  [ELEC] Circuit containing inductance or capacitance, or both, and resistance, connected so that a voltage impulse will produce an output current which periodically reverses or oscillates.  \( \text{\`a\text-\'s\text-a\text-,\text-\l\text-o\text-r\text-e\text-} \text{\`s\text-a\text-\text-g\text-o\text-t} \)  

oscillistor  [ELECTR] A bar of semiconductor material, such as germanium, that will oscillate much like a quartz crystal when it is placed in a magnetic field and is carrying direct current that flows parallel to the magnetic field. \( \text{\`a\text-\'s\text-a\text-,\text-\l\text-o\text-s\text-i\text-t\text-ar} \)  

oscillogram  [ENG] The permanent record produced by an oscillograph, or a photograph of the trace produced by an oscilloscope.  \( \text{\`a\text-s\text-i\text-l\text-o\text-g\text-ra\text-f\text-\text-a\text-m} \)  

oscillograph  [ENG] A measurement device for determining waveform by recording the instantaneous values of a quantity such as voltage as a function of time. \( \text{\`a\text-s\text-i\text-l\text-o\text-g\text-ra\text-f\text-a\text-m} \)  

Ostwald process  [CHEM ENG] An industrial preparation of nitric acid by the oxidation of ammonia; the oxidation takes place in successive stages to nitric oxide, nitrogen dioxide, and nitric acid, a catalyst of platinum gauze is used and high temperatures are needed. \( \text{\`o\text-st\text-v\text-a\text-l\text-t\text-s\text-v\text-a\text-r\text-t\text-\text-o\text-r\text-e\text-} \)  

Ostwald's adsorption isotherm  [THERMO] An equation stating that at a constant temperature the weight of material adsorbed on an adsorbent dispersed through a gas or solution, per unit weight of adsorbent, is proportional to the concentration of the adsorbent raised to some constant power. \( \text{\`o\text-st\text-v\text-a\text-l\text-t\text-s\text-v\text-a\text-r\text-t\text-\text-o\text-r\text-e\text-} \)  

Ostwald viscometer  [ENG] A viscometer in which liquid is drawn into the higher of two glass bulbs joined by a length of capillary tubing, and the time for its meniscus to fall between calibration marks above and below the upper bulb is compared with that for a liquid of known viscosity. \( \text{\`o\text-st\text-v\text-a\text-l\text-t\text-s\text-v\text-a\text-r\text-t\text-\text-o\text-r\text-e\text-} \)  

OTE C  See ocean thermal energy conversion. \( \text{\`o\text-t\text-e\text-k} \)  

oiter  See paravane.  \( \text{\`a\text-d\text-ar} \)  

Otto cycle  [THERMO] A thermodynamic cycle for the conversion of heat into work, consisting of two isentropic phases interspersed between two constant-volume phases. Also known as spark-ignition combustion cycle. \( \text{\`a\text-d\text-o\text,\text-s\text-f\text-k\text-a\text-t} \)  

Otto engine  [MECH ENG] An internal combustion engine that operates on the Otto cycle, where the phases of suction, compression, combustion, expansion, and exhaust occur sequentially in a four-stroke-cycle or two-stroke-cycle reciprocating mechanism. \( \text{\`a\text-d\text-o\text,\text-e\text-n\text-j\text-a\text-n} \)  

Otto-Lardillon method  [MECH] A method of computing trajectories of missiles with low velocities (so that drag is proportional to the velocity squared) and quadrant angles of departure that may be high, in which exact solutions of the equations of motion are arrived at by numerical integration and are then tabulated. \( \text{\`a\text-d\text-o\text,\text-l\text-a\text-r\text-d\text-i\text-l\text-o\text-n\text-t\text-o\text-m\text-e\text-d\text-r\text-a\text-t} \)  

ounce  [MECH] 1. A unit of mass in avoirdupois measure equal to 1/16 pound or equal to approximately 0.0283495 kilogram. Abbreviated oz. 2. A unit of mass in either troy or apothecaries’ measure equal to 480 grains or exactly 0.031034768 kilogram. Also known as apothecaries’ ounce or troy ounce (abbreviations are oz ap and oz t in the United States, and oz apoth and oz tr in the United Kingdom). \( \text{\`a\text-i\text-n\text-s} \)  

ouncedal  [MECH] A unit of force equal to the force which will impart an acceleration of 1 foot per second per second to a mass of 1 ounce; equal to 0.000640934685 newton. \( \text{\`a\text-u\text-n\text-s\text-d\text-a\text-l} \)  

outfall  [CIV ENG] The point at which a sewer or drainage channel discharges to a body of water. \( \text{\`o\text-u\text-t\text-e\text-l\text-a\text-d\text-a\text-r} \)  

outflow  [CHEM ENG] Flow of fluid product out of a process facility. \( \text{\`o\text-u\text-t\text-d\text-f\text-l\text-o} \)  

outgassing  [ENG] The release of adsorbed or occluded gases or water vapor, usually by heating, as from a vacuum tube or other vacuum system. \( \text{\`o\text-u\text-t\text-g\text-a\text-s\text-i\text-n} \)  

outlet ventilator  See louver. \( \text{\`o\text-u\text-t\text-l\text-e\text-t\text-v\text-e\text-l\text-a\text-d\text-a\text-r} \)  

output  [ELECTR] 1. The current, voltage, power, driving force, or information which a circuit or device delivers. 2. Terminals or other places where a circuit or device can deliver current, voltage, power, driving force, or information. \( \text{\`o\text-u\text-t\text-p\text-u\text-t} \)  

output indicator  [ENG] A meter or other device that is connected to a radio receiver to indicate variations in output signal strength for alignment and other purposes, without indicating the exact value of output. \( \text{\`o\text-u\text-t\text-p\text-u\text-t\text-i\text-n\text-d\text-a\text-d\text-a\text-r} \)  

output-limited  [ENG] Restricted by the need to await completion of an output operation, as in process control or data processing. \( \text{\`o\text-u\text-t\text-p\text-u\text-t\text-l\text-i\text-m\text-a\text-d\text-a\text-d\text-a\text-r} \)  

output meter  [ENG] An alternating-current voltmeter connected to the output of a receiver or amplifier to measure output signal strength in volume units or decibels. \( \text{\`o\text-u\text-t\text-p\text-u\text-t\text-m\text-e\text-d\text-a\text-r} \)  

output-meter adapter  [ENG] Device that can be slipped over the plate prong of the output tube
of a radio receiver to provide a conventional ter-

tinal to which an output meter can be con-

nected during alignment. {'aʊt,pʌt ,mɛd-ə

dəp-tør
}

output power  [ELEC] Power delivered by a sys-

tem or transducer to its load. {'aʊt,pʌt ,pau-\n
u-ər
}

output shaft  [MECH ENG] The shaft that trans-

fers motion from the prime mover to the driven

machines. {'aʊt,pʌt ,ʃaft
}

output standard See standard time. {'aʊt,pʌt

,stan-daɾd
}

outtrigger  [ENG] A steel beam or lattice girder

extending from a crane to provide stability by

widening the base. {'aʊt,ˈfɪg-ər
}

outside caliper  [DES ENG] A caliper having two
curved legs which point toward each other, used
for measuring outside dimensions of a work-

piece. {'aʊt,sɪd dɪˈɑm-əd-ər
}

outside diameter  [DES ENG] The outer diame-
ter of a pipe, including the wall thickness; usually
measured with calipers. Abbreviated OD.
{'aʊt,sɪd std ˈdɪˌɑm-əd-ə-

ər
}

oven  [ENG] A heated enclosure for baking,

heating, or drying. {'ɔʊ-ən
}

overall plate efficiency  [CHEM ENG] For a spe-
cified liquid-mixture separation in a fractionation
(or distillation) tower, the ratio of actual to theo-

retical plates (or trays) required. {'oʊ-ˌvɑrˌfɔ́l ˈplæt

əˌfɪʃ-an-sɛ́
}

overarm  [MECH ENG] One of the adjustable
supports for the end of a milling-cutter arbor from
the machine spindle. {'oʊ-ˌvɑrˌərm
}

overbreak  [CIV ENG] Rock excavated in excess
of the neat lines of a tunnel or cutting. Also
known as backbreak. {'oʊ-ˌvɑrˌbræk
}

overcoating  [ENG] Extruding a plastic web be-

yond the edge of the substrate web in extrusion
coating. {'oʊ-ˌvɑrˌkɒd-ɪə
}

overcuring  [CHEM ENG] A condition resulting
from vulcanizing longer than necessary to
achieve full development of physical strength;
causes softness or brittleness and impaired age-
resisting quality of the material. {'oʊ-ˌvɑrˌkɪr-\

ɪŋ
}

overcurrent protection See overload protection.
{'oʊ-ˌvɑrˌkɑ-rənt prəˈtekʃən
}

overdrilling  [ENG] The act or process of drilling
a run or length of borehole greater than the core-

capacity length of the core barrel, resulting in
loss of the core. {'oʊ-ˌvɑrˌdirl-ɪə
}

overdrive  [MECH ENG] An automotive engine
device that lowers the gear ratio, thereby reduc-
ing fuel consumption. {'oʊ-ˌvɑrˌdrv

ə
}

overfall dam See overflow dam. {'oʊ-ˌvɑrˌflɔ́ˌdəm
}

overfire draft  [MECH ENG] The air pressure in
a boiler furnace during occurrence of the main
flame. {'oʊ-ˌvɑrˌfrətˈdreft
}

overflow  [CIV ENG] Any device or structure that
conducts excess water or sewage from a conduit
or container. {'oʊ-ˌvɑrˌflɔ́
}

overflow capacity  [ENG] Capacity of a con-
tainer measured to its top, or to the point of
overflow. {'oʊ-ˌvɑrˌflɔ́kəˌpɑs-əd-ə

ə
}

overflow channel  [CIV ENG] An artificial water-
way for conducting water away from an overflow-
ing structure such as a reservoir or canal. {'oʊ-
ˌvɑrˌflɔ́ˌtʃɛnəl
}

overflow dam  [CIV ENG] A dam built with a crest
to allow the overflow of water. Also known as
overflow spillway dam. {'oʊ-ˌvɑrˌflɔ́ˌdəm
}

overflow groove  [ENG] Small groove on a plas-
tics mold that allows material to flow freely, to
prevent weld lines and low density in the finished
product and to dispose of excess material. {'oʊ-
ˌvɑrˌflɔ́ˌɡruvr
}

overflow pipe  [ENG] Open pipe protruding
above the surface of a liquid in a container, such
as a distillation or absorption column or a toilet
tank, to control the height of the liquid; excess
liquid enters the pipe's open end and drains
away. {'oʊ-ˌvɑrˌflɔ́ˌpɪp
}

overgear  [MECH ENG] A gear train in which the
angular velocity ratio of the driven shaft to driv-
ing shaft is greater than unity, as when the pro-
pelling shaft of an automobile revolves faster
than the engine shaft. {'oʊ-ˌvɑrˌgər
}

overhang  [BUILD] The distance measured hori-

zontally that a roof projects beyond a wall. {'oʊ-
ˌvɑrˌhæŋ
}

overhaul  [ENG] A maintenance procedure for
machinery involving disassembly, the inspecting,
refinishing, adjusting, and replacing of parts, and
reassembly and testing. {'oʊ-ˌvɑrˌhəʊl
}

overhead  [CHEM ENG] Pertaining to fluid (gas
or liquid) effluent from the top of a process ves-
sel, such as a distillation column. See fixed cost.
{'oʊ-ˌvɑrˌhed
}

overhead camshaft  [MECH ENG] A camshaft
mounted above the cylinder head. {'oʊ-ˌvɑrˌhed
ˌkæm-ˌʃæft
}

overhead cost See fixed cost. {'oʊ-ˌvɑrˌhedˌkɒst
}

overhead shovel  [MECH ENG] A tractor which
digs with a shovel at its front end, swings the
shovel rearward overhead, and dumps the shovel
at its rear end. {'oʊ-ˌvɑrˌhedˈʃɛl
}

overhead traveling crane  [MECH ENG] A
hoisting machine with a bridge-like structure
moved on wheels along overhead trackage which
is usually fixed to the building structure. {'oʊ-
ˌvɑrˌhedˌtrəv-ə-lɪŋˈkræn
}

overhead-valve engine  [MECH ENG] A four-
stroke-cycle internal combustion engine having
its valves located in the cylinder head, operated
by pushrods that actuate rocker arms. Abbrevi-
ated OHV engine. Also known as valve-in-head
engine. {'oʊ-ˌvɑrˌhedˌˈvæl-əˈnɛn-ən
}

overlap radar  [ENG] Radar located in one sec-
tor whose area of useful radar coverage includes
a portion of another sector. {'oʊ-ˌvɑrˌlæpˈrədər
}

overlay  [CIV ENG] A repair topping of asphalt
or concrete placed on a worn roadway. [ENG]

1. Nonwoven fibrous mat (glass or other fiber)
used as the top layer in a cloth or mat lay-up
to give smooth finish to plastic products or to
minimize the fibrous pattern on the surface.
Also known as surfaced mat. 2. An ornamental
covering, as of wood or metal. {'oʊ-ˌvɑrˌlə

ə
}

386
overload [CIV ENG] A load on a structure that is greater than that for which the structure was designed.  

overload capacity [ELECTR] Current, voltage, or power level beyond which permanent damage occurs to the device considered.  

overload level [ELECTR] Level above which operation ceases to be satisfactory as a result of signal distortion, overheating, damage, and so forth.  

overload protection [ELECTR] Effect of a device operative on excessive current, but not necessarily on short circuit, to cause and maintain the interruption of current flow to the device governed.  

overpass [CIV ENG] 1. A grade separation in which traffic at the higher level is raised, and traffic at the lower level moves at approximately its original level.  

2. The upper level at such a grade separation.  

overpotential See overvoltage.  

override [CONT SYS] To cancel the influence of an automatic control by means of a manual control.  

overriding process control [CONT SYS] Process control in which any one of several controllers associated with one control valve can be made to override another in accordance with a priority requirement of the process.  

overrun [CIV ENG] A cleared area extending beyond the end of a runway.  

overrunning clutch [MECH ENG] A clutch that allows the driven shaft to turn freely only under certain conditions, for example, a clutch in an engine starter that allows the crank to turn freely when the engine attempts to run.  

oversail [BUILD] To project beyond the general face of a structure.  

overshoot [ENG] 1. An initial transient response to a unidirectional change in input which exceeds the steady-state response.  

2. The maximum amount by which this transient response exceeds the steady-state response.  

overshoot [ENG] 1. A fishing tool for recovering lost drill pipe or casing.  

2. See bullet.  

overshot wheel [MECH ENG] A horizontal-shaft waterwheel with buckets around the circumference, the weight of water pouring into the buckets from the top rotates the wheel.  

oversite concrete [BUILD] A layer of concrete that is installed below a slab or other type of floor surface.  

overspeed governor [MECH ENG] A governor that stops the prime mover when speed is excessive.  

overspin [MECH] In a spin-stabilized projectile, the overstability that results when the rate of spin is too great for the particular design of projectile, so that its nose does not turn downward as it passes the summit of the trajectory and follows the descending branch. Also known as overstabilization.  

oversquares engine [MECH ENG] An engine with bore diameter greater than the stroke length.  

overstabilization See overspin.  

oversteer [MECH ENG] The tendency of an automotive vehicle to steer into a turn to a sharper degree than was intended by the driver, sometimes causes the vehicle's rear end to swing out.  

overstressing [ENG] Cyclically stressing a material at a level higher than that used at the end of a fatigue test.  

overtoned [MECH] One of the normal modes of vibration of a vibrating system whose frequency is greater than that of the fundamental mode.  

overtopping [CIV ENG] The flow of water over a dam or embankment.  

overturning [CIV ENG] Failure of a retaining wall caused by the soil pressure overcoming the stability of the structure.  

overvoltage [ELECTR] A voltage greater than that for which the structure was designed.  

overwind [ENG] To wind a spring, rope, or cable too tightly or too far.  

Ovshinsky effect [ELECTR] The characteristic of a special thin-film solid-state switch that responds identically to both positive and negative polarities so that current can be made to flow in both directions equally.  

oxidation pond [CIV ENG] A shallow lagoon or basin in which wastewater is purified by sedimentation and aerobic and anaerobic treatment.  

oxide isolation [ELECTR] Isolation of the elements of an integrated circuit by forming a layer of silicon oxide around each element.  

oxide passivation [ELECTR] Passivation of a semiconductor surface by producing a layer of an insulating oxide on the surface.  

oxide passivation
oxo process

oxo process [CHEM ENG] Catalytic process for production of alcohols, aldehydes, and other oxygenated organic compounds by reaction of olefin vapors with carbon monoxide and hydrogen. \( \text{ˈák-saˈjanˈkər-sənˌbərnˈaɾ} \)

oxyacetylene cutting [ENG] The flame cutting of ferrous metals in which the preheating of the metal is accomplished with a flame produced by an oxyacetylene torch. Also known as acetylene cutting. \( \text{ˈák-sêˈsədəˌjēnˈkədˈiŋ} \)

oxyacetylene torch [ENG] A torch that mixes acetylene and oxygen to produce a hot flame for the welding or cutting of metal. Also known as acetylene torch. \( \text{ˈák-sêˈsəˌjêntorch} \)

oxyamination See ammoxidation. \( \text{ˈák-səˌaməˈnaŋəˌʃan} \)

oxygen bomb calorimeter [ENG] Device to measure heat of combustion; the sample is burned with oxygen in a closed vessel, and the temperature rise is noted. \( \text{ˈák-saˈjənˈbəmˈkaləˌrimədəˈɾə} \)

oxygen cutting [ENG] Any of several types of cutting processes in which metal is removed with or without a flux by a chemical reaction of the base metal with oxygen at high temperatures. \( \text{ˈák-saˈjənˌkədˈiŋ} \)

oxy-kerosine burner [ENG] Liquid-fuel device using a mixture of oxygen and vaporized or atomized kerosine for combustion. \( \text{ˈák-səˈjənˈkərˌsənˌbərnˈaɾ} \)

oxygen mask [ENG] A mask that covers the nose and mouth and is used to administer oxygen. \( \text{ˈák-səˈjənˌmask} \)

oxygen point [THERMO] The temperature at which liquid oxygen and its vapor are in equilibrium, that is, the boiling point of oxygen, at standard atmospheric pressure; it is taken as a fixed point on the International Practical Temperature Scale of 1968, at \(-182.962\)°C. \( \text{ˈák-səˈjənˌpoʊənt} \)

oxyliquefaction process [CHEM ENG] Modified Fischer-Tropsch process used to make alcohols, other oxygenated compounds, paraffins, and olefin hydrocarbons from carbon monoxide and hydrogen. \( \text{ˈák-səˌalˌpraˈsəs} \)

oz See ounce.

oz ap See ounce.

oz apoth See ounce.

ozone generator [ENG] Apparatus that converts oxygen, \( \text{O}_2 \), into ozone, \( \text{O}_3 \), by subjecting the oxygen to an electric-brush discharge. Also known as ozonizer. \( \text{ˈoˌzoˌjənˌjənˈəˌrədˈaɾ} \)

ozonizer See ozone generator. \( \text{ˈoˌzoˌnizəˌrə} \)

oz t See ounce.

oz tr See ounce.
packer  [ENG] A device that is inserted into a hole being grouted to prevent return of the grout around the injection pipe.  { 'pak-or }
packing  [ENG] See stuffing.  [ENG ACOUS] Excessive crowding of carbon particles in a carbon microphone, produced by excessive pressure or by fusion particles due to excessive current, and causing lowered resistance and sensitivity.  { 'pak-iŋ }
packing density  [ELECTR] The number of devices or gates per unit area of an integrated circuit.  { 'pak-iŋ ,den-sad-e } 
packing ring  See piston ring.  { 'pak-iŋ ,riŋ }
pad  [ELECTR] 1. An arrangement of fixed resistors used to reduce the strength of a radio-frequency or audio-frequency signal by a desired fixed amount without introducing appreciable distortion. Also known as fixed attenuator. 2. See terminal area.  [ENG] 1. A layer of material used as a cushion or for protection. 2. A projection of excess metal on a casting forging, or welded part. 3. An area within an airstrip or airway that is used for warming up the motors of an airplane before takeoff. 4. A block of stone or masonry set on a wall to distribute a load that is concentrated at that portion of the wall. Also known as padstone. 5. That portion of an airstrip or airway from which an airplane leaves the ground on takeoff or first touches the ground on landing. 6. See helipad.  [pad] 
paddle [DES ENG] Any of various implements consisting of a shaft with a broad, flat blade or blade-like part at one or both ends.  [pad-al ] 
paddle wheel [MECH ENG] 1. A device used to propel shallow-draft vessels, consisting of a wheel with paddles or floats on its circumference; the wheel rotating in a plane parallel to the ship’s length. 2. A wheel with paddles used to move leather in a processing vat.  [pad-al ,wel ] 
padlock [DES ENG] An unmounted lock with a shackle that can be opened and closed; the shackle is usually passed through an eye, then closed to secure a hasp.  [pad-lak ] 
pail [DES ENG] A cylindrical or slightly tapered container.  [pål ] 
pair [ELEC] Two like conductors employed to form an electric circuit.  [MECH ENG] Two parts in a kinematic mechanism that mutually constrain relative motion; for example, a sliding pair composed of a piston and cylinder.  [ per ]
pairing element

pairing element  [MECH ENG] Either of two machine parts connected to permit motion.  {‘pər-\i\dʒ ,el-\ə-,mənt }
palladium barrier leak detector  [ENG] A type of leak detector in which hydrogen is diffused through a barrier of hot palladium into an evacuated vacuum gage.  {pəl’\i\dʒ-d\i\dʒ, \bær-\ə-,rē \lēk \di,tek-\tər }
pallet  [BUILD] A flat piece of wood laid in a wall to which workwood may be securely fastened.  [ENG] 1. A lever that regulates or drives a ratchet wheel.  2. A hinged valve on a pipe organ.  3. A tray or platform used in conjunction with a fork lift for lifting and moving materials.  [MECH ENG] One of the disks or pistons in a chain pump.  {‘pæl-\ət }
palletize  [IND ENG] To package material for convenient handling on a pallet or lift truck.  {‘pæl-\ət,\fɪz }
pall ring  [CHEM ENG] A specially shaped steel ring used as packing for distillation columns.  {‘pəl\r}\n
palpable coordinate  [MECH] A generalized co-ordinate that appears explicitly in the Lagrangian of a system.  {‘pəl-pə-bal \ko’\ord-\ən-\it }
pan bolt  [DES ENG] A bolt with a head resembling an upside-down pan.  {‘pæn \bəlt }
pancake auger  [DES ENG] An auger having one spiral web, 12 to 15 inches (30 to 38 centimeters) in diameter, attached to the bottom end of a slender central shaft, used as removable deadman to which a drill rig or guy line is anchored.  {‘pæn, \kæk \jog-\ər }
pancake engine  [MECH ENG] A compact engine with cylinders arranged radially.  {‘pæn, \kæk \\it\n
pan conveyer  [MECH ENG] A conveyor consisting of a series of pans.  {‘pæn \\kæn,\vær-\ər}
pan crusher  [MECH ENG] Solids-reduction device in which one or more grinding wheels or rollers revolve in a pan containing the material to be pulverized.  {‘pæn, \krə-sh\ər }
pane  [BUILD] A sheet of glass in a window or door.  [DES ENG] One of the sides on a nut or on the head of a bolt.  {pæn }
panel  [CIV ENG] 1. One of the divisions of a lattice girder.  2. A sheet of material held in a frame.  3. A distinct, usually rectangular, raised or sunken part of a construction surface or a material.  [DES ENG] See frog.  [ENG] A metallic or nonmetallic sheet on which operating controls and dials of an electronic unit or other equipment are mounted.  {‘pæn-\əl }
panel board  [ELEC] See control board.  [ENG] A drawing board with an adjustable outer frame that is forced over the drawing paper to hold and strain it.  {‘pæn-\əl ,\bɔrd }
panel coil See plate coil.  {‘pæn-\əl ,\kəil }
panel cooling  [CIV ENG] A system in which the heat-absorbing units are in the ceiling, floor, or wall panels of the space which is to be cooled.  {‘pæn-\əl ,\kəl-\tən }
panel heating  [CIV ENG] A system in which the heat-emitting units are in the ceiling, floor, or wall panels of the space which is to be heated.  {‘pæn-\əl ,\h\əd-\i\n
panel length  [CIV ENG] The distance between adjacent joists on a truss, measured along the upper or lower chord.  {‘pæn-\əl ,\l\eŋkθ }
panel point  [CIV ENG] The point in a framed structure where a vertical or diagonal member and a chord intersect.  {‘pæn-\əl ,\p\o\nt }
panel system  [BUILD] A wall composed of factory-assembled units connected to the building frame and to each other by means of anchors.  {‘pæn-\əl ,\s\i\s-t\əm }
panel wall  [BUILD] A nonbearing partition between columns or piers.  {‘pæn-\əl ,\wəl }
pan head  [DES ENG] The head of a screw or rivet in the shape of a truncated cone.  {‘pæn ,\hed }
panic exit device  [ENG] A locking device installed on an exit door to release the latch when the crash bar is pushed. Also known as fire-exit bolt; panic hardware.  {‘pæn-\i\k ,\\eg-\z\it di,\\vts }
panic hardware See panic exit device.  {‘pæn-\i\k ,\\h\r\d,\wər }
pannier See gabion.  {‘pæn-\\və\r }
panoramic radar  [ENG] Nonscanning radar which transmits signals over a wide beam in the direction of interest.  {‘pæn-\əram-\i\k ,\\r\d ,\d\ər }
pantograph  [ENG] A device that sits on the top of an electric locomotive or cars in an electric train and picks up electricity from overhead wires to run the train.  {‘pæn-\t\ə,\grəf }
pantography  [ENG] System for transmitting and automatically recording radar data from an indicator to a remote point.  {‘pæn-t\əg-,ræ-f\ə }
pantometer  [ENG] An instrument that measures all the angles necessary for determining distances and elevations.  {‘pæn-t\əm-\\d\ər }
paper cutter  [DES ENG] A hand-operated device to cut and trim paper, consisting of a cutting blade bolted at one end to a ruled board; when the blade is drawn flush with the board, which has a metal strip at the cutting edge, a shearing action takes place which cuts the paper cleanly and evenly.  {‘pæn-p\ər ,\k\əd-\ər }
paper machine  [MECH ENG] A synchronized series of mechanical devices for transforming a dilute suspension of cellulose fibers into a dry sheet of paper.  {‘pæn-p\ər ,\mə,\ʃ\ən }
paper mill  [IND ENG] A building or complex of buildings housing paper machines.  {‘pæn-p\ər ,\\m\l }
parabolic microphone  [ENG ACOUS] A microphone used at the focal point of a parabolic sound reflector to give improved sensitivity and directivity, as required for picking up a band marching down a football field.  {‘pæn-\əb\əl-\i\k ,\m\i-\kra,\f\ən }
paraboloid  [ENG] A reflecting surface which is a paraboloid of revolution and is used as a reflector for sound waves and microwave radiation.  {‘pæn-\əb\əl-\i\k }
parabomb  [ENG] An equipment container with a parachute which is capable of opening automatically after a delayed drop.  {‘pæn-\ə,bəm }
parametrized voice response system

paracentric  [DES ENG] Pertaining to a key and keyway with longitudinal ribs and grooves that project beyond the center, as used in pin-tumbler cylinder locks to deter lockpicking.  
parallel firing  [ENG] A method of connecting to another a key and keyway with longitudinal ribs and grooves that project beyond the center, as used in pin-tumbler cylinder locks to deter lockpicking.  
parallel flow  [ENG] The flow of electric current from one point to another in an electric network over multiple paths, in accordance with Kirchhoff’s laws.  
parallel gripper  [ENG] A robot end effector made up of two jawlike components that grasp objects.  
parallel linkage  [MECH ENG] An automotive steering system that has a short idler arm mounted parallel to the pitman arm.  
parallel-plate reactor  [ENG] A type of plasma reactor in which a process gas is introduced into the space between two closely spaced parallel plane electrodes, and a plasma, generated by a radio-frequency excitation applied to the electrodes, acts directly on substrates placed on either electrode.  
parallel reliability  [SYS ENG] Property of a system composed of functionally parallel elements in such a way that if one of the elements fails, the parallel units will continue to carry out the system function.  
parallel shot  [ENG] In seismic prospecting, a test shot which is made with all the amplifiers connected in parallel and activated by a single geophone so that lead, lag, polarity, and phasing in the amplifier-to-oscillograph circuits can be checked.  
parallelism  [ENG] The problem of estimating the values of the parameters that govern a dynamical system from data on the observed behavior of the system.  
parallel compensator  [ENG] A device that allows control over the center frequencies, bandwidths, and amplitudes (parameters) of band-pass filters that determine the frequency response of audio equipment.  
parametric excitation  [ENG] The method of exciting and maintaining oscillations in either an electrical or mechanical dynamic system, in which excitation results from a periodic variation in an energy storage element in a system such as a capacitor, inductor, or spring constant.  
parametrized voice response system  [ENG] A voice response system which first extracts informative parameters from human speech, such as natural resonant frequencies (formants) of the speaker’s vocal tract and the
parapack | ENG | A package or bundle with a parachute attached for dropping from an aircraft. {パーパック}

parapack | [ENG] A package or bundle with a parachute attached for dropping from an aircraft.

parasitic | [ELECTR] An undesired energy-wasting signal current, capacitance, or other parameter of an electronic circuit. {パリサティック}

parasitic current | [ELEC] An eddy current in a piece of electrical machinery, gives rise to energy losses. {パリサティックカーパランス}

paravane | [ELEC] An eddy current in a piece of electrical machinery, gives rise to energy losses. {パラヴァン}

parbuckling | [ENG] The tendency of a steel cable to buckle, from the stretch of a load on the cable. {パルバックリング}

parking brake | [ENG] A brake that functions independently of the service brake and is set after the vehicle has been brought to a stop. {パーキングブレーキ}

parking lot | [CIV ENG] An outdoor lot for parking automobiles. {パーキングロット}

parkway | [CIV ENG] A broad landscaped expressway which is not open to commercial vehicles. {パーキョウ}

parquet flooring | [BUILD] Wood flooring made of strips laid in a pattern to form designs. {パーケットフローリング}

Parshall flume | [ENG] A calibrated device for measuring the flow of liquids in open conduits by measuring the upper and lower beads at a specified distance from an obstructing sill. {パーシャルフローム}

Parsons-stage steam turbine | [MECH ENG] A steam turbine having a reaction-type stage in which the pressure drop occurs partially across the stationary nozzles and partly across the rotating blades. {パーソンズステージステムタービン}

part | [ENG] An element of a subassembly, normally useful by itself and not amenable to further disassembly for maintenance purposes. {パート}

part classification | [IND ENG] A coding scheme employed in automated manufacturing processes that uses four or more digits to assign discrete products to families of parts. {パーティション}

part detection | [IND ENG] The recognition of parts and workpieces by a robot or a computer vision system. {パーティートレーニング}

partial condensation | [CHEM ENG] The cooling of (or pressurization) of a saturated vapor until a part of it is condensed out as liquid. {パーシャルコンデンシング}

particle | See material particle. {パーソル}

particle dynamics | [MECH] The study of the dependence of the motion of a single material particle on the external forces acting upon it, particularly electromagnetic and gravitational forces. {パーソルダイナミクス}

particle energy | [MECH] For a particle in a potential, the sum of the particle's kinetic energy and potential energy. {パーソルエナジー}

particle image velocimetry | [ENG] A method of measuring local fluid velocities at thousands of locations in a fluid flow by optically observing large numbers of particles that are suspended in the fluid and move with it, using a photograph of the flow illuminated by two or more successive pulses of light or continuously for a known time interval. Also known as particle tracking velocimetry. {パーソルイメージヴェロシメトリ}

particle mechanics | [MECH] The study of the motion of a single material particle. {パーソルメカニクス}

particle-size analysis | [ENG] Determination of the proportion of particles of a specified size in a granular or powder sample. {パーソルサイズアナリシス}

particle-size distribution | [ENG] The percent-ages of each fraction into which a granular or powder sample is classified, with respect to particle size, by number or weight. {パーソルサイズディストリビューション}

particle tracking velocimetry | See particle image velocimetry. {パーソルトラッキングヴェロシメトリ}

particulate mass analyzer | [ENG] A unit which measures dust concentrations in emissions from furnaces, kilns, cupolas, and scrubbers. {パーティクルマスアナライザー}

parting stop | [BUILD] A thin strip of wood that...
separates the sashes in a double-hung window.

parting tool [DES ENG] A narrow-bladed hand tool with a V-shaped gouge used in woodworking for cutting grooves and in wood turning for cutting a piece in two. Also known as V-tool. {'pārd-īŋ ,stap}.

dissolution [ELEC] Growth of an oxide layer

partition [BUILD] An interior wall having a height of one story or less, which divides a structure into sections. [IND ENG] A slotted sheet of paperboard that can be assembled with similar sheets to form cells for holding goods during shipment. {'pār'tīsh-ān}.

part programming [CONT SYS] The planning and specification of the sequence of steps or events in the operation of a numerically controlled machine tool. {'pār't pr'ōg'ram-īŋ}.

parts kit [ENG] A group of parts, not all having the same basic name, used for repair or replacement of the worn broken parts of an item; it may include instruction sheets and material, such as sandpaper, tape, cement, and gaskets. {'pārts,kīt}.

parts list [ENG] One or more printed sheets showing a manufacturer's parts or assemblies of an end item by illustration or a numerical listing of part numbers and names; it does not outline any assembly, maintenance, or operating instructions, and it may or may not have a price list cover sheet. {'pārts, līst}.

party wall [BUILD] A wall providing joint service between two buildings. {'pārt, pro' gram-īŋ}.

pascal [MECH] A unit of pressure equal to the pressure resulting from a force of 1 newton acting uniformly over an area of 1 square meter. Symbolized Pa. {'pās'kal}.

pass [MECH ENG] 1. The number of times that combustion gases are exposed to heat transfer surfaces in boilers (that is, single-pass, double-pass, and so on). 2. In metal rolling, the passage in one direction of metal deformed between rolls. 3. In metal cutting, transit of a metal cutting tool past the workpiece with a fixed tool setting. {'pas}. 

passband [ELECTR] A frequency band in which the attenuation of a filter is essentially zero. {'pās,bānd}.

pass-by [ENG] The double-track part of any single-track system of rail transport. {'pās,bl}.

passenger car [ENG] 1. A railroad car in which passengers are carried. 2. An automobile for carrying as many as nine passengers. {'pās'g'n'jār, kār}.

passing track [ENG] A sidetrack with switches at both ends. {'pās'g trāk}.

passivation [ELECTR] Growth of an oxide layer on the surface of a semiconductor to provide electrical stability by isolating the transistor surface from electrical and chemical conditions in the environment, this reduces reverse-current leakage, increases breakdown voltage, and raises power dissipation rating. {'pās'vā-shān}.

passenger accommodation [CONT SYS] The alteration in the positioning or motion of the end point of a robot manipulator that results from bending or deforming of the manipulator components in response to forces exerted on the robot. {'pās'vā-shān}.

passive AND gate [ELECTR] See AND gate. [ENG] A fluidic device which achieves an output signal, by stream interaction, only when both of two control signals appear simultaneously. {'pās'iv 'and,'gāt}.

passive component See passive element. {'pās'iv kām'pō-nānt}.

passive earth pressure [CIV ENG] The maximum value of lateral earth pressure exerted by soil on a structure, occurring when the soil is compressed sufficiently to cause its internal shearing resistance along a potential failure surface to be completely mobilized. {'pās'iv'ārth prēsh-ər}.

passive element [ELEC] An element of an electric circuit that is not a source of energy, such as a resistor, inductor, or capacitor. Also known as passive component. {'pās'iv 'ēl-əm-ənt}.

passive method [CIV ENG] A construction method in permafrost areas in which the frozen ground near the structure is not disturbed or altered, and the foundations are provided with additional insulation to prevent thawing of the underlying ground. {'pās'iv 'meth-ad}.

passive radiator [ENG] A technique for detecting objects at a distance by picking up the microwave electromagnetic energy that is both radiated and reflected by all bodies. {'pās'iv 'rad-dār}.

passive radiator [ENG ACOUS] A loudspeaker driver with no voice-coil or magnet assemblies that is mounted in a box with a woofer and exhibits a resonance that can be used to improve the low-frequency response of the system. {'pās'iv 'rad-əd-ər}.

passive solar system [MECH ENG] A solar heating or cooling system that operates by using gravity, heat flows, or evaporation rather than mechanical devices to collect and transfer energy. {'pās'iv 'sōl-sar, sis'tom}.

passive sonar [ENG] Sonar that uses only underwater listening equipment, with no transmission of location-revealing pulses. {'pās'iv 'sōn, nār}.

passive transducer [ELECTR] A transducer containing no internal source of power. {'pās'iv tranz'dü-sər}.

paste mixer [ENG] Device for the blending together of solid particles and a liquid, with the final formation of a single paste phase. {'pāst,mik-sar}.

paste-up See mechanical. {'pāst,ap}.

pasteurizer [ENG] An apparatus used for pasteurization of fluids. {'pāst, nuriz-ər}.

patch [ELEC] A temporary connection between jacks or other terminations on a patch board. {'pāch, bolt}.

patch bolt [DES ENG] A bolt with a countersunk head having a square knob that twists off when the bolt is screwed in tightly, used to repair boilers and steel ship hulls. {'pāch, bolt}.

patent [IND ENG] A certificate of grant by a government of an exclusive right with respect to
an invention for a limited period of time. Also known as letters patent. ['pæt-ənt]

path computation [CONF SYS] The calculations involved in specifying the trajectory followed by a robot. ['pæθ, kæm-ˈpyə-tə-shən]

pattern [ENG] A form designed and used as a model for making things. ['pæd-ərn]

pattern shooting [ENG] In seismic prospecting, firing of explosive charges arranged in geometric pattern. ['pæd-ərn, ˈʃud-ə-jə]

pavement [BUILD] A hard floor of concrete, brick, tiles, or other material. [CIV ENG] A paved surface. (ˈpæv-ə-mànt)

pavement light [CIV ENG] A window built into the surface of a pavement to admit daylight to a specified material to be carried by a conveyor strength of bonded strips of metals by peeling.

pedestal design [MECH ENG] A robot design to a spherical working envelope. {peb-əl, məd-ər}

pedestal flooring See raised flooring. (ˈpɛd-ə-stəl, ˈflɔr-əjə)

pedestal pile [CIV ENG] A concrete pile with a bulbous enlargement at the bottom. (ˈpɛd-ə-stəl, ˈpɪl]

pedometer [ENG] 1. An instrument for measuring and weighing a newborn child 2. An instrument that registers the number of footsteps and distance covered in walking. (ˈpɛd-ə-mətər)

peel-back [ENG] The separation of two bonded materials, one or both of which are flexible, by stripping or pulling the flexible material from the mating surface at a 90 or 180° angle to the plane in which it is adhered. (ˈpɛl, ˈbæk)

peel-off time [ENG] In seismic prospecting, the time correction applied to observed data to adjust them to a depressed reference datum. (ˈpɛl, ˈɔf, ˈtɪm)

peel test [ENG] A test to ascertain the adhesive strength of bonded strips of metals by peeling or pulling the metal strips back and recording the adherence values. (ˈpɛl, ˈtest)

peen [DES ENG] The end of a hammer head with a hemispherical, wedge, or other shape, used to bend, indent, or cut. (ˈpɛn)

peepdoor [MECH ENG] A small door in a furnace with a glass opening through which combustion may be observed. (ˈpɪp,dɔr)

peg [ENG] 1. A small pointed or tapered piece, often cylindrical, used to pin down or fasten parts. 2. A projection used to hang or support objects. {peg}

peg count meter [ENG] A meter or register that counts the number of trunks tested, the number of circuits passed busy, the number of test failures, or the number of repeat tests completed. (ˈpɛg, ˈkɔntər, ˈmɛtə-rər)

PEL See permissible exposure limit. (ˈpɛl)
pellet cooler  [CHEM ENG] Gas-cooled, gravity-based device for the cooling and drying of extruded pellets and briquets.  (′pel·ət , kül·ər)  

pelleting  [ENG] Method of accelerating solidification of cast explosive charges by blending precast pellets of the explosives into the molten charge.  (′pel·əd·iŋ)  

pelletizer  [CHEM ENG] A machine for cutting bulk plastic into pellets, suitable for use as feedstock, either from solidified polymer at the end of the manufacturing process or from the molten polymer as it emerges from the die.  (′pel·ə·tiz·ər)  

pellet mill  [MECH ENG] Device for injecting particular, granular or pasty feed into holes of a roller, then compacting the feed into a continuous solid rod to be cut off by a knife at the periphery of the roller.  (′pel·ə·tan , mil)  

Pelton turbine  See Pelton wheel.  (′pel·ə·tan ′tar·bən)  

Pelton wheel  [MECH ENG] An impulse hydraulic turbine in which pressure of the water supply is converted into velocity by a few stationary nozzles, and the water jets then impinge on the buckets mounted on the rim of a wheel; usually limited to high head installations, exceeding 500 feet (150 meters). Also known as Pelton turbine.  (′pel·ə·tan ′wel)  

pen  [ENG] 1. A small place for confinement, storage, or protection.  2. A device for writing with ink.  (pen)  

pencil  [ENG] An implement for writing or making marks with a solid substance, the three basic kinds are graphite, carbon, and colored.  (′pen·sal)  

pencil cave  [ENG] A driller’s term for hard, closely jointed shale that caves into a well in pencil-shaped fragments.  (′pen·sal ′kav)  

pendant atomizer  See hanging-drop atomizer.  (′pen·dant ′ə·də·miz·ər)  

pendant post  [BUILD] A post on a solid support and set against a wall to support a collar beam or other part of a roof.  (′pen·dant ,pōst)  

pendulous gyroscope  [MECH] A gyroscope whose axis of rotation is constrained by a suitable weight to remain horizontal; it is the basis of one type of gyrocompass.  (′pen·ja·la·s ′jī·raˌskōp)  

pendulum anemometer  [ENG] A pressure-plate anemometer consisting of a plate which is free to swing about a horizontal axis in its own plane above its center of gravity; the angular deflection of the plate is a function of the wind speed; this instrument is not used for station measurements because of the false reading which results when the frequency of the wind gusts and the natural frequency of the swinging plate coincide.  (′pen·ja·lam ,ən·ə·mām·ə·dər)  

pendulum level  [ENG] A leveling instrument in which the line of sight is automatically kept horizontal by a built-in pendulum device (such as a horizontal arm and a plumb line at right angles to the arm).  (′pen·ja·lam ′lev·əl)  

pendulum press  [MECH ENG] A punch press actuated by a swinging treadle operated by the foot.  (′pen·ja·lam ′pres)  

pendulum saw  [MECH ENG] A circular saw that swings in a vertical arc for crosscuts.  (′pen·ja·lamˌsaw)  

pendulum scale  [ENG] Weight-measurement device in which the load is balanced by the movement of one or more pendulums from vertical (zero weight) to horizontal (maximum weight).  (′pen·ja·lamˌskāl)  

pendulum seismograph  [ENG] A seismograph that measures the relative motion between the ground and a loosely coupled inertial mass; in some instruments, optical magnification is used whereas others exploit electromagnetic transducers, photocells, galvanometers, and electronic amplifiers to achieve higher magnification.  (′pen·ja·lamˌsiz·naˌgraf)  

penetration ballistics  [MECH] A branch of terminal ballistics concerned with the motion and behavior of a missile during and after penetrating a target.  (′pen·ə·trā·shonˌbal·əˌsis)  

penetration depth  [ELEC] In induction heating, the thickness of a layer, extending inward from a conductor’s surface, whose resistance to direct current equals the resistance of the whole conductor to alternating current of a given frequency.  [ENG] The greatest depth in an ultrasonic test piece at which indications can be measured.  (′pen·ə·trāˌshonˌdēpθ)  

penetration number  [ENG] The consistency of greases, waxes, petrolatum, and asphalt or other bituminous materials expressed as the distance that a standard needle penetrates the sample under specified American Society for Testing and Materials test conditions.  (′pen·ə·trāˌshonˌnamˌbär)  

penetration rate  [MECH ENG] The actual rate of penetration of drilling tools.  (′pen·ə·trāˌshonˌrāt)  

penetration speed  [MECH ENG] The speed at which a drill can cut through rock or other material.  (′pen·ə·trāˌshonˌspēd)  

penetration test  [ENG] A test to determine the relative values of density of noncohesive sand or silt at the bottom of boreholes.  (′pen·ə·trāˌshonˌtēst)  

penetrometer  [ENG] 1. An instrument that measures the penetrating power of a beam of x-rays or other penetrating radiation.  2. An instrument used to determine the consistency of a material by measurement of the depth to which a standard needle penetrates into it under standard conditions.  (′pen·ə·trāˌmād·ər)  

Penex process  [CHEM ENG] A continuous, nonregenerative petroleum-refinery process for isomerization of C3 or C4 fractions in the presence of hydrogen and a platinum catalyst.  (′pen·eksˌprāˌtəs)  

Penning trap  [ENG] A device for trapping electrons and isolating single electrons, consisting of a large, homogeneous magnetic field plus a superimposed weak parabolic electric potential.
created by a positive charge +O on a ring electrode and two negative charges −O/2 each on two cap electrodes. \( \text{[pen-in ,trap]} \)

Penning-trap mass spectrometer \[ \text{ENG} \] A device for making highly accurate comparisons of the masses of charged atoms and molecules by comparing the cyclotron frequencies of single ions in a Penning trap. \( \{ \text{[pen-in,trap}, \text{mas spek} \} \)

Pennsylvania truss \[ \text{CIV ENG} \] A truss characterized by subdivided panels, curved top chords on through trusses, and curved bottom chords on deck spans; used on long bridge spans. \( \{ \text{[pen-sa̱l̄ȳ-nya̱} \text{,tras]} \)

pennyweight \[ \text{MECH} \] A unit of mass equal to 1/20 troy ounce or 1.55517384 grams; the term is employed in the United States and in England for the valuation of silver, gold, and jewels. Abbreviated dwt, pwt. \( \{ \text{[pen-€,wât]} \)

pen recorder \[ \text{ENG} \] A device in which the varying inputs (electrical, pneumatic, mechanical) are marked by a signal-controlled pen onto a continuous recorder chart (circular or roll chart). \( \{ \text{[pen ri̱,kɔ̱rd-tar]} \)

Pensky-Martens closed tester \[ \text{CHEM ENG} \] Device to determine the American Society for Testing and Materials flash point of fuel oils and cutback asphalt and other viscous materials and suspensions of solids. \( \{ \text{[pen-šê ‘mārt-ɔ̱n̄ kłôs̄ ‘tes-tar]} \)

penstock \[ \text{CIV ENG} \] A valve or sluice gate for regulating water or sewage flow. \[ \text{ENG} \] A closed water conduit controlled by valves and located between the intake and the turbine in a hydroelectric plant. \( \{ \text{[pen,štå̱k]} \)

pentane lamp \[ \text{ENG} \] A pentane-burning lamp formerly used as a standard for photometry. \( \{ \text{[pen,tan, ląmp]} \)

penthouse \[ \text{BUILD} \] 1. An enclosed space built on a flat roof to cover a stairway, elevator, or other equipment. 2. A dwelling built on top of the main roof. 3. A sloping shed or roof attached to a wall or building. \( \{ \text{[pen,haust, lă̱sh]} \)

percentage log \[ \text{ENG} \] A sample log in which the percentage of each type of rock (except obvious cavings) present in each sample of cuttings is estimated and plotted. \( \{ \text{[par-šen-ti̱j lă̱g]} \)

percent compaction \[ \text{ENG} \] The ratio of compaction, expressed as a percentage, of dry unit weight of a soil to maximum unit weight obtained in a laboratory compaction test. \( \{ \text{[par-sent kɔ̱m-pak-shə̱n]} \)

percent defective \[ \text{IND ENG} \] The ratio of defective pieces per lot or sample, expressed as a percentage. \( \{ \text{[par-sent ʃı́f-kə̱k-di̱v]} \)

perch \[ \text{MECH} \] Also known as pole, rod. 1. A unit of length, equal to 5.5 yards, or 16.5 feet, or 5,029.2 meters. 2. A unit of area, equal to 30.25 square yards, or 272.25 square feet, or 25,928.5264 square meters. \( \{ \text{[par ch]} \)

percolation filtration \[ \text{CHEM ENG} \] A continuous petroleum-refining process in which lubricating oils and waxes are percolated through a clay bed to improve color, odor, and stability. \( \{ \text{[par-kə̱l-a̱-shə̱n fil-tə̱r-shə̱n]} \)

percolation test \[ \text{CIV ENG} \] A test to determine the suitability of a soil for the installation of a domestic sewage-disposal system, in which a hole is dug and filled with water and the rate of water-level decline is measured. \( \{ \text{par-kə̱l-a̱-shə̱n test} \)

percolation bit \[ \text{MECH ENG} \] A rock-drilling tool with chiselskate cutting edges, which when driven by impacts against a rock surface drills a hole by a chipping action. \( \{ \text{par-kə̱sh-ə̱n bit} \)

percolation drill \[ \text{MECH ENG} \] A drilling machine usually using compressed air to drive a piston that delivers a series of impacts to the shank end of a drill rod or steel and attached bit. \( \{ \text{par-kə̱sh-ə̱n drill} \)

percolation drilling \[ \text{MECH ENG} \] A drilling method in which hammer blows are transmitted by the drill rods to the drill bit. \( \{ \text{par-kə̱sh-ə̱n,dril-li̱g} \)

perfect dielectric \( \text{See ideal dielectric.} \) \( \{ \text{[par-fikt, dı̱-ə̱lek-trik]} \)

perfect gas \( \text{See ideal gas.} \) \( \{ \text{[par-fikt ‘gas]} \)

perfect lubrication \[ \text{ENG} \] A complete, unbroken film of liquid formed over each of two metal surfaces moving relatively to one another with no contact. \( \{ \text{[par-fikt ,li-u̱-brə̱k-a̱-shə̱n]} \)

perforated-pipe distributor \[ \text{CHEM ENG} \] Liquid distribution device consisting of a length of piping or tubing with holes at spaced intervals along the length; used in spray columns, liquid-vapor contactors, and spray driers. Also known as a sparger. \( \{ \text{[par-la̱-fə̱,rad-ə̱d ,pıp dį̱strib-yą̱d-ə̱r]} \)

perforated plate \[ \text{CHEM ENG} \] Flat plate with series of holes used to control fluid distribution, as in a perforated-plate (distillation) column. \( \{ \text{[par-la̱-fə̱,rad-ə̱d ‘plat]} \)

perforated-plate column \[ \text{CHEM ENG} \] Distillation column in which vapor-liquid contact is provided by perforated plates instead of bubble-cap trays. \( \{ \text{[par-la̱-fə̱,rad-ə̱d ‘plat ‘kā̱l-ə̱m]} \)

perforated-plate distributor \[ \text{CHEM ENG} \] 1. A perforated plate or screen used to even out liquid-flow fluctuations through flow channels. 2. A perforated plate as used in a distillation column or liquid-liquid extraction column. \( \{ \text{[par-la̱-fə̱,rad-ə̱d ‘plat dį̱strif-yą̱d-ə̱r]} \)

perforated-plate extractor \[ \text{CHEM ENG} \] A liquid-liquid extraction vessel in which perforated plates are used to bring about contact between the two or more liquid phases. \( \{ \text{[par-la̱-fə̱,rad-ə̱d ‘plat ik-strak-tar]} \)

performance bond \[ \text{ENG} \] A bond that guarantees performance of a contract. \( \{ \text{[par-for-mans ,bænd]} \)

performance characteristic \[ \text{ENG} \] A characteristic of a piece of equipment, determined during its test or during its operation. \( \{ \text{[par-for-mans kə̱r-ı̱k-tə̱r-is-tik]} \)

performance chart \[ \text{ENG} \] A graph used in evaluating the performance of any device, for example, the performance of an electrical or electronic device, such as a graph of anode voltage versus anode current for a magnetron. \( \{ \text{[par-for-mans ,chą̱rt]} \)
performance curves [ENG] Graphical representations showing the abilities of rotating equipment at various operating conditions, for example, the performance curve for a compressor would include rotor speed for various intake and outlet pressures versus gas flow rate adjusted for temperature, density, viscosity, head, and other factors. \( \text{par}^\text{för-mānt 'kārv } \)

performance data [ENG] Data on the manner in which a given substance or piece of equipment performs during actual use. \( \text{par}^\text{för-mānt 'dād-ə } \)

performance evaluation [IND ENG] The analysis in terms of initial objectives and estimates, and usually made on site, of accomplishments using an automatic data-processing system, to provide information on operating experience and to identify corrective actions required, if any. \( \text{par}^\text{för-mānt 'jāl'-ya'-wā'-sha-n } \)

performance index [IND ENG] The ratio of standard hours to the hours of work actually used; a ratio exceeding 1.00 (or 100) indicates standard output is being exceeded. \( \text{par}^\text{för-mānt 'in,-deks } \)

performance measurement baseline [IND ENG] A time-phased budget plan developed for use in measuring contract performance; includes the budgets assigned to scheduled work elements and the related indirect budgets. \( \text{par}^\text{för-mānt 'mee-zh-ə-rant 'bā'-lın } \)

performance number [ENG] One of a series of numbers (constituting the PN, or performance-number, scale) used to convert fuel antiknock values in terms of a reference fuel into an index which is an indication of relative engine performance; used mostly to rate aviation gasolines with octave values greater than 100. \( \text{par}^\text{för-mānt 'na-mār } \)

performance rating See effort rating. \( \text{par}^\text{för-mānt 'rā'-dān-j } \)

performance sampling [IND ENG] A technique in work measurement used to determine the leveling factor to be applied to an operator or a group of operators by short, randomly spaced observations of the performance index. \( \text{par}^\text{för-mānt 'sām'-plān } \)

peridynamic loudspeaker [ENG ACOUS] A box-type loudspeaker baffle designed to give good bass response by minimizing acoustic standing. \( \text{per'-ə-dā'-na-mānt 'la'-dā'-spēk-ə-rō } \)

periodic klin [ENG] A kiln in which the cycle of setting ware in the kiln, heating up, “soaking” or holding at peak temperature for some time, cooling, and removing or “drawing” the ware is repeated for each batch. \( \text{pir'-ə-lād-ik 'kōl } \)

periodic motion [MECH] Any motion that repeats itself identically at regular intervals. \( \text{pir'-ə-lād-ik 'mā'-sha-n } \)

peripheral speed See cutting speed. \( \text{pa'-rēl-i-fā'-ral 'spēd } \)

peristaltic pump [MECH ENG] A device for moving fluids by the action of multiple, equally spaced rollers, which rotate and compress a flexible tube. \( \text{pir'-ə-stāl-tik 'pāmp } \)

permafrost drilling [ENG] Boreholes drilled in subsoil and rocks in which the contained water is permanently frozen. \( \text{pir'-ə-frōst 'dril'-iğ } \)

permanent axis [MECH] The axis of the greatest moment of inertia of a rigid body, about which it can rotate in equilibrium. \( \text{pir'-ə-mānt 'a-kā-sās } \)

permanent benchmark [ENG] A readily identifiable, relatively permanent, recoverable benchmark that is intended to maintain its elevation without change over a long period of time with reference to an adopted datum, and is located where disturbing influences are believed to be negligible. \( \text{pir'-ə-mānt 'bench,mārk } \)

permanent gas [THERMO] A gas at a pressure and temperature far from its liquid state. \( \text{pir'-ə-mānt 'gās } \)

permanent-magnet dynamic loudspeaker See permanent-magnet loudspeaker. \( \text{pir'-ə-mānt 'mā'-nānt 'mā'-lō-dā'-spēk-ə-rō } \)

permanent-magnet loudspeaker [ENG ACOUS] A moving-conductor loudspeaker in which the steady magnetic field is produced by a permanent magnet. Also known as permanent-magnet dynamic loudspeaker. \( \text{pir'-ə-mānt 'mā'-nānt 'mā'-lō-dā'-spēk-ə-rō } \)

permanent-magnet moving-coil instrument [ENG] An ammeter or other electrical instrument in which a small coil of wire, supported on jeweled bearings between the poles of a permanent magnet, rotates when current is carried to it through spiral springs which also exert a restoring torque on the coil; the position of the coil is indicated by an attached pointer. \( \text{pir'-ə-mānt 'mā'-nānt 'mā'-mānt 'mā'-nānt 'kōl '-in'-stra-mānt } \)

permanent-magnet moving-iron instrument [ENG] A meter that depends for its operation on a movable iron vane that aligns itself in the resultant magnetic field of a permanent magnet and adjacent current-carrying coil. \( \text{pir'-ə-mānt 'mā'-nānt 'mā'-mānt 'mā'-mānt 'kōl '-in'-stra-mānt } \)

permanent set [MECH] Permanent plastic deformation of a structure or a test piece after removal of the applied load. Also known as set. \( \text{pir'-ə-mānt 'set } \)

permanent stop [IND ENG] In a flexible manufacturing system a type of controlled stop where an automated guided vehicle will always halt, regardless of programming. \( \text{pir'-ə-mānt 'stāp } \)

permeability number [ENG] A numbered value assigned to molding materials indicating the relative ease of passage of gases through them. \( \text{pir'-ər-me'-bil'-ad-e-nā-nār } \)

permeameter [ENG] 1. A laboratory device for measurement of permeability of materials, for example, soil or rocks; consists of a powder bed of known dimension and degree of packing through which the particles are forced; pressure drop and rate of flow are related to particle size, and pressure drop is related to surface area. 2. A device for measuring the coefficient of permeability by measuring the flow of fluid through a sample of material which there is a pressure drop produced by gravity. 3. An instrument for measuring the magnetic flux or flux density produced
permeate

in a test specimen of ferromagnetic material by a given magnetic intensity, to permit computation of the magnetic permeability of the material. {ˌpar-mēˈəm-əd-or}

permeate [CHEM ENG] The clear fluid that passes through the membrane in a membrane filtration process. {ˌpar-mēˈət}

permeator [CHEM ENG] A membrane assembly that performs an ion-exchange function, for example, desalting in a membrane water-desalting process. {ˌpar-mēˈət-ər}

permissible exposure limit [IND ENG] The level of air contaminants that represents an acceptable exposure level as specified in standards set by a national government agency; generally expressed as 8-hour time-weighted average concentrations. Abbreviated PEL. {ˌparˈmɪs-ə-bəl ˌɪkˈspɒ-ər-tər, ˌɪl-mɪt-

permissible velocity [CIV ENG] The highest velocity at which water is permitted to pass through a structure or conduit without excessive damage. {ˌpar-mɪs-əbəl ˌvɛlɚ-sət-

permissive block system [CIV ENG] A block system in which a railroad train is permitted to enter a block section already occupied by a train. {ˌparˈmɪs-iv ˈbIkˌsɛt-kom-

permissive stop [CIV ENG] A railway signal indicating the train must stop but can proceed slowly and cautiously after a specified interval, usually 1 minute. {ˌparˈmɪs-iv ˈstɑp-

permittivity [ELEC] The dielectric constant multiplied by the permittivity of empty space, where the permittivity of empty space (ε₀) is a constant appearing in Coulomb’s law, having the value of 1 in centimeter-gram-second electrostatic units, and of 8.854 × 10⁻¹² farad/meter in rationalized meter-kilogram-second units. Symbolized ε. {ˌpar-ˈmɪtətɪv-əd-

permit [ENG] 1. Small iron pins or tripods that support ware while it is being fired in a kiln. 2. The marks left on baked pottery by these supports. {ˌper-mɪt-

perpend [CIV ENG] A bondstone that extends completely through a masonry wall and is exposed on each side of the wall. {ˌpar-pənd-

perpendicular axis theorem [MECH] A theorem which states that the sum of the moments of inertia of a plane lamina about any two perpendicular axes in the plane of the lamina is equal to the moment of inertia about an axis through their intersection perpendicular to the lamina. {ˌpar-ˈpɛrd-ək-ˈtaɪ-kər-əkˈsæs, ˌθɪr-

Pers sunshine recorder [ENG] A type of sunshine recorder in which the time scale is supplied by the motion of the sun. {ˌpers ˈsʌnˌʃaɪn ˈraɪˌkɔrd-ər-

PERT [SYS ENG] A management control tool for defining, integrating, and interrelating what must be done to accomplish a desired objective on time, a computer is used to compare current progress against planned objectives and give management the information needed for planning and decision making. Derived from program evaluation and review technique. {ˌpərt-

peter out [ENG] To fail gradually in size, quantity, or quality, for example, a mine may be said to have petered out. {ˌpɛd-ər ˈjɔːt-

Petersen grab [ENG] A bottom sampler consisting of two hinged semicylindrical buckets held apart by a cocking device which is released when the grab hits the ocean floor. {ˌpɛd-ər-

petroleum engineering [ENG] The application of all types of engineering to the drilling for and production of oil, gas, and liquefiable hydrocarbons. {ˌpetrəˈlɪəm ˌɛnˌjənər-

petroleum isomerization process [CHEM ENG] A fixed-bed, vapor-phase petroleum-refining process using a precious-metal catalyst and external hydrogen; feedstocks include natural gas, pentane, and hexane cuts, the product is high-octane blending stock. {ˌpetrəˈlɪəm ˌɛnˌjənər-

petroleum processing [CHEM ENG] The recovery and processing of various usable fractions from the complex crude oils; usable fractions include gasoline, kerosene, diesel oil, fuel oil, asphalt, and petroleum engineering. Also known as petroleum refining. {ˌpetrəˈlɪəm ˌɛnˌjən-

Petterson-Nansen water bottle See Nansen bottle. {ˌped-ər-ənˈsæn ˈnænˈsæn ˈwɔd-ər, ˌbæd-

Pettit truss [CIV ENG] A bridge truss in which the panel is subdivided by a short diagonal and a short vertical member, both intersecting the main diagonal at its midpoint. {ˌped-ətˌtrʌs-

PGR See precision depth recorder.

pharmaceutical chemistry [CHEM ENG] The chemistry of drugs and of medicinal and pharmaceutical products. {ˌfərməˈse-təl ˈkəm-

phase [THERMO] The type of state of a system, such as solid, liquid, or gas. {ˌfæz-

phase advance [ELEC] Phase modifier which supplies leading reactive volt-amperes to the system to which it is connected, may be either synchronous or asynchronous. {ˌfæz ɪdˌvɑn-

phase-angle meter See phase meter. {ˌfæz ənˈgælˌmɛd-

phase-balance relay [ELEC] Relay which relays by reason of a difference between two quantities associated with different phases of a polyphase circuit. {ˌfæz əˌbæl-

phase-change material [ENG] A material which is used to store the latent heat absorbed in the material during a phase transition. {ˌfæz ˈkæn-

phase-comparison relaying [ELEC] A method of detecting faults in an electric power system in which signals are transmitted from each of two terminals every half cycle so that a continuous signal is received at an intermediate point if there is no fault between the terminals, while a periodic signal is received if there is a fault. {ˌfæz ˈkænˌpər-

phase conductor [ELEC] In a polyphase circuit,
any conductor other than the neutral conductor. ['fæz kan,dæk-tər]

**phase converter** [ELEC] A converter that changes the number of phases in an alternating-current power source without changing the frequency. ['fæz kan,yard-or]

**phase crossover** [CONT SYS] A point on the plot of the loop ratio at which it has a phase angle of 180°. ['fæz krios,dər-vər]

**phase diagram** [THERMO] 1. A graph showing the pressures at which phase transitions between different states of a pure compound occur, as a function of temperature. 2. A graph showing the temperatures at which transitions between different phases of a binary system occur, as a function of the relative concentrations of its components. ['fæz,dər-grəm]

**phase factor** See power factor. ['fæz,fæk-tər]

**phase integral** See action. ['fæz jɪnt-ə-grəl]

**phase-locked system** [ENG] A radar system, having a stable local oscillator, in which information regarding the target is gained by measuring the phase shift of the echo. ['fæz,lækt,sis-təm]

**phase margin** [CONT SYS] The difference between 180° and the phase of the loop ratio of a stable system at the gain-crossover frequency. ['fæz,miər-ən]

**phase meter** [ENG] An instrument for the measurement of electrical phase angles. Also known as phase-angle meter. ['fæz,məd-ər]

**phase modifier** [ELEC] Machine whose chief purpose is to supply leading or lagging reactive volt-ampere to the system to which it is connected, may be either synchronous or asynchronous. ['fæz,məd-ə,fr-ər]

**phase plane analysis** [CONT SYS] A method of analyzing systems in which one plots the time derivative of the system’s position (or some other quantity characterizing the system) as a function of position for various values of initial conditions. ['fæz,pələn,snəl-ə-səs]

**phase portrait** [CONT SYS] A graph showing the time derivative of a system’s position (or some other quantity characterizing the system) as a function of position for various values of initial conditions. ['fæz,pɔr-tər]

**phase-rotation relay** See phase-sequence relay. ['fæz rɔtə-sən-ənt]

**phase-sequence relay** [ELEC] Relay which functions according to the order in which the phase voltages successively reach their maximum positive values. Also known as phase-rotation relay. ['fæz,se-kwəns,ˈrɛlə]

**phase shift** [ELECTR] The phase angle between the input and output signals of a network or system. ['fæz,ʃift]

**phase-shift circuit** [ELECTR] A network that provides a voltage component which is shifted in phase with respect to a reference voltage. ['fæz,ʃift,sər-keɪt]

**phase shifter** [ELEC] A device used to change the phase relation between two alternating-current voltages. ['fæz,ʃift-ər]

**phase-shifting transformer** [ELEC] A transformer which produces a difference in phase angle between two circuits. ['fæz ʃif-ting tranz fɔr-mər]

**phase splitter** [ELEC] A circuit that takes a single input alternating voltage and produces two or more output alternating voltages that differ in phase from one another. ['fæz,split-ər]

**phase transformation** [ELEC] A change of poly-phase power from three-phase to six-phase, from three-phase to twelve-phase, and so forth, by use of transformers. ['fæz,tranz-fər,mən-ʃən]

**phase transformer** [ELEC] A transformer for changing a two-phase current to a three-phase current, or vice versa. ['fæz tranz,fər-mər]

**phase undervoltage relay** [ELEC] Relay which functions by reason of the reduction of one phase voltage in a polyphase circuit. ['fæz ən-dər,vol-tij,ˈreɪlə]

**phasing** See framing. ['fæz-ɪŋ]

**phenolate process** [CHEM ENG] A process which employs sodium phenolate to remove hydrogen sulfide from gas. ['fən-ət,prə-səs]

**phenol extraction** [CHEM ENG] Petroleum-refining process in which petroleum-refining solvent-extraction process using phenol as the solvent to remove aromatic, unsaturated and naphthenic constituents from lubricating-oil stocks. ['fɛnəl ik,strək-ʃən]

**phenol process** [CHEM ENG] A single-solvent petroleum-refining process in which phenol is the selective solvent. ['fɛnəl,pər-səs]

**Phillips hot-air engine** [MECH ENG] A compact hot-air engine that is a Philips Research Lab (Holland) design; it uses only one cylinder and piston, and operates at 3000 revolutions per minute, with hot-chamber temperature of 1200°F (650°C), maximum pressure of 50 atmospheres (5.07 megapascals), and mean effective pressure of 14 atmospheres (1.42 megapascals). ['fɪlsips hət ɪr,ən-ən]

**Phillips screw** [DES ENG] A screw having in its head a recess in the shape of a cross; it is inserted or removed with a Phillips screwdriver that automatically centers itself in the screw. ['fɪlsips,skrʊ]

**phleger corer** [ENG] A device for obtaining ocean bottom cores up to about 4 feet (1.2 meters) in length, consists of an upper tube, main body weight, and tailfin assembly with a check valve that prevents the flow of water into the upper section and a consequent washing out of the core sample while hoisting the corer. ['fleɪər,ˈkɔr-ər]

**pH meter** [ENG] An electronic voltmeter using a pH-responsive electrode that gives a direct conversion of voltage differences to differences of pH at the temperature of the measurement. ['pFeɪər,məd-ər]

**phonation** [ENG] Production of speech sounds. ['fənənən]

**phone** See headphone. ['fən]

**phonemic synthesizer** [ENG] A voice-response system in which each word is abstractly represented as a sequence of expected vowels and consonants, and speech is composed by juxtaposing the expected phonemic sequence
for each word with the sequences for the preceding and following words. {fənè-mik 'sin-thə,sizər}

phonograph [ENG ACOUS] An instrument for recording or reproducing acoustical signals, such as voice or music, by transmission of vibrations from or to a stylus that is in contact with a groove in a rotating disk. {fən′ə-nə,graf′}

phonograph cartridge See phonograph pickup. {fən′ə-nə,graf′ˌkär-tri}

phonograph cutter See cutter. {fən′ə-nəˌgraf′ˌkəd-ər}

phonograph needle See stylus. {fən′ə-nəˌgrafˌned-əl}

phonograph pickup [ENG ACOUS] A pickup that converts variations in the grooves of a phonograph record into corresponding electric signals. Also known as cartridge; phonograph cartridge. {fən′ə-nəˌgrafˌpi-kəp}

phonograph record [ENG ACOUS] A shellac-composition or vinyl-plastic disk, usually 7 or 12 inches (18 or 30 centimeters) in diameter, on which sounds have been recorded as modulations in grooves. Also known as disk, disk recording. {fən′ə-nəˌgrafˌrek-ərd}

phonon friction [MECH] Friction that arises when atoms close to a surface are set into motion by the sliding action of atoms in an opposing surface, and the mechanical energy needed to slide one surface over the other is thereby converted to the energy of atomic lattice vibrations (phonons) and is eventually transformed into heat. {fən′ə-nənˌfrık-əshən}

phonotelemeter [ENG] A device consisting essentially of a stopwatch, for estimating the distance of guns in action by measuring the interval between the flash and the arrival of the sound waves from the discharge. {fən′ə-nəˌthəl-əm-əd-ər}

phosphate desulfurization [CHEM ENG] A continuous, regenerative petroleum-refining process using a tripotassium phosphate solution to remove hydrogen sulfide from natural gas, refinery gas, or liquid hydrocarbons. {fəsˌfat dəˌsəl-fəˌrɑp-zəˌshən}

phosphoric acid polymerization [CHEM ENG] A petroleum-refining process using phosphoric acid catalyst to convert propylene, butylene, or both, into high-octane gasoline or petrochemical polymers. {fəsˌfrək-əkˌəs-əd ˈpeˌlim-əˌrɑp-zəˌshən}

photoalidade [ENG] A photogrammetric instrument which has a telescopic alidade, a plateholder, and a hinged ruling arm and is mounted on a tripod frame, used for plotting lines of direction and measuring vertical angles to selected features appearing on oblique and terrestrial photographs. {fəd-əlˌaˌdəd}

photocapacitative effect [ELECT] A change in the capacitance of a bulk semiconductor or semiconductor surface film upon exposure to light. {fəd-əkˌpək-ətəˌtivˌiˌfikt}

photoclinometer [ENG] A directional surveying instrument which records photographically the direction and magnitude of well deviations from the vertical. {fəd-əkˌkləˌnəm-əd-ər}

photoconductive device [ELECTR] A photoelectric device which utilizes the photoinduced change in electrical conductivity to provide an electrical signal. {fəd-əkˌkənˈdək-tivˌdiˈvɪsɨ}

photoconductive film [ELECTR] A film of material whose current-carrying ability is enhanced when illuminated. {fəd-əkˌkənˈdək-tivˌfiˈlm}

photoconductor diode See photodiode. {fəd-əkˌkənˈdək-təˌdɪˌdəˌkər-

photodetector [ELECTR] A detector that responds to radiant energy, examples include photodetectors, photodiodes, photosensors, photoswitches, phototransistors, phototubes, and photovoltaic cells. Also known as light-sensitive cell; light-sensitive detector, light sensor photodevice, photodetector, photoelectric detector, photosensor. {fəd-əkˌdəˌdɪˈlek-tər}

photodiffusion effect See Dember effect. {fəd-əkˌdɪˈfjuˌzən ˌiˌfikt}

photodiode [ELECTR] A semiconductor diode in which the reverse current varies with illumination, examples include the alloy-junction photodiode and the grown-junction photodiode. Also known as photoconductor diode. {fəd-əkˌdɪˈdəˌdəˌkər

photodraft [DES ENG] A photographic reproduction of a master layout or design on a specially prepared emulsion-coated piece of sheet metal, used as a master in a tool-construction department. {fəd-əˌdəˈdrɑft}

photoecology [ENG] The application of photography to ecology, integrated land resource studies, and forestry. {fəd-əˌikˌələˌjə}

photoelectric [ELECTR] Pertaining to the electrical effects of light, such as the emission of electrons, generation of voltage, or a change in resistance when exposed to light. {fəd-əˌiˈlekˈtrɪk}

photoelectric absorption [ELECTR] Absorption of photons in one of the several photoelectric effects. {fəd-əˌiˈlekˈtrɪkˌəbˈsɔrpˌshən}

photoelectric cell See photocell. {fəd-əˌiˈlekˈtrɪkˌsəl}

photoelectric colorimeter [ENG] A colorimeter that uses a phototube or photocell, a set of color filters, an amplifier, and an indicating meter for quantitative determination of color. {fəd-əˌiˈlekˈtrɪkˌkəlˌəˌrɪmˌəd-ər}

photoelectric constant [ELECTR] The ratio of the frequency of radiation causing emission of photoelectrons to the voltage corresponding to the energy absorbed by a photoelectron, equal to Planck's constant divided by the electron charge. {fəd-əˌiˈlekˈtrɪkˌkənˌstɑnt}

photoelectric control [ELECTR] Control of a circuit or piece of equipment by changes in incident light. {fəd-əˌiˈlekˈtrɪkˌkənˌtrəl}

photoelectric densitometer [ENG] An electronic instrument used to measure the density or opacity of a film or other material; a beam of light is directed through the material, and the amount of light transmitted is measured with

400
a photocell and meter.  

**photoelectric detector** See photodetector.  

**photoelectric device** [ELECTR] A device which gives an electrical signal in response to visible, infrared, or ultraviolet radiation.  

**photoelectric door opener** [CONT SYS] A control system that employs a photocell or other photo device, used to open and close a power-operated door.  

**photoelectric effect** See photoelectricity.  

**photoelectric flame-failure detector** [CONT SYS] A photoelectric control that cuts off fuel flow when the fuel-consuming flame is extinguished.  

**photoelectric fluorometer** [ENG] Device using a photoelectric cell to measure fluorescence in a chemical sample that has been excited (one or more electrons have been raised to higher energy level) by ultraviolet or visible light, used for analysis of chemical mixtures.  

**photoelectricity** [ELECTR] The liberation of an electric charge by electromagnetic radiation incident on a substance, includes photoemission, photoionization, photoconduction, the photovoltaic effect, and the Auger effect (an internal photoelectric process). Also known as photoelectric effect, photoelectric process.  

**photoelectric liquid-level indicator** [ENG] A level indicator in which rising liquid interrupts the light beam of a photoelectric control system; used in a tank or process vessel.  

**photoelectric loop control** [CONT SYS] A photoelectric control system used as a position regulator for a loop of material passing from one strip-processing line to another that may travel at a different speed. Also known as loop control.  

**photoelectric photometer** [ENG] A photometer that uses a photocell, phototransistor, or phototube to measure the intensity of light. Also known as electronic photometer.  

**photoelectric pyrometer** [ENG] An instrument that measures high temperatures by using a photoelectric arrangement to measure the radiant energy given off by the heated object.  

**photoelectric reflectometer** [ENG] A reflectometer that uses a photocell or phototube to measure the diffuse reflection of surfaces, powders, pastes, and opaque liquids.  

**photoelectric register control** [CONT SYS] A register control using a light source, one or more phototubes, a suitable optical system, an amplifier, and a relay to actuate control equipment when a change occurs in the amount of light reflected from a moving surface due to register marks, dark areas of a design, or surface defects. Also known as photoelectric scanner.  

**photoelectric smoke-density control** [CONT SYS] A photoelectric control system used to measure, indicate, and control the density of smoke in a flue or stack.  

**photoelectric sorter** [CONT SYS] A photoelectric control system used to sort objects according to color, size, shape, or other light-changing characteristics.  

**photoelectric transmissometer** [ENG] A device to measure the runway visibility at an airport by measuring the degree to which a light beam falling on a photocell is obscured by clouds or fog.  

**photoelectric turbidimeter** [ENG] Device for measurement of solution turbidity by use of photocells to detect the loss of intensity of light beamed through the solution.  

**photoelectromotive force** [ELECTR] Electromotive force caused by photovoltaic action.  

**photoelectron** [ELECTR] An electron emitted by the photoelectric effect.  

**photoemission** [ELECTR] The ejection of electrons from a solid (or less commonly, a liquid) by incident electromagnetic radiation. Also known as external photoelectric effect.  

**photoemissive tube photometer** [ENG] A photometer which uses a tube made of a photoemissive material; it is highly accurate, but requires electronic amplification, and is used mainly in laboratories.  

**photoemissivity** [ELECTR] The property of a substance that emits electrons when struck by light.  

**photofabrication** [ELECTR] In manufacturing circuit boards and integrated circuits, a process in which the etching pattern is placed over the circuit board or semiconductor material, the board or chip is placed in a special solution, and the assembly is exposed to light.  

**photoflash bomb** [ENG] A missile dropped from aircraft, it contains a photoflash mixture and a means for ignition at a distance above the ground, to produce a brilliant light of short duration for photographic purposes.  

**photogoniometer** [ENG] A goniometer that uses a phototube or photocell as a sensing device for studying x-ray spectra and x-ray diffraction effects in crystals.
photogrammetry

photogrammetry  [ENG] 1. The science of making accurate measurements and maps from aerial photographs. 2. The practice of obtaining surveys by means of photography. ｛ʃɔd-ə-ɡram-ə-trɛ́｝

photographic barograph  [ENG] A mercury barometer arranged so that the position of the upper or lower meniscus is measured photographically. ｛ʃɔd-ə-ɡraf-ik bə-ə-ɡrəf ｝

photographic interpretation  See photointerpretation. ｛ʃɔd-ə-ɡraf-ik ɪn,ˈtɛr-prət-ə-tʃən ｝

photographic surveying  [ENG] Photographing of plumb bobs, clinometers, or magnetic needles in borehole surveying to provide an accurate permanent record. ｛ʃɔd-ə-ɡraf-ik sərˈvə-tərɪŋ ｝

photointerpretation  [ENG] The science of identifying and describing objects in a photograph, such as deducing the topographic significance or the geologic structure of landforms on an aerial photograph. Also known as photographic interpretation. ｛ʃɔd-ə-in,ˈtɛr-prət-ə-tʃən ｝

photomask  [ELECTR] A film or glass negative that has many high-resolution images, used in the production of semiconductor devices and integrated circuits. ｛ˈʃɔd-ə-mɑsk ｝

photometer  [ENG] An instrument used for measuring light or electromagnetic radiation, in the visible range. ｛ʃɔd-ə-ˈmɔt-ər ｝

photon coupling  [ELECTR] Coupling of two circuits by means of photons passing through a light pipe. ｛ʃɔd-ə-ˈkʌpl-ing ｝

photonegative  [ELECTR] Having negative photoconductivity, hence decreasing in conductivity (increasing in resistance) under the action of light, selenium sometimes exhibits photonegativity. ｛ʃɔd-ə-ˈnɛg-ə-tɪv ｝

photonephelometer  [ENG] A nephelometer that uses a photocell or phototube to measure the amount of light transmitted by a suspension of particles. ｛ʃɔd-ə,neft-ə-ləm-ər-ər ｝

photons  [ELECTR] The electronic technology involved with the practical generation, manipulation, analysis, transmission, and reception of electromagnetic energy in the visible, infrared, and ultraviolet portions of the light spectrum. It contributes to many fields, including astronomy, biomedicine, data communications and storage, fiber optics, imaging, optical computing, optoelectronics, sensing, and telecommunications. Also known as optoelectronics. ｛ʃɔt-ən-ərɪks ｝

photopositive  [ELECTR] Having positive photoconductivity, hence increasing in conductivity (decreasing in resistance) under the action of light; selenium ordinarily has photopositivity. ｛ʃɔd-ə-ˈpəz-əd-ɪv ｝

photocounter  [ENG] A scanner used to make a film record of gamma rays passing through tissue from an injected radioactive material. ｛ʃɔd-ə,skən-ər ｝

photosensitive  See light-sensitive. ｛ʃɔd-ə-ˈsen-əd-ɪv ｝

phototeodolite  [ENG] A ground-surveying instrument used in terrestrial photogrammetry which combines the functions of a theodolite and a camera mounted on the same tripod. ｛ʃɔd-ə-ˈθe-əd-əl-ɪt ｝

photothyristor  See light-activated silicon controlled rectifier. ｛ʃɔd-ə-ˈθɪl-rɪs-tɔr ｝

phototopography  [ENG] The science of mapping and surveying in which details are plotted entirely from photographs taken at suitable ground stations. ｛ʃɔd-ə-ˈtɒp-ər-fə ｝

phototransistor  [ELECTR] A junction transistor that may have only collector and emitter leads or also a base lead, with the base exposed to light through a tiny lens in the housing, collector current increases with light intensity, as a result of amplification of base current by the transistor structure. ｛ʃɔd-ə-ˈtræn-sɪ-tɔr ｝

phototriangulation  [ENG] The extension of horizontal or vertical control points, or both, by photogrammetric methods, whereby the measurements of angles and distances on overlapping photographs are related into a spatial solution using the perspective principles of the photographs. ｛ʃɔd-ə-ˌtrɪˌʌŋ-gəl-ə-shən ｝

phototube current meter  [ENG] A device for measuring the speed of water currents in which a perforated disk, which rotates with the current by means of a propeller, is placed in the path of a beam of light that is then reflected from a mirror onto a phototube. ｛ʃɔd-ə-ˈtʊb ˈkær-ənt ˌmɛd-ər ｝

photovoltaic  [ELECTR] Capable of generating a voltage as a result of exposure to visible or other radiation. ｛ʃɔd-ə-ˈvəl-tə-rɪk ｝

photovoltaic cell  [ELECTR] A device that detects or measures electromagnetic radiation by generating a potential at a junction (barrier layer) between two types of material, upon absorption of radiant energy. Also known as barrier-layer cell; barrier-layer photocell; boundary-layer photocell; photronic photocell. ｛ʃɔd-ə-ˈvəl-tə-rɪk ˌsɛl ｝

photovoltaic effect  [ELECTR] The production of a voltage in a nonhomogeneous semiconductor, such as silicon, or at a junction between two types of material, by the absorption of light or other electromagnetic radiation. ｛ʃɔd-ə-ˈvəl-tə-rɪk ˈfɛkt ｝

photovoltameter  [ELECTR] An exposure cell in which a photovoltaic cell produces a current proportional to the light falling on the cell, and this current is measured by a sensitive microammeter. ｛ʃɔd-ə-ˈvəl-tə-rɪk ˌmiːkr-əm-ətər ｝

physical compatibility  [ENG] The ability of two or more materials, substances, or chemicals to be used together without ill effect. ｛ˈfɪz-ə-kæl ˈkɒm-pə-tɛl-əd-ər ｝

physical modeling synthesis  [ENG ACOUS] A method of synthesizing the sounds of a musical instrument that uses computational algorithms that are based directly on the mathematical physics of the instrument. ｛ˈfɪz-ɪ-kæl ˈmɛd-əl-ɪn,ˈsɪn-θə-sæs ｝

physical realizability  [CONT SYS] For a transfer function, the possibility of constructing a net-
work with this transfer function. \{'fiz-ə-kal\, rē-əliz-ə-ˌbil-əd-ər\}'

**physical system** *Sci* causal system. \{'fiz-ə-kal\, ˌsīz-ə-tam\}'

**physical testing** *ENG* Determination of physical properties of materials based on observation and measurement. \{'fiz-ə-kal\, ˈtest-əŋ\}'

**phytometer** *ENG* A device for measuring transpiration, consisting of a vessel containing soil in which one or more plants are rooted and sealed so that water can escape only by transpiration from the plant. \{'fit-əm-əd-ər\}'

**Picutanny test** *ENG* An impact test used in the United States for evaluating the sensitivity of high explosives; a small sample of the explosive is placed in a depression in a steel die cup and capped by a thin brass cover, a cylindrical steel plug is placed in the center of the cover, and a 2-kilogram weight is dropped from varying heights on the plug; the reported sensitivity figure is the minimum height, in inches, at which at least 1 firing results from 10 trials. \{'pik-ə-tim-əng\}'

**Piche evaporimeter** *ENG* A porous-paperwick atmometer. \{'pesh ɪˌvə-ˌrɪm-əd-ər\}'

**pick** *DES ENG* 1. The steel cutting points used on a coal-cutter chain. 2. A miner's steel or iron digging tool with sharp points at each end. *ENG* 1. To dress the sides of a shaft or other excavation. 2. To remove shale, dirt, and such from coal. \{'pik\}'

**pick-and-place robot** *CONT SYS* A simple robot, often with only two or three degrees of freedom and little or no trajectory control, whose sole function is to transfer items from one place to another. \{'pik ənˈpləs ˈrōˌbāt\}'

**pickax** *DES ENG* A pointed steel or iron tool mounted on a wooden handle and used for breaking earth and stone. \{'pikˌaks\}'

**pick hammer** *DES ENG* A hammer with a point at one end of the head and a blunt surface at the other end. \{'pikˌham-ər\}'

**pick lacing** *DES ENG* The pattern to which the picks are set in a cutter chain. \{'pikˌlas-əŋ\}'

**pickling** *CHEM ENG* A method of preparing hides for tanning by immersion in a salt solution with a pH of 2.5 or less. \{'pikˌliŋ\}'

**pickoff** *ELECTR* A device used to convert mechanical motion into a proportional electric signal. *MECH ENG* A mechanical device for automatic removal of the finished part from a press die. \{'pikˌəf\}'

**pickup** *ELEC* 1. A device that converts a sound, scene, measurable quantity, or other form of intelligence into corresponding electric signals, as in a microphone, phonograph pickup, or television camera. 2. The minimum current, voltage, power, or other value at which a relay will complete its intended function. 3. Interference from a nearby circuit or system. \{'pikˌap\}'

**picameter** *ENG* An ammeter whose scale is calibrated to indicate current values in picocampi. \{'pēˌkoʊˌəmˌɛd-ər\}'

**picosecond** *MECH* A unit of time equal to 10^{-12} second, or one-millionth of a microsecond. Abbreviated ps, psec. \{'pēˌkoʊˌsək-ənˌd\}'

**picowatt** *MECH* A unit of power equal to 10^{-12} watt, or one-millionth of a microwatt. Abbreviated pW. \{'pēˌkoˌwät\}'

**picture element** *ELECTR* 1. That portion, in facsimile, of the subject copy which is seen by and measured from the plant. \{'pikˌərˌchəˌrˌel-əm-ənt\}'

**picture window** *BUILD* A large window framing an exterior view. \{'pikˌərˌchəˌjin-ˌdō\}'

**piece mark** *ENG* Identification number for an individual part, subassembly, or assembly; shown on the drawing, but not necessarily on the part. \{'pēˌsēˌmârk\}'

**piece rate** *IND ENG* Wages paid per unit of production. \{'pēˌsēˌrât\}'

**piecewise linear system** *CONT SYS* A system for which one can divide the range of values of input quantities into a finite number of intervals such that the output quantity is a linear function of the input quantity within each of these intervals. \{'pēˌsēˌwizˌlin-ˌe-ərˌsīs-ˌtam\}'

**piecework** *IND ENG* Work paid for in accordance with the amount done rather than the hours taken. \{'pēˌsēˌwərk\}'

**pier** *BUILD* A concrete block that supports the floor of a building. *CIV ENG* 1. A vertical, rectangular or circular support for concentrated loads from an arch or bridge superstructure. 2. A structure with a platform projecting from the shore into navigable waters for mooring vessels. \{'pîr\}'

**piercing** *Sci* fusion piercing. \{'pîrˌiŋ\}'

**piercing gripper** *CONT SYS* A robot component that first punctures a material such as cloth, rubber, or porous sheets, or soft plastic in order to lift and handle it. \{'pîrˌiŋˌgrîpˌər\}'

**pier foundation** *Sci* caisson foundation. \{'pîrˌfaˌsənˌdʒənˌfənd-ə-ˌmənˌt\}'

**pierhead line** *CIV ENG* The line in navigable waters beyond which construction is prohibited; open-pier construction may extend outward from the bulhead line to the pierhead line. \{'pîrˌhedˌlin\}'

**pîže** *MECH* A unit of pressure equal to 1 sthène per square meter, or to 1000 pascals. Abbreviated pz. \{'pēˌez\}'

**piezoelectric detector** *ENG* A seismic detector constructed from a stack of piezoelectric crystals with an inertial mass mounted on top and intervening metal foil to collect the charges produced on the crystal faces when the crystals are strained. \{'pēˌzoˌe-ˌtēlˌtrikˌdîˌtekˌtər\}'

**piezoelectric element** *ELECTR* A piezoelectric crystal used in an electric circuit, for example, as a transducer to convert mechanical or acoustical...
signals to electric signals, or to control the frequency of a crystal oscillator. \( p_{\text{elect}} \) piezoelectric gage [ENG] A pressure-measuring gage that uses a piezoelectric material to develop a voltage when subjected to pressure; used for measuring blast pressures resulting from explosions and pressures developed in guns. \( p_{\text{elek}} \) piezoelectric loudspeaker See crystal loudspeaker. \( p_{\text{elek}},p_{\text{spēk},\text{-ar}} \) piezoelectric microphone See crystal microphone. \( p_{\text{elek}},m_{\text{fri}},f_{\text{fōn}} \) piezoelectric oscillator See crystal oscillator. \( p_{\text{elek}},m_{\text{fri}} \) piezoelectric pickup See crystal pickup. \( p_{\text{elek}},p_{\text{apk}} \) piezoelectric resonator See crystal resonator. \( p_{\text{elek}},r_{\text{ez}},a_{\text{d},-\text{ar}} \) piezoelectric transducer [ELECTR] A piezoelectric crystal used as a transducer, either to convert mechanical or acoustical signals to electric signals, as in a microphone, or vice versa, as in ultrasonic metal inspection. \( p_{\text{elek}},m_{\text{tzn}},d_{\lambda},-\text{d} \) piezojunction effect [ELECTR] A change in the current-voltage characteristic of a pn junction that is produced by a mechanical stress. \( p_{\text{elek}},p_{\text{anj}},k_{\text{shn}} \) piezometer [ENG] 1. An instrument for measuring fluid pressure, such as a gage attached to a pipe containing a gas or liquid. 2. An instrument for measuring the compressibility of materials, such as a vessel that determines the change in volume of a substance in response to hydrostatic pressure. \( p_{\text{ez}},p_{\text{ zam}},-\text{d} \) piezometer opening See pressure tap. \( p_{\text{ez}},p_{\text{ zam}},-\text{i} \) piezoresistive microphone [ENG ACOUS] A microphone in which a piezoresistive material is deposited on the edges of a membrane, and variations in the resistance of this material resulting from motion of the membrane are sensed, typically in a Wheatstone bridge. \( p_{\text{ez}},p_{\text{riz}},t_{\text{iv}},m_{\text{fri}},\text{fōn} \) piezoresistive sensor [ENG] A transducer which converts variations in mechanical stress into an electrical output; it consists of an element of piezoresistive material that is connected to a Wheatstone bridge circuit and is placed on a highly stressed part of a suitable mechanical structure, usually attached to a cantilever or other beam configuration. \( p_{\text{ez}},p_{\text{riz}},t_{\text{iv}},\text{fēn},-\text{s} \) piezotransistor accelerometer [ENG] An accelerometer in which a seismic mass supported by a stylus transmits a concentrated force to the upper diode surface of a transistor and acceleration is determined from the resulting change in current across the pn junction of the transistor. \( p_{\text{ez}},p_{\text{trans}},-\text{tar},k_{\text{sel}},p_{\text{ zam}},-\text{d},-\text{ar} \) pi filter [ELECTR] A filter that has a series element and two parallel elements connected in the shape of the Greek letter \( \pi \). \( p_{\text{fil}},-\text{tar} \) pig [ELECTR] 1. An ion source based on the same principle as the Philips ionization gage. 2. See Philips ionization gage. [ENG] In-line scraper (brush, blade cutter, or swab) forced through pipelines by fluid pressure, used to remove scale, sand, water, and other foreign matter from the interior surfaces of the pipe. \( p_{\text{pig}} \) pigtail [ELECT] A short, flexible wire, usually stranded or braided, used between a stationary terminal and a terminal having a limited range of motion, as in relay armatures. \( p_{\text{pig}},t_{\text{آل}} \) pigtail splice [ELECT] A splice made by twisting together the bare ends of parallel conductors. \( p_{\text{pig}},t_{\text{آل}},p_{\text{līς}} \) pike pole [ENG] 1. A pole with a sharp metal point in one end that is used to hold utility poles upright while they are being installed. 2. See fire hook. \( p_{\text{plk}},p_{\text{pōl}} \) pilaster [CIV ENG] A vertical rectangular architectural member that is structurally a pier and architecturally a column. \( p_{\text{plas}},-\text{tōr} \) pile [ENG] A long, heavy timber, steel, or reinforced concrete post that has been driven, jacked, jetted, or cast vertically into the ground to support a load. \( p_{\text{plė}},p_{\text{lī}},{\text{pē}} \) pile bent [CIV ENG] A row of timber or concrete bearing piles with a pile cap forming that part of a trestle which carries the adjacent ends of timber stringers or concrete slabs. \( p_{\text{plē}},p_{\text{lē}},p_{\text{bent}} \) pile cap [CIV ENG] A mass of reinforced concrete cast around the head of a group of piles to ensure that they act as a unit to support the imposed load. \( p_{\text{plē}},p_{\text{kēp}} \) pile dike [CIV ENG] A dike consisting of a group of piles braced and lashed together along a riverbank. \( p_{\text{plē}},d_{\text{īk}} \) pile driver [MECH ENG] A hoist and movable steel frame equipped to handle piles and drive them into the ground. \( p_{\text{plē}},p_{\text{driv}},-\text{ar} \) pile extractor [MECH ENG] 1. A pile hammer which strikes the pile upward so as to loosen its grip and remove it from the ground. 2. A vibratory hammer which loosens the pile by high-frequency jarring. \( p_{\text{plē}},k_{\text{str}},-\text{tār} \) pile formula [MECH] An equation for the forces acting on a pile at equilibrium. \( P = p_{\text{fē}},-\text{t},s_{\text{ē}},-\text{s} \) pile foundation [CIV ENG] A substructure supported on piles. \( p_{\text{fūn}},d_{\text{ā}},-\text{shān} \) pile hammer [MECH ENG] The heavy weight of a pile driver that depends on gravity for its striking power and is used to drive piles into the ground. Also known as drop hammer. \( p_{\text{ham}},-\text{ar} \) pile shoe [CIV ENG] A cast-iron point on the foot of a timber or concrete driven pile to facilitate penetration of the ground. \( p_{\text{shū}}, -\text{shē} \) pillar [CIV ENG] A column for supporting part of a structure. \( p_{\text{πl}},-\text{rē} \) pillar bolt [DES ENG] A bolt projecting from a part so as to support it. \( p_{\text{bōlt}} \)
pinch-tube process
pin diode

**pin diode**  [ELECTR] A diode consisting of a silicon wafer containing nearly equal p-type and n-type impurities, with additional p-type impurities diffused from one side and additional n-type impurities from the other side; this leaves a lightly doped intrinsic layer in the middle, to act as a dielectric barrier between the n-type and p-type regions. Also known as power diode.  *(ˈpinˌdēˌōd)*)

**pinger**  [ENG ACOUS] A battery-powered, low-energy source for an echo sounder  *(ˈpiŋər)*)

**pinhole detector**  [ENG] A photoelectric device that detects extremely small holes and other defects in moving sheets of material.  *(ˈpinˌhōl dīˌtekˈta-r)*)

**pinion**  [MECH ENG] The smaller of a pair of gear wheels or the smallest wheel of a gear train.  *(ˈpin-ˌiōn)*)

**pin point gate**  [ENG] In plastics molding, an ori-fice in a mold cavity through which molten resin enters a mold cavity.  *(ˈpinˌpōintˌgāt)*)

**pin joint**  [DES ENG] A joint made with a pin hinge which has a removable pin. *(ˈpinˌjōnt)*)

**pin junction**  [ELECTR] A semiconductor device having three regions: p-type impurity, intrinsic (electrically pure), and n-type impurity. *(ˈpinˌjung-kənʃən)*)

**pinnacle joint**  See feather joint.  *(ˈpi-nəltˌ jōnt)*)

**pinpoint gate**  [ENG] In plastics molding, an ori-fice of 0.030 inch (0.76 millimeter) or less in diameter through which molten resin enters a mold cavity. *(ˈpinˌpōintˌgāt)*)

**pin rod**  [DES ENG] A rod designed to connect two parts so they act as one. *(ˈpinˌräd)*)

**pint**  [MECH] Abbreviated pt.  1. A unit of volume, used in the United States for measurement of liquid substances, equal to 1/8 U.S. gallon, or 231/8 cubic inches, or 4.731764731 × 10⁻⁴ cubic meter. Also known as liquid pint (liq pt).  *(ˈpin)*)

2. A unit of volume used in the United States for measurement of solid substances, equal to 1/64 U.S. bushel, or 107.521/3200 cubic inches, or approximately 5.05610 × 10⁻⁴ cubic meter. Also known as dry pint (dry pt).  *(ˈpinˌräd)*)

3. A unit of volume, used in the United Kingdom for measurement of liquid and solid substances, although usually the former, equal to 1/8 imperial gallon, or 5.6826125 × 10⁻⁴ cubic meter. Also known as imperial pint. *(ˈpint)*)

**pintle**  [DES ENG] A vertical pivot pin, as on a rudder or a gun carriage. *(ˈpint-əl)*)

**pintle chain**  [DES ENG] A chain with links held together by pivot pins; used with sprocket wheels. *(ˈpint-əlˌchān)*)

**pin-type mill**  [MECH ENG] Solids pulverizer in which protruding pins on high-speed rotating disk provide the breaking energy. *(ˈpinˌtīpˌmīl)*)

**pipe**  [DES ENG] A tube made of metal, clay, plastic, wood, or concrete and used to conduct a fluid, gas, or finely divided solid. *(ˈpip)*)

**pipe bit**  [DES ENG] A bit designed for attachment to standard coupled pipe for use in socketing the pipe in bedrock. *(ˈpipˌbit)*)

**pipebox**  [ENG] In a pipework installation, a casing packed with loose insulation to enclose a set of pipes. *(ˈpipˌbōks)*)

**pipe clamp**  [DES ENG] A device similar to a casing clamp, but used on a pipe to grasp it and facilitate hoisting or suspension. *(ˈpipˌklamp)*)

**pipe culvert**  [CIV ENG] A buried pipe for carrying a watercourse below ground level. *(ˈpipˌkōl-vərt)*)

**pipe cutter**  [DES ENG] A hand tool consisting of a clamplike device with three cutting wheels which are forced inward by screw pressure to cut into a pipe as the tool is rotated around the pipe circumference. *(ˈpipˌkār-vərt)*)

**pipe elbow meter**  [ENG] A variable-head meter for measuring flow around the bend in a pipe. *(ˈpipˌel-bōˌmēd-ər)*)

**pipe fitter**  [ENG] A technician who fits, threads, installs, and repairs pipes in a pipework system. *(ˈpipˌfit-ər)*)

**pipe fitting**  [ENG] A piece, such as couplings, unions, nipples, tees, and elbows for connecting lengths of pipes. *(ˈpipˌfīt-ıŋ)*)

**pipe flow**  [ENG] Conveyance of fluids in closed conduits. *(ˈpipˌflō)*)

**pipe laying**  [ENG] The placing of pipe into position in a trench, as with buried pipelines for oil, water, or chemicals. *(ˈpipˌlā-iŋ)*)

**pipeline**  [ENG] A line of pipe connected to valves and other control devices, for conducting fluids, gases, or finely divided solids. *(ˈpipˌlin)*)

**pipe pile**  [CIV ENG] A steel pipe 6–30 inches (15–76 centimeters) in diameter, usually filled with concrete and used for underpinning. *(ˈpipˌpıl)*)

**pipe run**  [ENG] The path followed by a piping system. *(ˈpipˌrōn)*)

**pipe scale**  [ENG] Rust and corrosion products adhering to the inner surfaces of pipes, serve to decrease ability to transfer heat and to increase the pressure drop for flowing fluids. *(ˈpipˌskāl)*)

**pipe still**  [CHEM ENG] A petroleum-refinery still in which heat is applied to the oil while it is being pumped through a coil or pipe arranged in a firebox, the oil then running to a fractionator with continuous removal of overhead vapor and liquid bottoms. *(ˈpipˌstīl)*)

**pipe sleeve**  [ENG] A hollow, cylindrical insert placed in a form for a concrete wall at the position where a pipe is to penetrate in order to prevent flow of concrete into the opening. *(ˈpipˌsīl)*)

**pipe tee**  [DES ENG] A T-shaped pipe fitting with two outlets, one at 90° to the connection to the main line. *(ˈpipˌti)*)

**pipe thread**  [DES ENG] Most commonly, a 60° thread used on pipes and tubes, characterized by flat crests and roots and cut with 3/4-inch taper per foot (about 1.9 centimeters per 30 centimeters). Also known as taper pipe thread. *(ˈpipˌthrid)*)
pipe-thread protector  See thread protector.

pipe tongs  [ENG] Heavy tongs that are hung on a cable and used for screwing pipe and tool joints.

pipe train  [ENG] In the extrusion of plastic pipe, the entire equipment assembly used to fabricate the pipe (such as the extruder, die, cooling bath, haul-off, and cutter).

pipework  See piping.

piping  [ENG] A system of pipes provided to carry a fluid. Also known as pipework.

piston  [ENG] See force plug. [MECH ENG] A sliding metal cylinder that reciprocates in a tubular housing, either moving against or moved by fluid pressure.

piston blower  [MECH ENG] A piston-operated, positive-displacement air compressor used for stationary, automobile, and marine duty.

piston corer  [MECH ENG] A steel tube which is driven into the sediment by a free fall and by lead attached to the upper end, and which is capable of recovering undistorted vertical sections of sediment.

piston displacement  [MECH ENG] The volume which a piston in a cylinder displaces in a single stroke, equal to the distance the piston travels times the internal cross section of the cylinder.

piston drill  [MECH ENG] A heavy percussion-type rock drill mounted either on a horizontal bar or on a short horizontal arm fastened to a vertical column; drills holes to 6 inches (15 centimeters) in diameter. Also known as reciprocating drill.

piston engine  [MECH ENG] A type of engine characterized by reciprocating motion of pistons in a cylinder. Also known as displacement engine, reciprocating engine.

piston gage  See free-piston gage.

piston head  [MECH ENG] That part of a piston above the top ring.

piston meter  [ENG] A variable-area, constant-head fluid-flow meter in which the position of the piston, moved by the buoyant force of the liquid, indicates the flow rate. Also known as piston-type area meter.

pistonphone  [ENG ACOUS] A small chamber equipped with a reciprocating piston having a measurable displacement and used to establish a known sound pressure in the chamber, as for testing microphones.

piston pin  [MECH ENG] A cylindrical pin that connects the connecting rod to the piston. Also known as wrist pin.

piston pump  [MECH ENG] A pump in which motion and pressure are applied to the fluid by a reciprocating piston in a cylinder. Also known as reciprocating pump.

piston ring  [DES ENG] A sealing ring fitted around a piston and extending to the cylinder wall to prevent leakage. Also known as packing ring.

piston skirt  [MECH ENG] That part of a piston below the piston pin bore.

piston speed  [MECH ENG] The total distance a piston travels in a given time; usually expressed in feet per minute.

piston-type area meter  See piston meter.

piston valve  [MECH ENG] A cylindrical type of steam engine slide valve for admission and exhaust of steam.

piston viscometer  [ENG] A device for the measurement of viscosity by the timed fall of a piston through the liquid being tested.

pitch  [DES ENG] The distance between similar elements arranged in a pattern or between two points of a mechanical part, as the distance between the peaks of two successive grooves on a disk recording or on a screw. [MECH] 1. Of an aerospace vehicle, an angular displacement about an axis parallel to the lateral axis of the vehicle. 2. The rising and falling motion of the bow of a ship or the tail of an airplane as the craft oscillates about a transverse axis.

pitch acceleration  [MECH] The angular acceleration of an aircraft or missile about its lateral, or Y, axis.

pitch attitude  [MECH] The attitude of an aircraft, rocket, or other flying vehicle, referred to the relationship between the longitudinal body axis and a chosen reference line or plane as seen from the side.

pitch axis  [MECH] A lateral axis through an aircraft, missile, or similar body, about which the body pitches. Also known as pitching axis.

pitch circle  [DES ENG] In toothed gears, an imaginary circle concentric with the gear axis which is defined at the thickest point on the teeth and along which the tooth pitch is measured.

pitch cone  [DES ENG] A cone representing the pitch surface of a bevel gear.

pitch cylinder  [DES ENG] A cylinder representing the pitch surface of a spur gear.

pitch diameter  [DES ENG] The diameter of the pitch circle of a gear.

pitched roof  [BUILD] 1. A roof that has one or more surfaces with a slope greater than 10°. 2. A roof that has two slopes meeting at a central ridge.

pitching axis  See pitch axis.

pitching moment  [MECH] A moment about a lateral axis of an aircraft, rocket, or airfoil.

pitch line  See cam profile.

pitman  [ENG] 1. A worker in or near a pit, as in a quarry, mine, garage, or foundry. 2. On a
pumping unit, an arm connecting the crank with the walking beam for converting rotary motion to reciprocating motion. [MECH ENG] In an automotive steering system, the arm that is connected to the shaft of the steering gear sector and the tie rod, and swings back and forth as the steering wheel is turned. Also known as pitman arm. { `pit-man` }
pitman arm See pitman. { `pit-man` , `árm` }
pitometer [ENG] Reversed pitot-tube-type flow-measurement device with one pressure opening facing upstream and the other facing downstream. { `pøtı-møtər` }
pitometer log [ENG] A log consisting essentially of a pitot tube projecting into the water, and suitable registering devices. { `pøtı-møtər` , `løg` }
pitot tube [ENG] An instrument that measures the stagnation pressure of a flowing fluid, consisting of an open tube pointing into the fluid and connected to a pressure-indicating device. Also known as impact tube. { `pøtø` , `tøb` }
pitot-tube anemometer [ENG] A pressure-tube anemometer consisting of a pitot tube mounted on the windward end of a wind vane and a suitable manometer to measure the developed pressure, and calibrated in units of wind speed. { `pøtø`tø , `ønəmənə-mətər` }
pitot-venturi flow element [ENG] Liquid-flow measurement device in which a pair of concentric venturi elements replaces the pitot-tube probe. { `pøtø-ventu-rə` , `fələ` , `ənə-mənt` }
pivot [MECH] A short, pointed shaft forming the center and fulcrum on which something turns, balances, or oscillates. { `piv-ət` }
pivot anchor [DES ENG] An anchor that permits a pipe to swivel about a fixed point. { `piv-ət` , `ənə-kənər` }
pivot bridge [CIV ENG] A bridge in which a span can open by pivoting about a vertical axis. { `piv-ət` , `bri` }
pivot-bucket conveyor-elevator [MECH ENG] A bucket conveyor having overlapping pivoted buckets on long-pitch roller chains; buckets are always level except when tripped to discharge materials. { `piv-ət` , `bak-ət` , `kənər` , `ələ` , `vəd-ər` }
pivoted window [BUILD] A window having a section which is pivoted near the center so that the top of the section swings in and the bottom swings out. { `piv-əd-əd` , `win-du` }
pixel [ELECTR] The smallest addressable element in an electronic display; a short form for picture element. Also known as pel. { `pik-əl` }

pk [ScW pexck]
plain concrete [CIV ENG] Concrete without reinforcement but often with light steel to reduce shrinkage and temperature cracking. { `płən` , `kənər-kət` }
plain-laid [DES ENG] Pertaining to a rope whose strands are twisted together in a direction opposite to that of the twist in the strands. { `płən` , `lad` }
plain milling cutter [DES ENG] A cylindrical milling cutter with teeth on the periphery only; used for milling plain or flat surfaces. Also known as slab cutter. { `płən` , `mil-ə-jəd` , `kəd-ər` }
plain turning [MECH ENG] Lathe operations involving when machining a workpiece between centers. { `płən` , `tərn-ə-jə` }
planar linkage [MECH ENG] A linkage that involves motion in only two dimensions. { `płə-nər` , `lin-ə-kən` }
planar process [ENG] A silicon-transistor manufacturing process in which a fractional-micrometer-thick oxide layer is grown on a silicon substrate; a series of etching and diffusion steps is then used to produce the transistor inside the silicon substrate. { `płə-nər` , `pré-səs` }
planchet [ENG] A small metal container or sample holder, usually used to hold radioactive materials that are being checked for the degree of radioactivity in a proportional counter or scintillation detector. { `plan-çhæt` }
Planck function [THERMO] The negative of the Gibbs free energy divided by the absolute temperature. { `pλæŋk` , `fæŋk-ʃon` }
plane [DES ENG] A tool consisting of a smooth-soled stock from the face of which extends a wide-edged cutting blade for smoothing and shaping wood. [ELECTR] Screen of magnetic cores; planes are combined to form stacks. { `pλən` }
plane correction [ENG] A correction applied to observed surveying data to reduce them to a common reference plane. { `pλən` , `krεk-ʃon` }
plane lamina [MECH] A body whose mass is concentrated in a single plane. { `pλən` , `ləm-ə-nə` }
plane of departure [MECH] Vertical plane containing the path of a projectile as it leaves the muzzle of the gun. { `pλən` , `də-pər-tur` , `kər-ə` }
plane of fire [MECH] Vertical plane containing the gun and the target, or containing a line of sight. { `pλən` , `fər` }
plane of maximum shear stress [MECH] Either of two planes that lie on opposite sides of and at angles of 45° to the maximum principal stress axis and that are parallel to the intermediate principal stress axis. { `pλən` , `mak-si-mən` , `əs` , `sər` }
plane of work [IND ENG] The plane in which most of a worker’s motions occur in the performance of a task. { `pλən` , `wərk` }
plane of yaw [MECH] The plane determined by the tangent to the trajectory of a projectile in flight and the axis of the projectile. { `pλən` , `yə` }
plan equation [MECH ENG] The mathematical statement that horsepower = \( p = \frac{33,000}{4} \) \( \text{rpm} \) \( \frac{\text{in}}{4} \) \( \text{m} \) \( \text{gal} \) \( \text{area} \) \( \text{force} \) \( \text{cycles} \) \( \text{minute} \). { `pλən` , `i` , `kəwə-ζən` }
planner [MECH ENG] A machine for the shaping of long, flat, or flat contoured surfaces by recipro-
cating the workpiece under a stationary single-point tool or tools. \{'planét,ər\}

**plant layout** [IND ENG] The location of equipment and facilities in a manufacturing plant. \{'plant \,lā,aü̯t\}

**plant layout** [ELEC] The ratio of the average power load of an electric power plant to its rated capacity. Also known as capacity factor. \{'plant fak-tər\}

**plant protection** [IND ENG] That portion of industrial security which concerns the safeguarding of industrial installations, resources, utilities, and materials by physical measures such as guards, fences, and lighting designation of restricted areas. \{'plant prə,tek-shən\}

**plastic bonding** [MECH] Displaying, or associated with, plasticity. \{'plas-tik\}

**plastic deformation** [MECH] Permanent change in shape or size of a solid body without fracture resulting from the application of sustained stress beyond the elastic limit. \{'plas-tik ,dē,for'ma-shən\}

**plastic processing** [ENG] Methods and technologies that utilize a plasma to treat and manufacture materials, generally through etching, deposition, or chemical alteration at a surface inside or at the boundary of the plasma. \{'plaz-mə prə,ses-iə\}

**plastic-source ion implantation** [ENG] A method of ion implantation in which the workpiece is placed in a plasma containing the appropriate ion species and is repetitively pulse-biased to a high negative potential so that positive plasma ions are accelerated to the surface and implant in the bulk material. Abbreviated PSII. \{'plaz-mə, sors \,tə-an, im-plan,tə-shən\}

**plasmata** [SECONDARY ENG] A net for collecting plankton, in close contact with the rock or boulder. \{'plan-sət\}

**planimeter** [ENG] A device used for measuring the area of any plane surface by tracing the boundary of the area. \{'plan-im-ər\}

**planishing** [MECH ENG] Smoothing or shaping the surface of a metal, and cutting of hard rock or hard materials. \{'plan-ə\}

**planishing** [BUILD] A thin layer of plaster lining walls in buildings. \{'plas-tər \,köt\}

**plaster coat** [BUILD] A piece of wood used as a gage to control the thickness of a plaster coat placed on a wall; usually put around windows and doors and at the floor. \{'plas-tər \,gраʊnd\}

**plaster ground** [BUILD] A piece of wood used as a gage to control the thickness of a plaster coat placed on a wall; usually put around windows and doors and at the floor. \{'plas-tər \,gраʊnd\}

**plaster shooting** [ENG] A surface blasting method used when no rock drill is necessary or one is not available, consists of placing a charge of gelignite, primed with safety fuse and detonator in close contact with the rock or boulder and covering it completely with stiff damp clay. \{'plas-tər \,shūd-iə\}

**plastic** [MECH] Displaying, or associated with, plasticity. \{'plas-tik\}

**plasticize** [ENG] To soften a material by heating or kneading. Also known as plastify. \{'plas-tə,kat\}

**plastic bonding** [ENG] The joining of plastics by heat, solvents, adhesives, pressure, or radio frequency. \{'plas-tik \,bänd-iə\}

**plastic collision** [MECH] A collision in which one or both of the colliding bodies suffers plastic deformation and mechanical energy is dissipated. \{'plas-tik kəliz-iən\}

**plastic deformation** [MECH] Permanent change in shape or size of a solid body without fracture resulting from the application of sustained stress beyond the elastic limit. \{'plas-tik ,dē,for'ma-shən\}

**plasmarc cutting** [ENG] Metal cutting by melting a localized area with an arc followed by removal of metal by high-velocity, high-temperature ionized gas. \{'plaz-mə \,järk \,kəd-iə\}

**plasma processing** [ENG] Methods and technologies that utilize a plasma to treat and manufacture materials, generally through etching, deposition, or chemical alteration at a surface inside or at the boundary of the plasma. \{'plaz-mə prə,ses-iə\}

**planar gear train** [MECH ENG] An assembly of meshed gears consisting of a central gear, a coaxial internal or ring gear, and one or more intermediate pinions supported on a revolving carrier. \{'plan-ər \,tər\,ə \,gir\,tən\}

**planar carrier** [MECH ENG] A fixed member in a planetary gear train that contains the shaft upon which the planet pinion rotates. \{'plan-ər \,kær\,rə\}

**plankton net** [ENG] A net for collecting plankton. \{'plank-ton \,nət\}

**plant** [IND ENG] The land, buildings, and equipment used in an industry. \{'plant\}

**plant** [CONT SYS] The partitioning of a large-scale control system into subsystems along lines of weak interaction. \{'plant dë,käm-pə\,zish-ən\}

**plant factor** [ELEC] The ratio of the average power load of an electric power plant to its rated capacity. Also known as capacity factor. \{'plant fak-tər\}

**plant layout** [IND ENG] The location of equipment and facilities in a manufacturing plant. \{'plant \,lā,aü̯t\}

**plant** [ENG] Measurement of areas and facilities in a manufacturing plant. \{'plant \,lā,aü̯t\}

**plant protection** [IND ENG] That portion of industrial security which concerns the safeguarding of industrial installations, resources, utilities, and materials by physical measures such as guards, fences, and lighting designation of restricted areas. \{'plant prə,tek-shən\}

**planimetry** [ENG] The land, buildings, and equipment used in an industry. \{'plant\}

**plastic deformation** [MECH] Permanent change in shape or size of a solid body without fracture resulting from the application of sustained stress beyond the elastic limit. \{'plas-tik ,dē,for'ma-shən\}

**plasmarc cutting** [ENG] Metal cutting by melting a localized area with an arc followed by removal of metal by high-velocity, high-temperature ionized gas. \{'plaz-mə \,järk \,kəd-iə\}

**plasma-processing** [ENG] Methods and technologies that utilize a plasma to treat and manufacture materials, generally through etching, deposition, or chemical alteration at a surface inside or at the boundary of the plasma. \{'plaz-mə prə,ses-iə\}

**plasmarc cutting** [ENG] Metal cutting by melting a localized area with an arc followed by removal of metal by high-velocity, high-temperature ionized gas. \{'plaz-mə \,järk \,kəd-iə\}

**plasma processing** [ENG] Methods and technologies that utilize a plasma to treat and manufacture materials, generally through etching, deposition, or chemical alteration at a surface inside or at the boundary of the plasma. \{'plaz-mə prə,ses-iə\}

**plasmarc cutting** [ENG] Metal cutting by melting a localized area with an arc followed by removal of metal by high-velocity, high-temperature ionized gas. \{'plaz-mə \,järk \,kəd-iə\}

**plasma processing** [ENG] Methods and technologies that utilize a plasma to treat and manufacture materials, generally through etching, deposition, or chemical alteration at a surface inside or at the boundary of the plasma. \{'plaz-mə prə,ses-iə\}

**planar gear train** [MECH ENG] An assembly of meshed gears consisting of a central gear, a coaxial internal or ring gear, and one or more intermediate pinions supported on a revolving carrier. \{'plan-ər \,tər\,ə \,gir\,tən\}

**planar carrier** [MECH ENG] A fixed member in a planetary gear train that contains the shaft upon which the planet pinion rotates. \{'plan-ər \,kær\,rə\}

**plankton net** [ENG] A net for collecting plankton. \{'plank-ton \,nət\}

**plant** [IND ENG] The land, buildings, and equipment used in an industry. \{'plant\}

**plant** [CONT SYS] The partitioning of a large-scale control system into subsystems along lines of weak interaction. \{'plant dë,käm-pə\,zish-ən\}

**plant factor** [ELEC] The ratio of the average power load of an electric power plant to its rated capacity. Also known as capacity factor. \{'plant fak-tər\}

**plant layout** [IND ENG] The location of equipment and facilities in a manufacturing plant. \{'plant \,lā,aü̯t\}

**plant protection** [IND ENG] That portion of industrial security which concerns the safeguarding of industrial installations, resources, utilities, and materials by physical measures such as guards, fences, and lighting designation of restricted areas. \{'plant prə,tek-shən\}

**plasmarc cutting** [ENG] Metal cutting by melting a localized area with an arc followed by removal of metal by high-velocity, high-temperature ionized gas. \{'plaz-mə \,järk \,kəd-iə\}

**plasma processing** [ENG] Methods and technologies that utilize a plasma to treat and manufacture materials, generally through etching, deposition, or chemical alteration at a surface inside or at the boundary of the plasma. \{'plaz-mə prə,ses-iə\}

**planar gear train** [MECH ENG] An assembly of meshed gears consisting of a central gear, a coaxial internal or ring gear, and one or more intermediate pinions supported on a revolving carrier. \{'plan-ər \,tər\,ə \,gir\,tən\}

**planar carrier** [MECH ENG] A fixed member in a planetary gear train that contains the shaft upon which the planet pinion rotates. \{'plan-ər \,kær\,rə\}

**plankton net** [ENG] A net for collecting plankton. \{'plank-ton \,nət\}

**plant** [IND ENG] The land, buildings, and equipment used in an industry. \{'plant\}

**plant** [CONT SYS] The partitioning of a large-scale control system into subsystems along lines of weak interaction. \{'plant dë,käm-pə\,zish-ən\}

**plant factor** [ELEC] The ratio of the average power load of an electric power plant to its rated capacity. Also known as capacity factor. \{'plant fak-tər\}

**plant layout** [IND ENG] The location of equipment and facilities in a manufacturing plant. \{'plant \,lā,aü̯t\}
plastic design See ultimate-load design. {‘plas-tik di’zin}

plasticity [MECH] The property of a solid body whereby it undergoes a permanent change in shape or size when subjected to a stress exceeding a particular value, called the yield value. {‘plas-tis-åd-ě}

plasticize [ENG] To soften a material to make it plastic or moldable by adding a plasticizer or by using heat. {‘plas-ta-siz}

plasticorder [ENG] Laboratory device used to predict the performance of a plastic material by measurement of temperature, viscosity, and shear-rate relationships. Also known as plasticograph. {‘plas-ta-kör-ård-ar}

plasticoviscosity [MECH] Plasticity in which device made up of a stack or layers, with each the rate of deformation of a body subjected to stresses greater than the yield stress is a linear function of the stress. {‘plas-ta-kvi’skä-såd-ě}

plastify See plasticize. {‘plas-ta-fy}

plastigraph See plasticorder. {‘plas-ta-graf}

plastimeter [ENG] Instrument used to determine the flow properties of a thermoplastic resin by forcing molten resin through a specified die opening or orifice at a given pressure and temperature. {‘plas-timåt-ård-ar}

plate [BUILD] 1. A shoe or base member, such as of a partition or other kind of frame. 2. The top horizontal member of a row of studs used in a frame wall. [DES ENG] A rolled, flat piece of metal of some arbitrary minimum thickness and width depending on the type of metal. [ELEC] 1. One of the conducting surfaces in a capacitor. 2. One of the electrodes in a storage battery. [ELECTR] See anode. {‘plat}

plate anemometer See pressure-plate anemometer. {‘plat ,an-ä-nem-ård-ar}

plate bearing test [ENG] Former method to estimate the bearing capacity of a soil, a rigid steel plate about 1 foot (30 centimeters) square was placed on the foundation level and then loaded until the foundation failed, as evidenced by rapid sinking of the plate. {‘plat ‘ber-ing ,test}

plate-belt feeder See apron feeder. {‘plat ‘belt ‘féd-ar}

plate cam [MECH ENG] A flat, open cam that imparts a sliding motion. {‘plat ‘kam}

plate coil [MECH ENG] Heat-transfer device made from two metal sheets held together, one or both plates embossed to form passages between them for a heating or cooling medium to flow through. Also known as panel coil. {‘plat ‘koił}

plate conveyor [MECH ENG] A conveyor with a series of steel plates as the carrying medium; each plate is a short trough, all slightly overlapped to form an articulated band, and attached to one center chain or to two side chains, the chains join rollers running on an angle-iron framework and transmit the drive from the driveheads, installed at intermediate points and sometimes also at the head or tail ends. {‘plat kån,vå-år}

plate cut [BUILD] The cut made in a rafter to rest on the plate. {‘plat ‘kat}

plated circuit [ELECTR] A printed circuit produced by electrodeposition of a conductive pattern on an insulating base. Also known as plated printed circuit. {‘plåd-ad ‘sår-kat}

plated printed circuit See plated circuit. {‘plåd-ad ‘print-ad ‘sår-kat}

plate efficiency [CHEM ENG] The equilibrium produced by an actual plate of a distillation column or countercurrent tower extractor compared with that of a perfect plate, expressed as a ratio. [ELECTR] See anode efficiency. {‘plåt i,fish-an-så-re}

plate feeder See apron feeder. {‘plat ‘féd-ar}

plate-fin exchanger [MECH ENG] Heat-transfer device made up of a stack or layers, with each layer consisting of a corrugated fin between flat metal sheets sealed off on two sides by channels or bars to form passages for the flow of fluids. {‘plat ‘fin iks,chan-jår}

plate girder bridge [CIV ENG] A fixed bridge consisting, in its simplest form, of two flange plates welded to a web plate in the overall shape of an I. {‘plat ‘gård-ar}

plate modulus [MECH] The ratio of the stress component $T_{xx}$ in an isotropic, elastic body obeying a generalized Hooke’s law to the corresponding strain component $S_{xx}$, when the strain components $S_{yy}$ and $S_{zz}$ are 0; the sum of the Poisson ratio and twice the rigidity modulus. {‘plat ‘måj-å-lås}

platen [ENG] 1. A flat plate against which something rests or is pressed. 2. The rubber-covered roller of a typewriter against which paper is pressed when struck by the typebars. [MECH ENG] A flat surface for exchanging heat in a boiler or heat exchanger which may have extended heat transfer surfaces. {‘plat-an}

plate-shear test [ENG] A method used to get true shear data on a honeycomb core by bonding the core between two thick steel plates and subjecting the core to shear by displacing the plates relative to each other by loading in either tension or compression. {‘plat ‘shir ‘test}

plate tower [CHEM ENG] A distillation tower along the internal height of which is a series of transverse plates (bubble-cap or sieve) to force intimate contact between downward flowing liquid and upward flowing vapor. {‘plat ‘tår-ar}

plate-type exchanger [MECH ENG] Heat-exchange device similar to a plate-and-frame filter press; fluids flow between the frame-held plates, transferring heat between them. {‘plat ,tip iks,chan-jår}

plate vibrater [ENG] A mechanically operated tamper fitted with a flat base. {‘plat vi’bråd-ar}

platform balance [ENG] A weighing device with a flat plate mounted above a balanced beam. {‘plat ,förm ,bal-åns}

platform blowing [ENG] Special technique for
blow-molding large parts made of plastic without sagging of the part being formed. (plenum, blö-o)

platform conveyor [MECH ENG] A single- or double-strand conveyor with plates of steel or hardwood forming a continuous platform on which the loads are placed. (platform, förm kon, våå-or)

platform framing [BUILD] A construction method in which each floor is framed independently by nailing the horizontal framing member to the top of the wall studs. (platform, förm, främ-iëj)

platinum resistance thermometer [ENG] The basis of the International Practical Temperature Scale of 1968 from 259.35°C to 630.74°C, used in industrial thermometers in the range 0 to 650°C; capable of high accuracy because platinum is noncorrosive, ductile, and nonvolatile, and can be obtained in a very pure state. Also known as Callendar’s thermometer. (platinum, an-am, täl-bol, an-äm-ad-ar; plam-

play [MECH ENG] Free or unimpeded motion of an object, such as the motion between poorly fitted or worn parts of a mechanism. (pla)

playback [ENG ACOUS] Reproduction of a sound recording. (playback, bak)

playback robot [CONT SYS] A robot that repeats the same sequence of motions in all its operations, and is first instructed by an operator who puts it through this sequence. (pla,bak, ro,bät)

play for position [IND ENG] The prepositioning of an object by a worker for a subsequent operation in the performance of a task. (plå for pa’żish-an)

pleated cartridge [DES ENG] A filter cartridge made into a convoluted form that resembles the folds of an accordion. (pléad-d, kår-triñ)

plenum [ENG] A condition in which air pressure within an enclosed space is greater than that in the outside atmosphere. (plén-um)

plenum blower assembly [MECH ENG] An automotive air-conditioning system, the assembly through which air passes on its way to the evaporator or heater core. (plé-num ’blö-or, a,sem-bële)

plenum chamber [ENG] An enclosed space in which a plenum condition exists; air is forced into it for slow distribution through ducts. (plen-am, chäm-bor)

plenum system [MECH ENG] A heating or air conditioning system in which air is forced through a plenum chamber for distribution to ducts. (plen-am, sis-tom)

pli [MECH] A unit of line density (mass per unit length) equal to 1 pound per inch, or approximately 17.8580 kilograms per meter. (plë)

pliers [DES ENG] A small instrument with two handles and two grasping jaws, usually long and roughened, working on a pivot, used for holding small objects and cutting, bending, and shaping wire. (plër-arz)

plinth block See skirting block. (plinth, pläk)

plot [CIV ENG] A measured piece of land. (plat)

plotter [ENG] A visual display or board on which a dependent variable is graphed by an automatically controlled pen or pencil as a function of one or more variables. (plåd-ar)

plotting board [ENG] The surface portion of a plottor, on which graphs are recorded. Also known as plotting table. (plåd-iëj, börd)

plotting table See plotting board. (plåd-iëj, tål-bal)

plough [ENG] A groove cut lengthwise with the grain in a piece of wood. (plau)

ploughed-and-tongued joint See feather joint. (pluad on ’tagj, joit)

plowshare [DES ENG] The pointed part of a moldboard plow, which penetrates and cuts the soil first. (plau, sher)

plug [ELEC] The half of a connector that is normally movable and is generally attached to a cable or removable subassembly, inserted in a jack, outlet, receptacle, or socket. (plag)

plug-and-feather hole [ENG] A hole drilled in pieces for the purpose of splitting a block of stone by the plug-and-feather method. (plag on ’feth-ar, höl)

plug bit See noncorring bit. (plåg, bit)

plug check See plug valve. (plåg, kåk)

plug cutter [DES ENG] A device for boring out short dowels or plugs from wood that exactly match standard drill sizes. (plag, kad-ar)

plug forming [ENG] Thermoforming process for plastics molding in which a plug or male mold is used to partially preform the part before forming is completed, using vacuum or pressure. (plåg, förm-iëj)

plug gage [DES ENG] A steel gage that is used to test the dimension of a hole, may be straight or tapered, plain or threaded, and of any cross-sectional shape. (plag, gaj)

plugging [ELEC] Braking an electric motor by reversing its connections, so it tends to turn in the opposite direction, the circuit is opened automatically when the motor stops, so the motor does not actually reverse. (ENG) The formation of a barrier (plug) of solid material in a process flow system, such as a pipe or reactor. (plag-in)

plug meter [ENG] A variable-area flowmeter in which a tapered plug, located in an orifice and raised until the resulting opening is sufficient to handle the fluid flow, is used to measure the flow rate. (plåg, méd-ar)

plug valve [MECH ENG] A valve fitted with a plug that has a hole through which fluid flows and that is rotatable through 90° for operation in the open or closed position. Also known as plug cock. (plåg, valv)

plumb [ENG] Pertaining to an object or structure in true vertical position as determined by a plumb bob. (plam)

plumb bob [ENG] A weight suspended on a string to indicate the direction of the vertical. (plam, bab)

plumb bond [CIV ENG] A masonry bond in
which corresponding joints (for example, on alternate courses) are aligned. ('plam,bänd)

plumbing [CIV ENG] The system of pipes and fixtures concerned with the introduction, distribution, and disposal of water in a building. ('plam,ín)

plumb line [ENG] The string on which a plumb bob hangs. ('plám.lin)

plummeter [ENG] A loose-fitting metal plug in a tapered rotameter tube which moves upward (or downward) with an increase (or decrease) in fluid flow rate upward through the tube. Also known as float. ('plám,át)

plunge [ENG] To set the horizontal cross hair of a theodolite in the direction of a grade when establishing a grade between two points of known level. ('plánj)

plunge grinding [MECH ENG] Grinding in which the wheel moves radially toward the work. ('plánj,grindaın)

plunger [DES ENG] A wooden shaft with a large rubber suction cup at the end, used to clear plumbing traps and waste outlets. [ENG] See force plug. [MECH ENG] The long rod or piston of a reciprocating pump. ('plánjar,pump)

plunger-type instrument [ENG] Moving-iron instrument in which the pointer is attached to a long and specially shaped piece of iron that is drawn into or moved out of a coil carrying the current to be measured. ('plánjar,țil, în,stranț)

pluviograph See recording rain gage. ('pl vai,gráf)

pluviometer See rain gage. ('pl vai,veîm,ad,ar)

PMOS [ELECTR] Metal-oxide semiconductors that are made on n-type substrates, and whose active carriers are holes that migrate between process vessel by the use of air pressure. ('pe,ni,te,me,nik)

pneumatic [ENG] Pertaining to or operated by air or other gas. ('nú,ma,đ-ik)

pneumatic atomizer [MECH ENG] An atomizer that uses compressed air to produce drops in the diameter range of 5–100 micrometers. ('nú,ma,đ-ik,'a,d,am,li,ż,ar)

pneumatic caisson [CIV ENG] A caisson having a chamber filled with compressed air at a pressure equal to the pressure of the water outside. ('nú,ma,đ-ik,'ka,sán)

pneumatic controller [MECH ENG] A device for the mechanical movement of another device (such as a valve stem) whose action is controlled by variations in pneumatic pressure connected to the controller. ('nú,ma,đ-ik,kan,țróbıł,ar)

pneumatic control valve [MECH ENG] A valve in which the force of compressed air against a diaphragm is opposed by the force of a spring to control the area of the opening for a fluid stream. ('nú,ma,đ-ik,kan,țróbıł, yalv)

pneumatic conveyor [MECH ENG] A conveyor which transports dry, free-flowing, granular material in suspension, or a cylindrical carrier, within a pipe or duct by means of a high-velocity airstream or by pressure of vacuum generated by an air compressor. Also known as air conveyor. ('nú,ma,đ-ik,kan,vă,ăr)

pneumatic drill [MECH ENG] Compressed-air drill worked by reciprocating piston, hammer action, or turbo drive. ('nú,ma,đ-ik,'drıl)

pneumatic drilling [MECH ENG] Drilling a hole when using air or gas in lieu of conventional drilling fluid as the circulating medium; an adaptation of rotary drilling. ('nú,ma,đ-ik,'drıl,un,ț)

pneumatic hammer [MECH ENG] A hammer in which compressed air is utilized for producing the impacting blow. Also known as air hammer, jack hammer. ('nú,ma,đ-ik,'hám,ăr)

pneumatic hoist See air hoist. ('nú,ma,đ-ik,'hóıst)

pneumatic loudspeaker [ENG ACOUS] A loudspeaker in which the acoustic output results from controlled variation of an airstream. ('nú,ma,đ-ik,'laid,speiker)

pneumatic riveter [MECH ENG] A riveting machine having a rapidly reciprocating piston driven by compressed air. ('nú,ma,đ-ik,'riv,ad,ăr)

pneumatic servo See valve positioner.

pneumatic servomechanism [CONT SYS] A servomechanism in which power is supplied and transmission of signals is carried out through the medium of compressed air. ('nú,ma,đ-ik,'sará,vó,'mek,am,ni,ț,om)

pneumatic telemetering [ENG] The transmission of a pressure impulse by means of pneumatic pressure through a length of small-bore tubing; used for remote transmission of signals from primary process-unit sensing elements for pressure, temperature, flow rate, and so on. ('nú,ma,đ-ik,'tel,am,med,am,ni,ț)

pneumatic test [ENG] Pressure testing of a process vessel by the use of air pressure. ('nú,ma,đ-ik,'te,șt,ar)

pneumatic weighing system [ENG] A system for weight measurement in which the load is detected by a nozzle and balanced by modulating the air pressure in an opposing capsule. ('nú,ma,đ-ik,'wai,și,ț,om)

pn hook transistor See hook collector transistor. ('pe,ʃen,'huk,țran,zis,țar)

pnp transistor [ELECTR] An intrinsic junction transistor in which the intrinsic region is sandwiched between the n-type base and the p-type collector. ('pe,en,țpe,țran,zis,țar)

pn junction [ELECTR] The interface between two regions in a semiconductor crystal which have been treated so that one is a p-type semiconductor and the other is an n-type semiconductor; it contains a permanent dipole charge layer. ('pe,en,țan,kın,șan)

pnp diode [ELECTR] A semiconductor device consisting of four alternate layers of p-type and n-type semiconductor material, with terminal connections to the two outer layers. Also known as npnp diode. ('pe,șen,pe,șen,di,od)
point contact
point-blank range
point-bearing pile
Poinsot's method
Poinsot's central axis
[MECH] A line through a 
Poinsot ellipsoid
Poinsot's central axis
pod
[DES ENG] 1. The socket for a bit in a brace. 2. A straight groove in the barrel of a pod auger
Podbielniak extractor
[CHEM ENG] A solvent-extraction device in which centrifugal action enhances liquid-liquid contact and increases resultant separation efficiency.
[MECH] A method of displaying the character of a particular trajectory without examining its complete time development, in which the trajectory is sampled periodically, and the rate of change of a quantity under study is plotted against the value of that quantity at the beginning of each period. Also known as surface of section.
point of contraflexure
[MECH] A point at which the direction of bending changes. Also known as point of inflection.
point of control
[IND ENG] Fraction defective in those lots that have a probability of 50 of acceptance according to a specific sampling acceptance plan.
point of deambulation
point of fall
[MECH] The point in the curved path of a falling projectile that is level with the muzzle of the gun. Also known as level point.
point of frog
[CIV ENG] The place of intersection of the gage lines of the main track and a turnout.
point of inflection
See point of contraflexure.
point of intersection
[CIV ENG] The point at which two straight sections or tangents to a road curve or rail curve meet when extended.
point of origin
point of tangency
[CIV ENG] The point at which a road curve or railway curve becomes straight or changes its curvature. Also known as tangent point.
point source
[CIV ENG] A municipal or industrial wastewater discharge through a discrete pipe or channel.
point system
[pnpn transistor] See npnp transistor.
pnp transistor [ELECTR] A junction transistor having an n-type base between a p-type emitter and a p-type collector.
pocket
[BUILD] A recess in a wall designed to receive a folding or sliding door in the open position.
[CIV ENG] A recess made in masonry to receive the end of a beam.
pod
[DES ENG] 1. The socket for a bit in a brace.
2. A straight groove in the barrel of a pod auger
Podbielniak extractor
[CHEM ENG] A solvent-extraction device in which centrifugal action enhances liquid-liquid contact and increases resultant separation efficiency.
[MECH] A method of displaying the character of a particular trajectory without examining its complete time development, in which the trajectory is sampled periodically, and the rate of change of a quantity under study is plotted against the value of that quantity at the beginning of each period. Also known as surface of section.
point of contraflexure
[MECH] A point at which the direction of bending changes. Also known as point of inflection.
point of control
[IND ENG] Fraction defective in those lots that have a probability of 50 of acceptance according to a specific sampling acceptance plan.
point of deformation
point of deambulation
point of fall
[MECH] The point in the curved path of a falling projectile that is level with the muzzle of the gun. Also known as level point.
point of frog
[CIV ENG] The place of intersection of the gage lines of the main track and a turnout.
point of inflection
See point of contraflexure.
point of intersection
[CIV ENG] The point at which two straight sections or tangents to a road curve or rail curve meet when extended.
point of origin
point of tangency
[CIV ENG] The point at which a road curve or railway curve becomes straight or changes its curvature. Also known as tangent point.
point source
[CIV ENG] A municipal or industrial wastewater discharge through a discrete pipe or channel.
point system
[IND ENG] 1. A system of job evaluation wherein job requirements are rated according to a scale of point values. 2. A wage incentive plan based on points instead of man-minutes.
point-to-point programming [CONT SYS] A method of programming a robot in which each major change in the robot’s path of motion is recorded and stored for later use. {'point to point ’pɔɪnt tə ’pɔɪnt ’prɔ:gram-’iŋ} 
polar radiation pattern [ENG ACOUS] A diagram showing the strength of sound waves radiated from a loudspeaker in various directions in a given plane, or a similar response pattern for a microphone. {'pɔlər ’rej-drə-’pæt-ən} 
polar timing diagram [MECH ENG] A diagram of the events of an engine cycle relative to crankshaft position. {'pɔlər ’tɪm-’ɪŋ ,dɪ-’ɑr-’ɡræm} 
polder [CIV ENG] Land reclaimed from the sea or other body of water by the construction of an embankment to restrain the water. {'pɔl-ər} 
pole [ELEC] 1. One of the electrodes in an electric cell. 2. An output terminal on a switch; a double-pole switch has two output terminals. [MECH] 1. A point at which an axis of rotation or of symmetry passes through the surface of a body. 2. See perch. {'pɔl} 
pole-dipole array [ENG] An electrode array used in a lateral search conducted during a resistivity or induced polarization survey, or in drill hole logging, in which one current electrode is placed at infinity while another current electrode and two potential electrodes in proximity are moved across the structure to be investigated. {'pɔl ’dɹ,plɔl ə ɹə} 
pole lathe [MECH ENG] A simple lathe in which the work is rotated by a cord attached to a treacle. {'pɔl ’læθ} 
pole-pole array [ENG] An electrode array, used in lateral search or in logging, in which one current electrode and the other potential electrode are kept in proximity and traversed across the structure. {'pɔl ’pɔl ə ɹə} 
pole-positioning [CONT SYS] A design technique used in linear control theory in which many or all of a system's closed-loop poles are positioned as required, by proper choice of a linear state feedback law, if the system is controllable, all of the closed-loop poles can be arbitrarily positioned by this technique. {'pɔl ’pɔl,ʃiːn-’iŋ} 
polestar recorder [ENG] An instrument used to determine approximately the amount of cloudiness during the dark hours; consists of a fixed long-focus camera positioned so that Polaris is permanent within its field of view, the apparent motion of the star appears as a circular arc on the photograph and is interrupted as clouds come between the star and the camera. {'pɔl ’pɔl,ʃiːn-’iŋ} 
pole-zero configuration [CONT SYS] A plot of the poles and zeros of a transfer function in the complex plane, used to study the stability of a system, its natural motion, its frequency response, and its transient response. {'pɔl ’ziː- ’əʊ kən,ʃɪɡ-’ya-’ræ-ʃən} 
polhode [MECH] For a rotating rigid body not subject to external torque, the closed curve traced out on the inertia ellipsoid by the intersection with this ellipsoid of an axis parallel to the angular velocity vector and through the center. {'pɔl, ’lɔd} 
polhode cone See body cone. {'pɔl,’lɔd ,’kɔn} 
poling [ELEC] Adjustment of polarity, specifically, in wire-line practice, the use of transpositions between transposition sections of open wire or between lengths of cable, to cause the residual cross-talk couplings in individual
sections or lengths to oppose another. {'pöl-in
poling board [CIV ENG] A timber plank driven into the soil to support the sides of an excavation. {'pöl-in · bõrd
polishing [CHEM ENG] In petroleum refining, removal of final traces of impurities, as for a lubricant, by clay adsorption or mild hydrogen treating. [MECH ENG] Smoothing and brightening a surface such as a metal or a rock through the use of abrasive materials. {'pöl-iš·in
polishing roll [MECH ENG] A roll or series of rolls on a plastics mold; has highly polished chrome-plated surfaces; used to produce a smooth surface on a plastic sheet as it is extruded. {'pöl-iš·in · rół
polishing wheel [DES ENG] An abrasive wheel used for polishing. {'pöl-iš·in · wël
polyforming [CHEM ENG] A noncatalytic, petroleum-refinery process charging C$_1$ and C$_4$ gases with naphtha or gas oil at high temperature to produce high-quality gasoline and fuel oil; mostly replaced by catalytic reforming, the product is known as polyformdistillate. {'pöl-e·form·ín
polygraph See lie detector. {'pöl-i·graf
polyimide [CHEM ENG] A group of polymers containing a repeat imide group (—CON—CO—). Aromatic polyimides are noted for their resistance to high temperatures, wear, and corrosion. {'pöl-e·mid
polyliner [ENG] A perforated sleeve with longitudinal ribs that is used inside the cylinder of an injection-molding machine. {'pöl-i·ln·ír
polyphase [ELEC] Having or utilizing two or more phases of an alternating-current power line. {'pöl-i
polyphase circuit [ELEC] Group of alternating-current circuits (usually interconnected) which enter (or leave) a delimited region at more than two points of entry; they are intended to be so energized that, in the steady state, the alternating currents through the points of entry, and the alternating potential differences between them, all have exactly equal periods, but have differences in phase, and may have differences in waveform. {'pöl-i · fáz · sarkat
polyphase meter [ENG] An instrument which measures some electrical quantity, such as power factor or power, in a polyphase circuit. {'pöl-i · fáz · 'méd·or
polyphase wattmeter [ENG] An instrument that measures electric power in a polyphase circuit. {'pöl-i · fáz · 'wät · 'méd·or
polysulfide treating [CHEM ENG] A petroleum-refinery process used to remove elemental sulfur from refinery liquids by contacting them with a nonregenerable solution of sodium polysulfide. {'pöl-i·sól · fíd · 'tréd·ín
polytropic process [THERMO] An expansion or compression of a gas in which the quantity $pV^n$ is held constant, where $p$ and $V$ are the pressure and volume of the gas, and $n$ is some constant. {'pöl-ı́trɒp · ík · 'prä-sás
PONA analysis [ENG] American Society for Testing and Materials analysis of paraffins (P), olefins (O), naphthenes (N), and aromatics (A) in gasoline. {'pö́r·kya · pín · ˈboi·l·ə·r
pond See gram-force. {'pánd
ponding [BUILD] An accumulation of water on a flat roof because of clogged or inadequate drains. [CIV ENG] 1. The impoundment of stream water to form a pond. 2. Covering the surface of newly poured concrete with a thin layer of water to promote curing. {'pánd·ín
pontoon bridge [CIV ENG] A fixed floating bridge supported by pontoons. {'pán·tūn · ˈbři
pontoon-tank roof [ENG] A type of floating tank roof, supported by buoyant floats on the liquid surface of a tank; the roof rises and falls with the liquid level in the tank, used to minimize vapor space above the liquid, thus reducing vapor losses during tank filling and emptying. {'pán·tūn · ˈtāŋ · ˈrulf
pony truss [CIV ENG] A truss too low to permit overhead braces. {'pö·né · ˈtrəs
pool [CIV ENG] A body of water contained in a reservoir, by a dam, or by the gates of a lock. {'pū́l
Poole-Frenkel effect [ELEC] An increase in the electrical conductivity of insulators and semiconductors in strong electric fields. {'pö́l · ˈfrɛn·kəl · iˌfekt
pop action [MECH ENG] The action of a safety valve as it opens under steam pressure when the valve disk is lifted off its seat. {'pö́p · ˈak·sən
Popov's stability criterion [CONT SYS] A frequency domain stability test for systems consisting of a linear component described by a transfer function preceded by a nonlinear component characterized by an input-output function, with a unity gain feedback loop surrounding the series connection. {'pö́p·pōv sˈtāˈbəl·əd·ə·r̆ kɹiˌtir·ə·nə́n
poppet [CIV ENG] One of the timber and steel structures supporting the fore and aft ends of a ship for launching from sliding ways. [DES ENG] A spring-loaded ball engaging a notch, a ball latch. {'pö́p·ət
poppet valve [MECH ENG] A cam-operated or spring-loaded reciprocating-engine mushroom-type valve used for control of admission and exhaust of working fluid, the direction of movement is at right angles to the plane of its seat. {'pö́p·ət · ˈvæl
popping pressure [MECH ENG] In compressible fluid service, the inlet pressure at which a safety valve disk opens. {'pö́p·íg · ˈpresh·ə́r
population [ELECTR] The set of electronic components on a printed circuit board. {'pö́p·voʊˌlə·sən
porcupine boiler [MECH ENG] A boiler having dead end tubes projecting from a vertical shell. {'pör·kyaˌpín · ˈboi·lə·r̆
pore diameter  [DES ENG] The average or effective diameter of the openings in a membrane, screen, or other porous material.  

porosimeter  [ENG] Laboratory compressed-gas device used for measurement of the porosity of reservoir rocks.  

porous bearing  [DES ENG] A bearing made from sintered metal powder impregnated with oil by a vacuum treatment.  

porous mold  [ENG] A plastic-forming mold made from bonded or fused aggregates (such as powdered metal or coarse pellets) so that the resulting mass contains numerous open interstices through which air or liquids can pass.  

porous wheel  [DES ENG] A grinding wheel having a porous structure and a vitrified or resinoid bond.  

port  [ELEC] An entrance or exit for a network.  [ENG] The side of a ship or airplane on the left of a person facing forward.  [ENG ACOUS] An opening in a bass-reflex enclosure for a loudspeaker, designed and positioned to improve bass response.  

portable  [ENG] Capable of being easily and conveniently transported.  

portal  [ENG] A redundant frame consisting of two uprights connected by a third member at the top.  

porthole  [DES ENG] The opening or passageway connecting the inside of a bit or core barrel to the outside and through which the circulating medium is discharged.  [ENG] A circular opening in the side of a ship or airplane, usually serving as a window and containing one or more panes of glass.  

port of entry  [CIV ENG] A location for clearance of foreign goods and citizens through a customs house.  

positional-error constant  [CONT SYS] For a stable unity feedback system, the limit of the transfer function as its argument approaches zero.  

positional servomechanism  [CONT SYS] A feedback control system in which the mechanical position (as opposed to velocity) of some object is automatically maintained.  

position-analog unit  [ENG] A device employed in machining operations to transmit analog information about the positions of machine parts to a servoamplifier which then compares it with input data.  

position-contouring system  [CONT SYS] A numerical control system that exerts contouring control in two dimensions and position control in a third.  

position control  [CONT SYS] A type of automatic control in which the input commands are the desired position of a body.  

position indicator  [ENG] An electromechanical dead-reckoning computer, either an air-position indicator or a ground-position indicator.  

positioning  [MECH ENG] A tooling function concerned with manipulating the workpiece in relationship to the working tools.  

positioning action  [CONT SYS] Automatic control action in which there is a predetermined relation between the value of a controlled variable and the position of a final control element.  

positioning time  [MECH ENG] The time required to move a machining tool from one coordinate position to the next.  

position sensor  [ENG] A device for measuring a position and converting this measurement into a form convenient for transmission. Also known as position transducer.  

position telemetering  [ENG] A variation of voltage telemetering in which the system transmits the measurand by positioning a variable resistor or other component in a bridge circuit so as to produce relative magnitudes of electrical quantities or phase relationships.  

position transducer  See position sensor.  

positive  [ELEC] Having fewer electrons than normal, and hence having ability to attract electrons.  

positive acceleration  [MECH] 1. Accelerating force in an upward sense or direction, such as from bottom to top, or from seat to head.  

positive charge  [ELEC] The type of charge which is possessed by protons in ordinary matter, and which may be produced in a glass object by rubbing with silk.  

positive click adjustment  [IND ENG] A means of adjusting dials or push buttons to incorporate audible clicks or their tactile counterparts at predetermined positions in order to provide appropriate motor-sensory feedback to the operator.  

positive clutch  [MECH ENG] A clutch designed to transmit torque without slip.  

positive-displacement compressor  [MECH ENG] A compressor that confines successive volumes of fluid within a closed space in which the pressure of the fluid is increased as the volume of the closed space is decreased.  

positive-displacement meter  [ENG] A fluid quantity meter that separates and captures definite volumes of the flowing stream one after another and passes them downstream, while counting the number of operations.  

positive-displacement pump  [MECH ENG] A
pump in which a measured quantity of liquid is entrapped in a space, its pressure is raised, and then it is delivered, for example, a reciprocating piston-cylinder or rotary-vane, gear, or lobe mechanism.

### positive draft

**MECH ENG** Pressure in the furnace or gas passages of a steam-generating unit which is greater than atmospheric pressure.

### positive drive belt

See timing belt.

### positive electrode

See anode.

### positive feedback

**CONT SYs** Feedback in which a portion of the output of a circuit or device is fed back in phase with the input so as to increase the total amplification. Also known as reaction (British usage), regeneration, regenerative feedback, retroaction (British usage).

### positive motion

**MECH ENG** Motion transferred from one machine part to another without slippage.

### positive temperature coefficient

**THERMO** The condition wherein the resistance, length, or other some characteristic of a substance increases when temperature increases.

### positive terminal

**ELEC** The terminal of a battery or other voltage source towards which electrons flow through the external circuit.

### positron camera

**ENG** An instrument that uses photomultiplier tubes in combination with scintillation counters to detect oppositely directed gamma-ray pairs resulting from the annihilation with electrons of positrons emitted by short-lived radioisotopes used as tracers in the human body.

### post

**CIV ENG**

1. A vertical support such as a pillar, upright, or fence stake.
2. A pole used as a boundary marker.

### post-and-beam construction

**BUILD** A type of wall construction using posts instead of studs.

### postauricular hearing aid

**ENG ACOUS** A hearing aid that fits behind the ear and has a sound tip attached to plastic tubing that conducts sound through an ear mold to the ear canal.

### post brake

**MECH ENG** A brake occasionally fitted on a steam winder or haulage, and consisting of two upright posts mounted on either side of the drum that operate on brake paths bolted to the drum cheeks.

### posture bonding

**ENG** A method of postcuring at elevated temperatures of parts previously subjected to autoclave or press in order to obtain higher heat-resistant properties of the adhesive bond.

### post drill

**ENG** An auger or drill supported by a post.

### postemphasis

See emphasis.

### postequalization

See equalization.

### postform

See form.

### posthole

**CIV ENG** A hole bored in the ground to hold a fence post.

### postforming

**MECH ENG** Forming, bonding, or shaping of heated, flexible thermoset laminates before the final thermoset reaction has occurred; upon cooling, the formed shape is held.

### pot

See potentiometer, pothole.

### pot die forming

**MECH ENG** Forming sheet or plate metal through a hollow die by the application of pressure which causes the workpiece to assume the contour of the die.

### potential

See electric potential.

### potential difference

**ELEC** Between any two points, the work which must be done against electrical forces to move a unit charge from one point to the other. Abbreviated PD.

### potential divider

See voltage divider.

### potential drop

**ELEC** The potential difference between two points in an electric circuit.

### potential energy

**MECH** The capacity to do work that a body or system has by virtue of its position or configuration.

### potential flow analyzer

See electrolytic tank.

### potential gradient

**ELEC** Difference in the values of the voltage per unit length along a conductor or through a dielectric.

### potential temperature

**THERMO** The temperature that would be reached by a compressible fluid if it were adiabatically compressed or expanded to a standard pressure, usually 1 bar.

### potential transformer

See voltage transformer.

### potential transformer phase angle

**ELEC** Angle between the primary voltage vector and the secondary voltage vector reversed, this angle is conveniently considered as positive when the reversed, secondary voltage vector leads the primary voltage vector.

### potentiometer

**ELEC** A resistor having a continuously adjustable sliding contact that is generally mounted on a rotating shaft, used chiefly as a voltage divider. Also known as pot (slang).

### postcure bonding

**ENG** Forming, bonding, or shaping of heated, flexible thermoset laminates before the final thermoset reaction has occurred; upon cooling, the formed shape is held.

### postemphasis

See emphasis.

### postemphasis

See emphasis.

### postemphasis

See emphasis.

### postemphasis

See emphasis.

### postemphasis

See emphasis.
potentiometric controller [CONT SYS] A controller that operates on the null balance principle, in which an error signal is produced by balancing the sensor signal against a set-point voltage in the input circuit; the error signal is amplified for use in keeping the load at a desired temperature or other parameter. [ˈpætʃi-ˈmɛtrɪk ˈkænstəl]  

potentiostat [ENG] An automatic laboratory instrument that controls the potential of a working electrode to within certain limits during coulometric (electrochemical reaction) titrations. [ˈpætʃi-ˈʌstæt]  

pot furnace [ENG] 1. A furnace containing several pots in which glass is melted. 2. A furnace in which the charge is contained in a pot or crucible. ˈpæt ˈfɔːrnəs  

pothole [CIV ENG] A pot-shaped hole in a pavement surface. ˈpætˈhɒl  

Potier diagram [ELEC] Vector diagram showing the voltage and current relations in an alternating-current generator. ˈpɔtər ˈdiagram  

pot life [CHEM ENG] See work life. [ˈpɔt ˈlɪf]  

potmeter [ENG] A device for measuring transpiration, consisting of a small vessel containing water and sealed so that the only escape of moisture is by transpiration from a leaf, twig, or small plant with its cut end inserted in the water. ˈpɔtmɛtər  

potomology [CIV ENG] The systematic study of the factors affecting river channels to provide the basis for predictions of the effects of proposed engineering works on channel characteristics. [ˈpɔtəmələri]  

pot plunger [ENG] A plunger used to force softened plastic molding material into the closed cavity of a transfer mold. ˈpætˈplənər  

potter’s wheel [ENG] A revolving horizontal disk that turns while a tangle is operated; used to shape clay by hand. ˈpætәr ˈwɛl  

potting [ELECTR] Process of filling a complete electronic assembly with a thermosetting compound for resistance to shock and vibration, and for exclusion of moisture and corrosive agents. ˈpætɪŋ  

pound [MECH] 1. A unit of mass in the English absolute system of units, equal to 0.45359237 kilogram. Abbreviated lb. Also known as avoirdupois pound; pound mass. 2. A unit of force in the British absolute system of units equal to the force which will impart an acceleration of 1 ft/s² to a pound mass, or to 0.138254954376 newton. ˈpænd  

poundal [MECH] A unit of force in the British absolute system of units equal to the force which will impart an acceleration of 1 ft/s² to a pound mass, or to 0.138254954376 newton. ˈpændəl  

poundal-foot See foot-poundal. ˈpændəl ˈfʊt  

pound-foot See foot-pound. ˈpænd ˈfʊt  

pound force See pound. ˈpænd ˈfɔːrs  

pound mass See pound. ˈpænd ˈmæs  

pound per square foot [MECH] A unit of pressure equal to the pressure resulting from a force of 1 pound applied uniformly over an area of 1 square foot. Abbreviated psf. ˈpænd ˈpərskwər ˈfʊt  

pound per square inch [MECH] A unit of pressure equal to the pressure resulting from a force of 1 pound applied uniformly over an area of 1 square inch. Abbreviated psi. ˈpænd ˈpərskwər ˈɪŋkʃən  

pounds per square inch absolute [MECH] The absolute, thermodynamic pressure, measured by the number of pounds-force exerted on an area of 1 square inch. Abbreviated lb/in² abs; psia. ˈpænds ˈpərskwər ˈɪŋkʃən ˈæbs;ˈpɛsiə  

pounds per square inch differential [ENG] The difference in pressure between two points in a fluid-flow system, measured in pounds per square inch. Abbreviated psid. ˈpænds ˈpərskwər ˈɪŋkʃən ˈdɪfәrəntʃəl  

pounds per square inch gage [MECH] The gage pressure, measured by the number of pounds-force exerted on an area of 1 square inch. Abbreviated psig. ˈpænds ˈpərskwər ˈɪŋkʃən ˈgeɪʒ  

pour test [ENG] The chilling of a liquid under specified test conditions to determine the American Society for Testing and Materials (ASTM) pour point. ˈpɔr ˈtest  

powder clutch [MECH ENG] A type of electromagnetic disk clutch in which the space between the clutch members is filled with dry, finely divided magnetic particles, application of a magnetic field coalesce the particles, creating friction forces between clutch members. ˈpɔudər ˈklɑtʃ  

powder flowmeter [ENG] A device used to measure the flow rate of a metal powder. ˈpɔudər ˈfləʊ,ˈmɛdər  

powder house [CIV ENG] A magazine for the temporary storage of explosives. ˈpɔudər ˈhɔʊs  

powder keg [ENG] A small metal keg for black blasting powder. ˈpɔudər ˈkeɡ  

powder-moisture test [ENG] Determination of moisture in a propellant by drying under prescribed conditions; expressed as percentage by weight. ˈpɔudər ˈmoʊɪstr ˈtest  

powder molding [ENG] A generie term for plastics-molding techniques to produce objects of varying sizes and shapes by melting polyethylene.
powder, usually against the heated inside of a mold. \( \text{'pāud-ər, mōld-īg} \)

**Powder train** \[ENG\] 1. Train, usually of compressed black powder, used to obtain time action in older fuse types. 2. Train of explosives laid out for destruction by burning. \( \text{'pāud-ər, tōn} \)

**Power-actuated pressure relief valve** \[MECH ENG\] A pressure relief valve connected to and controlled by a device which utilizes a separate energy source. \( \text{'pāu-ər, jāk-chā, wād-əd 'presh-ər rīl'fēl, vlav} \)

**Power amplifier** \[ELECTR\] The final stage in multistage amplifiers, such as audio amplifiers and radio transmitters, designed to deliver maximum power to the load, rather than maximum voltage gain, for a given percent of distortion. \( \text{'pāu-ər, 'lam-plā, flōr} \)

**Power banker** See banker. \( \text{'pāu-ər, 'bārk-ər} \)

**Power brake** \[MECH ENG\] An automotive brake with engine-intake-manifold vacuum used to amplify the atmospheric pressure on a piston operated by movement of the brake pedal. \( \text{'pāu-ər, brāk} \)

**Power car** \[MECH ENG\] 1. A railroad car with equipment for furnishing heat and electric power to a train. 2. A railroad car with controls, which can be operated by itself or as part of a train. \( \text{'pāu-ər, kār} \)

**Power circuit** \[ELEC\] The wires that carry current to electric motors and other devices that use electric power. \( \text{'pāu-ər, sār-kōt} \)

**Power component** See active component. \( \text{'pāu-ər kam-pō-nānt} \)

**Power control valve** \[MECH ENG\] A safety relief device operated by a power-driven mechanism rather than by pressure. \( \text{'pāu-ər kān'trōl, vlav} \)

**Power cylinder** \[CONT SYS\] A linear actuator consisting of a piston in a cylinder, driven by pneumatic or hydraulic fluid under high pressure. \( \text{'pāu-ər sīl-ən-dōr} \)

**Power dam** \[CIV ENG\] A dam designed to raise the level of a stream to create or concentrate hydrostatic head for power purposes. \( \text{'pāu-ər dām} \)

**Power diode** See pin diode. \( \text{'pāu-ər, dī, ēd} \)

**Power drill** \[MECH ENG\] A motor-driven drilling machine. \( \text{'pāu-ər, dīl} \)

**Power-driven** \[MECH ENG\] Of a component or piece of equipment, moved, rotated, or operated by electrical or mechanical energy, as in a power-driven fan or power-driven turret. \( \text{'pāu-ər, drīv-ən} \)

**Power factor** \[ELEC\] The ratio of the average (or active) power to the apparent power (root-mean-square voltage times rms current) of an alternating-current circuit. Abbreviated as pf. Also known as phase factor. \( \text{'pāu-ər, fak-tār} \)

**Power-factor meter** \[ENG\] A direct-reading instrument for measuring power factor. \( \text{'pāu-ər, fak-tār, mēd-ər} \)

**Power-factor regulator** \[ELEC\] Regulator which functions to maintain the power factor of a line or an apparatus at a predetermined value, or to vary it according to a predetermined plan. \( \text{'pāu-ər, 'rek-tār, rēg-yā, rād-ər} \)

**Power frequency** \[ELEC\] The frequency at which electric power is generated and distributed; in most of the United States it is 60 hertz. \( \text{'pāu-ər, rē-fē-kwan-sē} \)

**Power generator** \[ELEC\] A device for producing electric energy, such as an ordinary electric generator or a magnetohydrodynamic, thermionic, or thermoelectric power generator. \( \text{'pāu-ər, 'jen-ə, rād-ər} \)

**Power grasp** See power grip. \( \text{'pāu-ər, grāp} \)

**Power grip** \[IND ENG\] A basic grasp whereby the fingers are wrapped around an object and the thumb placed against it, used, for example, in certain hammering operations. Also known as power grasp. \( \text{'pāu-ər, grīp} \)

**Power level** \[ELEC\] The ratio of the amount of power being transmitted past any point in an electric system to a reference power value, usually expressed in decibels. \( \text{'pāu-ər, lēv-ōl} \)

**Power line** \[ELEC\] Two or more wires conducting electric power from one location to another. Also known as electric power line. \( \text{'pāu-ər, līn} \)

**Power-line carrier** \[ELEC\] The use of transmission lines to transmit speech, metering indications, control impulses, and other signals from one station to another, without interfering with the lines’ normal function of transmitting power. \( \text{'pāu-ər, līn, kar-ē-ər} \)

**Power-line filter** See line filter. \( \text{'pāu-ər, līn, fil-tōr} \)

**Power meter** See electric power meter. \( \text{'pāu-ər, 'mēd-ər} \)

**Power pack** \[ELECTR\] Unit for converting power from an alternating- or direct-current supply into an alternating- or direct-current power at voltages suitable for supplying an electronic device. \( \text{'pāu-ər, pāk} \)

**Power package** \[MECH ENG\] A complete engine and its accessories, designed as a single unit for quick installation or removal. \( \text{'pāu-ər, pāk-ˌi-j} \)

**Power plant** \[MECH ENG\] Any unit that converts some form of energy into electrical energy, such as a hydroelectric or steam-generating station, a diesel-electric engine in a locomotive, or a nuclear power plant. Also known as electric power plant. \( \text{'pāu-ər, plānt} \)

**Power rating** \[ELEC\] The power available at the output terminals of a component or piece of equipment that is operated according to the manufacturer’s specifications. \( \text{'pāu-ər, rād-ən} \)

**Power rectifier** \[ELEC\] A device which converts alternating current to direct current and operates at high power loads. \( \text{'pāu-ər, rēkˌ-tār, flōr} \)

**Power relay** \[ELEC\] Relay that functions at a predetermined value of power, may be an over-power relay, an underpower relay, or a combination of both. \( \text{'pāu-ər, 'rēl-ə} \)

**Power resistor** \[ELEC\] A resistor used in electric power systems, ranging in size from 5 watts
power saw

to many kilowatts, and cooled by air convection, air blast, or water. \( {\text{ˈpowsər ˈsaw}} \)

to many kilowatts, and cooled by air convection, air blast, or water. \( {\text{ˈpowsər ˈsaw}} \)

to many kilowatts, and cooled by air convection, air blast, or water. \( {\text{ˈpowsər ˈsaw}} \)

to many kilowatts, and cooled by air convection, air blast, or water. \( {\text{ˈpowsər ˈsaw}} \)

power saw \[ \text{MECH ENG} \] A power-operated woodworking saw, such as a bench or circular saw. \( {\text{ˈpowsər ˈsərənˈtər}} \)

power saw \[ \text{MECH ENG} \] A power-operated woodworking saw, such as a bench or circular saw. \( {\text{ˈpowsər ˈsərənˈtər}} \)

power saw \[ \text{MECH ENG} \] A power-operated woodworking saw, such as a bench or circular saw. \( {\text{ˈpowsər ˈsərənˈtər}} \)

power saw \[ \text{MECH ENG} \] A power-operated woodworking saw, such as a bench or circular saw. \( {\text{ˈpowsər ˈsərənˈtər}} \)

power semiconductor \[ \text{ELECTR} \] A semiconductor device capable of dissipating appreciable power (generally over 1 watt) in normal operation; may handle currents of thousands of amperes or voltages up to thousands of volts, at frequencies up to 10 kilohertz. \( {\text{ˈpowsər ˈsərnəktərnˈdər}} \)

power shovel \[ \text{MECH ENG} \] A power-operated shovel that carries a short boom on which rides a movable dipper stick carrying an open-topped bucket, used to excavate and remove debris. \( {\text{ˈpowsər ˈʃəvəl}} \)

power shovel \[ \text{MECH ENG} \] A power-operated shovel that carries a short boom on which rides a movable dipper stick carrying an open-topped bucket, used to excavate and remove debris. \( {\text{ˈpowsər ˈʃəvəl}} \)

power shovel \[ \text{MECH ENG} \] A power-operated shovel that carries a short boom on which rides a movable dipper stick carrying an open-topped bucket, used to excavate and remove debris. \( {\text{ˈpowsər ˈʃəvəl}} \)

power shovel \[ \text{MECH ENG} \] A power-operated shovel that carries a short boom on which rides a movable dipper stick carrying an open-topped bucket, used to excavate and remove debris. \( {\text{ˈpowsər ˈʃəvəl}} \)

power steering \[ \text{MECH ENG} \] A steering control system for a propelled vehicle in which an auxiliary power source assists the driver by providing the major force required to direct the road wheels. \( {\text{ˈpowsər ˈstrɪŋ}} \)

power stroke \[ \text{MECH ENG} \] The stroke in an engine during which pressure is applied to the piston by expanding steam or gases. \( {\text{ˈpowsər ˈstrɒk}} \)

power supply circuit \[ \text{ELEC} \] An electrical network used to convert alternating current to direct current. \( {\text{ˈpowsər ˈspeɪlərˈsɜrkt}} \)

power switch \[ \text{ELEC} \] An electric switch which energizes or deenergizes an electric load; ranges from ordinary wall switches to load-break switches and disconnecting switches in power systems operating at voltages of hundreds of thousands of volts. \( {\text{ˈpowsər ˈswɪtʃ}} \)

power train \[ \text{MECH ENG} \] The part of a vehicle connecting the engine to propeller or driven axle; may include drive shaft, clutch, transmission, and differential gear. Also known as drive train. \( {\text{ˈpowsər ˈtrɛin}} \)

power transformer \[ \text{ELEC} \] An iron-core transformer having a primary winding that is connected to an alternating-current power line and one or more secondary windings that provide different alternating voltage values. \( {\text{ˈpowsər ˈtrænsˌfərmər}} \)

power transistor \[ \text{ELECTR} \] A junction transistor designed to handle high current and power, used chiefly in audio and switching circuits. \( {\text{ˈpowsər ˈtrænsˌzɪstər}} \)

power transmission line \[ \text{ELEC} \] The facility in an electric power system used to transfer large amounts of power from one location to a distant location; distinguished from a subtransmission or distribution line by higher voltage, greater power capability, and greater length. Also known as electric main, main (both British usages). \( {\text{ˈpowsər ˈtrænzˈmɪshən ˈmɛn}} \)

power transmission tower \[ \text{ELEC} \] A rigid steel tower supporting a high-voltage electric power transmission line, having a large enough spacing between conductors, and between conductors and ground, to prevent corona discharge. \( {\text{ˈpowsər ˈtrænzˈmɪshən ˈmɛn}} \)

power winding \[ \text{ELEC} \] In a saturable reactor, a winding to which is supplied the power to be controlled; commonly the functions of the output and power windings are accomplished by the same winding, which is then termed the output winding. \( {\text{ˈpowsər ˈwɪndˈɪŋ}} \)

Poynting effect \[ \text{MECH} \] The effect of torsion of a very long cylindrical rod on its length. \( {\text{ˈpɔɪntɪŋ ɪnˈfɛkt}} \)

Poynting’s law \[ \text{THERMO} \] A special case of the Clapeyron equation, in which the fluid is removed as fast as it forms, so that its volume may be ignored. \( {\text{ˈpɔɪntɪŋ ˈlɔː}} \)

pp junction \[ \text{ELECTR} \] A region of transition between two regions having different properties in p-type semiconducting material. \( {\text{ˌpɛpˈprɔʊntˈʃɛŋkˌʃæn}} \)

practical entropy \[ \text{virtual entropy} \] \( {\text{ˈpræktɪˈkæl ˈɛnˈtrəpɪ}} \)

Prandtl number \[ \text{THERMO} \] A dimensionless number used in the study of forced and free convection, equal to the dynamic viscosity times the specific heat at constant pressure divided by the thermal conductivity. Symbolized \( {\text{\( N_p \)}} \). \( {\text{nər mər iŋ}} \)

Pratt truss \[ \text{CIV ENG} \] A truss having both vertical and diagonal members between the upper and lower chords, with the diagonals sloped toward the center. \( {\text{ˌpræt ˈtræs}} \)

preamplifier \[ \text{ELECTR} \] An amplifier whose primary function is boosting the output of a low-level audio-frequency, radio-frequency, or microwave source to an intermediate level so that the signal may be further processed without appreciable degradation of the signal-to-noise ratio of the system. Also known as a preliminary amplifier. \( {\text{ˈprɛʔəmˈplərˌfiːər}} \)

preassembled \[ \text{ENG} \] Assembled beforehand. \( {\text{ˈprɛrˌəsˈmɛlˌbɛrd}} \)

prebreaker \[ \text{MECH ENG} \] Device used to break down large masses of solids prior to feeding them to a crushing or grinding device. \( {\text{ˈprɛrˌbrəˈkər}} \)

precession \[ \text{CIV ENG} \] Chlorination of water before filtration. \( {\text{ˈprɛkərˈlənˈeɪʃən}} \)

precipitation \[ \text{ENG} \] Any device that measures the amount of precipitation, principally, a rain gage or snow gage. \( {\text{ˌprɛkˌprɪˈpəˌteɪʃən}} \)

precession \[ \text{CIV ENG} \] Chlorination of water before filtration. \( {\text{ˈprɛkərˈlənˈeɪʃən}} \)

precession \[ \text{CIV ENG} \] Chlorination of water before filtration. \( {\text{ˈprɛkərˈlənˈeɪʃən}} \)

precession \[ \text{CIV ENG} \] Chlorination of water before filtration. \( {\text{ˈprɛkərˈlənˈeɪʃən}} \)

precession \[ \text{CIV ENG} \] Chlorination of water before filtration. \( {\text{ˈprɛkərˈlənˈeɪʃən}} \)

precession \[ \text{CIV ENG} \] Chlorination of water before filtration. \( {\text{ˈprɛkərˈlənˈeɪʃən}} \)

precession \[ \text{CIV ENG} \] Chlorination of water before filtration. \( {\text{ˈprɛkərˈlənˈeɪʃən}} \)

precession \[ \text{CIV ENG} \] Chlorination of water before filtration. \( {\text{ˈprɛkərˈlənˈeɪʃən}} \)

precession \[ \text{CIV ENG} \] Chlorination of water before filtration. \( {\text{ˈprɛkərˈlənˈeɪʃən}} \)}
press polish
pressure slide [MECH ENG] The reciprocating member of a power press on which the punch and upper die are fastened. {'pres, slid}

pressure [MECH] A type of stress which is exerted uniformly in all directions, its measure is the force exerted per unit area. {'pres-ər}

pressure altimeter [ENG] A highly refined aneroid barometer that precisely measures the pressure of the air at the altitude an aircraft is flying, and converts the pressure measurement to an indication of height above sea level according to a standard pressure-altitude relationship. Also known as barometric altimeter. {'pres-ər al-tim-əd-ər}

pressure angle [MECH ENG] The angle that the line of force makes with a line at right angles to the center line of two gears at the pitch points. {'pres-ər, ən-gal}

pressure bag [ENG] A bag made of rubber, plastic, or other impermeable material that provides a flexible barrier between the pressure medium and the part being bonded. {'pres-ər, əbag}

pressure bar [MECH ENG] A bar that holds the edge of a metal sheet during press operations, such as punching, stamping, or forming, and prevents the sheet from buckling or becoming crimped. {'pres-ər, əbər}

pressure-base factor [CHEM ENG] Factor used in orifice pressure-drop calculations to allow for conditions where the pressure base used for calculating the orifice factor is not 14.73 pounds per square inch absolute (101.32 megapascals); calculated as $F_b = 14.73/\text{pressure base (absolute)}$. {'pres-ər, əbəs, fək-tər}

pressure bulb [CIV ENG] The zone in a loaded soil mass bounded by an arbitrarily selected iso- bar of stress. {'pres-ər, əbələb}

pressure carburetor See injection carburetor. {'pres-ər, əkrə-bərəd-ər}

pressure chamber [ENG] A chamber in which an artificial environment is established at low or high pressures to test equipment under simulated conditions of operation. {'pres-ər, əchəm-əbər}

pressure coefficient [THERMO] The ratio of the fractional change in pressure to the change in temperature under specified conditions, usually constant volume. {'pres-ər, əkə-i,fish-ənt}

pressure-containing member [MECH ENG] The part of a pressure-relieving device which is in direct contact with the pressurized medium in the vessel being protected. {'pres-ər, əkan-ən-ən, əm-əm-ber}

pressure control [ENG] Any device or system able to maintain, raise, or lower the pressure in a vessel or processing system as desired. {'pres-ər, əkan-,trəl}

pressure cooker [ENG] An autoclave designed for high-temperature cooking. {'pres-ər, əkə-kər}

pressure deflection [ENG] In a Bourdon or bellows-type pressure gage, the deflection or movement of the primary sensing element when pressure is applied by the fluid being measured. {'pres-ər, ədi,flek-ənən}

pressure-drop manometer [ENG] Manometer device (liquid-filled U tube) open at both ends, each end connected by tubing to a different location in a flow system (such as fluid- or gas-carrying pipe) to measure the drop in system pressure between the two points. {'pres-ər, ədrəp ma-ən-məd-ər}

pressure dye test [ENG] A leak detection method in which a pressure vessel is filled with liquid dye and is pressurized under water to make possible leakage paths visible. {'pres-ər, ədt, ətest}

pressure elements [ENG] Those portions of a pressure-measurement gage which are moved or temporarily deformed by the gas or liquid of the system to which the gage is connected, the amount of movement or deformation is proportional to the pressure and is indicated by the position of a pointer or movable needle. {'pres-ər, əl-ə-ənən}

pressure forming [ENG] A plastics thermo-forming process using pressure to push the plastic sheet to be formed against the mold surface, as opposed to using vacuum to suck the sheet flat against the mold. {'pres-ər, əfərm-ən}

pressure gage [ENG] An instrument having metallic sensing element (as in a Bourdon pressure gage or aneroid barometer) or a piezoelectric crystal (as in a quartz pressure gage) to measure pressure. {'pres-ər, əgəj}

pressure hydrophone [ENG ACOUS] A pressure microphone that responds to waterborne sound waves. {'pres-ər, əhə-drən-fən}

pressure measurement [ENG] Measurement of the internal forces of a process vessel, tank, or piping caused by pressurized gas or liquid; can be for a static or dynamic pressure, in English or metric units, either absolute (total) or gage (absolute minus atmospheric) pressure. {'pres-ər, əmɛzh-ər-ən-ən}

pressure microphone [ENG ACOUS] A microphone whose output varies with the instantaneous pressure produced by a sound wave acting on a diaphragm; examples are capacitor, carbon, crystal, and dynamic microphones. {'pres-ər, əmɛzh-ər-ən-ən}

pressure pad [ENG] A steel reinforcement in the face of a plastics mold to help the land absorb the closing pressure. {'ENG ACOUS} A felt pad mounted on a spring arm, used to hold magnetic tape in close contact with the head on some tape recorders. {'pres-ər, əpad}

pressure pillow [ENG] A mechanical-hydraulic snow gage consisting of a circular rubber or metal pillow filled with a solution of antifreeze and water, and containing either a pressure transducer or a riser pipe to record increase in pressure of the snow. {'pres-ər, əpil-ən}

pressure plate [MECH ENG] The part of an automobile disk clutch that presses against the flywheel. {'pres-ər, əpələn}

pressure-plate anemometer [ENG] An anemometer which measures wind speed in terms of the drag which the wind exerts on a solid body, may be classified according to the means
by which the wind drag is measured. Also known as plate anemometer. ('presh-ər plāt,ə′mō-nə-mər) pressure process. [CHEM ENG] Treatment of timber to prevent decay by forcing a preservative such as creosote and zinc chloride into the cells of the wood. (‘presh-ər, prā′sāv) pressure rating [ENG] The operating (allowable) internal pressure of a vessel, tank, or piping used to hold or transport liquids or gases. (‘presh-ər, rād-ən) pressure-regulating valve [ENG] A valve that releases or holds process-system pressure (that is, opens or closes) either by preset spring tension or by actuation by a valve controller to assume any desired position between full open and full closed. (‘presh-ər, rēg-ya-ləd-ən, valv) pressure regulator [ENG] Open-close device used on the vent of a closed, gas-pressured system to maintain the system pressure within a specified range. (‘presh-ər, rēg-ya-ləd-ər) pressure relief [ENG] A valve or other mechanical device (such as a rupture disk) that eliminates system overpressure by allowing the controlled or emergency escape of liquid or gas from a pressurized system. (‘presh-ər ri,lēf) pressure-relief device [MECH ENG] 1. In pressure vessels, a device designed to open in a controlled manner to prevent the internal pressure of a component or system from increasing beyond a specified value, that is, a safety valve. 2. A spring-loaded machine part which will yield, or deflect, when a predetermined force is exceeded. (‘presh-ər ri,lēf,di,flis) pressure-relief valve [MECH ENG] A valve which relieves pressure beyond a specified limit and recloses upon return to normal operating conditions. (‘presh-ər ri,lēf, valv) pressure-retaining member [MECH ENG] That part of a pressure-relieving device loaded by the restrained pressurized fluid. (‘presh-ər ri,tān-ing,mem′bar) pressure roll [ENG] In plastics-extrusion coating, the roll that with the chill roll applies pressure to the substrate and the molten extruded web. (‘presh-ər, rōl) pressure seal [ENG] A seal used to make pressure-proof the interface (contacting surfaces) between two parts that have frequent or continual relative rotational or translational motion. (‘presh-ər, sel) pressure still [CHEM ENG] A continuous-flow, petroleum-refinery still in which heated oil (liquid and vapor) is kept under pressure so that it will crack (decompose into smaller molecules) to produce lower-boiling products (pressure distillate or pressure naphtha). (‘presh-ər, stil) pressure storage [ENG] The storage of a volatile liquid or liquefied gas under pressure to prevent evaporation. (‘presh-ər, stōr-ən) pressure switch [ELEC] A switch that is actuated by a change in pressure of a gas or liquid. (‘presh-ər, swich) pressure system [ENG] Any system of pipes, vessels, tanks, reactors, and other equipment, or interconnections thereof, operating with an internal pressure greater than atmospheric. (‘presh-ər, sim,əm) pressure tank [CHEM ENG] A pressurized tank into which timber is inserted for impregnation with preservative. (‘presh-ər, tank) pressure transducer [ENG] An instrument component that detects a fluid pressure and produces an electrical signal related to the pressure. Also known as electrical pressure transducer. (‘presh-ər tranz,dū′sər) pressure-travel curve [MECH] Curve showing pressure plotted against the travel of the projectile within the bore of the weapon. (‘presh-ər,trav′əl,kwər) pressure treating [CIV ENG] Airtight watersuch as creosote and zinc chloride into the cells with preservative. (‘presh-ər, tīt,ən′əm,ə′mō-nə-mər) pressure tunnel [CIV ENG] A waterway tunnel under pressure because the hydraulic gradient lies above the tunnel crown. (‘presh-ər, tān,əl) pressure vector [IND ENG] A stress on the human body produced at the interface between the operator and the equipment during the use of hand tools or other equipment, and described in terms of direction and magnitude. (‘presh-ər, vēk,tər) pressure vessel [ENG] A metal container, generally cylindrical or spherical, capable of withstanding bursting pressures. (‘presh-ər, vēs′əl) pressurization [ENG] 1. Use of an inert gas or dry air, at several pounds above atmospheric pressure, inside the components of a radar system or in a sealed coaxial line, to prevent corrosion by keeping out moisture, and to minimize high-voltage breakdown at high altitudes. 2. The act of maintaining normal atmospheric pressure in a chamber subjected to high or low external pressure. (‘presh-ər, zā′shən) pressurize [ENG] To maintain normal atmospheric pressure in a chamber subjected to high or low external pressures. (‘presh-ər, rzīz)
pressurized blast furnace

pressurized blast furnace  [ENG] A blast furnace operated under pressure above the ambient; pressure is obtained by throttling the off-gas line, which permits a greater volume of air to be passed through the furnace at a lower velocity, and results in increase in smelting rate.

presswork  [ENG] The entire range of bending and drawing operations in the cold forming of sheet metal products.

prestress  [ENG] To apply a force to a structure to condition it to withstand its working load more effectively or with less deflection.

pretensioning  [ENG] Process of precasting concrete beams with tensioned wires embedded in them. Also known as Hoyer method of prestressing.

pretreatment  [CHEM ENG] To form pellet-sized crystals of prill.

primary crusher  See primary breaker.  [ˈprɪ,mer-ˌɛ ˈkrəʊʃ-ər]

primary detector  See sensor.  [ˈprɪ,mer-ˌɛ ˈdɪtekt-ər]

primary drilling  [ENG] The process of drilling holes in a solid rock ledge in preparation for a blast by means of which the rock is thrown down.

primary energy  [ENG] Energy that exists in a naturally occurring form, such as coal, before being converted into an end-use form.

primary excavation  [ENG] Digging performed in undisturbed soil.

primary instrument  [ENG] A measuring instrument that can be calibrated without reference to another instrument.

primary measuring element  [ENG] The portion of a measuring or sensing device that is in direct contact with the variables being measured (such as temperature, pressure, pH, or velocity).

primary phase  [THERMO] The only crystalline phase capable of existing in equilibrium with a given liquid.

primary phase region  [THERMO] On a phase diagram, the locus of all compositions having a common primary phase.

primary radar  [ENG] Radar in which the incident beam is reflected from the target to form the return signal. Also known as primary surveillance radar (PSR).

primary sewage sludge  [CIV ENG] A semiliquid waste resulting from sedimentation with no additional treatment.

primary stress  [MECH] A normal or shear stress component in a solid material which results from an imposed loading and which is under a condition of equilibrium and is not self-limiting.

primary surveillance radar  See primary radar.

primary treatment  [CIV ENG] Removal of floating solids and suspended solids, both fine and coarse, from raw sewage.

prime  [ENG] 1. Main or primary, as in prime contractor.  2. In blasting, to place a detonator in a cartridge or charge of explosive.  3. To treat wood with a primer or penetrant primer.  4. To add water to a pump to enable it to begin pumping.

prime contractor  [ENG] A contractor having a direct contract for an entire project; the contractor may in turn assign portions of the work to subcontractors.

prime mover  [MECH ENG] 1. The component of a power plant that transforms energy from the thermal or the pressure form to the mechanical form.  2. A tractor or truck, usually with four-wheel drive, used for hauling tasks.
principle of virtual work

For a point in principal plane of stress, Item which, because of its
The integral of the one of the principal axes of strain relative to its original length.
A stress occurring at right angles to a principal plane of stress.
The principle of operation of a vernier, according to which the
A stress occurring at right angles to a principal plane of stress.
A principle that two physical systems which are
principle of dynamical similarity
principle of inaccessibility
principle of least action
principle of optimality
principle of reciprocity
principle of superposition
principle of virtual work
printed circuit

system. Also known as virtual work principle.  
[prɪn-sə-pəl əv 'vær-ɛtʃ-ə-wəl, ˈwɜrk]

printed circuit  [ELECTR] A conductive pattern that may or may not include printed components, formed in a predetermined design on the surface of an insulating base in an accurately repeatable manner.  
[ˈprɪnt-əd ˈsɑr-kət]

printed circuit board  [ELECTR] A flat board whose front contains slots for integrated circuit chips and connections for a variety of electronic components, and whose back is printed with electrically conductive pathways between the components. Also known as circuit board.  
[ˈprɪnt-əd ˈsɑr-kət, ˈbɔrd]

printed wiring board  [ELECTR] A copper-clad dielectric material with conductors etched on the external or internal layers.  
[ˈprɪnt-əd ˈwɜrɪŋ, ˈbɔrd]

prior-art search  [ENG] 1. A search for prior art which may possibly anticipate an invention which is being considered for patentability.  
2. A similar search but for the purpose of determining what the status of existing technology is before going ahead with new research; it is done to avoid unwittingly retracing new steps taken by other workers in the field.  
[ˈprɪər-ərt ˈsɜrˌsɛt]

prismatic astrolabe  [ENG] A surveying instrument that makes use of a pan of mercury forming an artificial horizon, and a prism mounted in front of a horizontal telescope to determine the exact times at which stars reach a fixed altitude, and thereby to establish an astronomical position.  
[prɪzˈmæd-ik ˈæstrələb]

prismatic compass  [ENG] A hand compass used by surveyors which is equipped with a prism that allows the compass to be read while the site is being taken.  
[prɪzmæd-ik ˈkæm-pəs]

prism joint  [MECH ENG] A robotic articulation that has only one degree of freedom, in sliding motion only.  
[prɪz-əm ˈʃɔrnt]

prism level  [ENG] A surveyor's level with prisms that allow the levelman to view the level bubble without moving his eye from the telescope.  
[prɪzməm ˈlevəl]

probe  [ENG] A small tube containing the sensing element of electronic equipment, which can be lowered into a borehole to obtain measurements and data.  
[prəb]

probe gas  [ENG] Tracer gas emitted from a small orifice for impediment on a restricted area being tested for leaks.  
[prəb ˈgæs]

probe-type liquid-level meter  [ENG] Device to sense or measure the level of liquids in storage or process vessels by means of an immersed electrode or probe.  
[prəbˌtʌp ˈlɪk-ˈləv ˈlevəlˌmɛd-ər]

process  [ENG] A system or series of continuous or regularly occurring actions taking place in a predetermined or planned manner to produce a desired result.  
[prəs ˈres]

process analyzer  [CHEM ENG] An instrument for determining the chemical composition of the substances involved in a chemical process directly, or for measuring the physical parameters indicative of composition.  
[prəs ənˈæləzə]

process chart  [IND ENG] A graphic representation of events occurring during a series of actions or operations.  
[prəs ˈkɑrt]

process control  [ENG] Manipulation of the conditions of a process to bring about a desired change in the output characteristics of the process.  
[prəs ˈkɔntroʊl]

process control chart  [IND ENG] A tabulated graphical arrangement of test results and other pertinent data for each production assembly unit, arranged in chronological sequence for the entire assembly.  
[prəs ˈkɔntroʊlˌtʃɑrt]

process control engineering  [ENG] A field of engineering dealing with ways and means by which conditions of continuous processes are automatically kept as close as possible to desired values or within a required range.  
[prəs ˈkɔntroʊlˌənˈgɪnəriŋ]

process control system  [CONT SYS] The automatic control of a continuous operation.  
[prəs ˈkɔntroʊlˌsətˈsɪstəm]

process dynamics  [ENG] The dynamic response interrelationships between components (units) of a complex system, such as in a chemical process plant.  
[prəs ˈdænaˌmɪks]

process engineering  [ENG] A service function of production engineering that involves selection of the processes to be used, determination of the sequence of all operations, and determination of special tools to make a product.  
[prəs ˈɪŋˌɡɪnɪəri]

process fishtail  [ENG] A tabulation of components, and whose back is printed with a field, arranged in chronological sequence for the entire assembly.  
[prəs ˈfɪstəl]

process furnace  [CHEM ENG] Furnace used to heat process-stream materials (liquids, gases, or solids) in a chemical-plant operation; types are direct-fired, indirect-fired, and pebble heaters.  
[prəs ˈfɜrnɪs]

process heater  [CHEM ENG] Equipment for the heating of chemical process streams (gases, liquids, or solids); usually refers to furnaces, in contrast to heat exchangers.  
[prəs ˈhɛtər]

processing  [ENG] The act of converting material from one form into another desired form.  
[prəs ˈprəs]
systems-engineering life cycle in order to reconstitute it in a new form and with new functional and nonfunctional features, often to take advantage of newly emerged or desired organizational or technological capabilities without changing the inherent purpose of the process that is being reengineered.

**process sequencing** [IND ENG] Specification of the appropriate order for the processes required to manufacture a part.

**process time** [IND ENG] 1. Time needed for completion of the machine-controlled portion of a work cycle. 2. Time required for completion of an entire process.

**process variable** [CHEM ENG] Any of those varying operational and physical conditions associated with a chemical processing operation, such as temperature, pressure, flowrate, density, pH, viscosity, or chemical composition.

**producer’s risk** [IND ENG] The probability that in an acceptance sampling plan, material of an acceptable quality level will be rejected.

**product** [CHEM ENG] See discharge liquor.

**product design** [DES ENG] The determination and specification of the parts of a product and their interrelationship so that they become a unified whole.

**production** [ENG] Output, such as units made in a factory, oil from a well, or chemicals from a processing plant.

**production control** [IND ENG] The procedure for planning, routing, scheduling, dispatching, and expediting the flow of materials, parts, subassemblies, and assemblies within a plant, from the raw state to the finished product, in an orderly and efficient manner.

**production engineering** [IND ENG] The planning and control of the mechanical means of changing the shape, condition, and relationship of materials within industry toward greater effectiveness and value.

**production model** [IND ENG] A model in its final mechanical and electrical form of final production design made by production tools, jigs, fixtures, and methods.

**production requirements** [IND ENG] The sum of authorized stock levels and pipeline needs less stocks expected to become available, stock on hand, stocks due in, returned stocks, and stocks from salvage, reclamation, rebuild, and other sources.

**production standard** See standard time.

**production track** [ENG ACOUS] A sound track which is either prerecorded or recorded directly on the set, and which exists in the film at that time when the music breakdown for scoring is about to begin.

**productive time** [IND ENG] Time during which useful work is performed in an operation or process.

**productivity** [IND ENG] The ratio of output production to input effort, it is an indicator of the efficiency with which an enterprise converts its resources (inputs) into finished goods or services (outputs).

**product life-cycle** [IND ENG] All the phases, from conception and scale-up, through production, growing use, maturity, and obsolescence of a product.

**product line** [IND ENG] 1. The range of products offered by a firm. 2. A group of basically similar products, differentiated only by such characteristics as color, style, or size.

**product of inertia** [MECH ENG] Relative to two rectangular axes, the sum of the products formed by multiplying the mass (or, sometimes, the area) of each element of a figure by the product of the coordinates corresponding to those axes.

**product reengineering** [SYS ENG] The study, capture, and modification of the internal mechanisms or functionality of an existing system or product in order to reconstitute it in a new form with new features, often to take advantage of newly emerged technologies without major change to the inherent functionality and purpose of the system.

**profile water** [CHEM ENG] Fresh water that is produced by a desalination process; Also known as converted water.

**profile die** [ENG] A plastics extrusion die used to produce continuous shapes, but not tubes or sheets.

**profiled keyway** [DES ENG] A keyway for a straight key formed by an end-milling cutter. Also known as end-milled keyway.

**profiling** [ENG] Electrical exploration wherein the transmitter and receiver are moved in unison across a structure to obtain a profile of mutual impedance between transmitter and receiver. Also known as lateral search.

**profiling machine** [MECH ENG] A machine used for milling irregular profiles; the cutting tool is guided by the contour of a model.

**profilograph** [ENG] An instrument for measuring and recording roughness of the surface over which it travels.

**profilometer** [ENG] An instrument for measuring the roughness of a surface by means of a diamond-pointed tracer arm attached to a coil in an electric field; movement of the arm across the surface induces a current proportional to surface roughness.

**profit sharing** [IND ENG] Sharing of company profits with the employees.

**program** [IND ENG] An undertaking of significant scope that is enduring rather than occurring within a limited time span.

**program control** [CONT SYS] A control system
program device

whose set point is automatically varied during definite time intervals in order to make the process variable vary in some prescribed manner. \( \text{`}\text{prö-grem}_\text{kam},\text{trö}l\text{'} \)

program device \[\text{CONT SYS}\] In missile guidance, the automatic device used to control time and sequence of events of a program. \( \text{`}\text{prö-di,vi,s} \)

program evaluation and review technique See \( \text{PERT} \). \( \text{`}\text{prö-grem}_\text{i,v,al-ya\’waw-shan an ri’vyü tek,nëk} \)

program level \[\text{ENG ACOUS}\] The level of the program signal in an audio system, expressed in volume units. \( \text{`}\text{prö-grem}_\text{lev-al} \)

programmable controller \[\text{CONT SYS}\] A control device, normally used in industrial control applications, which employs the hardware architecture of a computer and a relay ladder diagram language. Also known as programmable logic controller. \( \text{`}\text{prö-grem}_\text{a-bal kan’troll-ar} \)

programmable counter \[\text{ELECTR}\] A counter that divides an input frequency by a number which can be programmed into decades of synchronous down counters; these decades, with additional decoding and control logic, give the equivalent of a divide-by-N counter system, where N can be made equal to any number. \( \text{`}\text{prö-grem}_\text{a-bal ‘kaunt-ar} \)

programmable decade resistor \[\text{ELECTR}\] A decade box designed so that the value of its resistance can be remotely controlled by programming logic as required for the control of load, time constant, gain, and other parameters of circuits used in automatic test equipment and automatic controls. \( \text{`}\text{prö-grem}_\text{a-bal ‘de,käd ri,zis-tar} \)

programmable electronic system \[\text{SYS ENG}\] A system based on a computer and connected to sensors or actuators for the purpose of control, protection, or monitoring. \( \text{`}\text{prö-grem}_\text{a-bal ‘lek,tran,ik sis,ton} \)

programmable logic array See field-programmable logic array. \( \text{`}\text{prö-grem}_\text{a-bal ‘laji,ik a,ra} \)

programmable logic controller See programmable controller. \( \text{`}\text{prö-grem}_\text{a-bal ‘laji,ik kan,troll-ar} \)

programmed logic array \[\text{ELECTR}\] An array of AND/OR logic gates that provides logic functions for a given set of inputs programmed during manufacture and serves as a read-only memory. Abbreviated PLA. \( \text{`}\text{prö,gramd ‘laji,ik a,ra} \)

programmer \[\text{CONT SYS}\] A device used to control the motion of a missile in accordance with a predetermined plan. \( \text{`}\text{prö,gram}_\text{dor} \)

programming \[\text{ENG}\] In a plastics process, extruding a parison whose thickness differs longitudinally in order to equalize wall thickness of the blown container. \( \text{`}\text{prö,gram}_\text{in,j} \)

programming panel \[\text{CONT SYS}\] A device used to edit a program or insert and monitor it in a programmable controller. \( \text{`}\text{prö,gram}_\text{in,j ,pan,al} \)

programming unit See manual control unit. \( \text{`}\text{prö,gram}_\text{in,j ,yu,nat} \)

program scan \[\text{CONT SYS}\] The span of time during which a programmable controller processor executes all the instructions of a given program. \( \text{`}\text{prö,gram}_\text{skan} \)

progress chart \[\text{IND ENG}\] A graphical representation of the degree of completion of work in progress. \( \text{`}\text{prö-gres,iv _chärt} \)

progressive bonding \[\text{ENG}\] A method of curing a resin adhesive wherein heat and pressure are applied in successive steps. Also known as progressive gluing. \( \text{`}\text{pågres,iv ‘bänd-i,j} \)

progressive gluing See progressive bonding. \( \text{`}\text{pågres,iv ‘glü,i,j} \)

project \[\text{ENG}\] A specifically defined task within a research and development field, which is established to meet a single requirement, either stated or anticipated, for research data, an end item of material, a major component, or a technique. \( \text{`}\text{prå,jekt} \)

projected-scale instrument \[\text{ENG}\] An indicating instrument in which a light beam projects an image of the scale on a screen. \( \text{`}\text{på¡ek-tad ‘skal, in-stramant} \)

projected window \[\text{BUILD}\] A window having one or more rotatable sashes which swing either inward or outward. \( \text{`}\text{på¡ek-tad ‘win-do} \)

project engineering \[\text{ENG}\] 1. The engineering design and supervision (coordination) aspects of building a manufacturing facility. 2. The engineering aspects of a specific project, such as development of a product or solution to a problem. \( \text{`}\text{prå,jekt en-jö,nir-i,j} \)

projection thermography \[\text{ENG}\] A method of measuring surface temperature in which thermal radiation from a surface is imaged by an optical system on a thin screen of luminescent material, and the pattern formed corresponds to the heat radiation of the surface. \( \text{`}\text{på¡ek-shan that ‘måg-å,e-fe} \)

project life See economic life. \( \text{`}\text{prå,jikt ,lit} \)

projector \[\text{ENG ACOUS}\] 1. A horn designed to project sound chiefly in one direction from a loudspeaker. 2. An underwater acoustic transmitter. \( \text{`}\text{på¡ek-tar} \)

pronate \[\text{CONT SYS}\] To orient a robot toward a position in which the back or protected side of a manipulator faces up and is exposed. \( \text{`}\text{prö,nat} \)

prong See pin. \( \text{`}\text{prång} \)

prony brake \[\text{MECH ENG}\] An absorption dynamometer that applies a friction load to the output shaft by means of wood blocks, a flexible band, or other friction surface. \( \text{`}\text{prö, nê,båk} \)

proof \[\text{ENG}\] Reproduction of a die impression by means of a cast. \( \text{`}\text{prüf} \)

proof load \[\text{ENG}\] A predetermined test load, greater than the service load, to which a specimen is subjected before acceptance for use. \( \text{`}\text{prüf ,loj} \)

proof resilience \[\text{MECH}\] The tensile strength necessary to stretch an elastomer from zero elongation to the breaking point, expressed in foot-pounds per cubic inch of original dimension. \( \text{`}\text{prüf ,ri,zil-yans} \)

proof stress \[\text{MECH}\] 1. The stress that causes a specified amount of permanent deformation in a material. 2. A specified stress to be applied

428
to a member or structure in order to assess its ability to support service loads. { prüf , stresses }

propagated blast [ENG] A blast of a number of unprimed charges of explosives plus one hole primed, generally for the purpose of ditching, where each charge is detonated by the explosion of the adjacent one, the shock being transmitted through the wet soil. { präp ,gäd-ad *blast }

propylene fractionation [CHEM ENG] Petroleum-refinery solvent process using propylene to separate hydrocarbons from petroleum stocks, such as for lubricating oils. { prö,pän de'as,föld-inj }

propylene decarboxylation [CHEM ENG] Petroleum-refinery solvent process using propylene to recover catalytic-cracking feedstock from heavy-residue fractions; when butane or butylene-propylene recover is used, the process is called solvent decarboxylation. { prö,pän de'as,kär-ba,niz-inj }

propylene dewaxing [CHEM ENG] Petroleum-refinery solvent process using propylene to remove waxes from lubricating oils to lower the pour point. { prö,pän de'waks-inj }

propylene fractionation [CHEM ENG] Continuous, petroleum-refinery solvent process using liquid propylene to segregate long-vacuum resids into two or more grades of lube-oil stock (such as heavy neutral stock or bright stock) and asphalt. { prö,pän frak-sha'nà-shan }

propellant-actuated device [ENG] A device that employs the energy supplied by the gases produced by burning propellants to accomplish or initiate a mechanical action other than propelling a projectile. { pröpel-ant, ak-chö,wad-ad di,vís }

propeller [MECH ENG] A bladed device that rotates on a shaft to produce a useful thrust in the direction of the shaft axis. { pröpel-ar }

propeller anemometer [ENG] A rotation anemometer which is encased in a strong glass outer shell that protects it against hydrostatic pressure. { pröpel-ar, an-a'mám-ad-ar }

propeller blade [DES ENG] One of two or more plates radiating out from the hub of a propeller and normally twisted to form part of a helical surface. { pröpel-ar,bläd }

propeller boss [DES ENG] The central portion of the screw propeller which carries the blades, and forms the medium of attachment to the propeller shaft. Also known as propeller hub. { pröpel-ar,bos }

propeller efficiency [MECH ENG] The ratio of the thrust horsepower delivered by the propeller to the shaft horsepower as delivered by the engine to the propeller. { pröpel-ar ,fish-on-sé }

propeller fan [MECH ENG] An axial-flow blower, with or without a casing, using a propeller-type rotor to accelerate the fluid. { pröpel-ar ,fan }

propeller hub See propeller boss. { pröpel-ar ,hab }

propeller meter [ENG] A quantity meter in which the flowing stream rotates a propellerlike device and revolutions are counted. { pröapel-ar ,mëd-ar }

propeller pump See axial-flow pump. { pröapel-ar ,pamp }

propeller shaft [MECH ENG] A shaft, carrying a screw propeller at its end, that transmits power from an engine to the propeller. { pröpel-ar ,shaft }

propeller slip angle [MECH ENG] The angle between the plane of the blade face and its direction of motion. { pröapel-ar, slip ,än-gal }

propeller tip speed [MECH ENG] The speed in feet per minute swept by the propeller tips. { pröapel-ar ,tip, spëd }

propeller turbine [MECH ENG] A form of reactive-type hydraulic turbine using an axial-flow propeller rotor. { pröapel-ar ,tår-ban }

propeller windmill [MECH ENG] A windmill that extracts wind power from horizontal air movements to rotate the blades of a propeller. { pröapel-ar ,win,mil }

proportional band [CONT SYS] The range of values of the controlled variable that will cause a controller to operate over its full range. { pröpor-shan-al band }

proportional control [CONT SYS] Control in which the amount of corrective action is proportional to the error signal, used, for example, in chemical engineering to control pressure, flow rate, or temperature in a process system. { pröpor-shan-al kon'tról }

proportional controller [CONT SYS] A controller whose output is proportional to the error signal. { pröpor-shan-al kon'trol-ar }

proportional dividers [DES ENG] Dividers with two legs, pointed at both ends, and an adjustable pivot, distances measured by the points at one end can be marked off in proportion by the points at the other end. { pröpor-shan-al di'vid-ard }

proportional elastic limit [MECH] The greatest stress intensity for which stress is still proportional to strain. { pröpor-shan-al Plas'tik lim-at }

proportional limit [MECH] The greatest stress a material can sustain without departure from linear proportionality of stress and strain. { pröpor-shan-al lim-it }

proportional-plus-derivative control [CONT SYS] Control in which the control signal is a linear combination of the error signal and its derivative. { pröpor-shan-al ,plas 'int-a-gral kan,trol }

proportional-plus-integral control [CONT SYS] Control in which the control signal is a linear combination of the error signal and its integral. { pröpor-shan-al ,plas 'int-a-gral ,plas 'int-a-gral kan,trol }

proportional-plus-integral-plus-derivative control [CONT SYS] Control in which the control signal is a linear combination of the error signal, its integral, and its derivative. { pröpor-shan-al ,plas 'int-a-gral ,plas 'int-a-gral kan,trol }

proportional-speed control See floating control. { pröpor-shan-al ,spéd kan,trol }

proportioning probe [ENG] A leak-testing probe capable of changing the air-tracer gas ratio without changing the amount of flow it transmits to the testing device. { pröpör-shan-ig ,prüb }
**proximate analysis** [CHEM ENG] A technique that separates and identifies categories of compounds in a mixture; reported are moisture and ash content, the extracts of the mixture made with alcohol, petroleum ether, water, hydrochloric acid and resins, starches, reducing sugars, proteins, fats, esters, free acids, and so on; this type of analysis of solid fuels allows a prediction to be made as to how the fuel will behave in a furnace.

**propeller** [MACH] A rotating mechanism for generating thrust. (prəˈprəlˈpər)
quickly computing certain psychrometric data, usually the dew point and the relative humidity, from known values of the dry- and wet-bulb temperatures and the atmospheric pressure.  

psychrometric chart  [THERMO] A graph each point of which represents a specific condition of a gas-vapor system (such as air and water vapor) with regard to temperature (horizontal scale) and absolute humidity (vertical scale); other characteristics of the system, such as relative humidity, wet-bulb temperature, and latent heat of vaporization, are indicated by lines on the chart.  

psychrometric formula  [THERMO] The sem- 

psychrometric tables  [THERMO] Tables prepared from the psychrometric formula and used to obtain vapor pressure, relative humidity, and dew point from values of wet-bulb and dry-bulb temperature.  

psychrometry  [ENG] The science and tech-

p-type conductivity  [ELECTR] The conductivity associated with holes in a semiconductor, which are equivalent to positive charges.  

p-type crystal rectifier  [ELECTR] Crystal recti-

p-type semiconductor  [ELECTR] An extrinsic semiconductor in which the hole density exceed the conduction electron density.  

p-type semiconductor  [ELECTR] A p-type semiconductor in which the excess mobile hole concentration is very large.  

p-type silicon  [ELECTR] Silicon to which more materials to pulp, for example, one that reduces p-type crystal rectifier  [ELECTR] Crystal recti-

p-type semiconductor  [ELECTR] The conductivity which a motor will attain normal characteristics of the system, such as relative humidity, wet-bulb temperature, and latent heat of vaporization, are indicated by lines on the chart.  

p-type conductivity  [ELECTR] The conductivity associated with holes in a semiconductor, which are equivalent to positive charges.  

p-type semiconductor  [ELECTR] A p-type semiconductor in which the excess mobile hole concentration is very large.  

p-type silicon  [ELECTR] Silicon to which more materials to pulp, for example, one that reduces p-type semiconductor  [ELECTR] The conductivity which a motor will attain normal characteristics of the system, such as relative humidity, wet-bulb temperature, and latent heat of vaporization, are indicated by lines on the chart.  

psychrometric chart  [THERMO] A graph each point of which represents a specific condition of a gas-vapor system (such as air and water vapor) with regard to temperature (horizontal scale) and absolute humidity (vertical scale); other characteristics of the system, such as relative humidity, wet-bulb temperature, and latent heat of vaporization, are indicated by lines on the chart.  

psychrometric formula  [THERMO] The sem-
pulses and measuring the time delay between the leading edge of the transmitted pulse and that of the pulse returned from the ground.

pulse-amplitude discriminator [ENG] Electronic instrument used to investigate the amplitude distribution of the pulses produced in a detector. 

pulse circuit [ELECTR] An active electrical network designed to respond to discrete pulses of current or voltage.

pulse column [CHEM ENG] A linear-substance process column (such as liquid only or gas only) in which the flow-through is pulsating, used to increase mass-transfer rates, as in a liquid-liquid extraction operation.

pulse-compression radar [ENG] A radar system in which the transmitted signal is linearly frequency-modulated or otherwise spread out in time to reduce the peak power that must be handled by the transmitter, signal amplitude is kept constant, the receiver uses a linear filter to compress the signal and thereby reconstitute a short pulse for the radar display.

pulsed-bed sorption [CHEM ENG] Solid-liquid countercurrent adsorption process (such as an ion-exchange process) in which the granulated solids bed and the solution flow alternately, in opposite directions.

pulsed fast neutron analysis [ENG] A technique for detecting contraband materials, in which a pulsed beam of high-energy neutrons is scanned up and down in a raster pattern while the object under inspection is conveyed through the beam; characteristic gamma rays emitted by materials in the object are detected in order to analyze and image these materials with the help of time-of-flight measurements.

pulsed-light ceilometer See pulsed-light cloud-height indicator.

pulsed-light cloud-height indicator [ENG] An instrument used for the determination of cloud heights; it operates on the principle of pulse radar, employing visible light rather than radio waves. Also known as pulsed-light ceilometer.

pulsed-Doppler radar [ENG] Pulse radar that uses the Doppler effect to obtain information about the velocity of a target.

pulsed oscillator [ELECTR] An oscillator that generates a carrier-frequency pulse or a train of carrier-frequency pulses as the result of self-generated or externally applied pulses.

pulsed dot soldering iron [ENG] A soldering iron that provides heat to the tip for a precisely controlled time interval, as required for making a good soldered joint without overheating adjacent parts.

pulsed transfer function [CONT SYS] The ratio of the z-transform of the input of a system to the z-transform of the output of the input signal, when both input and output are trains of pulses. Also known as discrete transfer function; z-transfer function.

pulsed video thermography [ENG] A method of nondestructive testing in which a source of heat is applied to a material and an infrared detection system reveals FeMetabolically hot or cold regions that then appear close to defects.

pulsed height [ELECTR] The strength or amplitude of a pulse, measured in volts.

pulsar [CHEM ENG] Device used to create a pulsed light fluid flow through a process vessel, such as a liquid-liquid or vapor-liquid extraction tower, used to increase contact and mass transfer rates.

pulse generator [ELECTR] A generator that produces repetitive pulses or signal-initiated pulses.

pulse generator [ELECTR] A device for carrying out the pulse modulation of a radio-frequency carrier signal.

pulse generator [ELECTR] A pulse shaper that produces heat to the tip for a precisely controlled time interval, as required for making a good soldered joint without overheating adjacent parts. 

pulse integrator [ELECTR] A device for carrying short pulse for the radar display.

pulse modulator [ELECTR] A device used for receiving pulses from one circuit and transmitting corresponding pulses into another circuit; it may also change the frequencies and waveforms of the pulses and perform other functions.

pulse repetition frequency See pulse repetition rate.

pulse repetition rate [ELECTR] The number of times per second that a pulse is transmitted. Abbreviated PRR. Also known as pulse recurrence rate, pulse repetition frequency (PRF).

pulse stretcher [ELECTR] A device used for receiving pulses from one circuit and transmitting corresponding pulses into another circuit; it may also change the frequencies and waveforms of the pulses and perform other functions.

pulsed radar [ENG] Radar in which the transmitter sends out high-power pulses that are spaced far apart in comparison with the duration of each pulse, the receiver is active for reception of echoes in the interval following each pulse.

pulsed repeater [ELECTR] Device used for receiving pulses from one circuit and transmitting corresponding pulses into another circuit; it may also change the frequencies and waveforms of the pulses and perform other functions.

pulsed video thermography [ENG] A method of nondestructive testing in which a source of heat is applied to a material and an infrared detection system reveals FeMetabolically hot or cold regions that then appear close to defects.

pulsed light cloud-height indicator. A technique for detecting contraband materials, in which a pulsed beam of high-energy neutrons is scanned up and down in a raster pattern while the object under inspection is conveyed through the beam; characteristic gamma rays emitted by materials in the object are detected in order to analyze and image these materials with the help of time-of-flight measurements. 

pulsed radar [ENG] A radar system in which the transmitted signal is linearly frequency-modulated or otherwise spread out in time to reduce the peak power that must be handled by the transmitter, signal amplitude is kept constant, the receiver uses a linear filter to compress the signal and thereby reconstitute a short pulse for the radar display. 

pulsed-light ceilometer See pulsed-light cloud-height indicator.

pulsed-light cloud-height indicator [ENG] An instrument used for the determination of cloud heights; it operates on the principle of pulse radar, employing visible light rather than radio waves. Also known as pulsed-light ceilometer.

pulsed-Doppler radar [ENG] Pulse radar that uses the Doppler effect to obtain information about the velocity of a target. 

pulsed oscillator [ELECTR] An oscillator that generates a carrier-frequency pulse or a train of carrier-frequency pulses as the result of self-generated or externally applied pulses. 

pulsed dot soldering iron [ENG] A soldering iron that provides heat to the tip for a precisely controlled time interval, as required for making a good soldered joint without overheating adjacent parts.

pulsed transfer function [CONT SYS] The ratio of the z-transform of the input of a system to the z-transform of the output of the input signal, when both input and output are trains of pulses. Also known as discrete transfer function; z-transfer function.
amplitude is proportional to the peak amplitude of the input pulse. {pals stretch-ə-rə}
pulse synthesizer [ELECTR] A circuit used to supply pulses that are missing from a sequence due to interference or other causes. {pals sin-tha,si-zrə-

pulse-time-modulated radiosonde [ENG] A radio-
dosonde which transmits the indications of the meteorological sensing elements in the form of pulses spaced in time; the meteorological data are evaluated from the intervals between the pulses. Also known as time-interval radio-
dosonde. {pals ˈtim ˈmāj-ə,lad-əd ˈrad-ə-o,sänd}
pulse tracking system [ENG] Tracking system which uses a high-energy, short-duration pulse radiated toward the target from which the velocity, direction, and range are determined by the characteristics of the reflected pulse. {pals ˈtrak-əjə,si-tom}
pulse transformer [ELECTR] A transformer capable of operating over a wide range of frequen-
cies, used to transfer nonsinusoidal pulses without materially changing their waveforms. {pals tranz,for-mar}
pulse transmitter [ELECTR] A pulse-modulated transmitter whose peak-power-output capabil-
ties are usually large with respect to the average-
power-output rating. {pals tranz,mid-ə-rə}
pulse-width discriminator [ELECTR] Device that measures the pulse length of video signals and passes only those whose time duration falls into some predetermined design tolerance. {pals ‘width diˈskrım-ə,nad-ə-rə}
pulsometer [MECH ENG] A simple, lightweight pump in which steam forces water out of one of two chambers alternately. {pals ‘sām-əd-ə-rə}
pultrusion [ENG] A process for producing con-
tinuous fibers for advanced composites which involves pulling reinforcements through tanks of thermosets, a preformer, and then a die, where the product is formed into its final shape. {pulˈtriiˈzan}
pulverization See comminution. {pals ‘va-raˌzaˌshan}
pulverizer [MECH ENG] Device for breaking down of solid lumps into a fine material by cleavage-
along crystal faces. {pals ‘vaˌrīz-ə-rə}
pump [ELECTR] Of a parametric device, the source of alternating-current power which causes the nonlinear reactor to behave as a time-
varying reactance [MECH ENG] A machine that draws a fluid into itself through an entrance port and forces the fluid out through an exhaust port. {pamp}
pumpability test [ENG] Standard test to ascen-
tain the lowest temperature at which a petroleum fuel oil may be pumped. {pamp-paˈbil-əd-ə-test}
pumperaround [CHEM ENG] A system or process vessel that moves liquid out of and back into the vessel at a new location; for example, in a bubble tower, the withdrawing of liquid from a plate or tray, followed by cooling, and returning to another plate to induce condensation of vapors. {pamp-paˌraʊnd}
pump bob [MECH ENG] A device such as a crank that converts rotary motion into reciprocating motion. {pampˌba̱bə}
pump-down time [ENG] The length of time re-
quired to evacuate a leak-tested vessel. {pamp ˌdounˌtim}
pumphouse [CIV ENG] A building in which are housed pumps that supply an irrigation system, a power plant, a factory, a reservoir, a farm, a home, and so on. {pampˌhaʊs}
pumping loss [MECH ENG] Power consumed in pumping a cylinder of exhaust gas and sucking in fresh air instead. {pampˌiŋˌloʊs}
pumping station [CIV ENG] A building in which two or more pumps operate to supply fluid flow-
ning at adequate pressure to a distribution sys-
tem. {pampˌiŋˌstāˈshan}
punch [DES ENG] See nail set. [MECH ENG] A tool that forces metal into a die for extrusion or similar operations. {punch}
punched-plate screen [ENG] Flat, perforated plate with round, square, hexagonal, or elon-
gated openings; used for screening (size classifi-
cation) of crushed or pulverized solids. {puncht ˈplātˌskrɛn}
punching [ENG] 1. A piece removed from a sheet of metal or other material by a punch press. 2. A method of extrusion, cold heading, hot forging, or stamping in a machine for which mating die sections determine the shape or con-
tour of the work. {punch-əj}
punch press [MECH ENG] 1. A press consisting of a frame in which slides or rams move up and down, of a bed to which the die shoe or bolster plate is attached, and of a source of power to move the slide. Also known as drop press. 2. Any mechanical press. {punchˌpres}
punch radius [DES ENG] Theradius on the bot-
tom end of the punch over which the metal sheet is bent in drawing. {punchˌrād-ə-əs}
puncture-sealing tire [ENG] A tire whose inter-
ior surface is coated with a plastic material that is forced into a puncture by high-pressure air inside the tire and subsequently hardens to seal the puncture. {pækˌcharˌsēˌin tɪr}
pure shear [MECH] A particular example of irro-
tational strain or flattening in which a body is elongated in one direction and shortened at right angles to it as a consequence of differential dis-
placements on two sets of intersecting planes. {pjur ˈshir}
purge meter interlock [MECH ENG] A meter to maintain airflow through a boiler furnace at a specific level for a definite time interval, ensures that the proper air-fuel ratio is achieved prior to ignition. {parəˈmed-ər ˈin-tarˌlæk}
purging [ENG] Replacing the atmosphere in a container by an inert substance to prevent forma-
tion of explosive mixtures. {parəˌiŋ}
purify [ENG] To remove unwanted constituents from a substance. {pjurˌaɪ}
purlin [BUILD] A horizontal roof beam, perpen-
dicular to the trusses or rafters; supports the
purse seine

roofing material or the common rafters. {'par-lan}

purse seine [ENG] A net that can be dropped by two boats to encircle a school of fish, then pulled together at the bottom and raised, thereby catching the fish. {'pars ,sän}

push-bar conveyor [MECH ENG] A type of chain conveyor in which two endless chains are cross-connected at intervals by push bars which propel the load along a stationary bed or trough of the conveyor. {'push ,bar kən̩ ,vā-ər}

push bench [MECH ENG] A machine used for drawing tubes of moderately heavy gage by cupping metal sheet and applying pressure to the inside bottom of the cup to force it through a die. {'push ,bench}

push fit [DES ENG] A hand-tight sliding fit between a shaft and a hole. {'push ,fit}

push nipple [MECH ENG] A short length of pipe used to connect sections of cast iron boilers. {'push ,nipple}

push-pull sound track [ENG ACOUS] A sound track having two recordings so arranged that the signals are out of phase with that produced by the radiation on blackened metal strips with that produced by an electric current. Also known as solarimeter. {'push-pull sound track}

push rod [MECH ENG] A rod, as in an internal combustion engine, which is actuated by the cam to open and close the valves. {'push ,råd}

push-up [ENG] Concave bottom contour of a plastic container; allows an even bearing surface on the outer edge and prevents the container from rocking. {'push ,pəd}

putlog [CIV ENG] A crosspiece in a scaffold or formwork; supports the soffits and is supported by the ledgers. {'putlog}

putty knife [DES ENG] A knife with a broad flexible blade, used to apply and smooth putty. {'paːd-ə ,nif}

pW See picowatt.

pwt See pennyweight.

pycnometer [ENG] A container whose volume is precisely known, used to determine the density of a liquid by filling the container with the liquid and then weighing it. Also spelled pyknometer. {'piknämə-ər}

pyknometer See pycnometer. {'piknämə-ər}

pylon [CIV ENG] 1. A massive structure, such as a truncated pyramid, on either side of an entrance. 2. A tower supporting a wire over a long span. 3. A tower or other structure marking a route for an airplane. {'plən}

pyramidal horn [ENG] Horn whose sides form a pyramid. {'pɪrə-mid-əl hɔrn}

pyrometer [ENG] An instrument used to measure the combined intensity of incoming direct solar radiation and diffuse sky radiation; compares heating produced by the radiation on blackened metal strips with that produced by an electric current. Also known as solarimeter. {'pyrə-tek-niks}

pyrotechnics [ENG] Art and science of preparing and using fireworks. {'pɪrə-tek-niks
angle at the level point, between the horizontal and the line of fall of a projectile. { 'kwä-drônt 'aŋ-gål av 'föl'}

quadrant electrometer | ENG | An instrument for measuring electric charge by the movement of a vane suspended on a wire between metal quadrants; the charge is introduced on the vane and quadrants in such a way that there is a proportional twist to the wire. { 'kwä-drônt i ˌlekˈtrəˌməd-ər'}

quadruphonic sound system | ENG ACOUS | A system for reproducing sound by means of four loudspeakers properly situated in the listening room, usually at the four corners of a square, with each loudspeaker being fed its own identifiable segment of the program signal. Also known as four-channel sound system. { 'kwä-ˈdrəфɪn-ik 'soʊnd'}

quadratic performance index | CONT SYS | A measure of system performance which is, in general, the sum of a quadratic function of the system state at fixed times, and the integral of a quadratic function of the system state and control inputs. { kwäˈdrad-ik pərˈfor-ˌməns , inˌdēks}

quadricycle | MECH ENG | A four-wheeled human-powered land vehicle, usually propelled by the action of the rider’s feet on the pedals. { kwäˈdrəsikˈlōkəl}

quadrilateral | See quadrangle. { kwäˈdrələˈdræŋ-gəl, -əˈdræŋ-gəl}

quadruple thread | DES ENG | A multiple thread having four separate helices equally spaced around the circumference of the threaded member, the lead is equal to four times the pitch of the thread. { kwäˈdrəp-pləˈθrēd}

qualification test | ENG | A formally defined series of tests by which the functional, environmental, and reliability performance of a component or system may be evaluated in order to satisfy the engineer, contractor, or owner as to its satisfactory design and construction prior to final approval and acceptance. { kwäˈlələ-fəˈkä-kəˌshənˌtɛst}

quality analysis | IND ENG | Examination of the quality goals of a product or service. { kwäˈlədələˌnaləˈsæs}

quality assurance | IND ENG | A series of
planned or systematic actions required to provide adequate confidence that a product or service will satisfy given needs. (‘kwân-əd-ê kanˌtrɔl) quality control [IND ENG] The operational techniques and the activities that sustain the quality of a product or service in order to satisfy given requirements. It consists of quality planning, data collection, data analysis, and implementation, and is applicable to all phases of the product life cycle: design, development, manufacturing, delivery and installation, and operation and maintenance. (‘kwând-əd-ê kanˌtrɔl) quality-control chart [IND ENG] A control chart used to indicate and control the quality of a product. (‘kwând-əd-ê kanˌtrɔlˌchart) quality-factor meter [ENG] A type of fluid meter used to measure volume of flow. (‘kwând-əd-ê ‘fakˌtarˌmed-ər) quantity meter [ENG] A device that measures the magnitude of a time-varying quantity in multiples of some fixed unit, at a specified instant or specified repetition rate, and delivers a proportional response that is usually in pulse code or digital form. (‘kwânt-iz-ər) quantum dot [ELECTR] A quantized electronic structure in which electrons are confined with respect to motion in all three dimensions. (‘kwânt-əm ‘dât) quantum efficiency [ELECTR] The average number of electrons photoelectrically emitted from a photocathode per incident photon of a given wavelength in a phototube. (‘kwânt-təm ɪˌfish-ənˈsiː) quantum electronics [ELECTR] The branch of electronics associated with the various energy states of matter, motions within atoms or groups of atoms, and various phenomena in crystals; examples of practical applications include the atomic hydrogen maser and the cesium atomic-beam resonator. (‘kwânt-təm ɪˌliˌktrənˈiːks) quantum Hall effect [ELECTR] A phenomenon exhibited by certain semiconductor devices at low temperatures and high magnetic fields, whereby the Hall resistance becomes precisely equal to \( (\hbar/e^2/n) \), where \( \hbar \) is Planck's constant, \( e \) is the electronic charge, and \( n \) is either an integer or a rational fraction. Also known as von Klitzing effect. (‘kwânt-təm ˈhol ɪˌfɛkt) quantum well [ELECTR] A thin layer of material (typically between 1 and 10 nanometers thick) within which the potential energy of an electron is less than outside the layer, so that the motion of the electron perpendicular to the layer is quantized. (‘kwânt-təm ˈwel) quantum well injection transit-time diode [ELECTR] An active microwave diode that employs resonant tunneling through a gallium arsenide quantum well located between two aluminum gallium arsenide barriers to inject electrons into a undoped gallium arsenide drift region. Abbreviated QWITT diode. (‘kwânt-təm ˌwel in ˈjekˌʃən ˈtrænz-ıtˌtəm ˈdɪˌfjər) quantum well infrared photodetector [ELECTR] A detector of infrared radiation composed of numerous alternating layers of controlled thickness of gallium arsenide and aluminum gallium arsenide; the spectral response of the device can be tailored within broad limits by adjusting the aluminum-to-gallium ratio and the thicknesses of the layers during growth. Abbreviated QWIP. (‘kwânt-əmˌwel ˌɪnˌfrəˈredˌfɔldˌdɪˌtekˌtɔr) quantum wire [ELECTR] A strip of conducting material about 10 nanometers or less in width and thickness that displays quantum-mechanical effects such as the Aharonov-Bohm effect and universal conductance fluctuations. (‘kwânt-əmˌwir) quarry [ENG] An open or surface working or excavation for the extraction of building stone, ore, coal, gravel, or minerals. (‘kwâr-ə) quarry bar [ENG] A horizontal bar with legs at each end, used to carry machine drills. (‘kwâr-əˌbær) quarrying [ENG] The surface exploitation and removal of stone or mineral deposits from the earth’s crust. (‘kwâr-ɪŋ) quarrying machine [MECH ENG] Any machine used to drill holes or cut tunnels in native rock, such as a gang drill or tunneling machine; most commonly, a small locomotive bearing rock-drilling equipment operating on a track. (‘kwâr-əˌɪŋ ˈmesˌʃen) quarry sap See quarry water. (‘kwâr-əˌsap) quarry water [ENG] Subsurface water retained in freshly quarried rock. Also known as quarry sap. (‘kwâr-əˌwod-ər) quart [MECH] Abbreviated qt. 1. A unit of volume used for measurement of liquid substances in the United States, equal to 2 pints, or 1/4 gallon, or 573/4 cubic inches, or 9.46352946 \( \times 10^{-5} \) cubic meter. 2. A unit of volume used for measurement of solid substances in the United States, equal to 2 dry pints, or 1/32 bushel, or 107.521/1600 cubic inches, or approximately 1 10122 \( \times 10^{-6} \) cubic meter. 3. A unit of volume used for measurement of both liquid and solid substances, although mainly the former, in the United Kingdom and Canada, equal to 2 U.K. pints, or 1/4 U.K. gallon, or approximately 1 1365225 \( \times 10^{-3} \) cubic meter. (‘kwôrt) quarter [MECH] 1. A unit of mass in use in the United States, equal to 1/4 short ton, or 500 pounds, or 226.796185 kilograms. 2. A unit of mass used in troy measure, equal to 1/4 troy hundredweight, or 25 troy pounds, or 9.33104304 kilograms. Abbreviated qr. 3. A unit of mass used in the United Kingdom, equal to 1/4 hundredweight, or 28 pounds, or 12.70058636 kilograms. Abbreviated qr. 4. A unit of volume used in the United Kingdom for measurement of liquid and solid substances, equal to 8 bushels, or 64 gallons, or approximately 0.29094976 cubic meter. (‘kwôrd-ər) quartering machine [MECH ENG] A machine
that bores parallel holes simultaneously in such a way that the center lines of adjacent holes are 90° apart. ( 'kwɔːrd-ar, tɔrn 'driv'

**quarter-turn drive** [MECH ENG] A belt drive connecting pulleys whose axes are at right angles. ( 'kwɔːrd-ar, tɔrn 'd riv'

**quartz crystal** [ELECTR] A natural or artificially grown piezoelectric crystal composed of silicon dioxide, from which thin slabs or plates are carefully cut and ground to serve as a crystal plate. ( 'kwɔːst ə r, ˈk r i s t-ə l)

**quartz-crystal filter** [ELECTR] A filter which utilizes a quartz crystal, it has a small bandwidth, a high rate of cutoff, and a higher unloaded Q than can be obtained in an ordinary resonator. ( 'kwɔːst ə r, ˈk r i s t-ə l 'f i l-tə r'

**quartz-crystal resonator** [ELECTR] A quartz plate whose natural frequency of vibration is used to control the frequency of an oscillator. Also known as quartz resonator. ( 'kwɔːst ə r, ˈk r i s t-ə l 'rez-ən, ˈæd-ər'

**quartz fiber** [ENG] An extremely fine and uniform quartz filament that may be used as a torsion thread or as an indicator in an electroscope or dosimeter. ( 'kwɔːt ə s 'f i l-bær'

**quartz-fiber dosimeter** [ENG] A dosimeter in which radiation dose is determined from the deflection of a quartz fiber that is initially charged, repelling it from its metal support, and has its charge reduced by ionizing radiation, causing a proportional reduction in its deflection. ( 'kwɔːt əs 'f i l-bær ˈd əs-im-əd-ər'

**quartz-fiber manometer** See decrement gage. ( 'kwɔːt əs 'f i l-bær mən-əm-əd-ər'

**quartz horizontal magnetometer** [ENG] A type of relative magnetometer used as a geomagnetic field instrument and as an observatory instrument for routine calibration of recording equipment. ( 'kwɔːt əz ˈhær-əz-ənt-əl, ˈmæg-nətəm-əd-ər'

**quartz oscillator** [ELECTR] An oscillator in which the frequency of the output is determined by the natural frequency of vibration of a quartz crystal. ( 'kwɔːt əs 'əs-ə-ləd-ər'

**quartz plate** See crystal plate. ( 'kwɔːt əs 'plæt'

**quartz pressure gage** [ENG] A pressure gage that uses a highly stable quartz crystal resonator whose frequency changes directly with applied pressure. ( 'kwɔːt əs 'prɛʃ-ər, ˈʒət'

**quartz resonator** See quartz-crystal resonator. ( 'kwɔːt əs 'rez-ən, ˈæd-ər'

**quartz resonator force transducer** [ENG] A type of accelerometer which measures the change in the resonant frequency of a small quartz plate with a longitudinal slot, forming a double-ended tuning fork, when a longitudinal force associated with acceleration is applied to the plate. ( 'kwɔːt əs 'rez-ən, ˈæd-ər 'fɔrs trænz, ˈdjuːs-ər'

**quartz thermometer** [ENG] A thermometer based on the sensitivity of the resonant frequency of a quartz crystal to changes in temperature. ( 'kwɔːt əs 'θər-məd-ər'

**quasi-linear feedback control system** [CONT SYS] Feedback control system in which the relationships between the pertinent measures of the system input and output signals are substantially linear despite the existence of nonlinear elements. ( 'kwɑː-zən æl-ər ˈf əd-bæk kən-trəl ˈsɪs-əm-

**quasi-linear system** [CONT SYS] A control system in which the relationships between the input and output signals are substantially linear despite the existence of nonlinear elements. ( 'kwɑː-zən æl-ər ˈsɪs-əm-

**quasi-particle detector** [ENG] A detector of electromagnetic radiation at wavelengths close to 1 millimeter, based on the tunneling of single electrons (more precisely, quasi-particles) through a tunnel junction consisting of an oxide barrier between two superconductors, with a responsiveness of one tunneling electron for each microwave photon absorbed. ( 'kwɑː-zən ˈp aːd-əl di-tek-tər'

**quasi-static process** See reversible process. ( 'kwɑː-zə ˈstɛd-ɪk ˈprɛ-səs'

**quay** [CIV ENG] A solid embankment or structure parallel to a waterway, used for loading and unloading ships. ( 'k eɪ

**queen closer** [CIV ENG] In masonry work, a brick that has been cut in half along its length and is used at the end of a course. ( 'kwɛn ˈklɒs-ər'

**queen post** [CIV ENG] Either of two vertical members, one on each side of the apex of a triangular truss. ( 'kwɛn ˈpɒst'

**quench bath** [ENG] A liquid medium, such as oil, fused salt, or water, into which a material is plunged for heat-treatment purposes. ( 'kwɛnch ˈbæθ'

**quenching** [ELECTR] 1. The process of terminating a discharge in a gas-filled radiation-counter tube by inhibiting reignition. 2. Reduction of the intensity of resonance radiation resulting from deexcitation of atoms, which would otherwise have emitted this radiation, in collisions with electrons or other atoms in a gas. [ENG] Shock cooling by immersing liquid or molten material into a cooling medium (liquid or gas); used in metallurgy, plastics forming, and petroleum refining. [MECH ENG] Rapid removal of excess heat from the combustion chamber of an automotive engine. ( 'kwɛnch-ɪŋ'

**quench-tank extrusion** [ENG] Plastic-film or metal extrusion that is cooled in a quenching medium. ( 'kwɛnch ˈtæŋk ɪkˈstrʌn-

**quench temperature** [ENG] The temperature of the medium used for quenching. ( 'kwɛnch ˈtem-prə-ˈtʃər'

**queue** See waiting line. ( 'kjuː

**queueing** [ENG] The movement of discrete units through channels, such as programs or data arriving at a computer, or movement on a highway of heavy traffic. ( 'kjuː-ɪŋ'

**quick-change gearbox** [MECH-ENG] A cluster of gears on a machine tool, the arrangement of which allows for the rapid change of gear ratios. ( 'kwɪk ˈʃæn-kər 'ɡɜːt, ˈbæks-

**quickmatch** [ENG] Fast-burning fuse made from a cord impregnated with black powder. ( 'kwɪkˌmætʃ'

**quick return** [MECH ENG] A device used in a
quiescent

reciprocating machine to make the return stroke faster than the power stroke. {'kwik rl\textdecorated{tarn}}

quiescent [ELECTR] Pertaining to a circuit element which has no input signal, so that it does not perform its active function. [ENG] Pertaining to a body at rest, or inactive, such as an undisturbed liquid in a storage or process vessel. {'kw\textdecorated{es\textdecorated{-}ant}}

quirk bead [BUILD] 1. A bead with a quirk on one side only, as on the edge of a board. Also known as bead and quirk. 2. A bead that is flush with the adjoining surface and separated from it by a quirk on each side. Also known as bead and quirk, double-quirked bead, flush bead, recessed bead. 3. A bead located at a corner with quirks at either side at right angles to each other. Also known as bead and quirk, return bead. 4. A bead with a quirk on its face. Also known as bead and quirk. {'kw\textdecorated{r\textdecorated{k}}}

Q unit [THERMO] A unit of energy, used in measuring the heat energy of fuel reserves, equal to $10^{18} \text{British thermal units}$, or approximately $1.055 \times 10^7 \text{joules}$. {'\text{"yu\textdecorated{\text{"y\textdecorated{-}nat}}}}

quirk [BUILD] 1. An indentation separating one element from another, as between moldings. 2. A V groove in the finish-coat plaster where it abuts the return on a door or window. {'kw\textdecorated{rk}}

quirk drive [MECH ENG] A drive in which the motor is mounted on a nonrotating hollow shaft surrounding the driving-wheel axle, pins on the armature mesh with spokes on the driving wheels, thereby transmitting motion to the wheels, used on electric locomotives. {'kw\textdecorated{l} \text{,driv}}

quirk gear [MECH ENG] A gear mounted on a hollow shaft. {'kw\textdecorated{l} \text{,gir}}

quintal See metric centner. {'kw\textdecorated{nt\textdecorated{-}al}}

quoin [BUILD] One of the members forming an outside corner or exterior angle of a building, and differentiated from the wall by color, texture, size, or projection. {'k\textdecorated{o\textdecorated{n}}}

quoin post [CIV ENG] The vertical member at the jointed end of a gate in a navigation lock. {'k\textdecorated{o\textdecorated{n} \text{,p\textdecorated{ost}}}}

qwerty keyboard [ENG] A keyboard containing the standard arrangement of letters so named after the first letters on the top alphabetic row. {'kw\textdecorated{r\textdecorated{-}d\textdecorated{-}\text{"e\textdecorated{-}k\textdecorated{,b\textdecorated{\text{"o\textdecorated{\text{"d}}}}}}}}
rabbet  [ENG] 1. A groove cut into a part.  2. A strip applied to a part as, for example, a stop or seal.  3. A joint formed by fitting one member into a groove, channel, or recess in the face or edge of a second member.  ['raβət]
rabbit plane  [DES ENG] A plane with the blade extending to the outer edge of one side that is open.  ['raβət ,plæn]
rabbling  [ENG] Stirring a molten charge, as of metal or ore.  ['raβliŋ]
race  [DES ENG] Either of the concentric pair of steel rings of a ball bearing or roller bearing.  [ENG] A channel transporting water to or away from a hydraulic machinery, as in a powerhouse.  ['ræs]
rack  [CIV ENG] A fixed screen composed of parallel bars placed in a waterway to catch debris.  [DES ENG] See relay rack.  [ENG] A frame for holding or displaying articles.  [MECH ENG] A bar containing teeth on one face for meshing with a gear.  ['ræk]
rack and pinion  [MECH ENG] A gear arrangement consisting of a toothed bar that meshes with a pinion.  ['rækˌan 'pin-yən]
rack-and-pinion steering  [MECH ENG] A steering system in which the rotation of pinion gear at the end of the steering column moves a toothed bar (the rack) left or right to transmit steering movements.  ['rækˌan 'pin-yən 'stər-in]
racking  [CIV ENG] Setting back the end of each course of brick or stone from the end of the preceding course.  ['rækˌɪŋ]
rack railway  [CIV ENG] A railway with a rack between the rails which engages a gear on the locomotive, used on steep grades.  ['rækˌrælˌwæ] 
radar  [ENG] 1. A system using beamed and reflected radio-frequency energy for detecting and locating objects, measuring distance or altitude, navigating, homing, bombing, and other purposes, in detecting and ranging, the time interval between transmission of the energy and reception of the reflected energy establishes the range of an object in the beam's path. Derived from radio detection and ranging.  2. See radar set.  ['rædər]
radar bombsight  [ENG] An airborne radar set used to sight the target, solve the bombing problem, and drop bombs.  ['rædər 'bæmˌʃt] 
radar command guidance  [ENG] A missile guidance system in which radar equipment at the launching site determines the positions of both target and missile continuously, computes the missile course corrections required, and transmits these by radio to the missile as commands.  ['rædər ,kæmˈænd ,ɡidˈəns] 
radar contact  [ENG] Recognition and identification of an echo on a radar screen, an aircraft is said to be on radar contact when its radar echo can be seen and identified on a PPI (position indicator) display.  ['rædər ,kænˌtakt]
radar coverage  [ENG] The limits within which objects can be detected by one or more radar stations.  ['rædər ,kəˈvɛri] 
radar coverage indicator  [ENG] Device that shows how far a given aircraft should be tracked by a radar station, and also provides a reference (detection) range for quality control; takes into account aircraft size, altitude, screening angle, site elevation, type radar, antenna radiation pattern, and antenna tilt.  ['rædərˌkəvərɪˌɪndɪkətər] 
radar dome  [ENG] Weatherproof cover for a primary radiating element of a radar or radio device which is transparent to radio-frequency energy, and which permits active operation of the radiating element, including mechanical rotation or other movement as applicable.  ['rædərˌdəm] 
radar gun-layer  [ENG] A radar device which tracks a target and aims a gun or guns automatically.  ['rædərˌgʌnˌləˈɛr] 
radar homing  [ENG] Homing in which a missile-borne radar locks onto a target and guides the missile to that target.  ['rædərˌhəʊmˌɪŋ] 
radar marker  [ENG] A fixed facility which continuously emits a radar signal so that a bearing indication appears on a radar display.  ['rædərˌmɑːkər] 
radar netting  [ENG] The linking of several radars to a single center to provide integrated target information.  ['rædərˌnetɪŋ] 
radar netting station  [ENG] A center which can receive data from radar tracking stations and exchange these data among other radar tracking stations, thus forming a radar netting system.  ['rædərˌnetɪŋˌstætʃən] 
radar picket  [ENG] A ship or aircraft equipped with early-warning radar and operating at a distance from the area being protected, to extend the range of radar detection.  ['rædərˌpɪkt]
radar prediction [ENG] A graphic portrayal of the estimated radar intensity, persistence, and shape of the cultural and natural features of a specific area. ( rá,ðár trï,ʌŋ.gyə.lås.han )

radar range marker [ENG] A distance marker. ( rá,ðár tænˌræŋˌmår=kår )

radar relay [ENG] 1. Equipment for relaying the radar video and appropriate synchronizing signal to a remote location. 2. Process or system by which radar echoes and synchronization data are transmitted from a search radar installation to a receiver at a remote point. ( rá,ðår rɛˈræ.læ )

radar scanning [ENG] The process or action of directing a radar beam through a space search pattern for the purpose of locating a target. ( rá,ðår skænˌɪŋ )

radarscope overlay [ENG] A transparent overlay placed on a radarscope for comparison and identification of radar returns. ( rá,ðår skɔˈp ˈoʊˌværˌlæ )

radar set [ENG] A complete assembly of radar equipment for detecting and ranging, consisting essentially of a transmitter, antenna, receiver, and indicator. Also known as radar. ( rá,ðår sɛt )

radarsonde [MECH ENG] 1. An electronic system for automatically measuring and transmitting high-altitude meteorological data from a balloon, kite, or rocket by pulse-modulated radio waves when triggered by a radar signal. 2. A system in which radar techniques are used to determine the range, elevation, and azimuth of a radar target carried aloft by a radiosonde. ( rá,ðår sændæ̚r )

radar station [ENG] The place, position, or location from which, or at which, a radar set transmits or receives signals. ( rá,ðår stæˈʃæn )

radar surveying [ENG] Surveying in which airborne radar is used to measure accurately the distance between two ground radio beacons positioned along a baseline; this eliminates the need for measuring distance along the baseline in inaccessible or extremely rough terrain. ( rá,ðård særˌrædˌɪŋ )

radar telescope [ENG] A large radar antenna and associated equipment used for radar astronomy. ( rá,ðår tɛłˌɑsˌkɔp )

radar theodolite [ENG] A theodolite that uses radar to obtain azimuth, elevation, and slant range to a reflecting target, for surveying or other purposes. ( rá,ðår tɛˈðədˌɔlt )

radar threshold limit [ENG] For a given radar and specified target, the point in space relative to the focal point of the antenna at which initial detection criteria can be satisfied. ( rá,ðår tˈrɛʃˈhɔldˌlimˌət )

radar tracking [ENG] Tracking a moving object by means of radar. ( rá,ðår ˈtrakˌɪŋ )

radar tracking station [ENG] A radar facility which has the capability of tracking moving targets. ( rá,ðår ˈtrakˌɪŋˌstæˈʃæn )

radar triangulation [ENG] A radar system of locating targets, usually aircraft, in which two or more separate radars are employed to measure range only, the target is located by automatic trigonometric solution of the triangle composed of a pair of radars and the target in which all three sides are known. ( rá,ðår trɪˌæŋˈgəˌlaˌshon )

radar wind system [ENG] Apparatus in which radar techniques are used to determine the range, elevation, and azimuth of a balloon-borne target, and hence to compute upper-air wind data. ( rá,ðår ˈwɪndˌsɪsˌtæm )

radial acceleration [ENG] Centripetal acceleration. ( ˈrædɪəlˌækˈsəlˌsən )

radial band pressure [MECH] The pressure which is exerted on the rotating band by the walls of the gun tube, and hence against the projectile wall at the band seat, as a result of the engraving of the band by the gun rifling. ( ˈrædɪəlˌbændˌpɹəˈliːʃər )

radial bearing [MECH ENG] A bearing with rolling contact in which the direction of action of the load transmitted is radial to the axis of the shaft. ( ˈrædɪəlˌbiŋg )

radial draw forming [MECH ENG] A metal-forming method in which tangential stretch and radial compression are applied gradually and simultaneously. ( ˈrædɪəlˌdrɔ́fɔrˈmiŋ )

radial drill [MECH ENG] A drilling machine in which the drill spindle can be moved along a horizontal arm which itself can be rotated about a vertical pillar. ( ˈrædɪəlˌdrɪl )

radial drilling [ENG] The drilling of several holes in one plane, all radiating from a common point. ( ˈrædɪəlˌdrɪlˌɪŋ )

radial engine [MECH ENG] An engine characterized by radially arranged cylinders at equiangular intervals around the crankshaft. ( ˈrædɪəlˌɛnˈʤiŋ )

radial-flow [ENG] Having the fluid working substance flowing along the radii of a rotating tank. ( ˈrædɪəlˌflɔ́ )

radial-flow turbine [MECH ENG] A turbine in which the gases flow primarily in a radial direction. ( ˈrædɪəlˌflɔ́ˌtɔrˈbæn )

radial force [MECH ENG] In machining, the force acting on the cutting tool in a direction opposite to depth of cut. ( ˈrædɪəlˌfɔrz )

radial gate [ENG] A Tainter gate. ( ˈrædɪəlˌɡæt )

radial heat flow [THERMO] Flow of heat between two coaxial cylinders maintained at different temperatures; used to measure thermal conductivities of gases. ( ˈrædɪəlˌhætˌflɔ́ )

radial load [MECH ENG] The load perpendicular to the bearing axis. ( ˈrædɪəlˌlɔd )

radial locating [MECH ENG] One of the three locating problems in tools to maintain the desired relationship between the workpiece, the cutter, and the body of the machine tool; the other two locating problems are concentric and plane locating. ( ˈrædɪəlˌlɔdˌkædˌɪŋ )

radial motion [MECH] Motion in which a body moves along a line connecting it with an observer or reference point, for example, the motion of stars which move toward or away from the earth without a change in apparent position. ( ˈrædɪəlˌmoʊˌmənʃən )

radial- ply [DES ENG] Pertaining to the construction of a tire in which the cords run straight
across the tire, and an additional layered belt of fabric is placed around the circumference between the plies and the tread. \(\text{\textit{\text{'rād-e-əl pəl tər}}}\)

**radial-ply tire** See radial tire. \(\text{\textit{\text{'rād-e-əl pəl tər}}}\)

**radial rake** [MECH ENG] The angle between the cutter tooth face and a radial line passing through the cutting edge in a plane perpendicular to the cutter axis. \(\text{\textit{\text{'rād-e-əl rāk}}}\)

**radial road** [CIV ENG] One of a group of roads leading outward from the center of a city in a pattern similar to spokes on a wheel. \(\text{\textit{\text{'rād-e-əl rōd}}}\)

**radial saw** [MECH ENG] A power saw that has a circular blade suspended from a transverse head mounted on a rotatable overarm. \(\text{\textit{\text{'rād-e-əl sil-lēk-tōr}}}\)

**radial selector** See omnibearing selector. \(\text{\textit{\text{'rād-e-əl sīl-lek-tōr}}}\)

**radial stress** [MECH] Tangential stress at the periphery of an opening. \(\text{\textit{\text{'rād-e-əl sṭrēs}}}\)

**radial tire** [ENG] A pneumatic tire constructed with a layer of fabric between the tread and the plies (cords), which run straight across the tire. Also known as radial-ply tire. \(\text{\textit{\text{'rād-e-əl tīr}}}\)

**radial velocity** [MECH] The component of the velocity of a body that is parallel to a line from an observer or reference point to the body; the radial velocities of stars are valuable in determining the structure and dynamics of the Galaxy. Also known as line-of-sight velocity. \(\text{\textit{\text{'rād-e-əl vār-lās-o-əd-əm}}}\)

**radial wave equation** [MECH] Solutions to wave equations with spherical symmetry can be found by separation of variables; the ordinary differential equation for the radial part of the wave function is called the radial wave equation. \(\text{\textit{\text{'rād-e-əl jăw və kiw-ə-zān}}}\)

**radiant energy** See radiation. \(\text{\textit{\text{'rād-e-ənt ˈen-ər-je}}}\)

**radiant-energy thermometer** See radiation pyrometer. \(\text{\textit{\text{'rād-e-ənt ˈen-ər-je thərˈmām-əd-ər}}}\)

**radiating power** See emittance. \(\text{\textit{\text{'rād-e-əd-ər ˈpəl-ər}}}\)

**radiation** [ENG] A method of surveying in which points are located by knowledge of their distances and directions from a central point. \(\text{\textit{\text{'rād-e-əshən}}}\)

**radiation correction** See cooling correction. \(\text{\textit{\text{'rād-e-əshən ˈkər-e-kənˈzən}}}\)

**radiation hardening** [ENG] Improving the ability of a device or piece of equipment to withstand nuclear or other radiation; applies chiefly to dielectric and semiconductor materials. \(\text{\textit{\text{'rād-e-əshən ˈhārd-ən-ər}}}\)

**radiation loss** [MECH ENG] Boiler heat loss to the atmosphere by conduction, radiation, and convection. \(\text{\textit{\text{'rād-e-əshən ˈloʊs}}}\)

**radiation noise** See electromagnetic noise. \(\text{\textit{\text{'rād-e-əshən ˈnəʊz}}}\)

**radiation oven** [ENG] Heating chamber relying on tungsten-filament infrared lamps with reflectors to create temperatures up to 600°F (315°C); used to dry sheet and granular material and to bake surface coatings. \(\text{\textit{\text{'rād-e-əshən ˈəvn-ən}}}\)

**radiation pyrometer** [ENG] An instrument which measures the temperature of a hot object by focusing the thermal radiation emitted by the object and making some observation on it; examples include the total-radiation, optical, and ratio pyrometers. Also known as noncontact thermometer, radiant-energy thermometer, radiation thermometer. \(\text{\textit{\text{'rād-e-əshən pˈtrəm-əd-ər}}}\)

**radiation shelter** See fallout shelter. \(\text{\textit{\text{'rād-e-əshən ˈʃel-tər}}}\)

**radiation shield** [ENG] A shield or wall of material interposed between a source of radiation and a radiation-sensitive body, such as a person, radiation-detection instrument, or photographic film, to protect the latter. \(\text{\textit{\text{'rād-e-əshən ˈʃild}}}\)

**radiation thermometer** See radiation pyrometer. \(\text{\textit{\text{'rād-e-əshən thərˈmām-əd-ər}}}\)

**radiation vacuum gage** [ENG] Vacuum (reduced-pressure) measurement device in which gas ionization from an alpha source of radiation varies measurably with changes in the density (molecular concentration) of the gas being measured. \(\text{\textit{\text{'rād-e-əshən ˈvək-ə-yəm ˈgæj}}}\)

**radiation well logging** See radioactive well logging. \(\text{\textit{\text{'rād-e-əshən ˈwel ˈlæg-ən}}}\)

**radiator** [ENG] Any of numerous devices, units, or surfaces that emit heat, mainly by radiation, to objects in the space in which they are installed. \(\text{\textit{\text{'rād-e-əd-ər}}}\)

**radiator temperature drop** [MECH ENG] In internal combustion engines, the difference in temperature of the coolant liquid entering and leaving the radiator. \(\text{\textit{\text{'rād-e-əd-ər ˈtem-prə-ˈchar, ˈdræp}}}\)

**radioacoustic position finding** See radioacoustic ranging. \(\text{\textit{\text{'rād-e-ə-ə-kəs-tik ˈpəz-əz-ən ˈfənd-ən}}}\)

**radioacoustic ranging** [ENG] A method for finding the position of a vessel at sea; a bomb is exploded in the water, and the sound of the explosion transmitted through water is picked up by the vessel and by shore stations, other vessels, or buoys whose positions are known; the received sounds are transmitted instantaneously by radio to the surveying vessel, and the elapsed times are proportional to the distances to the known positions. Abbreviated RAR. Also known as radioacoustic position finding, radioacoustic sound ranging. \(\text{\textit{\text{'rād-e-ə-ə-kəs-tik ˈrān-ən}}}\)

441
radioacoustic sound ranging

radioacoustic sound ranging See radioacoustic ranging  

radioactive heat [THERMO] Heat produced within a medium as a result of a absorption of radiation from decay of radioisotopes in the medium, such as thorium-232, potassium-40, uranium-238, and uranium-235.  

radioactive snow gage [ENG] A device which automatically and continuously records the water equivalent of snow on a given surface as a function of time. A small sample of a radioactive salt is placed in the ground in a lead-shielded collimator which directs a beam of radioactive particles vertically upward; a Geiger-Müller counting system (located above the snow level) measures the amount of depletion of radiation caused by the presence of the snow.  

radioactive well logging [ENG] The recording of the differences in radioactive content (natural or neutron-induced) of the various rock layers found down an oil well borehole, types include γ-ray, neutron, and photon logging. Also known as radiation well logging, radioactivity prospecting.  

radioactivity log [ENG] Record of radioactive well logging  

radioactivity prospecting See radioactive well logging  

radio altimeter [ENG] An absolute altimeter that depends on the reflection of radio waves from the earth for the determination of altitude, as in a frequency-modulated radio altimeter and a radar altimeter. Also known as electronic altimeter, reflection altimeter.  

radio atmometer [ENG] An instrument designed to measure the effect of sunlight upon evaporation from plant foliage; consists of a porous-clay atmometer whose surface has been blackened so that it absorbs radiant energy.  

radioautography See autoradiography  

diagram of a radar system using radio signals to determine the position of an object by means of equipment directed at the object and the time that elapses from transmission of the pulse to reception of a reflected pulse is measured.  

diagram of a radar system using radio signals to determine the position of an object by means of equipment directed at the object and the time that elapses from transmission of the pulse to reception of a reflected pulse is measured.  

radio engineering [ENG] The field of engineering that deals with the generation, transmission, and reception of radio waves and with the design, manufacture, and testing of associated equipment.  

radio-frequency current [ELEC] Alternating current having a frequency higher than 10,000 hertz.  

radio-frequency head [ENG] Unit consisting of a radar transmitter and part of a radar receiver, the two contained in a package for ready removal and installation.  

radio-frequency heating See electronic heating  

radio-frequency preheating [ENG] Preheating of plastics-molding materials by radio frequencies of 10–100 megahertz per second to facilitate the molding operation or to reduce the molding cycle time. Abbreviated rf preheating.  

radio-frequency sensor [ENG] A device that uses radio signals to determine the position of objects to be manipulated by a robotic system.  

radioactive range [ENG] Determination of relative position of an object by means of equipment operating on the principle that propagation of radio waves is at a constant velocity and rectilinear.  

radio mast [ENG] A tower, pole, or other structure for elevating an antenna.  

radioelectricfield [ENG] The electric field produced by a current in a conductor.  

radiolocation [ENG] Science of locating a radio transmitter by means of taking bearings on the radio waves emitted by such a transmitter.  

radioluminescence [ENG] The property of a substance to emit light upon the absorption of energy.  

radio interferometer [ENG] Radiotelescope or radiometer employing a separated receiving antenna to measure angular distances as small as 1 second of arc, records the result of interference between separate radio waves from celestial radio sources.  

radio location [ENG] Determination of relative position of an object by means of equipment operating on the principle that propagation of radio waves is at a constant velocity and rectilinear.  

radiometer [ELECT] A receiver for detecting microwave thermal radiation and similar weak wide-band signals that resemble noise and are obscured by receiver noise, examples include the Dicke radiometer, subtraction-type radiometer, and two-receiver radiometer. Also known as
microwave radiometer, radiometer-type receiver. [ENG] An instrument for measuring radiant energy, examples include the bolometer, microradiometer, and thermopile. {\textit{rādē-ē-sām-ōd-ẹr}}

radiopasteurization [ENG] Pasteurization by surface treatment with low-energy irradiation. {\textit{rādē-ē-ō, pās-chūr-ō-ˈzā-shan}}

radio position finding [ENG] Process of locating a radio transmitter by plotting the intersection of its azimuth as determined by two or more radio direction finders. {\textit{ˈrādē-ē-ɵ pəˈzish-ən}}, \textit{fīnd-əj}}

radio prospecting [ENG] Use of radio and electrical equipment to locate mineral or oil deposits. {\textit{ˈrādē-ē-ɵ ˈprā,spēk-əj}}

radio shielding [ELEC] Metallic covering over all electric wiring and ignition apparatus, which is grounded at frequent intervals for the purpose of eliminating electric interference with radio communications. {\textit{ˈrādē-ē-ɵ, sħeld-əj}}

radiosonde [ENG] A balloon-borne instrument for the simultaneous measurement and transmission of meteorological data; the instrument consists of transducers for the measurement of pressure, temperature, and humidity, a modulator for the conversion of the output of the transducers to a quantity which controls a property of the radio-frequency signal, a selector switch which determines the sequence in which the parameters are to be transmitted, and a transmitter which generates the radio-frequency carrier. {\textit{ˈrādē-ē-ɵ, sând-əj}}

radiosonde-radio-wind system [ENG] An apparatus consisting of a standard radiosonde and radiosonde ground equipment to obtain upper-air data on pressure, temperature, and humidity, and a self-tracking radio direction finder to provide the elevation and azimuth angles of the radiosonde so that the wind vectors may be obtained. {\textit{ˈrādē-ē-ɵ, sând-əd-ē-ɵ, wīnd, shtām}}

radiosonde set [ENG] A complete set for automatically measuring and transmitting high-altitude meteorological data by radio from such carriers as a balloon or rocket. {\textit{ˈrādē-ē-ɵ, sând-ət}}

radio sonobuoy See sonobuoy. {\textit{ˈrādē-ē-ɵ sān-ə, bōl}}

radio telescope [ENG] An astronomical instrument used to measure the amount of radio energy coming from various directions in the sky, consisting of a highly directional antenna and associated electronic equipment. {\textit{ˈrādē-ē-ə, tehl-ə, skōp}}

radio tracking [ENG] The process of keeping a radio or radar beam set on a target and determining the range of the target continuously. {\textit{ˈrādē-ē-ɵ trāk-əj}}

radius cutter [MECH ENG] A formed milling cutter with teeth ground to produce a radius on the workpiece. {\textit{ˈrādē-ē-əs, kād-ər}}

radius of action [ENG] The maximum distance a ship, aircraft, or other vehicle can travel away from its base along a given course with normal load and return without refueling, but including the fuel required to perform those maneuvers made necessary by all safety and operating factors. {\textit{ˈrādē-ē-əs əv ˈak-ən-ər}}

radius of gyration [MECH] The square root of the ratio of the moment of inertia of a body about a given axis to its mass. {\textit{ˈrādē-ē-əs əv ˈjil-ˈrā-ən-ər}}

radius of protection [ENG] The radius of the circle within which a lightning discharge will not strike, due to the presence of an elevated lighting rod at the center. {\textit{ˈrādē-ē-əs əv prātək-ən-ər}}

radius rod [ENG] A rod which restricts movement of a part to a given arc. {\textit{ˈrādē-ē-əs, rād-əl}}

rafinate [CHEM ENG] In solvent refining, that portion of the treated liquid mixture that remains undissolved and is not removed by the selective solvent. Also known as good oil to petroleum-refinery operators. {\textit{ˈrāf-ə, nət}}

raft [ENG] A quantity of timber or lumber secured together by means of ropes, chains, or rods and used for transportation by floating. {\textit{rāft}}

ratter [BUILD] A roof-supporting member immediately beneath the roofing material. {\textit{ˈrāt-ər}}

ratter dam [CIV ENG] A dam made of horizontal timbers that meet in the center of the stream like rafters in a roof. Also known as foundation mat. {\textit{ˈrāt-ər, däm}}

raft foundation [CIV ENG] A continuous footing that supports an entire structure, such as a floor. Also known as flashing block, raggle block. 2. A groove cut into masonry to receive adjoining material. {\textit{ˈrāt-əl}}

raggle block See raggle. {\textit{ˈrāg-əl, blāk}}

rain [ENG] 1. A bar extending between posts or other supports as a barrier or guard. 2. A steel bar resting on the crossbeams to provide track for railroad cars and other vehicles with flanged wheels. [MECH ENG] A high-pressure manifold in some fuel injection systems. {\textit{ˈrāl}}

rail anchor [CIV ENG] A device that prevents tracks from moving longitudinally and maintains the proper gap between sections of rail. {\textit{ˈrāl ə-ˈnər-ən-ər}}

rail bender [ENG] A portable appliance for bending rails for track or for straightening bent or curved rails. {\textit{ˈrāl əˈbend-ər}}

rail capacity [CIV ENG] The maximum number of trains which can be planned to move in both directions over a specified section of track in a 24-hour period. {\textit{ˈrāl ək, pās-əd-ə}}

rail clip [CIV ENG] 1. A plate that holds a rail at its base. 2. A device used to fasten a derrick or crane to the rails of a track to prevent tipping. 3. A support on a track rail, used for holding a detector bar. {\textit{ˈrāl, klīp}}

rail crane See locomotive crane. {\textit{ˈrāl, kran}}

railhead [CIV ENG] 1. The topmost part of a rail, supporting the wheels of railway vehicles. 2. A point at which railroad traffic originates and
railings  3. The temporary ends of a railroad line under construction. { râl, hed }

railling  [CIV ENG] A barrier consisting of a rail and support. { ELECTR } Radar pulse jamming at high recurrence rates (50 to 150 kilohertz); it results in an image on a radar indicator resembling a fence railing. { râl-iŋ }

rail joint  [CIV ENG] A rigid connection of the ends of two sections of railway track. { râl ʃjoint }

railroad  [CIV ENG] A permanent line of rails forming a route for freight cars and passenger cars drawn by locomotives. { râl ʃrod }

railroad engineering  [CIV ENG] That part of transportation engineering involved in the planning, design, development, operation, construction, maintenance, use, or economics of facilities for transportation of goods and people in wheeled units of rolling stock running on, and guided by, rails normally supported on crossties and held to fixed alignment. Also known as railway engineering. { râl ʃrod, en ʃjaʃnir-iŋ }

railroad jack  [MECH ENG] 1. A hoist used for lifting locomotives. 2. A portable jack for lifting heavy objects. 3. A hydraulic jack, either powered or lever-operated. { râl ʃrod, ʃjak }

railway dry dock  [CIV ENG] A railway dock consisting of tracks built on an incline on a strong foundation, and extending from a sufficient distance in shore to allow a vessel to be hauled out of the water. { râl, ʃwa ʃdiʃ, ʃdak }

railway end-loading ramp  [CIV ENG] A sloping platform situated at the end of a track and rising to the level of the floor of the railcars (wagons). { râl, ʃwa ʃend, ʃliʃ, ʃram }

railway engineering  See railroad engineering. { râl, ʃwa, en ʃjaʃnir-iŋ }

rain gage  [ENG] An instrument designed to collect and measure the amount of rain that has fallen. Also known as ombrometer, pluviometer, udometer. { ʃran, ʃgai }

rain-gage shield  [ENG] A device which surrounds a rain gage and acts to maintain horizontal flow in the vicinity of the funnel so that the catch will not be influenced by eddies generated near the gage. Also known as wind shield. { ʃran ʃwaʃ, ʃshield }

rain-intensity gage  [ENG] An instrument which measures the instantaneous rate at which rain is falling on a given surface. Also known as rate-of-rainfall gage. { ʃran in ʃten-ʃaad-ə, ʃgai }

raised flooring  [CIV ENG] A flooring system having removable panels supported on adjustable pedestals or stringers to allow convenient access to the space below. Also known as access flooring, elevated flooring, pedestal flooring. { rzad ʃfloor-iŋ }

raising plate  See wall plate. { ʃraʃiŋ, ʃplat }

Rajakaruna engine  [MECH ENG] A rotary engine that uses a combustion chamber whose sides are pin-jointed together at their ends. { raʃjaʃkaruna, en ʃjan }

rake  [BUILD] The exterior finish and trim applied parallel to the sloping end walls of a gabled roof. [DES ENG] A hand tool consisting of a long handle with a row of projecting prongs at one end; for example, the tool used for gathering leaves or grass on the ground. [ENG] The angle between an inclined plane and the vertical. [MECH ENG] The angle between the tooth face or a tangent to the tooth face of a cutting tool at a given point and a reference plane or line. { râk }

rake blade  [ENG] A blade on a bulldozer in the form of spaced tines that point down. { râk ʃblad }

raked joint  [CIV ENG] A mortar, or masonry, joint from which the mortar has been scraped out to about 3/4 inch (20 millimeters). { râkt ʃjoint }

ram  [MECH ENG] A plunger, weight, or other guided structure for exerting pressure or drawing something by impact. { ram }

ram effect  [MECH ENG] The increased air pressure in a jet engine or in the manifold of a piston engine, due to ram. { ram ʃiʃekt }

rammer  [ENG] An instrument for driving something, such as wood or stones, into another material with force. Also known as beetle, maul. { ram ʃor }

ramming  [ENG] Packing a powder metal or sand into a compact mass. { ram ʃiŋ }

ramp  [ENG] 1. A uniformly sloping platform, walkway, or driveway. 2. A stairway which gives access to the main door of an airplane. { ramp }

ram penetrometer  See ramsonde. { ʃram, penətromətər }

ramping  [ENG] In the production of parts fabricated from composite materials, a gradual and programmed sequence of changes in temperature or pressure that control curing and cooling. { ram ʃip }

RAMPS  See resource allocation in multiproject scheduling. { ramps }

Ramsay-Shields-Eötvös equation  [THERMO] An elaboration of the Eötvös rule which states that at temperatures not too near the critical temperature, the molar surface energy of a liquid is proportional to t-6 K, where t is the temperature and ti is the critical temperature. { rams-eʃaʃ ʃoʃ, ʃwaʃən }

Ramsay-Young method  [THERMO] A method of measuring the vapor pressure of a liquid, in which a thermometer bulb is surrounded by cotton wool soaked in the liquid, and the pressure, measured by a manometer, is reduced until the thermometer reading is steady. { rams-eʃaʃ ʃoʃ, ʃmeth-pədər }

Ramsay-Young rule  [THERMO] An empirical relationship which states that the ratio of the absolute temperatures at which two chemically similar liquids have the same vapor pressure is independent of this vapor pressure. { rams-eʃaʃ ʃoʃ, ʃrul }

ramsonde  [ENG] A cone-tipped metal rod or tube that is driven downward into snow to measure its hardness. Also known as ram penetrometer. { ʃram, ʃsand }
Rankine-Hugoniot equations
Rankine temperature scale

Rankine temperature scale  [THERMO] A scale of absolute temperature. The temperature in degrees Rankine (°R) is equal to 9/5 of the temperature in kelvins and to the temperature in degrees Fahrenheit plus 459.67.  [ˈræk-ən ˈtem-prə- Char_ˌskal]

ranking method  [IND ENG] A system of job evaluation wherein each job as a whole is given a rank with respect to all the other jobs, and no attempt is made to establish a measure of value.  [ˈræŋ-ˌingˌ meth-əd]

Ranney well  [CIV ENG] A well that has a center caisson with horizontal perforated pipes extending radially into an aquifer, particularly applicable to the development of thin aquifers at shallow depths.  [ˈran-əˌwel]

rapid prototyping  [IND ENG] A modeling process used in product design in which a CAD drawing of a part is processed to create a file of the part in slices, and then a part is built by depositing layer (slice) upon layer of material; includes stereolithography, selective laser sintering, or fused deposition modeling.  [ˈræp-ədˌ ˈprɑd-əˌtip-ˌiŋ]

rapid sand filter  [CIV ENG] A system for purifying water, which is forced through layers of sand and gravel under pressure.  [ˈræp-ədˌ ˈsand ˌfil-ˌtər]

rapid traverse  [MECH ENG] A machine tool mechanism which rapidly repositions the workpiece while no cutting takes place.  [ˈræp-ədˌ trav-ərывают]

Raschig process  [CHEM ENG] A method for production of phenol that begins with a first-stage chlorination of benzene, using an air-hydrochloric acid mixture.  [ˈrɑˈskiˌˈpraˌsɑs]

Raschig ring  [CHEM ENG] A type of packing in the shape of a short pipe, used in columns for absorption operations, and to a limited extent for distillation operations.  [ˈrɑˈskiˌˈrɪŋ]

RA size  [ENG] One of a series of sizes to which RAsize.  [ˈrɑˈzeiˌs]

RA size  [ENG] One of a series of sizes to which RAsize.  [ˈrɑˈzeiˌs]

RCA  [MECH ENG] A gyroscope that is suspended in just one gimbal whose bearings form its output axis and which is restrained by a spring, rotation of the gyroscope frame about an axis perpendicular to both spin and output axes produces precession of the gimbal within the bearings proportional to the rate of rotation.  [ˈræt ˈjɪˌrəˌskɔp]

rate gyroscope  [MECH ENG] A gyroscope that is suspended in just one gimbal whose bearings form its output axis and which is restrained by a spring, rotation of the gyroscope frame about an axis perpendicular to both spin and output axes produces precession of the gimbal within the bearings proportional to the rate of rotation.  [ˈræt ˈjɪˌrəˌskɔp]

rate integrating gyroscope  [MECH ENG] A single-degree-of-freedom gyro having primarily viscous restraint of its spin axis about the output axis; an output signal is produced by gimbal angular displacement, relative to the base, which
reactance drop
reactance grounded

reactance grounded  [ELEC] Grounded through a reactance. { rē`ak-tāns, grān-dād

reaction  [CONT SYS] See positive feedback. [MECH] The equal and opposite force which results when a force is exerted on a body, according to Newton’s third law of motion. { rē`ak-shon

reaction injection molding  [ENG] A plastics fabrication process in which two streams of highly reactive, low-molecular-weight, low-viscosity resin systems are combined to form a solid material. { rē`ak-shan in`jek-shan mōl-diŋ

reactions inventory  [IND ENG] A summary of the various possible responses of an individual to a stimulus or group of stimuli. { rē`ak-shanz `in-ven,tör-e-

reaction turbine  [MECH ENG] A power-generation prime mover utilizing the steady-flow principle of fluid acceleration, where nozzles are mounted on the moving element. { rē`ak-shan tar-ban

reaction wheel  [MECH ENG] A device capable of storing angular momentum which may be used in a space ship to provide torque to effect or maintain a given orientation. { rē`ak-shan `wel

reaction zone  [CHEM ENG] In a catalytic reactor vessel, the location or zone within the vessel where the bulk of the chemical reaction takes place. { rē`ak-shan zōn

reactive  [ELEC] Pertaining to either inductive or capacitive reactance, a reactive circuit has a high value of reactance in comparison with resistance. { rē`ak-tiv

reactive ion etching  [ELECTR] Directed chemical etching process used in integrated circuit fabrication in which chemically active ions are accelerated along electric field lines to meet a substrate perpendicular to its surface. { rē`ak-tiv `t,ān ech-iŋ

reactive muffler  [ENG] A muffler that attenuates by reflecting sound back to the source. Also known as nondissipative muffler. { rē`ak-tiv `maf-lar

reactive volt-ampere meter  See varmeter. { rē`ak-tiv `volt `am,pir `mēd-ar

reactor  [CHEM ENG] Device or process vessel in which chemical reactions (catalyzed or noncatalyzed) take place during a chemical conversion type of process. [ELEC] A device that introduces either inductive or capacitive reactance into a circuit, such as a coil or capacitor. Also known as electric reactor. { rē`ak-tor

read  [ELECTR] To generate an output corresponding to the pattern stored in a charge storage tube. { rē`d

Read diode  [ELECTR] A high-frequency semiconductor diode consisting of an avalanche pn junction, biased to fields of several hundred thousand volts per centimeter, at one end of a high-resistance carrier serving as a drift space for the charge carriers. { rē`d, dē,ôd

readiness time  [ENG] The length of time required to obtain a stabilized system ready to perform its intended function (readiness time includes warm-up time), the time is measured from the point when the system is unassembled or uninstalled to such time as it can be expected to perform as accurately as at any later time, maintenance time is excluded from readiness time. { rē`d-i-nas tīm

reading  [ENG] 1. The indication shown by an instrument. 2. Observation of the readings of one or more instruments. { rē`d-iŋ

reading point  See breakpoint. { rē`d-iŋ`poʊnt

real gas  [THERMO] A gas, as considered from the viewpoint in which deviations from the ideal gas law, resulting from interactions of gas molecules, are taken into account. Also known as imperfect gas. { rē`l gas

realizability  [CONT SYS] Property of a transfer function that can be realized by a network that has only resistances, capacitances, inductances, and ideal transformers. { rē`l-ə riz-ə bil-əd-e

ream  [ENG] To enlarge or clean out a hole. { rēm

reamer  [DES ENG] A tool used to enlarge, shape, smooth, or otherwise finish a hole. { rē`m-ər

reaming bit  [DES ENG] A bit used to enlarge a borehole. Also known as broaching bit, pilot reaming bit. { rē`m-iŋ`biŋt

rear response  [ENG ACOUS] The maximum pressure within 60° of the rear of a transducer in decibels relative to the pressure on the acoustic axis. { rē`r i r,spāns

Réaumur temperature scale  [THERMO] Temperature scale where water freezes at 0°R and boils at 80°R. { rē`roʊmʊr tem-prər-əd-kəl

rebar  [CIV ENG] A steel bar or rod used to reinforce concrete. { rē`bər

reboiler  [CHEM ENG] An auxiliary heating unit for a fractionating tower designed to supply additional heat to the lower portion of the tower; liquid withdrawn from the side or bottom of the tower is reheated by heat exchange, then reintroduced into the tower. { rē`böl-ar

rebound clip  [DES ENG] A clip surrounding the back and one or two other leaves of a leaf spring, to distribute the load during rebounds. { rē`baʊnd, klip

rebound leaf  [DES ENG] In a leaf spring, a leaf placed over the master leaf to limit the rebound and help carry the load imposed by it. { rē`baʊnd, lɛf

rebreather  [ENG] A closed-loop oxygen supply system consisting of gas supply and face mask. { rē`brestør-ar

rebuild  [ENG] To restore to a condition comparable to new by disassembling the item to determine the condition of each of its component parts, and reassembling it, using serviceable, rebuilt, or new assemblies, subassemblies, and parts. { rē`bīld

receiver  [CHEM ENG] Vessel, container, or tank used to receive and collect liquid material from a process unit, such as the distillate receiver from the overhead condenser of a distillation column. [ELECTR] The complete equipment required for receiving modulated radio waves
and converting them into the original intelligence, such as into sounds or pictures, or converting to desired useful information as in a radar receiver. [MECH ENG] An apparatus placed near the compressor to equalize the pulsations of the air as it comes from the compressor to cause a more uniform flow of air through the pipeline and to collect moisture and oil carried in the air. ( r'i:sę-vör )

receiving gage [ENG] A fixed gage designed to inspect a number of dimensions and also their reaction to each other. ( r'i:sę-vę̂ng )

receiving house [CHEM ENG] A building where liquid streams from petroleum-refining-process condensers are observed through a look box, and samples are taken for testing, and also where products are diverted to storage tanks or to other processing units. ( r'i:sę-vę̂ng )

receiving station [MECH ENG] The location or solids-separation screen (sieve) oscillated back and forth by an eccentric gear; used for solids classification. ( r'i:sę-vę̂ng )

receiving tank See rundown tank. ( r'i:sę-vę̂ng )

recess [ENG] A surface groove or depression. ( rę̂̂,sę̂̂s )

recessed bead See quirk bead. ( rę̂̂,sę̂̂st ,bę̂̂d )

recessed tube wall [MECH ENG] A boiler furnace wall which has openings to partially expose waterwall tubes to the radiant combustion gases. ( rę̂̂,sę̂̂st ,tų̂̂b ,wöl )

recharge basin [CIV ENG] A basin constructed in sandy material to collect water, as from storm drains, for the purpose of replenishing ground-water supply. ( rę̂̂,sę̂̂s )

reciprocal impedance [ELEC] Two impedances Z₁ and Z₂ are said to be reciprocal impedances with respect to an impedance Z (invariably a resistance) if they are so related as to satisfy the equation Z₁Z₂ = Z². ( r'i:sı̂r-rą:kôl )

reciprocal leveling [CIV ENG] A variant of straight differential leveling applied to long distances in which levels are taken on two points, and the average of the two elevation differences is the true difference. ( r'i:sı̂r-rą:kôl )

reciprocal ohm See siemens. ( r'i:sı̂r-rą:kôl )

reciprocal ohm centimeter See roc. ( r'i:sı̂r-rą:kôl )

reciprocal strain ellipsoid [MECH] In elastic theory, an ellipsoid of certain shape and orientation which under homogeneous strain is transformed into a set of orthogonal diameters of the sphere. ( r'i:sı̂r-rą:kôl )

reciprocating compressor [MECH ENG] A positive-displacement compressor having one or more cylinders, each fitted with a piston driven by a crankshaft through a connecting rod. ( r'i:sı̂r-rą:kôl )

reciprocating drill See piston drill. ( r'i:sı̂r-rą:kôl )

reciprocating engine See piston engine. ( r'i:sı̂r-rą:kôl )

reciprocating flight conveyor [MECH ENG] A reciprocating beam or beams with hinged flights that advance materials along a conveyor trough. ( r'i:sı̂r-rą:kôl )

reciprocating-plate column See reciprocating-plate extractor. ( r'i:sı̂r-rą:kôl )

reciprocating-plate extractor [CHEM ENG] A liquid-liquid contactor in which equally spaced perforated plates (as in a distillation column) move up and down rapidly over a short distance to cause liquid agitation and mixing. Also known as reciprocating-plate column. ( r'i:sı̂r-rą:kôl )

reciprocating-plate feeder [MECH ENG] A back-and-forth shaking tray used to feed abrasive materials, such as pulverized coal, into process units. ( r'i:sı̂r-rą:kôl )

reciprocating pump See piston pump. ( r'i:sı̂r-rą:kôl )

reciprocating screen [MECH ENG] Horizontal solids-separation screen (sieve) oscillated back and forth by an eccentric gear, used for solids classification. ( r'i:sı̂r-rą:kôl )

reciprocity calibration [ENG ACOUS] A measurement of the projector loss and hydrophone loss of a reversible transducer by means of the reciprocity theorem and comparisons with the known transmission loss of an electric network, without knowing the actual value of either the electric power or the acoustic power. ( rę̂̂,śprę̂:s-ę̂̂d̂̂ę̂̂,kral-ą̂̂râ̂n )

reciprocity theorem Also known as principle of reciprocity. [ELEC] 1. The electric potentials V₁ and V₂ produced at some arbitrary point, due to charge distributions having total charges of q₁ and q₂, respectively, are such that q₂V₁ = q₁V₂. 2. In an electric network consisting of linear passive impedances, the ratio of the electromotive force introduced in any branch to the current in any other branch is equal in magnitude and phase to the ratio that results if the positions of electromotive force and current are exchanged. [ENG ACOUS] The sensitivity of a reversible electroacoustic transducer when used as a microphone divided by the sensitivity when used as a source of sound is independent of the type and construction of the transducer. ( rę̂̂,śprę̂:s-ę̂̂d̂̂ę̂̂,thı̂̂r-ą̂̂n )

recirculating-ball steering [MECH ENG] A steering system that transmits steering movements by means of steel balls placed between a worm gear and a nut. ( rę̂̂,sär̎-kôl̎-lą̂̂d̎-ę̂̂ ,boł̎-ń̎-tı̂̂r̎-ę̂̂ )

recirculator [ENG] A self-contained underwater breathing apparatus that recirculates an oxygen supply (mix-gas or pure) to the diver until the oxygen is depleted. ( rę̂̂,sär̎-kôl̎-lą̂̂d̎-ę̂̂ )

reclamation [CIV ENG] 1. The recovery of land or other natural resource that has been abandoned because of fire, water, or other cause. 2. Reclaiming dry land by irrigation. ( rę̂̂,kłâ̂-mą̂̂-șan )

recoil See gun reaction. ( rę̂̂,kol̎ )

reconditioning [ENG] Restoration of an object to a good condition. ( rę̂̂,kand̎-dish-ą̂̂n )

reconnaissance [ENG] A mission to secure
rectifier

rectifier filter  [ELECTR] An electric filter used in smoothing out the voltage fluctuation of an electron tube rectifier, and generally placed between the rectifier's output and the load resistance. { 'rect-ta,fr-ar,fil-tar'.

rectifier instrument  [ENG] Combination of an instrument sensitive to direct current and a rectifying device whereby alternating current (or voltages) may be rectified for measurement. { 'rect-ta,fr-ar,in-stra-mant'.

rectifier rating  [ELECTR] A performance rating for a semiconductor rectifier, usually on the basis of the root-mean-square value of sinusoidal voltage that it can withstand in the reverse direction and the average current density that it will pass in the forward direction. { 'rect-ta,fr-ar,radj-in'.

rectifier transformer  [ELECTR] Transformer whose secondary supplies energy to the main anodes of a rectifier. { 'rect-ta,fr-ar,tranzer-mar'.

rectifying column  [CHEM ENG] Portion of a distillation column above the feed tray in which rising vapor is enriched by interaction with a countercurrent falling stream of condensed vapor, contrasted to the stripping column section below the column feed tray. { 'rect-ta,fr-in,kal-am'.

rectilinear motion  [MECH] A continuous change in position of a body so that every particle of the body follows a straight-line path. Also known as linear motion. { 'rek-ta,lin-e-ar'mo-shan'.

recuperative air heater  [ENG] An air heater in which the heat-transferring metal parts are stationary and form a separating boundary between the heating and cooling fluids. { 'rek-kup-rad-iv'er,he-da-tar'.

recuperator  [ENG] An apparatus in which heat is conducted from the combustion products to incoming cooler air through a system of thin-walled ducts. { 'rek-kup-pa,radj-ar'.

recurring demand  [IND ENG] A request made periodically or anticipated to be repetitive by an authorized requisitioner for material for consumption or use, or for stock replenishment. { 'rek-ka-r-in di&mend'.

recycle mixing  [CHEM ENG] The mixing of a portion of a product stream (fluid or solid) from a processing unit with incoming raw feed. { 'rekst-kal,miiks-in'.

recycle ratio  [CHEM ENG] In a continuous chemical process, the ratio of recycle stock to fresh feed. { 'rekst-kal,ra-sho'.

recycle stock  [CHEM ENG] That portion of a feedstock that has passed through a processing unit and is recirculated (recycled) back through the process. { 'rekst-kal,stak'.

recycling  [ELECTR] Returning to an original condition, as to 0 or 1 in a counting circuit. [ENG] The extraction and recovery of valuable

data concerning the meteorological, hydro-
materials from scrap or other discarded materials.  \( \text{ri'sık-liŋ} \)

**Redler conveyor**  [MECH ENG] A conveyor in which material is dragged through a duct by skeletonized or U-shaped impellers which move the material in which they are submerged because the resistance to slip through the element is greater than the drag against the walls of the duct.  \( \text{r'red-lar kan'vār} \)

**redox cell**  [ELEC] Cell designed to convert the energy of reactants to electrical energy, an intermediate reductant, in the form of liquid electrolyte, reacts at the anode in a conventional manner; it is then regenerated by reaction with a primary fuel.  \( \text{r're,dāks }\text{,sel} \)

**reduced frequency**  See Strouhal number.  \( \text{ri 'dūst 'frēkwān-sē} \)

**reduced inspection**  [IND ENG] The decrease in the number of items inspected from that specified in the original sampling plan because the quality of the item has consistently improved.  \( \text{r'i'dūst in'spek'shān} \)

**reduced mass**  [MECH] For a system of two particles with masses \( m_1 \) and \( m_2 \) exerting equal and opposite forces on each other and subject to no external forces, the reduced mass is the mass \( m \) such that the motion of either particle, with respect to the other as origin, is the same as the motion with respect to a fixed origin of a single particle with mass \( m \) acted on by the same force; it is given by \( m = m_1 m_2 / (m_1 + m_2) \).  \( \text{ri'dūst 'mas} \)

**reduced-order controller**  [CONT SYS] A control algorithm in which certain modes of the structure to be controlled are ignored, to enable control commands to be computed with sufficient rapidity.  \( \text{r'i'dūst 'or'dar kan'trōl-ar} \)

**reduced pressure**  [THERMO] The ratio of the pressure of a substance to its critical pressure.  \( \text{r'i'dūst 'presh-ar} \)

**reduced-pressure distillation**  See vacuum distillation.  \( \text{r'i'dūst 'presh-ar ,dis-tōl'ā-shān} \)

**reduced property**  See reduced value.  \( \text{r'i'dūst 'prap'ord-e} \)

**reduced temperature**  [THERMO] The ratio of the temperature of a substance to its critical temperature.  \( \text{r'i'dūst 'tem-prō-char} \)

**reduced value**  [THERMO] The actual value of a quantity divided by the value of that quantity at the critical point. Also known as reduced property.  \( \text{r'i'dūst 'val-yū} \)

**reduced viscosity**  [ENG] In plastics processing, the ratio of the specific viscosity to concentration.  \( \text{r'i'dūst 'vis'kāsād-e} \)

**reduced volume**  [THERMO] The ratio of the specific volume of a substance to its critical volume.  \( \text{r'i'dūst 'val-yām} \)

**reducer**  [DES ENG] A fitting having a larger size at one end than at the other and threaded inside, unless specifically flanged or for some special joint.  \( \text{r'i'dūst-sar} \)

**reducing coupling**  [ENG] A coupling used to connect a smaller pipe to a larger one.  \( \text{ri'dūs-inj ,kāp-liŋ} \)

**reduction gear**  [MECH ENG] A gear train which lowers the output speed.  \( \text{ri'dūk-shan gri} \)

**reduction ratio**  [ENG] Ratio of feed size to product size for a mill (crushing or grinding) operation; measured by lump and sieve sizes.  \( \text{ri'dūk-shan ,rā-shō} \)

**reduction to sea level**  [ENG] The application of a correction to a measured horizontal length on the earth's surface, at any altitude, to reduce it to its projected or corresponding length at sea level.  \( \text{r'i'dūk-shan ta ˈsē ,lev-əl} \)

**redundancy**  [MECH] A statically indeterminate structure.  \( \text{r'i'dān-dān-sē} \)

**redundant system**  See duplexed system.  \( \text{r'i'dān-dānt ,sīs-tām} \)

**Redwood viscometer**  [ENG] A standard British-type viscosimeter in which the viscosity is determined by the time, in seconds, required for a certain quantity of liquid to pass out through the orifice under given conditions, used for determining viscosities of petroleum oils.  \( \text{'red ,wād vi'skām-ad-ar} \)

**reed**  [ENG] A thin bar of metal, wood, or cane that is clamped at one end and set into transverse elastic vibration, usually by wind pressure; used to generate sound in musical instruments, and as a frequency standard, as in a vibrating-reed frequency meter.  \( \text{rēd} \)

**reed frequency meter**  See vibrating-reed frequency meter.  \( \text{rēd 'frēkwān-sē ,med-ar} \)

**reed horn**  [ENG ACOUS] A horn that produces sound by means of a steel reed vibrated by air under pressure.  \( \text{rēd ,hōrn} \)

**reeding**  [ENG] Corrugating or serrating, as in coinage or embossing.  \( \text{rēd-iŋ} \)

**reel**  [DES ENG] A revolving spool-shaped device used for storage of hose, rope, cable, wire, magnetic tape, and so on.  \( \text{rēl} \)

**reel and bead**  See bead and reel.  \( \text{rēl an bēd} \)

**reengineering**  [SYS ENG] The application of technology and management science to the modification of existing systems, organizations, processes, and products in order to make them more effective, efficient, and responsive.  \( \text{rēn-jānir-iŋ} \)

**reentrant**  [ENG] Having one or more sections directed inward, as in certain types of cavity resonators.  \( \text{rēn-trant} \)

**reference dimension**  [DES ENG] In dimensioning, a dimension without tolerance used for informational purposes only, and does not govern machining operations in any way, it is indicated on a drawing by writing the abbreviation REF directly following or under the dimension.  \( \text{ref-rōns ,dī,m en -shān} \)

**reference level**  [ENG] See datum plane.  \( \text{ENG ACOUS} \) The level used as a basis of comparison when designating the level of an audio-frequency signal in decibels or volume units. Also known as reference signal level.  \( \text{ref-rōns ,lev-əl} \)

**reference lot**  [IND ENG] A lot of select components used as a standard.  \( \text{ref-rōns ,lāt} \)

**reference plane**  [ENG] See datum plane.  \( \text{ENG ACOUS} \) The plane containing the axis and the cutting point of a cutter.  \( \text{ref-rōns ,plān} \)
reference range  [ENG] Range obtained from the radar coverage indicator for a given penetrating aircraft.  \{ r'[ref-\text{rans} \text{,l}\text{ös}] \}  

reflection gonimeter  [ENG] In seismic prospecting, a detector placed to record successive shots under similar conditions, to permit overall time comparisons.  \{ r'[ref-\text{rans sız'mâm-\text{d}a\text{-\text{r}}} \}  

reference signal level  See reference level.  \{ r'[ref-\text{rans sıg-nal, \text{lev-\text{a}}} \}  

reference tone  [ENG] Stable tone of known frequency continuously recorded on one track of multitrack signal recordings and intermittently recorded on signal track recordings by the collection equipment operators for subsequent use by the data analysts as a frequency reference.  \{ r'[ref-\text{ran-t\text{on}} \}  

reference voltage  [ELEC] An alternating-current voltage used for comparison, usually to identify an in-phase or out-of-phase condition in an ac circuit.  \{ r'[ref-\text{rans \text{,vol-tij}} \}  

referencing  [ENG] The process of measuring the horizontal (or slope) distances and directions from a survey station to nearby landmarks, reference marks, and other permanent objects which can be used in the recovery or relocation of the station.  \{ r'[ref-\text{ran-si\text{g}} \}  

refine  [ENG] To free from impurities, as the separation of petroleum, ores, or chemical mixtures into their component parts.  \{ r'[\text{rin-fin} \}  

refinery  [CHEM ENG] System of process units used to convert crude petroleum into fuels, lubricants, and other petroleum-derived products.  \{ r'[\text{rin-fin-r\text{e}}} \}  

reflextance  See reflection factor.  \{ r'[\text{rifleks-t\text{a}}} \}  

reflected signal indicator  [ENG] Pen recorder which presents the radar signals within frequency gates; these recordings enable the operator to determine that an airborne object has penetrated the Doppler link and its direction of penetration.  \{ r'[\text{rifleks-tin \text{si-fleks-skop}}} \}  

reflecting nephoscope  See mirror nephoscope.  \{ r'[\text{rifleks-tin \text{he-fleks}}} \}  

reflecting sign  [CIV ENG] A road sign painted of the diaphragm is propagated forward after with reflective paint so as to be easily visible in controlled shift of phase or other modification, the light of a headlamp.  \{ r'[\text{rifleks \text{'eks-r\text{a}}} \}  

reflectometer  [ENG] A photoelectric instrument for measuring the optical reflectance of a reflecting surface.  \{ r'[\text{rifleks-tam-\text{d}a\text{-\text{r}}} \}  

reflector microphone  [ENG] A high-directional microphone which has a surface that reflects the rays of impinging sound from a given direction to a common point at which a microphone is located, and the sound waves in the speech-frequency range are in phase at the microphone.  \{ r'[\text{rifleks-tar \text{mi-kra-sa-p\text{e}}} \}  

reflex baffle  [ENG] A loudspeaker baffle in which a portion of the radiation from the rear of the diaphragm is propagated forward after controlled shift of phase or other modification, to increase the overall radiation in some portion of the audio-frequency spectrum. Also known as vented baffle.  \{ r'[\text{rifleks \text{,baf-\text{a}}} \}  

reflowing  [ENG] Melting and resolidifying an electrodeposited or other type coating.  \{ r'[\text{riflo-i\text{g}}} \}  

reflux condenser  [CHEM ENG] An auxiliary vessel for a distillation column that constantly condenses vapors and returns liquid to the column.  \{ r'[\text{riflaks k\text{a}} \}  

reflux ratio  [CHEM ENG] The quantity of liquid reflux per unit quantity of product removed from the process unit, such as a distillation tower or extraction column.  \{ r'[\text{riflaks \text{,ra-s}}} \}  

reforming  [CHEM ENG] The thermal or catalytic
conversion of petroleum naphtha into more volatile products of higher octane number, represents the total effect of numerous simultaneous reactions, such as cracking, polymerization, dehydrogenation and isomerization. [\textit{\textsc{chem eng}}]

refrigeration [MECH ENG] A closed-flow refrigeration cycle [\textit{\textsc{thermo}}] A sequence of thermodynamic processes whereby heat is withdrawn from a cold body and expelled to a hot body. [\textit{\textsc{mech eng}}]

refrigeration car [MECH ENG] An insulated freight car constructed and used as a refrigerator. [\textit{\textsc{mech eng}}]

regulation [\textit{\textsc{thermo}}] Phenomenon in which ice (or any substance which expands upon freezing) melts under intense pressure and freezes again when this pressure is removed; accounts for phenomena such as the slippery nature of ice and the motion of glaciers. [\textit{\textsc{mech eng}}]

regenerate [CHEM ENG] To clean of impurities and make reusable as in regeneration of a catalytic cracking catalyst by burning off carbon residue, regeneration of clay adsorbent by washing free of adherents, or regeneration of a filtration system by cleaning off the filter media. [\textit{\textsc{mech eng}}]

regenerator [MECH ENG] Device or system in which a refrigerant is compressed, condensed, and expanded to produce cooling at a lower temperature level and rejection of heat at a higher temperature level for the purpose of extracting heat from a controlled space. [\textit{\textsc{mech eng}}]

regenerative feedback See positive feedback. [\textit{\textsc{mech eng}}]

regenerative pump [MECH ENG] Rotating-vane device that uses a combination of mechanical impulse and centrifugal force to produce high liquid heads at low volumes. Also known as turbine pump. [\textit{\textsc{mech eng}}]

regenerator [CHEM ENG] Device or system used to return a system or a component of it to full strength in a chemical process; examples are a furnace to burn carbon from a catalyst, a tower to wash impurities from clay, and a flush system to clean off the surface of filter media. [\textit{\textsc{mech eng}}]

refrigerator [MECH ENG] An insulated, cooled compartment. [\textit{\textsc{mech eng}}]
effluent gases to incoming air or gas. {rɛˈlen-\(a\),räd-\(ar\)\}

**register** [ENG] Also known as registration. 1. The accurate matching or superimposition of two or more images, such as the three color images on the screen of a color television receiver, or the patterns on opposite sides of a printed circuit board, or the colors of a design on a printed sheet. 2. The alignment of positions relative to a specified reference or coordinate, such as hole alignments in punched cards, or positioning of images in an optical character recognition device. [MECH ENG] The portion of a burner which directs the flow of air used in the combustion process. {rɛˈstər\}  

**register circuit** [ELECTR] A switching circuit with memory elements that can store from a few to thousands of bits of coded information, when needed, the information can be taken from the circuit in the same code as the input, or in a different code. {rɛˈstər \(kən\),trəl\}  

**register control** [CONT SYS] Automatic control of the position of a printed design with respect to reference marks or some other part of the design, as in photoelectric register control. {rɛˈstər \(kən\),\(s\)\(ə\)\(r\)\}  

**register element** [IND ENG] An element that occurs with a fixed frequency in each work cycle. Also known as repetitive element. {rɛˈstər \(lər\) \(ɛl\)ˈə\(s\)\(ə\)ˈmant\}  

**register lay** [DES ENG] The lay of a wire rope in which the wires in the strand are twisted in directions opposite to the direction of the strands. {rɛˈstər \(lər\) \(lə\)ˈtwi\(st\)}  

**register lay left twist** Ser left-laid. {rɛˈstər \(lər\) \(lə\)ˈtwi\(st\)\}  

**regulating reservoir** [CIV ENG] A reservoir that regulates the flow in a water-distributing system. {rɛˈstər \(ləd\)-\(i\)ˈrɛz-\(ə\)ˈvær\}  

**regulating system** See automatic control system. {rɛˈstər \(ləd\)-\(i\)ˈsɪs-təm\}  

**regulation** [CONT SYS] The process of holding constant a quantity such as speed, temperature, voltage, or position by means of an electronic or other system that automatically corrects errors by feeding back into the system the condition being regulated; regulation thus is based on feedback, whereas control is not. [ELEC] The change in output voltage that occurs between no load and full load in a transformer, generator, or other source. [ELECTR] The difference between the maximum and minimum tube voltage drops within a specified range of anode current in a gas tube. {rɛˈstər \(ləd\)-\(shən\)\}  

**regulator** [CONT SYS] A device that maintains a desired quantity at a predetermined value or varies it according to a predetermined plan. {rɛˈstər \(ləd\)-\(ə\)\}  

**regulator problem** See linear regulator problem. {rɛˈstər \(ləd\)-\(ə\),prəb-ləm\}  

**regulatory control function** [CONT SYS] That level in the functional decomposition of a large-scale control system which interfaces with the plant to implement the decisions of the optimizing controller inputted in the form of set points, desired trajectories, or targets. Also known as direct control function. {rɛˈstər \(lə\)\(tər\) \(ə\)ˈkən\,\(tər\) \(tə\)\(rə\)l\(ə\)```\}  

**rehabilitation engineering** [ENG] The use of technology to make disabled persons as independent as possible by providing assistive devices to compensate for disability. {rɛˈhɛd-\(i\)\(ə\)\}  

**reheating** [THERMO] A process in which the gas or steam is reheated after a partial isentropic expansion to reduce moisture content. Also known as superheating. {rɛˈhed-\(i\)\}  

**Reich process** [CHEM ENG] Process to purify carbon dioxide produced during fermentation, organic impurities in the gas are oxidized and absorbed, then the gas is dehydrated. {rɛˈkɪr\}  

**Reid vapor pressure** [ENG] A measure in a test bomb of the vapor pressure in pounds pressure of a sample of gasoline at 100°F (37.8°C). {rɛˈrid \(və\)-\(pə\)r\(ə\)\(ʃən\)\}  

**reinforced beam** [CIV ENG] A concrete beam provided with steel bars for longitudinal tension reinforcement and sometimes compression reinforcement and reinforcement against diagonal tension. {rɛˈən-

**reinforced brickwork** [CIV ENG] Brickwork strengthened by expanded metal, steel-wire mesh, hoop iron, or thin rods embedded in the bed joints. {rɛˈən-

**reinforced column** [CIV ENG] 1. A long concrete column reinforced with longitudinal bars with ties or circular spirals. 2. A composite column. {rɛˈən-

**reinforced concrete** [CIV ENG] Concrete containing reinforcing steel rods or wire mesh. {rɛˈən-

**reinforcement** [CIV ENG] Strengthening concrete, plastic, or mortar by embedding steel rods or wire mesh in it. {rɛˈən-

**reinforcing bars** [CIV ENG] Steel rod that are embedded in building materials such as concrete for reinforcement. {rɛˈən-

**rejection number** [IND ENG] A predetermined number of defective items in a batch which, if not exceeded, requires acceptance of the batch. {rɪˈək-

**rejection circuit** See band-stop filter. {rɪˈək-

**relative compaction** [ENG] The percentage ratio of the field density of soil to the maximum density as determined by standard compaction. {rɛˈlə-

**relative density** See specific gravity. {rɛˈlə-

**relative-density bottle** See specific-gravity bottle. {rɛˈlə-

**relative dielectric constant** See dielectric constant. {rɛˈlə-

**relative force** [ENG] Ratio of the force of a test
propellant to the force of a standard propellant, measured at the same initial temperature and loading density in the same closed chamber. \{rel-ad-iv 'fors\}

relative gain array \[CONT SYS\] An analytical device used in process control multivariable applications, based on the comparison of single-loop control to multivariable control; expressed as an array (for all possible input-output pairs) of the ratios of a measure of the single-loop behavior between an input-output variable pair, to a related measure of the behavior of the same input-output pair under some idealization of multivariable control. \{rel-ad-iv 'ğän ə, rá\}

relative gravity instrument \[ENG\] Any device for measuring the differences in the gravity force or acceleration at two or more points. \{rel-ad-iv 'grav-ad-ə, in-strä-mant\}

relative interferometer \[MECH\] The continuous change in the dielectric constant. \{rel-ad-iv 'di-elekt-rate, kon-stənt\}

relative ionospheric opacity meter \[MECH\] The probability that a component part, equipment, or system will satisfactorily perform its intended function under given circumstances, such as environmental conditions, limitations as to operating time, and frequency and thoroughness of maintenance for a specified period of time. \{ri,lə 'srel-ad-ə, 'bil-ad-ə\}

relative momentum \[MECH\] The amount, in decibels, by which the acoustic pressure induced by a projector under some specified condition exceeds the pressure induced under a reference condition. \{rel-ad-iv 'prəsh-ər ri 'spänz\}

relative resistance \[ELEC\] The ratio of a measure of the behavior of the same input-output pair under some idealization of multivariable control. \{rel-ad-iv 'spänz\}

relative transmitting response \[ENG ACOUS\] In a sonar projector, the ratio of the transmitting response for a given bearing and frequency to the transmitting response for a specified bearing and frequency. \{rel-ad-iv 'tränz'mid-in ri 'spänz\}

relative velocity \[MECH\] The velocity of a body with respect to a second body; that is, its velocity in a reference frame where the second body is fixed. \{rel-ad-iv va'ləs-əd-ə\}

relaxation \[MECH\] 1. Relief of stress in a strained material due to creep. 2. The lessening of elastic resistance in an elastic medium under an applied stress resulting in permanent deformation. \{rə, 'lək'sə-šən\}

relaxation circuit \[ELECTR\] Circuit arrangement, usually of vacuum tubes, reactances, and resistances, which has two states or conditions, one, both, or neither of which may be stable, the transient voltage produced by passing from one to the other, or the voltage in a state of rest, can be used in other circuits. \{rə, 'lək'sə-šən 'sar-kat\}

relaxation test \[ENG\] A creep test in which the decrease of stress with time is measured while the total strain (elastic and plastic) is maintained constant. \{rə, 'lək'sə-šən 'test\}

relay \[ELEC\] A device that is operated by a variation in the conditions in one electric circuit and serves to make or break one or more connections in the same or another electric circuit. Also known as electric relay. \{rə, 'lə\}

relay control system \[CONT SYS\] A control system in which the error signal must reach a certain value before the controller reacts to it, so that the control action is discontinuous in amplitude. \{rə, 'lə, 'kan'trəl, 'sis-təm\}

relay rack \[DES ENG\] A standardized steel rack designed to hold 19-inch (48.26-centimeter) panels of various heights, on which are mounted electronic equipment. Also known as rack. \{rə, 'lə, 'rak\}

relay system \[ELEC\] Dial-switching equipment that does not use mechanical switches, but is made up principally of relays. \{rə, 'lə, 'sis-təm\}

release \[MECH ENG\] A mechanical arrangement of parts for holding or freeing a device or mechanism as required. \{ri'ləs\}

release adiabat \[MECH\] A curve or locus of points which defines the succession of states through which a mass that has been shocked to a high-pressure state passes while monotonically returning to zero pressure. \{riləs 'ad-ə, bat\}

reliability \[ENG\] The probability that a component part, equipment, or system will satisfactorily perform its intended function under given circumstances, such as environmental conditions, limitations as to operating time, and frequency and thoroughness of maintenance for a specified period of time. \{ri, 'lə-ə 'bil-ad-ə\}

relief \[MECH ENG\] 1. A passage made by cutting away one side of a tailstock center so that the facing or parting tool may be advanced to or almost to the center of the work. 2. Clearance provided around the cutting edge by removal of tool material. \{ri'ləf\}

relief angle \[MECH ENG\] The angle between a relieved surface and a tangential plane at a cutting edge. \{ri'ləf, 'a-gəl\}

relief frame \[MECH ENG\] A frame placed between the slide valve of a steam engine and the steam chest cover, reduces pressure on the valve and thereby reduces friction. \{ri'ləf, 'frəm\}

relief hole \[ENG\] Any of the holes fired after the
relief valve

cut holes and before the lifter holes in breaking ground for tunneling or shaft sinking.  \{ r'ril'ēf ,hōl\}
relief valve See pressure-relief valve.  \{ r'ril'ēf ,vāl\}
relief well \[ CIV ENG \] A well that drains a pervious stratum, to relieve waterlogging at the surface.  \{ r'ril'ēf ,wel\}
relieving \[ MECH ENG \] Treating an embossed metal surface with an abrasive to reveal the base metal color on the elevations or highlights of the surface.  \{ r'ril'ēv-ēng\}
relieving arch See discharging arch.  \{ r'ril'ēv-ēng\}
relieving platform \[ CIV ENG \] A deck on the land side of a retaining wall to transfer loads vertically down to the wall.  \{ r'ril'ēv-ēng\}
rehish \[ ENG \] The shoulder of a tenon, used in a mortise and tenon system.  \{ ’rel-ish\}
reluctance microphone See magnetic microphone.  \{ r'il'ēk-tāns\}
reluctance pickup See variable-reluctance pickup.  \{ r'il'ēk-tāns\}
reluctance pressure transducer \[ ENG \] Pressure-measurement transducer in which pressure changes activate equivalent magnetic-property changes.  \{ r'il'ēk-tāns\}
remaining velocity \[ MECH \] Speed of a projectile at any point along its path of fire.  \{ r'il'män-ēng\}
remedial operation \[ CHEM ENG \] In a chemical process operation, the revision of operating conditions so as to correct the overall operation and bring the product into desired rate or specification limits. Also known as corrective operation.  \{ r'il'mēd-ē-al, āp-'ərā-shan\}
remote-access admittance \[ CONT SYS \] A special piece of hardware, with built-in sensors and actuators, that is used by a robot to carry out the last stages of assembling several parts into a piece of equipment.  \{ r'il'mōt \ 'ək,sēs \ 'dā-mīt-āns\}
remote-center compliance \[ MECH ENG \] A compliant device that allows a part that is gripped by a robot or other automatic machinery to rotate about the tip of the robot end effector or to translate without rotation when it is pushed, thereby easing the mechanical assembly of parts.  \{ r'il'mōt \ 'šen-tōr \ kām-'pēlē-āns\}
remote control \[ CONT SYS \] Control of a quantity which is separated by an appreciable distance from the controlling quantity; examples include master-slave manipulators, telemetering, telephone, and television.  \{ r'il'mōt \ kan ‘tōrōl\}
remote manipulation \[ ENG \] Use of mechanical equipment controlled from a distance to handle materials, such as radioactive materials. Also known as teleoperation.  \{ r'il'mōt \ ma'nip-yä \ ‘lā-shan\}
remote manipulator \[ ENG \] A mechanical, electromechanical, or hydromechanical device that enables a person, directly controlling the device through handles or switches, to perform manual operations while separated from the site of the work. Also known as manipulator, teleoperator.  \{ r'il'mōt \ ma'nip-yä \ ‘lā-dər\}
remote metering See telemetering.  \{ r'il'mōt \ ‘med-ā-rēng\}
remote sensing \[ ELEC \] Sensing, by a power supply, of voltage directly at the load, so that variations in the load lead drop do not affect load regulation.  \[ ENG \] The gathering and recording of information without actual contact with the object or area being investigated.  \{ r'il \ ‘mōt \ ‘sens-ing\}
renewable energy source \[ ENG \] A form of energy that is constantly and rapidly renewed by natural processes such as solar, ocean wave, and wind energy.  \{ r'ni-nū-ə-bal \ ‘ên-ər-jē \ ‘sōrs\}
renewable resources \[ CHEM ENG \] Agricultural materials used as feedstocks for industrial processes.  \{ r'ni-nū-ə-bal \ ri’sōr-səs\}
reorder cycle \[ IND ENG \] The interval between successive reorder (procurement) actions.  \{ r’eör-dār \ ‘pōint\}
reorder point \[ IND ENG \] An arbitrary level of stock on hand plus stock due in, at or below which routine requisitions for replenishment purposes are submitted in accordance with established requisitioning schedules.  \{ r’eör-dār \ ‘pōint\}
repair \[ ENG \] To restore that which is unserviceable to a serviceable condition by replacement of parts, components, or assemblies.  \{ r'il'per\}
repair cycle \[ ENG \] The period that elapses from the time the item is removed in a repairable condition to the time it is returned to stock in a serviceable condition.  \{ r'il'per ,sī-kāl\}
repair dock \[ CIV ENG \] A graving dock or floating dry dock built primarily for ship repair.  \{ r'il'per ,dāk\}
repair forecast \[ ENG \] The quantity of items estimated to be repaired or rebuilt for issue during a stated future period.  \{ r'il'per ,fōr-kast\}
repair kit \[ ENG \] A group of parts and tools, not all having the same basic name, used for repair or replacement of the worn or broken parts of an item, it may include instruction sheets and material, such as sandpaper, tape, cement, gas- kets, and the like.  \{ r'il'per ,kit\}
repair parts list \[ ENG \] List approved by designated authorities, indicating the total quantities of repair parts, tools, and equipment necessary for the maintenance of a specified number of end items for a definite period of time.  \{ r'il'per \ ‘parts \ ‘lišt\}
repeatability \[ CONT SYS \] The ability of a robot to reposition itself at a location to which it is directed or at which it is commanded to stop.  \{ r'il'pēd-ə-bal\}
repeat accuracy \[ CONT SYS \] The variations in the actual position of a robot manipulator from one cycle to the next when the manipulator is commanded to repeatedly return to the same point or position.  \{ r'il’pēt \ ‘ak-yə-rō-sē\}
repeated load \[ MECH \] A force applied repeatedly, causing variation in the magnitude and sometimes in the sense, of the internal forces.  \{ r'il’pēd-əl ‘lōd\}
reproducing system See sound-reproducing system. {'re-praĵdus-iŋ ,si-tɔs-
repulsion [MECH] A force which tends to increase the distance between two bodies having like electric charges, or the force between atoms or molecules at very short distances which keeps them apart. Also known as repulsive force. {'ri-pal-san-
repetitive element See regular element. {'ra-ped-
ad-iv 'el-a-mant-
repetitive time method [IND ENG] A technique where the stopwatch is read and simultaneously returned to zero at each break point. Also known as stopwatch method. {'ri-ped-ad-iv 'tim
replacement study [IND ENG] An economic analysis involving the comparison of an existing facility and a proposed replacement facility. {'ri-plas-mant ,staď-ə-
replacement study [IND ENG] An economic analysis involving the comparison of an existing facility and a proposed replacement facility. {'ri-plas-mant ,staď-ə-
replica [ENG] A thin plastic or inorganic film which is formed on a surface and then removed from it for study in an electron microscope. {''rep-la-ka-
replica master [MECH ENG] A robotlike machine whose motions are duplicated by another robot when the machine is moved by a human operator. {'rep-la-ka ,mas-tar-
Reppe process [CHEM ENG] A family of high-pressure, catalytic acetylene-reaction processes yielding (depending upon what the acetylene reacts with) butadiene, allyl alcohol, acrylonitrile, vinyl ethers and derivatives, acrylic acid esters, cyclooctatetraene and resins. {'rep-ə ,pra-sas-
reproducing stylus See stylus. {'re-praĵdus-iŋ ,sti-las-
resaw [ENG] To cut lumber to boards of final thickness. {'rësō-
rescaling pressure [MECH ENG] The inlet pressure at which leakage stops after a pressure relief valve is closed. {'rēsēl-iŋ ,prēsh-ə-
research method [ENG] A standard test to determine the research octane number (or rating) of fuels for use in spark-ignition engines. {'ri-sarč ,meth-ad-
research octane number [ENG] An expression for the antiknock rating of a motor gasoline as a guide to how vehicles will operate under mild conditions associated with low engine speeds. {'ri-sarċ 'ak-tąn ,nam-bar-
reset action [CONT SYS] Floating action in which the final control element is moved at a speed proportional to the extent of proportional-position action. {'re-set ,ak-šan-
reset bit [DES ENG] A diamond bit made by reusing diamonds salvaged from a used bit and setting them in the crown attached to a new bit blank. Also known as replacement bit. {'re-set bit-
reset rate [ENG] The number of times per minute that the effect of the proportional-position action upon the final control element is repeated
residence time

by the proportional-speed floating action. { 'rɛzdərənsi \tɛm\}'

residence time [CHEM ENG] The average length of time a particle of reactant spends within a process vessel or in contact with a catalyst. { 'rɛzə-dərənsi \tɛm\}'

residual mode [CONT SYS] A characteristic motion of a structure which is deliberately ignored in the control algorithm of an active control system for the structure in the process of model reduction. { rɔ'zɛdʒ-wɔl \mɔd\}'

residual stress See internal stress. { rɔ'zɛdʒ-wɔl \strɛs\}'

residue [CHEM ENG] 1. The substance left after distilling off all but the heaviest components from crude oil in petroleum refinery operations. Also known as bottoms, residuum. 2. Solids deposited onto the filter mesh during filtration. Also known as cake, discharged solids. { 'rɛzɪ-ədjuːm }

residuum See residue. { rɔ'zɛdʒ-wɔrm\}'

resilience [MECH] 1. Ability of a strained body, by virtue of high yield strength and low elastic modulus, to recover its size and form following deformation. 2. The work done in deforming a body to some predetermined limit, such as its elastic limit or breaking point, divided by the body's volume. { rɔ'zɛl-ɛn's}'

resin-in-pulp ion exchange [CHEM ENG] Combination of coarse anion-exchange resin with a slurry of finely ground uranium ore in an acid-leach liquor. { 'rɛzɪn \in \pɔl\p \iən \lim \kən \lætʃ \liŋ\}'

resinoid wheel [DES ENG] A grinding wheel bonded with a synthetic resin. { 'rɛzɪn-əd \wɛl\}'

resistance [ELEC] 1. The opposition that a device or material offers to the flow of direct current, equal to the voltage drop across the element divided by the current through the element. Also known as electrical resistance. 2. In an alternating-current circuit, the real part of the complex impedance. [MECH] In damped harmonic motion, the ratio of the frictional resistive force to the speed. Also known as damping coefficient; damping constant; mechanical resistance. { rɪ'zɛstəns}'

resistance bridge See Wheatstone bridge. { rɪ'zɛstəns bɹɪdʒ\}'

resistance-capacitance circuit [ELEC] A circuit which has a resistance and a capacitance in series, and in which inductance is negligible. Abbreviated R-C circuit. { rɪ'zɛstəns-kə'pæs-əd\əns \sər-kæt\}'

resistance-capacitance coupled amplifier [ELECTR] An amplifier in which a capacitor provides a path for signal currents from one stage to the next, with resistors connected from each side of the capacitor to the power supply or to ground, it can amplify alternating-current signals but cannot handle small changes in direct currents. Also known as R-C amplifier, R-C coupled amplifier, resistance-coupled amplifier. { rɪ'zɛstəns-kə'pæs-əd\əns \kap-əld \'æm-plə,fi\ər\}'

resistance-capacitance oscillator [ELECTR] Oscillator in which the frequency is determined by resistance and capacitance elements. Abbreviated R-C oscillator. { rɪ'zɛstəns kə'pæs-əd\əns \'æs-ə-ləd-ar\}'

resistance-coupled amplifier See resistance-capacitance coupled amplifier. { rɪ'zɛstəns \kəp-əld \'æm-plə,fi\ər\}'

resistance coupling [ELECTR] Coupling in which resistors are used as both input and output impedances of the circuits being coupled; a coupling capacitor is generally used between the resistors to transfer the signal from one stage to the next. Also known as R-C coupling; resistance-capacitance coupling, resistive coupling. { rɪ'zɛstəns \kəp-ɪn}\'

resistance drop [ELEC] The voltage drop occurring between two points on a conductor due to the flow of current through the resistance of the conductor, multiplying the resistance in ohms by the current in amperes gives the voltage drop in volts. Also known as IR drop. { rɪ'zɛstəns dræp\}'

resistance element [ELEC] An element of resistive material in the form of a grid, ribbon, or wire, used singly or built in groups to form a resistor for heating purposes, as in an electric soldering iron. { rɪ'zɛstəns \əl-a-mɔnt\}'

resistance furnace [ENG] An electric furnace in which the heat is developed by the passage of current through a suitable internal resistance that may be the charge itself, a resistor embedded in the charge, or a resistor surrounding the charge. Also known as electric resistance furnace. { rɪ'zɛstəns \fərnəs\}'

resistance gage [ENG] An instrument for determining high pressures from the change in the electrical resistance of manganin or mercury produced by these pressures. { rɪ'zɛstəns \ɡæ\}'

resistance grounding [ELEC] Electrical grounding in which lines are connected to ground by a resistive (totally dissipative) impedance. { rɪ'zɛstəns \grænd-ɪŋ\}'

resistance heating [ELEC] The generation of heat by electric conductors carrying current, degree of heating is proportional to the electrical resistance of the conductor, used in electrical home appliances, home or space heating, and heating ovens and furnaces. { rɪ'zɛstəns \hɛd-ɪŋ\}'

resistance loss [ELEC] Power loss due to current flowing through resistance, its value in watts is equal to the resistance in ohms multiplied by the square of the current in amperes. { rɪ'zɛstəns \lɔs\}'

resistance magnetometer [ENG] A magnetometer that depends for its operation on variations in the electrical resistance of a material immersed in the magnetic field to be measured. { rɪ'zɛstəns \mægnə'tæm-əd-ar\}'

resistance material [ELEC] Material having sufficiently high resistance per unit length or volume to permit its use in the construction of resistors. { rɪ'zɛstəns \mətər-əl\}'

resistance measurement [ELEC] The quantitative determination of that property of an electrically conductive material, component, or circuit.
called electrical resistance. { ri'zis-tans ,mezhr-ər-mant }

resistance meter [ENG] Any instrument which measures electrical resistance. Also known as electrical resistance meter. { ri'zis-tans ,méd-ər }

resistance methanometer [ENG] A catalytic methanometer, with platinum used as the filament, which both heats the detecting element and acts as a resistance-type thermometer. { ri'zis-tans ,meth-ənəm-əd-ər }

resistance pyrometer. { ri'zis-tans ,pə'ram-əd-ər }

resistance-rate flowmeter. { ri'zis-tans ,ræt ˈfləʊ,med-ər }

resistance thermometer [ENG] A thermometer in which the sensing element is a resistor whose resistance is an accurately known function of temperature. Also known as electrical resistance thermometer, resistance pyrometer. { ri'zis-tans thər'əm-əd-ər }

resisting moment [MECH] A moment produced by internal tensile and compressive forces that balances the external bending moment on a beam. { ri'zist-ɪŋ ,məʊ-ənt }

resistive coupling. { ri'zis-tiv ˈkəʊ-pəŋ }

resistive flowmeter. [ENG] Liquid flow-rate measurement device in which flow rates are read electrically as the result of the rise or fall of a conductive differential-pressure manometer fluid in contact with a resistance rod assembly. Also known as resistance-rate flowmeter. { ri'zis-tiv ˈfləʊ,med-ər }

resistive load [ELEC] A load whose total reactance is zero, so that the alternating current is in phase with the terminal voltage. Also known as nonreactive load. { ri'zis-tiv ˈləʊd }

resistivity. See electrical resistivity. { ˌrɪz,ərɪzˈtɪv-əd-e }

resistivity method [ENG] Any electrical exploration method in which current is introduced in the ground by two contact electrodes and potential differences are measured between two or more other electrodes. { ˌrɪz,ərɪzˈtɪv-əd-e ,meth-əd }

resistor [ELEC] A device designed to have a definite amount of resistance, used in circuits to limit current flow or to provide a voltage drop. Also known as electrical resistor. { ri'zis-tər }

resistor bulb [ENG] A temperature-measurement device inside of which is a resistance winding, changes in temperature cause corresponding changes in resistance, varying the current in the winding. { ri'zis-tər ,bəlb }

resistor-capacitor-transistor logic [ELECTR] A resistor-transistor logic with the addition of capacitors that are used to enhance switching speed. { ri'zis-tər kə'pas-əd-ər tran'zis-tər ,ləɪ-ɪk }

resistor-capacitor unit. See recap. { ri'zis-tər kə'pas-əd-ər ˈrɪl-nət }

resistor color code [ELEC] Code adopted by the Electronic Industries Association to mark the values of resistance on resistors in a readily recognizable manner; the first color represents the first significant figure of the resistor value, the second color the second significant figure, and the third color represents the number of zeros following the first two figures; a fourth color is sometimes added to indicate the tolerance of the resistor. { ri'zis-tər ˈkæl-ər ,kəʊd }

resistor core. { ri'zis-tər ˈkɔr }

resistor element [ELEC] That portion of a resistor which possesses the property of electric resistance. { ri'zis-tər ˈel-ə-mənt }

resistor furnace [ENG] An electric furnace in which heat is developed by the passage of current through distributed resistors (heating units) mounted apart from the charge. { ri'zis-tər ˈfərnəs }

resistor network [ELEC] An electrical network consisting entirely of resistances. { ri'zis-tər ˈnet,ˈwɜrk }

resistor oven [ENG] Heating chamber relying on an electrical-resistance element to create temperatures of up to 800°F (430°C), used for drying and baking. { ri'zis-tər ˈəv-ən }

resistor termination [ELECTR] A thick-film conductor pad overlapping and contacting a thick-film resistor area. { ri'zis-tər ,tər-mən-əshən }

resistor-transistor logic [ELECTR] One of the simplest logic circuits, having several resistors, a transistor, and a diode. Abbreviated RTL. { ri'zis-tər tran'zis-tər ,ləɪ-ɪk }

resolution [CONT SYS] The smallest increment in distance that can be distinguished and acted upon by an automatic control system. [ELECTR] In television, the maximum number of lines that can be discerned on the screen at a distance equal to tube height, this ranges from 350 to 400 for most receivers. { ˌrez-əl-ət-ən }

resolution in azimuth [ENG] The angle by which two targets must be separated in azimuth in order to be distinguished by a radar set when the targets are at the same range. { ˌrez-əl-ət-ən ɪn ˈæz-ə-məθ }

resolution in range [ENG] Distance by which two targets must be separated in range in order to be distinguished by a radar set when the targets are on the same azimuth line. { ˌrez-əl-ət-ən ɪn ˈræŋ }

resolve motion-rate control [CONT SYS] A form of robotic control in which the controlled variables are the velocity vectors of the end points of a manipulator, and the angular velocities of the joints are determined to obtain the desired results. { ˌrez-əl-ət-ən ɪn ˈræŋ }

resolving power. See resolution. { ˌrez-əl-ət-ən ˈpoʊər }

resolving time [ENG] Minimum time interval, between events, that can be detected; resolving time may refer to an electronic circuit, to a mechanical recording device, or to a counter tube. { ˌrez-əl-ət-ən ˈtɪm }

resonance. [ELEC] A phenomenon exhibited by an alternating-current circuit in which there are relatively large currents near certain frequencies, and a relatively unimpeded oscillation of energy
response characteristic  [CONT SYS] The response as a function of an independent variable, such as direction or frequency, often presented in graphical form.  { r'i'spänz kar-ik-tə-ris-tik }

resonance method  [ELEC] A method of determining the impedance of a circuit element, in which resonance frequency of a resonant circuit containing the element is measured.  [ENG] In ultrasonic testing, a method of measuring the thickness of a metal by varying the frequency of the beam transmitted to excite a maximum amplitude of vibration.  { r'ez-ən-əns myth-əd }

resonance vibration  [MECH] Forced vibration in which the frequency of the disturbing force is very close to the natural frequency of the system, so that the amplitude of vibration is very large.  { r'ez-ən-əns v'br-shan }

resonant capacitor  [ELEC] A tubular capacitor that is wound to have inductance in series with its capacitance.  { r'ez-ən-ənt kə'pas-əd-ər }

resonant circuit  [ELEC] A circuit that contains inductance, capacitance, and resistance of such values as to give resonance at an operating frequency.  { r'ez-ən-ənt 'sər-kat }

resonant coupling  [ELEC] Coupling between two circuits that reaches a sharp peak at a certain frequency.  { r'ez-ən-ənt 'kap-lij }

resonant gate transistor  [ELECTR] Surface field-effect transistor incorporating a cantilevered beam which resonates at a specific frequency to provide high-O-frequency discrimination.  { r'ez-ən-ənt 'gæt tran-zis-tɔr }

resonant-mass antenna  [ENG] A detector of gravitational radiation, consisting of a mass of several tons of aluminum or other metal, in the shape of a cylinder or a truncated icosahedron, and attached electromechanical transducers that convert deformations of the mass to electronic signals.  { r'ez-ən-ənt mas an'ten-a }

resonant resistance  [ELEC] Resistance value to which a resonant circuit is equivalent.  { r'ez-ən-ənt r'iz-təns }

resource allocation in multiproject scheduling  [IND ENG] A system that employs network analysis as an aid in making the best assignment of resources which must be stretched over a number of projects. Abbreviated RAMPS.  { r'ə zə'prəsn ál-tə-kə-shən in 'mæl-til'præjekt 'skred-ja-lip }

respirator  [ENG] A device for maintaining artificial respiration to protect the respiratory tract against irritating and poisonous gases, fumes, smoke, and dusts, with or without equipment supplying oxygen or air, some types have a fitting which covers the nose and mouth.  { r'es-pə,rad-ər }

respirometer  [ENG] 1. An instrument for studying respiration. 2. A diver’s helmet containing a compressed air supply for replenishing oxygen used by the diver.  { r'es-pərəmətə-rəd-ər }

response  [CONT SYS] A quantitative expression of the output of a device or system as a function of the input. Also known as system response.  { tis-nən-sən }

response time  [CONT SYS] The time required for the output of a control system or element to reach a specified fraction of its new value after application of a step input or disturbance.  [ELEC] The time it takes for the pointer of an electrical or electronic instrument to come to rest at a new value, after the quantity it measures has been abruptly changed.  { r'i'spänzˌti:m }

restoration coefficient See coefficient of restitution.  { r'es-tər-ə-shənˌkəf-ər-ənt }

rest point  [ENG] On a balance, the position of the pointer with respect to the pointer scale when the beam has ceased moving.  { r’est pɔnt }

rest potential  [ELEC] Residual potential difference remaining between an electrode and an electrolyte after the electrode has become polarized.  { r’est pɔ’tən-chor }

restraint of loads  [ENG] The process of binding, lashing, and wedging items into one unit onto or into its transporter in a manner that will ensure immobility during transit.  { r’restrənt av ’lodz }

restricted air cargo  [IND ENG] Cargo which is not highly dangerous under normal conditions, but which possesses certain qualities which require extra precautions in packing and handling.  { r’n’strikt-təd ’er, kɔr-gu }

restricted gate  [ENG] Small opening between runner and cavity in an injection or transfer mold which is used by the diver.  { r’n’strikt-təd ’gæt }

restricted job  [IND ENG] A task whose performance time is governed by a machine, a process, another task, or the nature of the job itself, rather than under the control of the worker.  { r’n’strikt-təd ’jəb }

restricted work  [IND ENG] Manual or machine work where the work pace is only partially under the control of the worker.  { r’n’strikt-təd ’wərk }

resultant rake  [MECH ENG] The angle between the face of a cutting tooth and an axial plane through the tooth point measured in a plane at right angles to the cutting edge.  { r’zəl-tənt ɾək }

resuperheating See reheating.  { r’es-ə-pə,-həd-iŋ }

resupply  [IND ENG] The act of replenishing stocks in order to maintain required levels of supply.  { r’es-əp’pli }

resuscitator  [ENG] A device for supplying oxygen to and inducing breathing in asphyxiation victims.  { r’es-ə’si-tər }

retainer  [ENG] A device that holds a mechanical component in place.  { r’tən-ər }

retainer plate  [ENG] The plate on which removable mold parts (such as a cavity or ejector pin) are mounted during molding.  { r’tən-ər əl’plæt }

retainer wall  [ENG] A wall, usually earthen,
around a storage tank or an area of storage tanks (tank farm), used to hold (retain) liquid in place if one or more tanks begin to leak. [ri'tän-rə]

return bend  [DES ENG] A pipe fitting, equal to two ells, used to connect parallel pipes so that fluid flowing into one will return in the opposite direction through the other. [ri'tärn 'bend] return connecting rod  [MECH ENG] A connecting rod with its crankpin end is located on the same side of the crosshead as the cylinder. [ri'tärn 'kär-nek-tin, 'rärd]

return difference  [CONT SYS] The difference between 1 and the loop transmittance. [ri'tärn 'dif-rən-sə]

return-flow burner  [MECH ENG] A mechanical oil atomizer in a boiler furnace which regulates the amount of oil to be burned by the portion of oil recirculated to the point of storage. [ri'tärn 'fləʊ, 'bær-nər]

return idler  [MECH ENG] The idler or roller beneath the cover plates on which the conveyor belt rides after the load which it was carrying has been dumped. [ri'tärn 'ɪd-lə]

return wall  [BUILD] An interior wall of about the same height as the outside wall of a building, distinct from a partition or a low wall. [ri'tärn 'wəl]

reveal  [BUILD] 1. The side of an opening for a door or window, doorway, or the like, between the doorframe or window frame and the outer surface of the wall. 2. The distance from the face of a door to the face of the frame on the pivot side. [ri'vel]

carbohydrate  [CHEM ENG] A monomer, or polymer of the monomers, that is a sugar. {ri'kɔr-bətər-əl}

reverse  [ELECTR] A reversed air-blast process  [CHEM ENG] A gas-making process in which, after a short period of the ordinary blow, the air blast is reversed so as to enter the top of the superheater, and passes back to the top of the generator and down. [ri'ver-stər 'ɛr, 'blæst, 'præ-səs]

reverse  [ELECTR] Small value of direct current that flows when a semiconductor diode has reverse bias. [ri'ver-stər 'kær-

reverse air-blast process  [CHEM ENG] A gas-making process in which, after a short period of the ordinary blow, the air blast is reversed so as to enter the top of the superheater, and passes back to the top of the generator and down. [ri'ver-stər 'ɛr, 'blæst, 'præ-səs]

reverse engineering  [ENG] The analysis of a completed system in order to isolate and identify its individual components or building blocks. [ri'ver-ən-jər'ɪŋ]

reverse feedback  See negative feedback. [ri'ver-stər 'fɛd, bæk]
reverse flange

reverse flange  [ENG] A flange made by shrinking
(re'vərs 'flan)

reverse lay  [DES ENG] The lay of a wire rope
with strands alternating in a right and left lay.
(re'vərs 'lā)

reverse osmosis  [CHEM ENG] A technique
used in desalination and waste-water treatment;
pressure is applied to the surface of a saline (or
waste) solution, forcing pure water to pass from
the solution through a membrane (hollow fibers
of cellulose acetate or nylon) that will not pass
sodium or chloride ions.  (re'vərs 'ōzə'mō'sās)

reverse pitch  [MECH ENG] A pitch on a propeller-
blade producing thrust in the direction opposite
to the normal one.  (re'vərs 'pich)

reverse-printout typewriter  [ENG] An automatic
typewriter that eliminates conventional
carriage return by typing one line from left to
right and the next line from right to left.  (re'vərs
prip'intaut 'tip,rd-rē)

reverse-roll coating  [ENG] Substrate coating that
is premetered between rolls and then wiped
off on the web; amount of coating is controlled
by the metering gap and the rotational speed of
the roll.  (re'vərs rōl 'kōd-ēj)

reverse voltage  [ELECT] In the case of two op-
opposing voltages, voltage of that polarity which
produces the smaller current.  (re'vərs 'vōl-tēj)

reversible capacitance  [ELECTR] Limit, as the
amplitude of an applied sinusoidal capacitor
voltage approaches zero, of the ratio of the am-
plitude of the resulting in-phase fundamental-
frequency component of transferred charge to
the amplitude of the applied voltage, for a given
constant bias voltage superimposed on the
sinusoidal voltage.  (re'vərs-sā-bal kōp'ēs-ad-
ōns)

reversible engine  [THERMO] An ideal engine
which carries out a cycle of reversible processes.
(re'vərs-sā-bal 'en-juän)

reversible path  [THERMO] A path followed by
a thermodynamic system such that its direction
of motion can be reversed at any point by an
infinitesimal change in external conditions; thus
the system can be considered to be at equilib-
rium at all points along the path.  (re'vərs-sā-
bal 'pāth)

reversible-pitch propeller  [MECH ENG] A type
of controllable-pitch propeller, of either control-
able or constant speed, it has provisions for
reducing the pitch to and beyond the zero value,
to the negative pitch range.  (re'vərs-sā-bal 'pich
pra'pel-ər)

reversible process  [THERMO] An ideal thermo-
dynamic process which can be exactly reversed
by making an indefinitely small change in the
external conditions.  Also known as quasistatic
process.  (re'vərs-sā-bal 'prāsās)

reversible steering gear  [MECH ENG] A steering
gear for a vehicle which permits road slack
and wheel deflections to come through the sys-
tem and be felt in the steering control.  (re'vərs
sa-bal 'stir-ing)

reversible tramway  See Jig back.  (re'vərs-sā-bal
'tram,wa"

reversible transit circle  [ENG] A transit circle
that can be lifted out of its bearings and rotated
through 180°, enabling systematic errors in both
orientations to be determined.  (re'vərs-sā-bal
'tran-zāt,sar-kōl)

reversing thermometer  [ENG] A mercury-in-
glass thermometer which records temperature
upon being inverted and thereafter retains its
reading until returned to the first position.  (re'vərs-
īnj thar'mām-ād-ar)

reversing water bottle  See Nansen bottle.  (re'vərs-
īnj 'wōd-ār,bād-āl)

reversion  [CHEM ENG] In rubber manufacture,
a decrease in rubber modulus or viscosity caused
by overworking.  (re'vərz-
zhən)

revetment  [CIV ENG] A facing made on a soil or
rock embankment to prevent scour by weather or
water.  (rev'et-mənt)

revolute-coordinate robot  See jointed-arm robot.
(re'vat-əˌlūt-kōrd-
ət-əm-ət 'rö,bāt)

revolute joint  [MECH ENG] A robotic articula-
tion consisting of a pin with one degree of free-
dom.  (re'vəlt-əˌlūt-
sənt)

revolution  [MECH] The motion of a body aroun-
d a closed orbit.  (re'vəlū-shən)

revolution counter  [ENG] An instrument for
registering the number of revolutions of a rotat-
ing machine.  Also known as revolution indica-
tor.  (re'vəlū-shən 'kuənt-
rə)

revolution indicator  See revolution counter.
(re'vəlū-shən 'in-dər-
ə-kuənt-
rə)

revolution per minute  [MECH] A unit of angular
velocity equal to the uniform angular velocity of
a body which rotates through an angle of 360°
(2π radians), so that every point in the body
returns to its original position, in 1 minute.  Ab-
breviated rpm.  (re'vəlū-shən par 'mīn-
rəm)

revolution per second  [MECH] A unit of angular
velocity equal to the uniform angular velocity of
a body which rotates through an angle of 360°
(2π radians), so that every point in the body
returns to its original position, in 1 second.  Ab-
breviated rps.  (re'vəlū-shən par 'sek-
ənd)

revolving-block engine  [MECH ENG] Any of var-
ious engines which combine reciprocating piston
motion with rotational motion of the entire en-
gine block.  (rev'əlāv-
̃iŋn 'bīlāk 'en-
̃juän)

revolving door  [BUILD] A door consisting of
four leaves that revolve together on a central
vertical axis within a circular vestibule.  (rev'əlāv-
̃iŋn 'dōr)

revolving shovel  [MECH ENG] A digging ma-
chine, mounted on crawlers or on rubber tires,
that has the machinery deck and attachment on
a vertical pivot so that it can swing freely.  (re'vəlāv-
̃iŋn 'shāv-al)

Reynier’s isolator  [ENG] A mechanical barrier
made of steel that surrounds the area in which
germ-free vertebrates and accessory equipment
are housed; has electricity for light and power,
an exit-entry opening with a steam barrier, a
means for sterile air exchange, glass viewing
port, and neoprene gloves which allow handling
of the animals.  (rēn’nē-ərs 'iə-s-əˌlād-ar)

Reynolds analogy  [CHEM ENG] Relationship
showing the similarity between the transfer of mass, heat, and momentum.  

**right-of-way**  

**rib**  

**ribbed-clamp coupling**  

**rib**  

**ribbon**  

**ribbon conveyor**  

**ribbon microphone**  

**ribbon mixer**  

**revolution of an elongated helicoid (spiral) ribbon of metal.**  

**riblet**  

**Richardson automatic scale**  

**ridge board**  

**ridge cap**  

**ridge pole**  

**riffler**  

**rifle**  

**right**  

**right-and-left-hand chart**  

**right-cut tool**  

**right-hand cutting tool**  

**right-handed**  

**right-hand screw**  

**right-laid**  

**right lang lay**  

**right-of-way**
rigid body

An idealized extended solid whose size and shape are definitely fixed and remain unaltered when forces are applied.

rigid body [MECH] The study of the motions of a rigid body under the influence of forces and torques.

rigid coupling [MECH ENG] A mechanical fastening of shafts connected with the axes directly in line.

rigid frame [BUILD] A steel skeleton frame in which the end connections of all members are rigid so that the angles they make with each other do not change.

rigidity [MECH] The quality or state of resisting change in form.

rigidity modulus See modulus of elasticity in shear.

rigidizer [ENG] A supporting structure providing rigidity to an instrument that might otherwise be subject to undesirable vibrations.

rigid pavement [CIV ENG] A thick portland cement pavement on a gravel base and subbase, with steel reinforcement and often with transverse joints.

rim [DES ENG] 1. The outer part of a wheel, usually connected to the hub by spokes. 2. An outer edge or border, sometimes raised or projecting.

rim-bearing swing bridge [CIV ENG] A swing bridge that is supported by a cylindrical girder on rollers.

rim clutch [MECH ENG] A frictional contact clutch having surface elements that apply pressure to the rim either externally or internally.

rim drive [ENG ACOUS] A phonograph or sound recorder drive in which a rubber-covered drive wheel is in contact with the inside of the rim of the turntable.

ring [DES ENG] A tie member or chain link, tension or compression applied through the center of the ring produces bending moment, shear, and normal force on radial sections.

ring-and-ball test [CHEM ENG] A test for determining the melting point of asphalt, waxes, and paraffins in which a small ring is fitted with a test sample upon which a small ball is then placed; the melting point is that temperature at which the sample softens sufficiently to allow the ball to fall through the ring. Also known as ball and ring method.

ring-and-circle shear [DES ENG] A rotary shear designed for cutting circles and rings where the edge of the metal sheet cannot be used as a start.

ringbol [DES ENG] An eyebolt with a ring passing through the eye.

ring crusher [MECH ENG] Solids-reduction device with a rotor having loose crushing rings held outwardly by centrifugal force, which crush the feed by impact with the surrounding shell.

Ringelmann chart [ENG] A chart used in making subjective estimates of the amount of solid matter emitted by smoke stacks; the observer compares the grayness of the smoke with a series of shade diagrams formed by horizontal and vertical black lines on a white background.

ring gage [DES ENG] A cylindrical ring of steel whose inside diameter is finished to gage tolerance and is used for checking the external diameter of a cylindrical object.

ring gate [CIV ENG] A type of gate used to regulate and control the discharge of a morning-glory spillway, like a drum gate, it offers a minimum of interference to the passage of ice or drift over the gate and requires no external power for operation.

ring gear [MECH ENG] The ring-shaped gear in an automobile differential that is driven by the propeller shaft pinion and transmits power through the differential to the line axle.

ringing [CONT SYS] An oscillatory transient occurring in the output of a system as a result of a sudden change in input.

ringing circuit [ELECTR] A circuit which has a capacitance in parallel with a resistance and inductance, with the whole in parallel with a second resistance, it is highly underdamped and is supplied with a step or pulse input.

ringing time [ENG] In an ultrasonic testing unit, the length of time that the vibrations in a piezoelectric crystal remain after the generation of ultrasonic waves ceases.

ring jewel [DES ENG] A type of jewel used as a pivot bearing in a time-keeping device, gyro, or instrument.

ring job [MECH ENG] Installation of new piston rings on a piston.

ring laser See laser gyro.

ring lifter See split-ring core lifter.

ringlock nail [DES ENG] A nail ringed with grooves to provide greater holding power.

ring-oil [MECH ENG] To oil (a bearing) by conveying the oil to the point to be lubricated by means of a ring, which rests upon and turns with the journal, and dips into a reservoir containing the lubricant.

ring road See beltway.

ring-roller mill [MECH ENG] A grinding mill in which material is fed past spring-loaded rollers that apply force against the sides of a revolving bowl. Also known as roller mill.

riometer [ENG] An instrument that measures changes in ionospheric absorption of electromagnetic waves by determining and recording the level of extraterrestrial cosmic radio noise.
Derived from relative ionospheric opacity meter.

rip [ENG] To saw wood with the grain.  { rip }

ripping bit See detachable bit; jackbit.  { rip, bit }

ripping bar [DES ENG] A steel bar with a chisel at one end and a curved claw for pulling nails at the other. Also known as claw bar; wrecking bar.  { rip-, iñ , bär }

ripping punch [DES ENG] A tool with a rectangular cutting edge, used in a punch press to crosscut metal plates.  { rip-, iñ , panch }

ripple [ELEC] The alternating-current component in the output of a direct-current power supply, arising within the power supply from incomplete filtering or from commutator action in a dc generator.  { rip- }

riprap [CIV ENG] A foundation or revetment in water or on soft ground made of irregularly placed stones or pieces of boulders; used chiefly for river and harbor work, for roadway filling, and on embankments.  { rip-, rap }

ripsaw [MECH ENG] A heavy-tooth power saw used for cutting wood with the grain.  { rip-, so }

rise and run [CIV ENG] The pitch of an inclined surface or member, usually expressed as the ratio of the vertical rise to the horizontal span.  { riz an 'rōn }

riser [CHEM ENG] That portion of a bubble-cap assembly in a distillation tower that channels the rising vapor and causes it to flow downward to pass through the liquid held on the bubble plate.  [CIV ENG] 1. A board placed vertically beneath the tread of a step in a staircase. 2. A vertical steam, water, or gas pipe.  { riz on 'rod }

riser plate [CIV ENG] A plate used to support a tapering switch rail above the base of the rail; used with a railroad gage or tie plate to maintain minimum gage.  { riz-, plat }

rise time [CONT SYS] The time it takes for the output of a system to change from a specified small percentage (usually 5 or 10) of its steady-state increment to a specified large percentage (usually 90 or 95).  [ELEC] The time for the pointer of an electrical instrument to make 90% of the change to its final value when electric power suddenly is applied from a source whose impedance is high enough that it does not affect damping.  { riz-, tim }

rising hinge [BUILD] A hinge that raises a door slightly as it is opened.  { riz-ín 'hini }

risk [ENG] The potential realization of undesirable consequences from hazards arising from a possible event.  { risk }

risk analysis [ENG] The scientific study of risk.  { risk, anal-ı'w-sas }

risk management [ENG] The overall systematic approach to analyzing risk and implementing risk controls.  { risk, man-ı'w-mant }

Ritchie’s experiment [THERMO] An experiment that uses a Leslie cube and a differential air thermometer to demonstrate that the emissivity of a surface is proportional to its absorptivity.  { rich'-e'sık'-men -ı'w-

Rittinger’s law [MECH ENG] The law that energy needed to reduce the size of a solid particle is directly proportional to the resultant increase in surface area.  { rit-ı'ng-pār-ı'w-sa

river engineering [CIV ENG] A branch of transportation engineering consisting of the physical measures which are taken to improve a river and its banks.  { riv-ı'w , en-ı'w , ri-ı'w }

river gage [ENG] A device for measuring the river stage. Types in common use include the staff gage, the water-stage recorder, and wire-weight gage. Also known as stream gage.  { riv-ı'w , gäl }

rivet [DES ENG] A short rod with a head formed on one end; it is inserted through aligned holes in parts to be joined, and the protruding end is pressed or hammered to form a second head.  { riv-ı'w-

riveting [ENG] The permanent joining of two or more machine parts or structural members, usually plates, by means of rivets.  { riv-ı'w-

riveting hammer [MECH ENG] A hammer used for driving rivets.  { riv-ı'w-ı'w , ham-ı'w }

rivet pitch [ENG] The center-to-center distance of adjacent rivets.  { riv-ı'w , piçh }

road [CIV ENG] An open way for travel and transportation.  { rōd }

roadbed [CIV ENG] The earth foundation of a highway or a railroad.  { rōd , bed }

road capacity [CIV ENG] The maximum traffic flow obtainable on a given roadway, using all available lanes, usually expressed in vehicles per hour or vehicles per day.  { rōd , ka, pas-ı'w-

road grade [CIV ENG] The level and gradient of a road, measured along its center way.  { rōd erad }

road net [CIV ENG] The system of roads available within a particular locality or area.  { rōd , net }

road octane number [ENG] A numerical value for automotive antiknock properties of a gasoline, determined by operating a car over a stretch of level road or on a chassis dynamometer under conditions simulating those encountered on the highway.  { rōd , 'ak,tān , nam-bär }

road test [ENG] A motor-vehicle test conducted on the highway or on a chassis dynamometer to determine the performance of fuels or lubricants or the performance of the vehicle.  { rōd , test }

roadway [CIV ENG] The portion of the thoroughfare over which vehicular traffic passes.  { rōd , wā }

roaster [ENG] Equipment for the heating of materials, such as in pyrite roasting, a furnace.  { ros-tar }

roasting regeneration [CHEM ENG] Regeneration of a processing (treating) clay by heating or burning it in contact with air to remove combustible impurities adsorbed onto the surface.  { rõst-ing ré-jen-ı'w-rā-san }

Roberts evaporator [DEE ENG] See short-tube vertical evaporator.  { röb-ı'w-ı'w , vap-ı'w , rād-

Roberts’ linkage [MECH ENG] A type of approximate straight-line mechanism which provided, early in the 19th century, a practical means of making straight metal guides for the slides in a metal planner.  { röb-ı'w-ı'w , li̇n-ı'w-kî }
Robins-Messiter system

Robins-Messiter system  [MECH ENG] A stacking conveyor system in which material arrives on a conveyor belt and is fed to one or two wing conveyors. {ˈroʊbɪnz 'mes-ə-tar, sis-tam}

Robitzsch actinograph  [ENG] A pyranometer whose design utilizes three bimetallic strips which are exposed horizontally at the center of a hemispherical glass bowl; the outer strips are white reflectors, and the center strip is a blackened absorber, the bimetals are joined in such a manner that the pen of the instrument deflects in proportion to the difference in temperature between the black and white strips, and is thus proportional to the intensity of the received radiation; this instrument must be calibrated periodically. {ˈroʊ,bitʃ ˈæk-tən-ˌə-ˌgraf}

robot  [CONT SYS] A mechanical device that can be programmed to perform a variety of tasks of manipulation and locomotion under automatic control. {ˈroʊ,bot}

robotics  [IND ENG] The study of problems associated with the design, application, and control and sensory systems of self-controlled devices. {ˈroʊˈbɒd-ɪks}

roc  [ELEC] A unit of electrical conductivity equal to the conductivity of a material in which an electric field of 1 volt per centimeter gives rise to a current density of 1 ampere per square centimeter. Derived from reciprocal ohm centimeter. {ˈrɒk}

Rochloches  [MECH] 1. Regions of space surrounding two massive bodies revolving around each other under their mutual gravitational attraction, such that the gravitational attraction of each body dominates the lobe surrounding it. 2. In particular, the effective potential energy (referred to a system of coordinates rotating with the bodies) is equal to a constant V₀ over the surface of the lobes, and if a particle is inside one of the lobes and if the sum of its effective potential energy and its kinetic energy is less than V₀, it will remain inside the lobe. {ˈroʊʃ,ˈlɒbz}

rock bit  [ENG] Any one of many different types of roller bits used on rotary-type drills for drilling large-size holes in soft to medium-hard rocks. {ˈroʊkˌbɪt}

rockbolt  [ENG] A bar, usually constructed of steel, which is inserted into predrilled holes in rock and secured for the purpose of ground control. {ˈrɒkˌbɒlt}

rock bolting  [ENG] A method of securing or strengthening closely jointed or highly fissured rocks in mine workings, tunnels, or rock abutments by inserting and firmly anchoring rock bolts oriented perpendicular to the rock face or mine opening. {ˈrɒkˌbɒlt-ɪŋ}

rock channeler  [MECH ENG] A machine used in quarrying for cutting an artificial seam in a mass of stone. {ˈrɑkˌ,ˈʃæn-əl-ər}

rock drill  [MECH ENG] A machine for boring relatively short holes in rock for blasting purposes; motive power may be compressed air, steam, or electricity. {ˈrɑkˌ,ˈdrɪl}

rocker  [CIV ENG] A support at the end of a truss or girder which permits rotation and horizontal movement to allow for expansion and contraction. {ˈrɑk-ər}

rocker arm  [MECH ENG] In an internal combustion engine, a lever that is pivoted near its center and operated by a pushrod at one end to raise and depress the valve stem at the other end. {ˈrɑk-ərˌ,arm}

rocker bearing  [CIV ENG] A bridge support that is free to rotate but cannot move horizontally. {ˈrɑk-ərˌ,ber-ɪŋ}

rocker bent  [CIV ENG] A bent used on a bridge span; hinged at one or both ends to provide for the span’s expansion and contraction. {ˈrɑk-ərˌ,ben-t}

rocker cam  [MECH ENG] A cam that moves with a rocking motion. {ˈrɑk-ərˌ,kæm}

rocker panel  [ENG] The part of the paneling on a passenger vehicle located below the passenger compartment doorsill. {ˈrɑk-ərˌ,pan-əl}

rocketsonde  See meteorological rocket. {ˈrɑk-ətˌsænd}

rocket station  [ENG] A life-saving station equipped with line-carrying rocket apparatus. {ˈrɑk-ətˌstaˌʃən}

rock-fill  [CIV ENG] Composed of large, loosely placed rocks. {ˈrɑkˌˌfɪl}

rock-fill dam  [CIV ENG] A dam constructed of loosely placed rock or stone. {ˈrɑkˌˌfɪlˌˌdæm}

rocking furnace  [MECH ENG] A horizontal, cylindrical melting furnace that is rolled back and forth on a geared cradle. {ˈrɑk-ɪŋˌˌfɑr-ˌnæs}

rocking pier  [CIV ENG] A pier that is hinged to allow for longitudinal expansion or contraction of the bridge. {ˈrɑk-ɪŋˌˌpɪr}

rocking valve  [MECH ENG] An engine valve in which a disk or cylinder turns in its seat to permit fluid flow. {ˈrɑk-ɪŋˌˌvalv}

rock pedestal  See pedestal. {ˈrɑkˌˌped-ə-ˌstæl}

Rockwell hardness  [ENG] A measure of hardness of a material as determined by the Rockwell hardness test. {ˈrɑkˌˌwelˌˈhɑrd-ˌnæs}

Rockwell hardness test  [ENG] One of the arbitrarily defined measures of resistance of a material to indentation under static or dynamic load; depth of indentation of either a steel ball or a 120° conical diamond with rounded point, 1/16, 1/8, 1/4, or 1/2 inch (1.5875, 3.175, 6.35, 12.7 millimeters) in diameter, called a bale, under prescribed load is the basis for Rockwell hardness; 60, 100, 150 kilogram load is applied with a special machine, and depth of impression under initial minor load is indicated on a dial whose graduations represent hardness number. {ˈrɑkˌˌwelˌˈhɑrd-ˌnæsˌˌtɛst}

rod  [DES ENG] 1. A bar whose end is slotted, tapered, or screwed for the attachment of a drill bit. 2. A thin, round bar of metal or wood. See perch. {ˈroʊd}

rod bit  [DES ENG] A bit designed to fit a reaming shell that is threaded to couple directly to a drill rod. {ˈroʊdˌˌbit}

rod coupling  [DES ENG] A double-pin-thread coupling used to connect two drill rods together. {ˈroʊdˌˌkoʊ-ˌlɪŋ}
rodding  [ENG] An operation in which a rod is passed through a length of tubing such as a rifle or pipework to determine if the bore is clear.  \{ ’röd̂ ’iŋ \}

rod level  [ENG] A spirit level attached to a level rod or stadia rod to ensure the vertical position of the rod prior to instrument reading.  \{ ’råd ’lev-al \}

rod mill  [MECH ENG] A pulverizer operated by the impact of heavy metal rods. \{ ’råd ’mil \}

rod string  [MECH ENG] Drill rods coupled to form the connecting link between the core barrel and bit in the borehole and the drill machine at the collar of the borehole.  \{ ’råd ’strîŋ \}

rod stuffing box  [ENG] An annular packing gland fitting between the drill rod and the casing at the borehole collar, allows the rod to rotate freely but prevents the escape of gas or liquid under pressure. \{ ’råd ’strîŋ ’båks \}

roentgen current  [ELEC] An electric current arising from the motion of polarization charges, as in the rotation of a dielectric in a charged capacitor.  \{ ’rønt-ﬂ̂ ’gæn , ka˚r-ønt ’\}

Rogowski coil  [ENG] A device for measuring alternating current without making contact with the current-carrying conductor, which consists of an air-core coil placed around the conductor in a toroidal fashion so that the alternating magnetic field produced by the current induces a voltage in the coil.  \{ ’røg-øv-skê , kɔîl \}

rolamite mechanism  [MECH ENG] An elemental mechanism consisting of two rollers contained by two parallel planes and bounded by a fixed S-shaped band under tension. \{ ’røl-a˚ ,mît ,mek-ø ,niz-øn \}

roll  [MECH] Rotational or oscillatory movement of an aircraft or similar body about a longitudinal axis through the body, it is called roll for any degree of such rotation.  \{ ’røl ik-sel ,rø-shan \}

roll axis  [MECH] A longitudinal axis through an aircraft, rocket, or similar body, about which the body rolls. \{ ’røl ’aks-øs \}

roll bar  [DES ENG] A metal bar installed over-head on a roofless automotive vehicle in order to protect the occupants if the car rolls over. \{ ’røl ’bår \}

roll cage  [DES ENG] A frame of metal bars that is installed in a racing car around the driver’s seat to protect the driver in the event of an accident. \{ ’røl ’kåı \}

roll control  [ENG] The exercise of control over a missile so as to make it roll to a programmed degree, usually just before pitchover. \{ ’røl ’kon ,røl \}

roll crusher  [MECH ENG] A crusher having one or two toothed rollers to reduce the material. \{ ’røl ’kra˚sh-ør \}

rolled joint  [ENG] A joint made by expanding a tube in a tube sheet hole by use of an expander. \{ ’rød̂ ’[jɔint ] \}

roller  [DES ENG] A cylindrical device for transmitting motion and force by rotation. \{ ’rö-lår \}

roller analyzer  [ENG] Device for qualitative separation of fine particles (down to 5 micrometers) by use of the graduated lift of a variable-rate pneumatic stream. \{ ’rö-lår ‘an ,ø-ﬂæ ,liz-ør \}

roller bearing  [MECH ENG] A shaft bearing characterized by parallel or tapered steel rollers confined between outer and inner rings. \{ ’rö-lår ‘ber-ing \}

roller biter  See cone rock bit. \{ ’rö-lår ’bit \}

roller cam follower  [MECH ENG] A follower consisting of a rotatable wheel at the end of the shaft. \{ ’rö-lår ’kam ,fål-ø-war \}

roller chain  [MECH ENG] A chain drive assembled from roller links and pin links. \{ ’rö-lår ’chån \}

roller coating  [ENG] The application of paints, lacquers, or other coatings onto raised designs arising from the motion of polarization charges, or letters by means of a roller. \{ ’rö-lår ,kôd-øj \}

roller cone bit  [ENG] A drilling bit containing two to four cutters (cones) mounted on very rugged bearings. Also known as bit cone; rock bit. \{ ’rö-lår ’kôn ,bıt \}

roller conveyor  [MECH ENG] A gravity conveyor having a track of parallel tubular rollers set at a definite grade, usually on antifriction bearings, at fixed locations, over which package goods which are sufficiently rigid to prevent sagging between rollers are moved by gravity or propulsion. \{ ’rö-lår kær-,vå-ør \}

roller drying  [CHEM ENG] A method used to dry milk for purposes other than human consumption; concentrated milk is fed between two heated and narrowly spaced stainless steel rollers, the adhering thin film of milk dries as the rollers turn and is scraped off the roller by a doctor blade. \{ ’rö-lår ,drî-øj \}

roller gate  [CIV ENG] A cylindrical, usually hollow crest gate that is raised and lowered by large toothed wheels running on sloping racks. \{ ’rö-lår ,gåt \}

roller-hearth kiln  [ENG] A type of tunnel kiln through which the ware is conveyed on ceramic rollers. \{ ’rö-lår ’hêr˘ th kîn \}

roller leveling  [MECH ENG] Leveling flat stock by passing it through a machine having a series of rolls whose axes are staggered about a mean parallel path by a decreasing amount. \{ ’rö-lår ’lev-ø-øj \}

roller mill  See ring-roller mill. \{ ’rö-lår ,mil \}

roller pulzerizer  [MECH ENG] A pulzerizer operated by the crushing action of rotating rollers. \{ ’rö-lår ’pål-va˚ ,liz-ør \}

roller stamping die  [MECH ENG] An engraved roller used for stamping designs and other markings on sheet metal. \{ ’rö-lår ’stamp-øj ,dîl \}

rolling  [MECH] Motion of a body across a surface combined with rotational motion of the body so that the point on the body in contact with the surface is instantaneously at rest. \{ ’rö-lår ’in \}

rolling contact  [MECH] Contact between bodies
such that the relative velocity of the two contacting surfaces at the point of contact is zero.  

`'rölt' iánk, takt`

rolling-contact bearing  [MECH ENG] A bearing composed of rolling elements interposed between an outer and inner ring.  

`'rölt' iánk, takt`

'ber-iánk'  

rolling door  [ENG] A door that moves up and down or from side to side by means of wheels moving along a track.  

`'rölt' idór`

rolling friction  [MECH] A force which opposes the motion of any body which is rolling over the surface of another.  

`'rölt' iánk, fokshàn`

rolling lift bridge  [CIV ENG] A bridge having on the shore end of the lifting portion a segmental bearing that rolls on a flat surface.  

`'rölt' lift, brij`

rolling radius  [DES ENG] For an automotive vehicle, the distance from the center of an axle to the ground.  

`'rölt' råd, e-ás`

roll mill  [MECH ENG] A series of rolls operating at different speeds for grinding and crushing.  

`'rölt' mil`

roll-off  [ELECTR] Gradually increasing loss or attenuation with increase or decrease of frequency beyond the substantially flat portion of the amplitude-frequency response characteristic of a system or transducer.  

`'rölt', of`

roll set  [ENG] A series of paired convex and concave contoured rolls in a rolling form machine that progressively form a workpiece of uniform cross section.  

`'rölt', set`

roll straightening  [ENG] Unbending of metal stock by passing it through staggered rolls in different planes.  

`'rölt', stråt-an-ij`

roll threading  [MECH ENG] Threading a metal workpiece by rolling it either between grooved circular rolls or between grooved straight lines.  

`'rölt', thred-ij`

rom  [ELEC] A unit of electrical conductivity, equal to the conductivity of a material in which an electric field of 1 volt per meter gives rise to a current density of 1 ampere per square meter.  

Derived from reciprocal ohm meter.  

`'ram'`

rood  [MECH] A unit of area, equal to 1/4 acre, or 10,890 square feet, or 10,111.7141056 square meters.  

`'röd'`

roof  [BUILD] The cover of a building or similar structure.  

`'röftp'`

roof beam  [BUILD] A load-bearing member in the roof structure.  

`'röftp', bém`

roof drain  [BUILD] A drain for receiving water that has collected on the surface of a roof and discharging it into a downsput.  

`'röftp', drån`

roofing nail  [DES ENG] A nail used for attaching paper or shingle to roof boards; usually short with a barbed Shank and a large flat head.  

`'röftiánk', nål`

roof truss  [BUILD] A truss used in roof construction. It carries the weight of roof deck and framing and of wind loads on the upper chord; an example is a Fink truss.  

`'röftp', tras`

room  [BUILD] A partitioned-off area inside a building or dwelling.  

`'rûm'`

root  [CIV ENG] The portion of a dam which penetrates into the ground where the dam joins the hillside.  

[DES ENG] The bottom of a screw thread.  

`'rût', sår-kal`

root circle  [DES ENG] A hypothetical circle defined at the bottom of the tooth spaces of a gear.  

`'rût', sår-kal`

rooter  [ENG] A heavy plowing device equipped with teeth and used for breaking up the ground surface; a towed scariﬁer.  

`'rûtdør`

root ﬁllet  [DES ENG] The rounded corner at the angle of a gear tooth flank and the bottom land.  

`'rûtfil-at'`

root locus plot  [CONT SYS] A plot in the complex plane of values at which the loop transfer function of a feedback control system is a negative number.  

`'rûts', blosør`

root-mean-square current  See effective current.  

`'rötmenn, 'skwer 'ka'ront'`

Roots blower  [MECH ENG] A compressor in which a pair of hourglass-shaped members rotate within a casing to deliver large volumes of gas at relatively low pressure increments.  

`'röts', bloø-sør`

rope-and-button conveyor  [MECH ENG] A conveyor consisting of an endless wire rope or cable with disks or buttons attached at intervals.  

`'röp', båt-an kän, vå-brø>`

rope boring  [ENG] A method similar to rod drilling except that rigid rods are replaced by a steel rope to which the boring tools are attached and allowed to fall by their own weight.  

`'röpbör-ij'`

rope drive  [MECH ENG] A system of ropes running in grooved pulleys or sheaves to transmit power over distances too great for belt drives.  

`'röp', dvf`

rope sheave  [DES ENG] A grooved wheel, usually made of cast steel or heat-treated alloy steel, used for rope drives.  

`'röp', shev`

rope socket  [DES ENG] A drop-forged steel device, with a tapered hole, which can be fastened to the end of a wire cable or rope and to which a load may be attached.  

`'röp', sák-at'`

ropewalk  [ENG] A long walkway down which a worker carries and lays rope in a manufacturing plant.  

`'röp', wok`

ropeway  [ENG] One or a pair of steel cables between several supporting towers which serve as tracks for transporting materials in mountainous areas or at sea.  

`'röp', våa`

rose bit  [DES ENG] A hardened steel or alloy noncore bit with a serrated face to cut or mill out bits, casing, or other metal objects lost in the hole.  

`'rözb', bit'`

rose chucking reamer  [DES ENG] A machine reamer with a straight or tapered shank and a straight or spiral flute; cutting is done at the ends of the teeth only; produces a rough hole since there are few teeth.  

`'röz', chak-ij, rë-mar'`

rose reamer  [DES ENG] A reamer designed to cut on the beveled leading ends of the teeth rather than on the sides.  

`'röz', rë-mar'`

Rossby diagram  [THERMO] A thermodynamic
diagram, named after its designer, with mixing ratio as abscissa and potential temperature as ordinate, lines of constant equivalent potential temperature are added. (*'rős ō'me.gram*)

**Rossman drive** [ENG] A method used to provide speed control of alternating-current motors; an induction motor stator is mounted on trunnion bearings and driven with an auxiliary motor, to provide the desired change in slip between the stator and rotor. (‘*rős-man_ˌdriv_*)

**rotameter** [ENG] A variable-area, constant-head, rate-of-flow volume meter in which the fluid flows upward through a tapered tube, lifting a shaped weight to a position where upward fluid force just balances its weight. (*'rő-təm-ôr*)

**rotary** [MECH ENG] 1. A rotary machine, such as a rotary printing press or a rotary well-drilling machine. 2. The turntable and its supporting and rotating assembly in a well-drilling machine. (‘*rőd-ô-rej_*)

**rotary abutment meter** [MECH ENG] A type of positive displacement meter in which two displacement rotating vanes interleave with cavities on an abutment rotor in such a way that the three elements are geared together. (*'rőd-ô-rej_ˌbat-mənt_ˌmêd-ôr_*)

**rotary actuator** [MECH ENG] A device that converts electric energy into controlled rotary force, usually consists of an electric motor, gear box, and limit switches. (*'rőd-ô-rej_ˌak-ô-chaˌwâd-ôr_*)

**rotary air heater** [MECH ENG] A regenerative air heater in which heat-transferring members are moved alternately through the gas and air streams. (*'rőd-ô-rej_ˌerˌhêd-ôr_*)

**rotary annular extractor** [MECH ENG] Vertical, cylindrical shell with an inner, rotating cylinder, liquids to be contacted flow countercurrently through the annular space between the rotor and shell, used for liquid-liquid extraction processes. (*'rőd-ô-rej_ˌan-ya-ˈlar_ˌik-stak-tər_*)

**rotary atomizer** [MECH ENG] A hydraulic atomizer having the pump and nozzle combined. (*'rőd-ô-rej_ˌad-ô-miz-ôr_*)

**rotary belt cleaner** [MECH ENG] A series of blades symmetrically spaced about the axis of rotation and caused to scrape or beat against the conveyor belt for the purpose of cleaning. (*'rőd-ô-rej_ˌbeltˌklen-ôr_*)

**rotary blower** [MECH ENG] Positive-displacement, rotating-impeller, air-motion device; can be straight-lobe, screw, sliding-vane, or liquid-piston type. (*'rőd-ô-rej_ˌblô-ôr_*)

**rotary boring** [MECH ENG] A system of boring in which rock penetration is achieved by the rotation of the hollow cutting tool. (*'rőd-ô-rej_ˌbôr-ing_*)

**rotary bucket** [MECH ENG] A 12- to 96-inch-diameter (30- to 244-centimeter) posthole augerlike device, the bottom end of which is equipped with cutting teeth used to rotary-drill large-diameter shallow holes to obtain samples of soil lying above the groundwater level. (*'rőd-ô-rej_ˌbûk-ôt_*)

**rotary-combustion engine** See Wankel engine. (‘*rőd-ô-rej_ˌkamˈbəsˌchanˌen-ˌjan_*)

**rotary compressor** [MECH ENG] A positive-displacement machine in which compression of the fluid is effected directly by a rotor and without the usual piston, connecting rod, and crank mechanism of the reciprocating compressor. (*'rőd-ô-rej_ˌkamˈpresh-ôr_*)

**rotary crane** [MECH ENG] A crane consisting of a boom pivoted to a fixed or movable structure. (*'rőd-ô-rej_ˌkrân_*)

**rotary crusher** [MECH ENG] Solids-reduction device in which a high-speed rotating cone on a vertical shaft forces solids against a surrounding shell. (*'rőd-ô-rej_ˌkris-shôr_*)

**rotary-cup oil burner** [ENG] Oil burner that uses centrifugal force to spray fuel oil from a rotary fuel atomizing cup into the combustion chamber. (*'rőd-ô-rej_ˌkôpˈoilˌbâr-nar_*)

**rotary cutter** [MECH ENG] Device used to cut tough or fibrous materials by the shear action between two sets of blades, one set on a rotating holder, the other stationary on the revolving casing. (*'rőd-ô-rej_ˌkad-ôr_*)

**rotary-disk contactor** [CHEM ENG] Liquid-liquid contactor, having a vertical cylindrical shell with vertical rotating shaft upon which are mounted a spaced series of flat disks; spinning of the disks forces liquid into shell-mounted baffles, causing mixing, used for liquid-liquid extraction processes. Also known as RDC extractor. (*'rőd-ô-rej_ˌdiskˌkánˌták-tər_*)

**rotary drill** [MECH ENG] Any of various drill machines that rotate a rigid, tubular string of rods to which is attached a rock cutting bit, such as an oil well drilling apparatus. (*'rőd-ô-rej_ˌdril_*)

**rotary drilling** [MECH ENG] The act or process of drilling a borehole by means of a rotary-drill machine, such as in drilling an oil well. (*'rőd-ô-rej_ˌdril-ing_*)

**rotary dryer** [MECH ENG] A cylindrical furnace slightly inclined to the horizontal and rotated on suitable bearings; moisture is removed by rising hot gases. (*'rőd-ô-rej_ˌdri-ing_*)

**rotary engine** [MECH ENG] A positive displacement engine (such as a steam or internal combustion type) in which the thermodynamic cycle is carried out in a mechanism that is entirely rotary and without the more customary structural elements of a reciprocating piston, connecting rods, and crankshaft. (*'rőd-ô-rej_ˌen-ˌjô-n_*)

**rotary excavator** See bucket-wheel excavator. (‘*rőd-ô-rej_ˌekˌskəˌvâd-ôr_*)

**rotary feeder** [MECH ENG] Device in which a rotating element or vane discharges powder or granules at a predetermined rate. (*'rőd-ô-rej_ˌfêd-ôr_*)

**rotary filter** See drum filter. (*'rőd-ô-rej_ˌfil-tər_*)

**rotary furnace** [MECH ENG] A heat-treating furnace of circular construction which rotates the workpiece around the axis of the furnace during
heat treatment, workpieces are transported through the furnace along a circular path.

rotary kiln [ENG] A long cylindrical kiln lined with refractory, inclined at a slight angle, and rotated at a slow speed. (ˈrəʊ-tər-ˈriːn kɪl´n)

rotary percussive drill [MECH ENG] Drilling machine which operates as a rotary machine by the action of repeated blows to the bit. (ˈrəʊ-tər-ˈreɪ pərˈkʌs̻-ɪv ˈdrɪl´)

rotary pump [MECH ENG] A displacement pump that delivers a steady flow by the action of two members in rotational contact. (ˈrəʊ-tər-ˈreɪ pʌmp´)

rotary roughening [MECH ENG] A metal preparation technique in which the workpiece surface is roughened by a cutting tool. (ˈrəʊ-tər-ˈreɪ rʊˈfʊən)
point of the body remaining fixed at an axis or center. { rōtā-shān·al trāvərs }

rotational viscometer See Couette viscometer. { rōtā-shān·al vĭskəm·ad·ər }

rotation anemometer [MECH] A type of anemometer in which the rotation of an element serves to measure the wind speed. Rotation anemometers are divided into two classes: those in which the axis of rotation is horizontal, as exemplified by the windmill anemometer, and those in which the axis is vertical, such as the cup anemometer. { rōtā-shān ,kō·i,fish·ans }

rotation coefficients [MECH] Factors employed in computing the effects on range and deflection which are caused by the rotation of the earth; they are published only in firing tables involving comparatively long ranges. { rōtā-shān,kō·i,fish·ans }

rotation firing [ENG] Setting off explosions so that each hole throws its burden toward the space made by the preceding explosions. { rōtā-shān.fīr·ing }

rotation moment See torque. { rōtā-shān,mo·ment }

rotator [MECH] A rotating rigid body. { rō,tād·ər }

rotor [ELEC] The rotating member of an electrical machine or device, such as the rotating armature of a motor or generator, or the rotating plates of a variable capacitor. [MECH ENG] See impeller. { rō·tād·ər }

rough-axed brick See axed brick. { raf·jakst·brik }

roughcast [CIV ENG] A rough finish on a surface, in particular, a plaster made of lime and shells or pebbles, applied by throwing it against a wall with a trowel. { raf,kast }

rough cut [ENG] A heavy cut (or cuts) made before the finish cut, the primary object of which is the rapid removal of material. { raf·kat }

rough grinding [MECH ENG] Preliminary grinding without regard to finish. { raf·grind·ing }

rough hardware [ENG] Utility items such as nails, sash balances, and studs, without attractive finished appearance. { raf·hard,wer }

roughing [ENG] The start of evacuation of a vacuum system under test for leaks. { raf·ing }

roughing tool [ENG] A single-point cutting tool having a sharp or small-radius nose, used for deep cuts and rapid material removal from the workpiece. { raf·ing.tūl }

rough machining [MECH ENG] Preliminary machining without regard to finish. { raf·ma·šen·ij }

roughness-width cutoff [MECH ENG] The maximum width of surface irregularities included in roughness height measurements. { raf·nəs·width·kəd·əl }

rough threading [ENG] 1. Rapid removal of the bulk of the material in a threading operation. 2. Roughening a surface prior to hot-metal spraying to enhance adhesions. { raf·thred·ing }

rough turning [MECH ENG] The removal of excess stock from a workpiece as rapidly and efficiently as possible. { raf·tərn·ij }

round [ENG] A series of shots fired either simultaneously or with delay periods between them. { rōnd }

round-face bit [DES ENG] Any bit with a rounded cutting face. { rōnd·fās·bit }

round file [DES ENG] A file having a circular cross section. { rōnd·fi·lē }

round-head bolt [DES ENG] A bolt having a rounded head at one end. { rōnd·hed·bōlt }

round-head buttress dam [CIV ENG] A mass concrete dam built of parallel buttresses thickened at the upstream end until they meet. { rōnd·hed·bō·trəs·dəm }

roundnose chisel [DES ENG] A chisel having a rounded cutting edge. { rūndnōs·chiz·əl }

roundnose tower [DES ENG] A large-radius-nose cutting tool generally used in finishing operations. { rūndnōs·tōr }

round strand rope [DES ENG] A rope composed generally of six strands twisted together or laid to form the rope around a core of hemp, sisal, or manila, or, in a wire-cored rope, around a central strand composed of individual wires. { rōnd·strənd·rop }

round trip [ENG] The combined operations of entering and leaving a hole during drilling operations. { rōnd·trip }

rout [MECH ENG] To gouge out, make a furrow, or otherwise machine a wood member. { rōt }

route locking [CIV ENG] Electrically locking in position switches, movable point frogs, or debris on the route of a train, after the train has passed a proceed signal. { rōt·lāk·ing }

router [DES ENG] 1. A chisel with a curved point for cleaning out features such as grooves and mortises on wood members. 2. See router plane. [MECH ENG] A machine tool with a rapidly rotating vertical spindle and cutter for making furrows, mortises, and similar grooves. { rōt·ər }

router plane [DES ENG] A plane for cutting grooves and smoothing the bottom of grooves. Also known as router. { rōt·ər.plān }

route survey [CIV ENG] A survey for the design and construction of linear works, such as roads and pipelines. { rōt·sər,vā }

Routh’s procedure [MECH] A procedure for modifying the Lagrangian of a system so that the modified function satisfies a modified form of Lagrange's equations in which ignorable coordinates are eliminated. { rōths prəs·ər }

Routh’s rule of inertia [MECH] The moment of inertia of a body about an axis of symmetry equals $M(a^2 + b^2)/n$, where $M$ is the body's mass, $a$ and $b$ are the lengths of the body's two other perpendicular semixaxes, and $n$ equals 3, 4, or 5 depending on whether the body is a rectangular parallelepiped, elliptic cylinder, or ellipsoid, respectively. { rōths rōl av i·nər·sha }

routing [ENG] A manufacturing process in which wooden parts are fabricated in various configurations, in high-speed industrial applications, an overhead cutting tool drills into the workpiece and then cuts the desired interior shape. { rōd·ing }

471
rowlock course  [CIV ENG] A course of bricks laid on their sides so that only their ends are visible. {ˈrɔʊlækˌkɔrors }
rpm See revolution per minute.
fps See revolution per second.
RTL See resistor-transistor logic.
rubber belt  [DES ENG] A conveyor belt that consists essentially of a rubber-covered fabric; fabric is cotton, or nylon or other synthetic fiber, with steel-wire reinforcement. {ˈrʌbr̩ òrˈbɛlt }
rubber blanket  [ENG] A rubber sheet used as a functional die in rubber forming. {ˈrʌbr̩ òrˈbliŋˈkat }
rubber-covered steel conveyor  [DES ENG] A steel conveyor band with a cover of rubber bonded to the steel. {ˈrʌbr̩ òrˈbɛrtˌsteilˌranˌværˌər }
rubber plating  [ENG] The laying down of a rubber coating onto metals by electrodeposition or by ionic coagulation. {ˈrʌbr̩ òrˈbplætɨŋj }
rubber wheel  [DES ENG] A grinding wheel made with rubber as the bonding agent. {ˈrʌbr̩ òrˈwel }
rubble  [CIV ENG] 1. Rough, broken stones and other debris resulting from the deterioration and destruction of a building. 2. Rough stone or brick used in coarse masonry or to fill the space in a wall between the facing courses. {ˈrʌbr̩ˌəl }
rubble-mound structure  [CIV ENG] A mound of nonselectively formed and placed stones which are protected with a covering layer of selected stones or of specially shaped concrete armored elements. {ˈrʌbr̩ˌəlˌmaʊnˌstrəkˈchar }
rubidium magnetometer  See rubidium-vapor magnetometer. {rʊbɪˈdɪəmˌvərəpˌmægˌnətmæɡˈnetɒmətərˌər }
rubidium-vapor magnetometer  [ENG] A highly sensitive magnetometer in which the spin precession principle is combined with optical pumping and monitoring for detecting and recording variations as small as 0.01 gamma (0.1 microersted) in the total magnetic field intensity of the earth. Also known as rubidium magnetometer. {ˈrʊbɪˌdɪəmˌvərəpˌmægˌnətərmæɡˈnetɒmətərˌər }
rudder  [ENG] 1. A flat, usually foil-shaped movable control surface attached upright to the stern of a boat, ship, or aircraft, and used to steer the craft. 2. See rudder angle. {ˈrʌdərˌər }
rudder angle  [ENG] The acute angle between a ship or plane's rudder and its fore-and-aft line. Also known as rudder. {ˈrʌdərˌəŋˈgɔl }
rule-based control system  See direct expert control system.
rule of 80-20  See Pareto's law. {ˈrʊl əv ˈædəˌtwɛnˈtɛ }
ruler  [ENG] A graduated strip of wood, metal, or other material, used to measure lines or as a guide in drawing lines. {ˈrʊlər }
rumble  See turntable rumble. {ˈrʌmbləl }
run  [BUILD] 1. The horizontal distance from the face of a wall to the ridge of the roof. 2. The width of a single tread in a stairway. 3. The horizontal distance traversed by a flight of steps. 4. The runway or track for a window. [CHEM ENG] 1. The amount of feedstock processed by a petroleum refinery unit during a given time; often used colloquially in relation to the type of stock being processed, as in crude run or naphtha run. 2. A processing-cycle or batch-treatment operation. [ENG] A portion of pipe or fitting lying in a straight line in the same direction of flow as the pipe to which it is connected. {ˈrʌn }
run a line of soundings  [ENG] To obtain a series of soundings along a course line. {ˈrʌn əlˈsaʊndɨŋz }
runaway effect  [ELECTR] The phenomenon whereby an increase in temperature causes an increase in a collector-terminal current in a transistor, which in turn results in a higher temperature and, ultimately, failure of the transistor, the effect limits the power output of the transistor. {ˈrʌnˌəwˈætˌiŋk }
runback  [CHEM ENG] A pipe through which all or part of a distillation column's overhead condensate can be run back into the column, instead of being drawn off as product. [ENG] 1. To retract the drill feed mechanism to its starting position. 2. To drill slowly downward toward the bottom of the hole when the drill string has been lifted off-bottom for rechucking. {ˈrʌnˌbæk }
rundown line  [CHEM ENG] A line from a process unit that connects the look box in the receiving house with the tank in which the product is temporarily stored. {ˈrʌnˌdɔːn ˌlɪn }
rundown tank  [CHEM ENG] A tank in which the product from a still, agitator, or other processing equipment is received, and from which the product is pumped to larger storage tanks. Also known as pan tank; receiving tank. {ˈrʌnˌdɔːnˌtæŋk }
Runge vector  [MECH] A vector which describes certain unchanging features of a nonrelativistic two-body interaction obeying an inverse-square law, either in classical or quantum mechanics; its constancy is a reflection of the symmetry inherent in the inverse-square interaction. {ˈrʌŋˌgəˌvɛktər }
run in  [ENG] To lower the assembled drill rods and auxiliary equipment into a borehole. {ˈrʌnˌɪn }
runner  [ENG] In a plastics injection or transfer mold, the channel (usually circular) that connects the sprue with the gate to the mold cavity. {ˈrʌnˌər }
running block  See traveling block. {ˈrʌnˌɪŋˌblæk }
running bond  [CIV ENG] A masonry bond involving the placing of each brick as a stretcher and overlapping the bricks in adjoining courses. {ˈrʌnˌɪŋˌbænd }
running fit  [DES ENG] The intentional difference in dimensions of mating mechanical parts that permits them to move relative to each other. {ˈrʌnˌɪŋˌfɪt }
running gear  [MECH ENG] The means employed to support a truck and its load and to provide rolling-friction contact with the running surface. {ˈrʌnˌɪŋˌgɛr }
running-in  [ENG] The process of operating new
or repaired machinery or equipment in order to
detect any faults and to ensure smooth, free
operation of parts before delivery. { 'rən-ʃən \in}

run-on See dieselign. { 'rən,ən }

run-out time [IND ENG] Time required by ma-
machine tools after cutting time is finished before
tool and material are completely free of interfer-
ence and before the start of the next sequence
of operation. { 'rən,əut ,tɪm }

run-time data [MECH ENG] Information ob-
tained from sensors during a machine's regular
operation and used to improve its performance.
{ 'rən \tim 'dæd-ə }

runway [CIV ENG] A straight path, often hard-
surfaced, within a landing strip, normally used
for landing and takeoff of aircraft. { 'rən,wa }

Rüping process [ENG] A system for preserva-
tive treatment of wood by using positive initial
pressure, followed by introduction of the preser-
vation and release of air, creating a vacuum.
{ 'rűp-ən ,prə-səs }

rupture disk device [MECH ENG] A nonreclos-
ing pressure relief device which relieves the inlet
static pressure in a system through the bursting
of a disk. { 'rʊp -char ,disk dɪvɪts }

Rushton-Oldshue column [CHEM ENG] A mix-
ing unit used for continuous pipeline blending
in which two-phase contacting is desired; it is a
column containing separation plates, baffles,
and mixing impellers. { 'rəsh-ən \ʊl,ʃə ,kæl-
əm }

Russell movable-wall oven [CHEM ENG] An
oven for coal carbonization which cooks a 400-
 pound (180-kilogram) charge in a horizontal, 12-
inch-wide (30-centimeter) chamber, heated from
both sides, but with one side floating and bal-
anced against scales. { 'rəs-əl \mʊv-ə-bɔl \wɔl
əv-ən }

rust joint [ENG] A joint to which some oxidizing
agent is applied either to cure a leak or to with-
stand high pressure. { 'rəst ,jənt }

rust prevention [ENG] Surface protection of fer-
rour structures or equipment to prevent forma-
tion of iron oxide; can be by coatings, surface
 treatment, plating, chemicals, cathodic arrange-
ments, or other means. { 'rəst prəvən-kən }

R-value [ENG] An index of the ability of a sub-
stance or material to retard the flow of heat;
higher numerical values correspond to higher
insulating ability. { 'rəv ,val-yə }

Rzeppa joint [MECH ENG] A special application
of the Bendix-Weiss universal joint in which four
large balls are transmitting elements, while a
center ball acts as a spacer, it transmits constant
angular velocity through a single universal joint.
{ 'rəʊp ,jənt }
This page intentionally left blank.
S See siemens.

Sabaté's cycle [MECH ENG] An internal combustion engine cycle in which part of the combustion is explosive and part at constant pressure. {'sab-a-ta\lje ,s\-kal}

saber saw [MECH ENG] A portable saw consisting of an electric motor, a straight saw blade with reciprocating mechanism, a handle, baseplate, and other essential parts. {'s\-ba\-r ,so}

saccharimeter [ENG] An instrument for measuring the amount of sugar in a solution, often by determining the change in polarization produced by the solution. {'sak-o\-rim\-o\-d-o\-r}

saccharometer [ENG] An instrument for measuring the amount of sugar in a solution, by determining either the specific gravity or the gases produced by fermentation. {'sak-o\-ram\-e\-d-o\-r}

sacrificial compliant substrate See compliant substrate. {'sak-ra\-fish\-al kam\-pli\-ont 'sab\-str\-at}

saddle [DES ENG] A support shaped to fit the object being held. {'s\-dal}

saddle-type turret lathe [MECH ENG] A turret lathe designed without a ram and with the turret mounted directly on a support (saddle) which slides on the bedways of the lathe. {'s\-d-al [t\-p 'tar\-at ,lath]}

SAE number [ENG] A classification of motor, transmission, and differential lubricants to indicate viscosities, standardized by the Society of Automotive Engineers; SAE numbers do not denote quality of the lubricant. {'e,s\-a\-l\-e ,nam\-bar}

safe load [MECH] The stress, usually expressed in tons per square foot, which a soil or foundation can safely support. {'s\-af ,l\-d}

safety [ENG] Methods and techniques of avoiding accident or disease. {'s\-af-\-te}

safety belt [ENG] A strong strap or harness used to fasten a person to an object, such as the seat of an airplane or automobile. {'s\-af-\-te ,bel-t}

safety bolt [CIV ENG] A bolt that can be opened from only one side of the door or gate it fastens. {'s\-af-\-te ,bol\-t}

safety can [ENG] A cylindrical metal container used for temporary storage or handling of flammable liquids, such as gasoline, naphtha, and benzine, in buildings not provided with properly constructed storage rooms; these cans are also used to transport such liquids for filling and supply purposes within local areas. {'s\-af-\-te ,kan}

safety chuck [DES ENG] Any drill chuck on which the heads of the set screws do not protrude beyond the outer periphery of the chuck. {'s\-af-\-te ,chak}

safety engineer [IND ENG] A person who inspects all possible danger spots in a factory, mine, or other industrial building or plant. {'s\-af-\-te ,en\-ja\-nir}

safety engineering [IND ENG] The testing and evaluating of equipment and procedures to prevent accidents. {'s\-af-\-te ,en\-ja\-nir-\-te}

safety factor [ELEC] The amount of load, above the normal operating rating, that a device can handle without failure. [MECH] See factor of safety. {'s\-af-\-te ,fa\-k-\-tor}

safety flange [DES ENG] A type of flange with tapered sides designed to keep a wheel intact in the event of accidental breakage. {'s\-af-\-te ,flan\-j}

safety fuse [ENG] A train of black powder which is enclosed in cotton, jute yarn, and waterproofing compounds, and which burns at the rate of 2 feet (60 centimeters) per minute; it is used mainly for small-scale blasting. {'s\-af-\-te ,fu\-z\-3}

safety hoist [MECH ENG] A hoisting gear that does not continue running when tension is released. {'s\-af-\-te ,ho\-ist}

safety hook [DES ENG] A hoisting hook with a spring-loaded latch that prevents the load from accidentally slipping off the hook. {'s\-af-\-te ,h\-uk}

safety level of supply [IND ENG] The quantity of material, in addition to the operating level of supply, required to be on hand to permit continuous operations in the event of minor interruption of normal replenishment or unpredictable fluctuations in demand. {'s\-af-\-te ,lev-al av sa\-pli}

safety match [ENG] A match that can be ignited only when struck against a specially made friction surface. {'s\-af-\-te ,ma\-ch}

safety plug [ENG] A protective device used on a heated pressure vessel (for example, a steam boiler), and containing a fusible element that melts at a predetermined safe temperature to prevent the buildup of excessive pressure. Also known as fusible plug. {'s\-af-\-te ,pl\-g}

safety rail See guardrail. {'s\-af-\-te ,ral}
safety relief valve

**safety relief valve** Ser safety valve. { 'saf-tē rīˈlēfˌvəlv }  

**safety shoe** [ENG] A special shoe without spark-producing nails or plates, worn by personnel working around explosions. { 'saf-tē șuˈl}  

**safety stop** [MECH ENG] 1. On a hoisting apparatus, a device by which the load may be prevented from falling. 2. An automatic device on a hoisting engine designed to prevent overloading. { 'saf-tē ștāp }  

**safety time** [IND ENG] The difference between the time when a certain material will be required and the time when the material will actually be in stock. { 'saf-tē̇ tīm }  

**safety valve** [MECH ENG] A spring-loaded, pressure-actuated valve that allows steam to escape from a boiler at a pressure slightly above the safe working level of the boiler, fitted by law to all boilers. Also known as safety relief. { 'saf-tē vəlˈvəlv }  

**safe yield** [CIV ENG] The maximum dependable draft that can be made continuously upon a source of water supply over a given period of time during which the probable driest period, and therefore period of greatest deficiency in water supply, is likely to occur. { 'saf ˈyeld }  

**Saint Venant’s compatibility equations** [MECH] Equations for the components $e_i$ of the strain tensor that follow from their integrability, namely, $(e_{11})_i + (e_{21})_i - (e_{12})_i = 0$, where $i$, $j$, and $k$ can take on any of the values $x$, $y$, and $z$, and subscripts outside the parentheses indicate partial differentiation. { 'sān-təνət ˈkɑmpāˌd-təl-əd-ē iˌkwəˌshən }  

**Saint Venant’s principle** [MECH] The principle that the strains that result from application, to a small part of a body’s surface, of a system of forces that are statically equivalent to zero force and zero torque become negligible at distances which are large compared with the dimensions of the part. { 'sān-təνən ˈprin-sal-pəl }  

**salamander stove** [ENG] A small portable stove used for temporary or emergency heat, for example, on construction sites or in greenhouses. { 'səˌləm-ənˈdər ˈstōv }  

**salimeter** [ENG] A hydrometer graduated to read directly the percentage of salt in a solution such as brine. { 'səˌlāmˌər }  

**salina** Ser saltworks. { 'sə-līnə }  

**saline-water reclamation** [CHEM ENG] Purification and removal of salts from brine or brackish water by ion exchange, crystallization, distillation, evaporation, and reverse osmosis. { 'sāl ˈlēnə wˈdārˌrekˌlaˌməˌshən }  

**salinity-temperature-depth recorder** [ENG] An instrument consisting of sensing elements usually lowered from a stationary ship, and a recorder on board which simultaneously records measurements of temperature, salinity, and depth. Also known as CTD recorder, STD recorder. { 'sālən-əd-ē ˈtem-prəˌkær ˈdēpθ riˌkərdər }  

**salinometer** [ENG] An instrument that measures water salinity by means of electrical conductivity or by a hydrometer calibrated to give percentage of salt directly. { 'səˌlānəˌmərˌənd-ər }  

**salt** [ENG] To add an accelerator or retardant to cement. { 'sōlt }  

**salt-effect distillation** [CHEM ENG] A process of extractive distillation in which a salt that is soluble in the liquid phase of the system being separated is used as a separating agent. { 'sōlt ˈiˌkektˌdisˌtālˈɡəˌshən }  

**saltern** See salt garden; saltworks. { 'sōltˈtərn }  

**salt garden** [ENG] A large, shallow basin or pond where sea water is evaporated by solar heat. Also known as saltern. { 'sōltˌɡaːrdən }  

**salt glaze** [ENG] Glaze formed on the surface of stoneware by putting salt into the kiln during firing. { 'sōltˌɡlāz }  

**salt-gradient solar pond** See solar pond. { 'sōltˌɡrād-əntˌsōləˌpōnd }  

**salt grainer** [CHEM ENG] Type of evaporative crystallizer in which the solution is kept hot, and supersaturation is developed by evaporation rather than by cooling. { 'sōltˌgrānər }  

**salting-out effect** [CHEM ENG] The growth of crystals of a substance on heated, liquid-holding surfaces of a crystallizing evaporator as a result of the decrease in solubility of the substance with increase in temperature. { 'sōltˈting ˈjautˈiˌkēkt }  

**salt velocity meter** [ENG] A rate-of-flow volume meter used to find the transit time of passage between two fixed points of a small quantity of salt or radioactive isotope in a flowing stream by measuring electrical conductivity or radiation level at those points. { 'sōltˌvəlˈsələˌdē ˈmēdˌər }  

**salt well** [ENG] A bored or driven well from a small part of a body’s surface, of a system of forces that are statically equivalent to zero force and zero torque become negligible at distances which are large compared with the dimensions of the part. { 'səˌlōltˌwel }  

**saltworks** [ENG] A building or group of buildings where salt is produced commercially, as by extraction from sea water or from the brine of salt springs. Also known as salina; saltern. { 'sōltˌwərkəs }  

**salvage procedure** [ENG] The recovery, evacuation, and reclaimation of damaged, discarded, condemned, or abandoned material, ships, craft, and floating equipment for reuse, repair, refabrication, or scrapping. { 'səˌlāvəˌprəˌsēər }  

**salvage value** [ENG] 1. The cost that could be recovered from the sale of used equipment when removed or scrapped. 2. The actual market value of a specific facility or equipment at a particular point in time. { 'səˌlāvəˌvəlˌyū }  

**sample-and-hold circuit** [ELECTR] A circuit that measures an input signal at a series of definite times, and whose output remains constant at a value corresponding to the most recent measurement until the next measurement is made. { 'səˌməlˌpəl ˈhōldˌsārˌkət }  

**sampled-data control system** [CONT SYS] A form of control system in which the signal appears at one or more points in the system as a sequence of pulses or numbers usually equally
spaced in time. \{'sam-pəld \'dād-ə kan\'-tröl \,si-təm\'}
sample log \[ENG\] Record of core samples or drill cuttings, gives geological, visual, and hydro-carbon-content record versus depth of drilling. \{'sam-pəl \lāg\'}
sampler \[CONT SYS\] A device, used in sampled-data control systems, whose output is a series of impulses at regular intervals in time; the height of each impulse equals the value of the continuous input signal at the instant of the impulse. \[ENG\] A mechanical or other device designed to obtain small samples of materials for analysis; used in biology, chemistry, and geology. \{'sam-plər\'}
sample splitter \[ENG\] An instrument, generally constructed of acrylic resin, designed to subdivide a total sample of marine plankton while maintaining a quantitatively correct relationship between the various phyla in the sample. \{'sam-plət\'}
sampling bottle \[ENG\] A cylindrical container, usually closed at a chosen depth, to trap a water sample and transport it to the surface without introducing contamination. \{'sam-pling \,bād-əl\'}
sampling gate \[ELECTR\] A gate circuit that extracts information from the input waveform only when activated by a selector pulse. \{'sam-pling \,gāt\'}
sampling interval \[CONT SYS\] The time between successive sampling pulses in a sampled-data control system. \{'sam-pling \,in\-'tər-val\'}
sampling plan \[IND ENG\] A plan stating sample sizes and the criteria for accepting or rejecting items or taking another sample during inspection of a group of items. \{'sam-pling \,plən\'}
sampling probe \[ENG\] A leak-testing probe which collects tracer gas from the test area of an object under pressure and feeds it to the leak detector at reduced pressure. \{'sam-pling \,prəb\'}
sampling process \[ENG\] The process of obtaining a sequence of instantaneous values of some quantity that varies continuously with time. \{'sam-pling \,prə-səs\'}
sampling rate \[ENG\] The rate at which measurements of physical quantities are made; for example, if it is desired to calculate the velocity of a missile and its position is measured each millisecond, then the sampling rate is 1000 measurements per second. \{'sam-pling \,rāt\'}
sampling risk \[IND ENG\] In inspection procedure, the probability, under the sampling plan used, that acceptable material will be rejected or that unsatisfactory material will be accepted. \{'sam-pling \,risk\'}
sampling synthesis \[ENG ACOUS\] Any method of synthesizing musical tones that is based on playing back digitally recorded sounds. \{'sam-pling \,sin-thə-səs\'}
sampling time \[ENG\] The time between successive measurements of a physical quantity. \{'sam-pling \,tim\'}
sampling voltmeter \[ENG\] A special type of voltmeter that detects the instantaneous value of an input signal at prescribed times by means of an electronic switch connecting the signal to a memory capacitor, it is particularly effective in detecting high-frequency signals (up to 12 gigahertz) or signals mixed with noise. \{'sam-pling \,völ-mətər\'}
samson post See king post. \{'sam-son \,pəst\'}
sandbag \[ENG\] A bag filled with sand, used to build temporary protective walls. \{'san-baŋ\'}
sandblasting \[ENG\] Surface treatment in which steel grit, sand, or other abrasive material is blown against an object to produce a roughened surface or to remove dirt, rust, and scale. \{'san \,blæt-ɪŋ\'}
sand drain \[CIV ENG\] A vertical boring through a clay or silty soil filled with sand or gravel to facilitate drainage. \{'san \,dræn\'}
sander \[MECH ENG\] 1. An electric machine used to sand the surface of wood, metal, or other material. 2. A device attached to a locomotive or electric rail car which sands the rails to increase friction on the driving wheels. \{'san-dər\'}
sand filter \[CIV ENG\] A filter consisting of graded layers of sand and aggregate for purifying water. \{'san \,fil-tər\'}
sand finish \[ENG\] A smooth finish on a plaster surface made by rubbing the sand or mortar coat. \{'san \,fin-ɪsh\'}
sand heap analogy See sand hill analogy. \{'sand \,hep ə,nał-ə-je\'}
sand hill analogy \[MECH\] A formal identity between the differential equation and boundary conditions for a stress function for torsion of a perfectly plastic prismatic bar, and those for the height of the surface of a granular material, such as dry sand, which has a constant angle of rest. Also known as sand heap analogy. \{'sand \,hil ə,nał-ə-je\'}
sandhog \[ENG\] A worker in compressed-air environments, as in driving tunnels by means of pneumatic caisons. \{'san-hāg\'}
sanding \[ENG\] 1. Covering or mixing with sand. 2. Smoothing a surface with sandpaper or other abrasive paper or cloth. \{'sand-ɪŋ\'}
sand line \[ENG\] A wire line used to raise and lower a bailer or sand pump to remove cuttings from a borehole. \{'san \,lān\'}
sand mill \[MECH ENG\] Variation of a ball-type size-reduction mill in which grains of sand serve as grinding balls. \{'san \,mil\'}
sand pile \[CIV ENG\] A compacted filling of sand in a deep round hole formed by ramming the sand with a pile, used for foundations in soft soil. \{'san \,pil\'}
sandpit \[CIV ENG\] An excavation dug in sand, especially as a source of sand for construction materials. \{'san\,pɪt\'}
sand pump \[MECH ENG\] A pump, usually a centrifugal type, capable of handling sand-
gravel-laden liquids without clogging or wearing unduly, used to extract mud and cuttings from a borehole. Also known as sludge pump.

sand reel [MECH ENG] A drum, operated by a band wheel, for raising or lowering the sand pump or bailer during drilling operations. Also known as coring reel. { "sand reel" }

sand slinger [MECH ENG] A machine which delivers sand to and fills molds at high speed by centrifugal force. { "sand slinger" }

sand trap [ENG] A device in a conduit for trapping sand or soil particles carried by the water. { "sand trap" }

sand wheel [MECH ENG] A wheel fitted with steel buckets around the circumference for lifting sand or sludge out of a sump to stack it at a higher level. { "sand wheel" }

sandwich beam See flitch girder. { "sandwich beam" }

sandwich construction [DES ENG] Composite construction of alloys, plastics, wood, or other materials consisting of a foam or honeycomb layer laminated and glued between two hard outer sheets. Also known as sandwich laminate. { "sandwich construction" }

sandwich heating [ENG] Method for heating both sides of a thermoplastic sheet simultaneously prior to forming or shaping. { "sandwich heating" }

sandwich laminate See sandwich construction. { "sandwich laminate" }

sandwich molding See coinjection molding. { "sandwich molding" }

sanitary engineering [CIV ENG] A field of civil engineering concerned with works and projects for the protection and promotion of public health. { "sanitary engineering" }

sanitary landfill [CIV ENG] The disposal of garbage by spreading it in layers covered with soil or ashes to a depth sufficient to control rats, flies, and odors. { "sanitary landfill" }

sanitary sewer [CIV ENG] A sewer which is restricted to carrying sewage and to which storm and surface waters are not admitted. { "sanitary sewer" }

sanitation [CIV ENG] The act or process of making healthy environmental conditions. { "sanitation" }

Sargents cycle [THERMO] An ideal thermodynamic cycle consisting of four reversible processes: adiabatic compression, heating at constant volume, adiabatic expansion, and isobaric cooling. { "Sargents cycle" }

sarking [BUILD] A layer of boards or bituminous felt placed beneath tiles or other roofing to provide thermal insulation or to prevent ingress of water. { "sarking" }

SASAR See segmented aperture-synthetic aperture radar. { "SASAR" }

sash [BUILD] A frame for window glass. { "sash" }

sash bar [BUILD] One of the strips of wood or metal that separate the panes of glass in a window. Also known as glazing bar, muntin, window bar. { "sash bar" }

sash cord [BUILD] A cord or chain used to attach a counterweight to the window sash. { "sash cord" }

satellite and missile surveillance [ENG] The systematic observation of aerospace for the purpose of detecting, tracking, and characterizing objects, events, and phenomena associated with satellites and inflight missiles, friendly and enemy. { "satellite and missile surveillance" }

saturable-core magnetometer [ENG] A magnetometer that depends for its operation on the changes in permeability of a ferromagnetic core as a function of the magnetic field to be measured. { "saturable-core magnetometer" }

saturated vapor [THERMO] A vapor whose temperature equals the temperature of boiling at the pressure existing on it. { "saturated vapor" }

saturation [ELECTR] 1. The condition that occurs when a transistor is driven so that it becomes biased in the forward direction (the collector becomes positive with respect to the base, for example, in a npn type of transistor). 2. See anode saturation, temperature saturation. { "saturation" }

saturation specific humidity [THERMO] A thermodynamic function of state, the value of the specific humidity of saturated air at the given temperature and pressure. { "saturation specific humidity" }

saturation vapor pressure [THERMO] The vapor pressure of a thermodynamic system, at a given temperature, wherein the vapor of a substance is in equilibrium with a plane surface of that substance's pure liquid or solid phase. { "saturation vapor pressure" }

saturator [ENG] A device, equipment, or person that saturates one material with another, examples are a tank in which vapors become saturated with ammonia from coal (in carbonization of coal), a humidifier, and the operator of a machine for impregnating roofing felt with asphalt. { "saturator" }

Saunders air-lift pump [MECH ENG] A device for raising water from a well by the introduction of compressed air below the water level in the well. { "Saunders air-lift pump" }

sauterelle [ENG] A device used by masons for tracing and forming angles. { "sauterelle" }

Savonius rotor [MECH ENG] A rotor composed of two offset semicircular elements rotating about a vertical axis. { "Savonius rotor" }

Savonius windmill [MECH ENG] A windmill composed of two semicircular offset cups rotating about a vertical axis. { "Savonius windmill" }

saw [DES ENG] 1. Any of various tools consisting of a thin, usually steel, blade with continuous cutting teeth on the edge. 2. Any similar device or tool, such as arborizing disc, in which a sharp continuous edge replaces the teeth. { "saw" }
saw bit  [DES ENG] A bit having a cutting edge formed by teeth shaped like those in a handsaw. {ˈsoʊˌbit\}
saw gumming  [MECH ENG] Grinding away the punch marks in the spaces between the teeth in saw manufacture. {ˈsoʊˌgʌmɪŋ}
sawhorse  [ENG] A wooden rack used to support wood that is being sawed. {ˈsoʊˌhɔrs\}
sawing  [ENG] Cutting with a saw. {ˈsoʊˌiŋ\}
sawmill  [IND ENG] A plant that houses sawing machines. [MECH ENG] A machine for cutting logs with a saw or a series of saws. {ˈsoʊˌmil\}
sawtooth barrel  See basket. {ˈsoʊˌtʊð ˈbɑːt\}
sawtooth crusher  [MECH ENG] Solids crusher in which feed is broken down between two saw-toothed shafts rotating at different speeds. {ˈsoʊˌtʊð ˈkrɑːʃ\-
-or\}
sawtooth waveform  [ELECTR] A waveform characterized by a slow rise time and a sharp fall, resembling a tooth of a saw. {ˈsoʊˌtʊð ˈwævˌfɔrm\}
sax  [DES ENG] A tool for chopping away the edges of roof slates; it has a pick at one end for making nail holes. {sæks\}
Saybolt color  [ENG] A color standard for petroleum products determined with a Saybolt chromometer. {ˈsæˌbɔltˌkɔr\-
or\}
Saybolt Furol viscosimeter  [ENG] An instrument for measuring viscosity of very thick fluids, used for example, heavy oils; similar to the Saybolt Universal viscosimeter, but with a larger-diameter tube so that the efflux time is about one-tenth that of the Universal instrument. {ˈsæˌbɔltˈfuʊrəlˌvɪskəˌsim\-
ədər\}
Saybolt Universal viscosimeter  [ENG] An instrument for measuring viscosity by the time it takes a fluid to flow through a calibrated tube; used for the lighter petroleum products and lubricating oils. {ˈsæˌbɔltˌjuːˈniːəˈvɔːrˌsælˌvɪskəˌsim\-
ədər\}
scab  [BUILD] A short, flat piece of lumber that is used to splice two pieces of wood set at right angles to each other. {skæb\}
SCADA  See supervisory control and data acquisition. {ˈskædəˌɔrəˌʃɛsˌɛpt\də\-
ə\}
scaffold  [CIV ENG] A temporary or movable platform supported on the ground or suspended; used for working at considerable heights above the ground. {ˈskafold\}
scale  [ENG] 1. A series of markings used for reading the value of a quantity or setting. 2. To change the magnitude of a variable in a uniform way, as by multiplying or dividing by a constant factor, or the ratio of the real thing’s magnitude to the magnitude of the model or analog of the model. 3. A weighing device. {ˈskəl\}
scale factor  [ENG] The factor by which the reading of an instrument or the solution of a problem should be multiplied to give the true final value when a corresponding scale factor is used initially to bring the magnitude within the range of the instrument or computer. {ˈskəlˌfæktə\}
scaler  [ELECTR] A circuit that produces an output pulse when a prescribed number of input pulses is received. Also known as counter, scaling circuit. {ˈskələr\}
scale-up  [DES ENG] Design process in which the data of an experimental-scale operation (model or pilot plant) is used for the design of a large (scale-up) unit, usually of commercial size. [IND ENG] Transfer of a new process from a pilot plant operation to production at commercial levels. {ˈskələp\}
scaling  [ELECTR] Counting pulses with a scaler when the pulses occur too fast for direct counting by conventional means. [ENG] Removing scale (rust or salt) from a metal or other surface. [MECH] Expressing the terms in an equation of power in nondimensional quantities (such as a Reynolds number), so that terms of significant magnitude under conditions specified in the problem can be identified, and terms of insignificant magnitude can be dropped. {ˈskəlŋ\}
scaling circuit  See scaler. {ˈskəlŋˌˈsær\kət\}
scaling factor  [ELECTR] The number of input pulses per output pulse of a scaling circuit. Also known as scaling ratio. [ENG] Factor used in heat-exchange calculations to allow for the loss in heat conductivity of a material because of the development of surface scale, as inside pipelines and heat-exchanger tubes. {ˈskəlŋˌˈfæktə\}
scaling ratio  [ELECTR] See scaling factor. [ENG] The ratio of a certain property of a laboratory model to the same property in the natural prototype. {ˈskəlŋˌˈreɪʃə\n}
sca pel  [DES ENG] A small, straight, very sharp knife (or detachable blade for a knife), used for dissecting. {ˈskəlp\}
scan  [ELECTR] The motion, usually periodic, given to the major lobe of an antenna; the process of directing the radio-frequency beam successively over all points in a given region of space. [ENG] 1. To examine an area, a region in space, or a portion of the radio spectrum point by point in an ordered sequence, for example, conversion of a scene or image to an electric signal or use of radar to monitor an airspace for detection, navigation, or traffic control purposes. 2. One complete circular, up-and-down, or left-to-right sweep of the radar, light, or other beam or device used in making a scan. {skən\}
scanner  [ENG] 1. Any device that examines an area or region point by point in a continuous systematic manner, repeatedly sweeping across until the entire area or region is covered; for example, a flying-spot scanner. 2. A device that automatically samples, measures, or checks a number of quantities or conditions in sequence, as in profile control. {ˈskənə\r\}
scanning proton microprobe  [ENG] An instrument used for determining the spatial distribution of trace elements in samples, in which a
beam of energetic protons is focused on a narrow spot which is swept over the sample, and the characteristic x-rays emitted from the target are measured.  

scanning radiometer  
[ENG] An image-forming system consisting of a radiometer which, by the use of a plane mirror rotating at 45° to the optical axis, can see a circular path normal to the instrument.  

scanning sequence  
[ENG] The order in which the points in a region are scanned, for example, in television the picture is scanned horizontally from left to right and vertically from top to bottom.  

scanning sonar  
[ENG] Sonar in which all targets of interest are shown simultaneously, as on a radar PPI (plan position indicator) display or sector display, the sound pulse may be transmitted in all directions simultaneously and picked up by a rotating receiving transducer, or transmitted and received in only one direction at a time by a scanning transducer.  

scantlings  
[BUILD] Sections of timber measuring less than 8 inches (20 centimeters) wide and from 2 to 6 inches (5 to 15 centimeters) thick, used for studding.  

scarf joint  
[DES ENG] A joint made by the cutting of overlapping mating parts so that the joint is not enlarged and the patterns are complementary, and securing them by glue, fasteners, welding, or other joining method.  

scarifier  
[ENG] An implement or machine with downward projecting tines for breaking down a road surface 2 feet (60 centimeters) or less.  

scatterometer  
[ENG] A microwave sensor that press outward and make contact with the walls is essentially a radar without ranging circuits, of the hole.  

Scend  
[ENG] 1. The upward motion of the bow and stern of a vessel associated with pitching.  

2. The lifting of the entire vessel by waves or swell. Also known as send.  

Scheffel column  
See Scheibele extractor.  

Scheibele extractor  
[CHEM ENG] Liquid-liquid contact vessel used in liquid-liquid extraction processes: a vertical cylinder with interspersed open spaces and wire-mesh packing along its height, with liquid agitators in the open spaces, or a vertical cylinder fully filled with wire-mesh packing. Also known as Scheibele column; Scheibele-York extractor; York-Scheibele column.  

Scheibele-York extractor  
See Scheibele extractor.  

schematic circuit diagram  
See circuit diagram.  

Schleiermacher’s method  
[THERMO] A method of determining the thermal conductivity of a gas, in which the gas is placed in a cylinder with an electrically heated wire along its axis, and the electric energy supplied to the wire and the temperatures of wire and cylinder are measured.  

Schlumberger dipmeter  
[ENG] An instrument that measures both the amount and direction of dip by readings taken in the borehole; it consists of a long, cylindrical body with two telescoping parts and three long, springy metal strips, arranged symmetrically round the body, which press outward and make contact with the walls of the hole.  

Schlumberger photoclinometer  
[ENG] An instrument that measures simultaneously the amount and direction of the deviation of a borehole; the sonde, designed to lie exactly parallel to the axis of the borehole, is fitted with a small camera on the axis of a graduated glass bowl, in which a steel ball rolls freely and a compass is mounted in gimbals; the camera is electrically operated from the surface and takes a photograph of the bowl, the steel ball marks the amount of deviation, and the position in relation to the image of the compass needle gives the direction of deviation.  

Schmidt field balance  
[ENG] An instrument that operates as both a horizontal and vertical field balance and consists of a permanent magnet pivoted on a knife edge.  

Schneider recoil system  
[MECH ENG] A recoil system for artillery, employing the hydropneumatic principle without a floating piston.  

Schoenherr-Hessberger process  
[CHEM ENG] A nitrogen-fixation process used in Norway, employs a very long (22 feet or 7 meters) alternating-current arc around which air moves in a helical
Scotch yoke
Scott connection

linkage; it is employed to convert a steady rotation into a simple harmonic motion. { ’skøck’k\r’k’k’ }

Scott connection  [ELECTR] A type of transformer which transmits power from two-phase to three-phase systems, or vice versa. { ’skót \k\,nk\-\sh\n’ }

Scott-Darey process  [CIV ENG] A chemical precipitation method used for fine solids removal in sewage plants; employs ferric chloride solution made by treating scrap iron with chlorine. { ’skót \d\r\-\r\t\-\r\ ,pr\-\s\-\s\ }n’

scouring  [ENG] Physical or chemical attack on process equipment surfaces, as in a furnace or fluid catalytic cracker  [MECH ENG] Mechanical finishing or cleaning of a hard surface by using an abrasive and low pressure. { ’skør\-\r\jn’ }

scouring basin  [CIV ENG] A basin containing impounded water which is released at about low water in order to maintain the desired depth in the entrance channel. Also known as sluicing pond. { ’skør\-\r\jn\-\b\s\-\an’ }

scout  [ENG] An engineer who makes a preliminary examination of promising oil and mining claims and prospects. { ’skøt’ }

scrambler  [ELECTR] A circuit that divides speech frequencies into several ranges by means of filters, then inverts and displaces the frequencies in each range so that the resulting reproduced sounds are unintelligible; the process is reversed at the receiving apparatus to restore intelligible speech. Also known as speech inverter, speech scrambler. { ’skr\m\-\b\l\r’ }

scrap  [ENG] Any solid material cutting or reject of a manufacturing operation, which may be suitable for recycling as feedstock to the primary operation; for example, scrap from plastic or glass molding or metalworking. { ’skr\p\m\-\l\r’ }

scraped-surface exchanger  [CHEM ENG] A liquid-liquid heat-exchange device that has a rotating element with spring-loaded scraper blades to wipe the process-fluid exchange surfaces clean of crystals or other foulants; used in paraffin-wax processing. { ’skr\p\t \s\r\-\r\s\s\-\s\s\ ,\c\h\-\n\-\r\-\j’ }

scraping conveyor  [MECH ENG] A type of flight conveyor in which the element (chain and flight) for moving materials rests on a trough. { ’skr\p\r\-\m\n\v\-\r\-\r’ }

scraping hoist  [MECH ENG] A drum hoist that operates the scraper of a scraper loader. { ’skr\p\r\-\m\ ,h\s\i\st’ }

scraping loader  [MECH ENG] A machine used for loading coal or rock by pulling a scoop through the material to an apron or ramp, where the load is discharged onto a car or conveyor. { ’skr\p\r\-\m\ ,\l\d\-\r\-\r’ }

scraping ring  [MECH ENG] A piston ring that scrapes oil from a cylinder wall to prevent it from being burned. { ’skr\p\r\-\m\ ,\r\i\n’ }

scraping trap  [ENG] A device for the insertion or recovery of pigs, or scrapers, that are used to clean the inside surfaces of pipelines. { ’skr\p\r\-\m\ ,\t\p’ }
screw pump
screw propeller

[MECH ENG] A rotary-element gas compressor in which compression is accomplished between two intermeshing, counternotating screws.

{ 'škrů kam'pres-ə }
screw conveyor
[MECH ENG] A conveyor consisting of a helical screw that rotates upon a single shaft within a stationary trough or casing, and which can move bulk material along a horizontal, inclined, or vertical plane. Also known as auger conveyor, spiral conveyor, worm conveyor.

{ 'škrů kon'va:r-ə }
screw displacement
[MECH] A rotation of a rigid body about an axis accompanied by a translation of the body along the same axis.

{ 'škrů di,spľás-mant }
screw dowel
[DES ENG] A metal dowel pin having a straight or tapered thread at one end.

{ 'škrů, dāl-ə }
screwdriver
[DES ENG] A tool for turning and driving screws in place, a thin, wedge-shaped or fluted end enters the slot or recess in the head of the screw.

{ 'škrů, drv-ə }screw elevator

{ 'škrů 'el-a,vád-ə }screw fastener
See screw.

{ 'škrů fas-nər }screw feed
[MECH ENG] A system or combination of gears, ratchet, and friction devices in the swivel head of a diamond drill, which controls the rate at which a bit penetrates a rock formation.

{ 'škrů, fēd }screw feeder
[MECH ENG] A mechanism for handling bulk (pulverized or granulated solids) materials, in which a rotating helicoid screw moves the material forward, toward and into a process unit.

{ 'škrů 'fēd-ə }screw jack
See jackscrew.

{ 'škrů 'jāk }screw machine
[MECH ENG] A lathe for making relatively small, turned metal parts in large quantities.

{ 'škrů mə,šən }screw pile
[CIV ENG] A pile having a wide helical blade at the foot which is twisted into position, for use in soft ground or other location requiring a large supporting surface.

{ 'škrů ,pil }screw plasticating injection molding
[ENG] A plastic-molding technique in which plastic is converted from pellets to a viscous (plasticated) melt by an extruder screw that is an integral part of the molding machine.

{ 'škrů 'plaś-ti,kād-ənj in'jek-shən ,mold-ənj }screw press
[MECH ENG] A press having the slide operated by a screw mechanism.

{ 'škrů ,pres }screw propeller
[MECH ENG] A marine and airplane propeller consisting of a streamlined hub attached outboard to a rotating engine shaft on which are mounted two to six blades; the blades form helicoidal surfaces in such a way as to advance along the axis about which they revolve.

{ 'škrů pro,pel-ə }screw pump
[MECH ENG] A pump that raises water by means of helical impellers in the pump casing.

{ 'škrů ,pamp }screw rivet
[DES ENG] A short rod threaded along the length of the shaft that is set without access to the point.

{ 'škrů ,riv-at }screw spike
[DES ENG] A large nail with a helical thread on the upper portion of the shank, used to fasten railroad rails to the ties.

{ 'škrů ,spık }screwstock
[MECH ENG] Free-machining bar, rod, or wire.

{ 'škrů,stāk }screw thread
[DES ENG] A helical ridge formed on a cylindrical core, as on fasteners and pipes.

{ 'škrů,’thrēd }screw-thread gage
[DES ENG] Any of several devices for determining the pitch, major, and minor diameters, and the lead, straightness, and thread angles of a screw thread.

{ 'škrů ’thrēd ɡāj }screw-thread micrometer
[DES ENG] A micrometer used to measure pitch diameter of a screw thread.

{ 'škrů ’thrēd məkrəm-əd-ər }scriber
[DES ENG] A sharp-pointed tool used for drawing lines on metal workpieces.

{ 'škr’bər }scroll gear
[DES ENG] A variable gear resembling a scroll with teeth on one face.

{ 'škrół ’ɡir }scroll saw
[ENG] A saw with a narrow blade, used for cutting curves or irregular designs.

{ 'škröl ,sō }scrubber
[ENG] A device for the removal, or washing out, of entrained liquid droplets or dust, or for the removal of an undesired gas component from process gas streams. Also known as washer, wet collector.

{ 'škrəb-ər }scrub plane
[DES ENG] A narrow carpenter's plane with a blade that has a rough surface and a rounded cutting edge.

{ 'škrəb ,plən }scuba diving

{ 'šku-bə ,dɪv-ɪŋ }scuffing
[ENG] The dull mark, sometimes the result of abrasion, on the surface of glazed ceramic or glassware.

{ 'šku-fɪŋ }scuffle hoe
[DES ENG] A hoe having two sharp edges so that it can be pushed and pulled.

{ 'škof-əl ,hō }scum chamber
[CIV ENG] An enclosed compartment in an Imhoff tank, in which gas escapes from the scum which rises to the surface of sludge during sewage digestion.

{ 'škam ,cham-bər }scutch
[DES ENG] A small, picklike tool which has flat cutting edges for trimming bricks. Also known as scotch.

{ 'škəch }scuttle
[BUILD] An opening in the ceiling to provide access to the attic or roof.

{ 'škəd-əl }scythe
[DES ENG] A tool with a long curved blade attached at a more or less right angle to a long handle with grips for both hands; used for cutting grass as well as grain and other crops.

{ 'šıθ }sea bank
See seawall.

{ 'sē ,bāŋk }seadrome
[CIV ENG] 1. A designated area for
sea gate

landing and takeoff of seaplanes. 2. A platform at sea for landing and takeoff of land planes.

[ENG] A radar intended primarily of crushing and pulverizing machines used after search radar

search light-types sonar

[ENG] A sonar system in constant differential stress, with the strain-time searching lighting

See

A mechanism that

The use of aircraft,

seaport

A patch of color on the ocean owned (or leased) shipping containers which are seamarker

seam

The change in shape secondary air

[MECH ENG] The change in shape secondary air

under the surface of seas and oceans. {se¯l}...{se¯z}

sea surveillance [ENG] The systematic observation of surface and subsurface sea areas by all available and practicable means primarily for the purpose of locating, identifying, and determining the movements of ships, submarines, and other vehicles, friendly and enemy, proceeding on or under the surface of seas and oceans. {sé sar, vá-lons}

seasoning See curing [ELECTR] Overcoming a temporary unsteadiness of a component that may appear when it is first installed. [ENG] Drying of wood either in the air or in a kiln.

sea van [IND ENG] Commercial or government-owned (or leased) shipping containers which are moved via ocean transportation, since wheels are not attached, they must be lifted on and off the ship.

seawall [CIV ENG] A concrete, stone, or metal wall or embankment constructed along a shore to reduce wave erosion and encroachment by the sea. Also known as sea bank. {sé,wol}

seawater thermometer [ENG] An instrument designed to measure the temperature of a sample of seawater, an instrument consisting of a mercury-in-glass thermometer protected by a perforated metal case. {sé,водд-ор that'mám-ад-э́r}

Scech dike [ENG] An opaque white disk used to measure the transparency or clarity of seawater by lowering the disk into the water horizontally and noting the greatest depth at which it can be visually detected. {sek-É, диск}

secondary air [MECH ENG] Combustion air introduced over the burner flame to enhance completeness of combustion. {sek-áñ,der-É-é́r}

secondary creep [MECH] The change in shape of a substance under a minimum and almost constant differential stress, with the strain-time relationship a constant. Also known as steady-state creep. {sek-án, der-É-é́r}

secondy crusher [MECH ENG] Any of a group of crushing and pulverizing machines used after...
the primary treatment to further reduce the particle size of shale or other rock. [ˈsek-on,der-ə ˈkrash-aːr]

**secondary grinding** [MECH ENG] A further grinding of material previously reduced to sand size. [ˈsek-on,der-ə ˈɡrind-ɪŋ]

**secondary ion mass analyzer** [ENG] A type of secondary ion mass spectrometer that provides general surface analysis and depth-profiling capabilities. [ˈsek-on,der-ə ˈtʃæn ˈmæs ˈan-o,liz-ər]

**secondary ion mass spectrometer** [ENG] An instrument for mass spectroscopic chemical analysis, in which a beam of primary ions with an energy in the range 5–20 kiloelectronvolts bombards a small spot on the surface of a sample, and positive and negative secondary ions sputtered from the surface are analyzed in a mass spectrometer. Abbreviated SIMS. Also known as ion microprobe, ion probe. [ˈsek-on,der-ə ˈtʃæn ˈmæs spekˈtæm-əd-ər]

**secondary port** [CIV ENG] A port with one or more berths, normally at quays, which can accommodate oceangoing ships for discharge. [ˈsek-on,der-ə ˈpɔrt]

**secondary rescue facilities** [ENG] Local airbase-ready aircraft, crash boats, and other air, surface, subsurface, and ground elements suitable for rescue missions, including government and privately operated units and facilities. [ˈsek-on,der-ə ˈtʃɛs,kvju fə,ʃil-əd-zə]

**secondary sewage sludge** [CIV ENG] Sludge that includes activated sludge, mixed sludge, and chemically precipitated sludge. [ˈsek-on,der-ə ˈsju-əl,sla]

**secondary stress** [MECH] A self-limiting normal or shear stress which is caused by the constraint of a structure and which is expected to cause minor distortions that would not result in a failure of the structure. [ˈsek-on,der-ə ˈstreʃəs]

**secondary tide station** [ENG] A place at which tide observations are made over a short period to obtain data for a specific purpose. [ˈsek-on,der-ə ˈtɛdi,sta-ʃən]

**second breakdown** [ELECTR] Destructive breakdown in a transistor, wherein structural imperfections cause localized current concentrations and uncontrollable generation and multiplication of current carriers; reaction occurs so suddenly that the thermal time constant of the collector regions is exceeded, and the transistor is irreversibly damaged. [ˈsek-ond ˈbræk,dɔn]

**second law of motion** See Newton’s second law. [ˈsek-ond ˈləv ˈmoʊ-ʃən]

**second law of thermodynamics** [THERMO] A general statement of the idea that there is a preferred direction for any process; there are many equivalent statements of the law, the best known being those of Clausius and of Kelvin. [ˈsek-ond ˈləv ˈthɔr-mɔdəlˌnæm-iks]

**second-level controller** [CONT SYS] A controller which influences the actions of first-level controllers, in a large-scale control system partitioned by plant decomposition, to compensate for subsystem interactions so that overall objectives and constraints of the system are satisfied. Also known as coordinator. [ˈsek-ond ˈləv-əl kan-trol-ər]

**second-order leveling** [ENG] Spirit leveling that has less stringent requirements than those of first-order leveling, in which lines between benchmarks established by first-order leveling are run in only one direction. [ˈsek-ond ˈɔːr-ədər ˈləv-ə-lənj]

**second-order transition** [THERMO] A change of state through which the free energy of a substance and its first derivatives are continuous functions of temperature and pressure, or other corresponding variables. [ˈsek-ond ˈɔːr-ədər ˈtrænˈziʃən]

**section** [CIV ENG] A piece of land usually 1 mile square (640 acres or approximately 2.5899 square kilometers) with boundaries conforming to meridians and parallels within established limits. 1 of 36 units of subdivision of a township in the U.S. Public Land survey system. [ˈsek-ʃən]

**sectional conveyor** [MECH ENG] A belt conveyor which can be lengthened or shortened by the addition or the removal of interchangeable sections together. [ˈsek-onal ˈkəʊn-vər-ər]

**sectional core barrel** [DES ENG] A core barrel whose length can be increased by coupling unit sections together. [ˈsek-onal ˈkɔr,bər-əl]

**sectional header boiler** [MECH ENG] A horizontal boiler in which tubes are assembled in sections front and rear headers; the latter, in turn, are connected to the boiler drum by vertical tubes. [ˈsek-onal ˈhed-ər ˈbɔɪl-ər]

**section house** [CIV ENG] A building near a railroad section for housing railroad workers, or for storing maintenance equipment for the section. [ˈsek-onal ˈhɔːs]

**section line** [CIV ENG] A line representing the boundary of a section of land. [ˈsek-onal ˈlɪn]

**section modulus** [MECH] The ratio of the moment of inertia of the cross section of a beam undergoing flexure to the greatest distance of an element of the beam from the neutral axis. [ˈsek-onal ˈməd-ələs]

**sector** [CIV ENG] A clearly defined area or airspace designated for a particular purpose. [ˈsek-tər]

**sector gate** [CIV ENG] A horizontal gate with a pie-slice cross section used to regulate the level of water at the crest of a dam; it is raised and lowered by a rack and pinion mechanism. [ˈsek-tər,ɡeɪt]

**sector gear** [DES ENG] 1. A toothed device resembling a portion of a gear wheel containing the center bearing and a part of the rim with its teeth. 2. A gear having such a device as its chief essential feature. [MECH ENG] A gear system employing such a gear as a principal part. [ˈsek-tər,ɡer]

**secural** [ENG] Of or pertaining to a long indefinite period of time. [ˈsek-yərəl]

**sedimentation tank** [ENG] A tank in which suspended matter is removed either by quiescent
sediment bulb  [ENG]  A bulb for holding sediment that settles from the liquid in a tank.  ['sed-a-man\-\-tal,\-shon, \-tank]

sediment bulb  [ENG]  A bulb used to catch fish by en- segregation

sediment corer  [ENG]  A heavy coring tube which punches out a cylindrical sediment section from the ocean bottom.  ['sed-a-man\-t\-k\-\-\-r-\-or-\-\-t]

sediment trap  [ENG]  A device for measuring the accumulation rate of sediment on the floor of a body of water.  ['sed-a-man\-t\-k\-\-\-t]

Seebeck coefficient  [ELECTR]  The ratio of the open-circuit voltage to the temperature difference between the hot and cold junctions of a circuit exhibiting the Seebeck effect.  ['see-beck, \-k\-\-\-n\-t\-l, \-t]

Seebeck effect  [ELECTR]  The development of a voltage due to differences in temperature between two junctions of dissimilar metals in the same circuit.  ['see-beck, \-k\-\-\-n\-t\-l, \-k\-\-\-t]

Segas process  [CHEM ENG]  A process for the production of low-Btu gas by the catalytic method using a fixed bed catalyst, lime-bauxite mixture bonded with bentonite.  ['se\-g\-\-\-z\-as, \-gas, \-pr\-i\-\-s\-as]

segmental gate  [ENG]  A tainter gate.  ['seg\-\-\-\-m\-t\-l, \-l\-\-\-\-t]

segmental meter  [ENG]  A variable head meter whose orifice plate has an opening in the shape of a half circle.  ['seg\-\-\-\-m\-t\-l, \-m\-\-\-d\-\-\-\-r]

segmented aperture-synthetic aperture radar  [ENG]  An enhancement of synthetic aperture radar that overcomes restrictions on the effective length of the receiving antenna by using a receiving antenna array composed of a set of contiguous subarrays and employing signal processing to provide the proper phase corrections for each subarray.  ['seg\-\-\-\-m\-t\-l, \-s\-\-\-\-e\-t\-k\-i\-k, \-l\-\-\-\-b\-\-\-x\-i\-t\-e, \-m\-\-\-b\-\-\-t\-n\-o\-\-t\-n, \-b\-e\-\-\-\-n\-o\-\-t\-n]

segment saw  [MECH ENG]  A saw consisting of steel segments attached around the edge of a flange and used for cutting veneer.  ['seg\-\-\-\-m\-t\-l, \-s\-\-\-\-o]

segregation  [ENG]  1.  The keeping apart of process streams.  2.  In plastics molding, a close succession of parallel, relatively narrow, and sharply defined wavy lines of color on the surface of a plastic that differ in shade from surrounding areas and create the impression that the components have separated.  ['seg\-\-\-\-r\-a\-g\-a\-shon]

sein net  [ENG]  A net used to catch fish by encirclement, usually by closure of the two ends and the bottom.  ['sein\-\-\-\-n\-t\-n]

seismic bracing  [ENG]  Reinforcement added to a structure to prevent collapse or deformation of building elements as a result of earthquakes.  ['seiz-mik, \-b\-\-\-r\-a\-s]

seismic constant  [CIV ENG]  In building codes dealing with earthquake hazards, an arbitrarily set quantity of steady acceleration, in units of acceleration of gravity, that a building must withstand.  ['seiz-mik, \-k\-\-\-n\-\-t\-\-s\-t\-\-nt]

seismic detector  [ENG]  An instrument that receives seismic impulses.  ['seiz-mik, d\-\-t\-i\-k\-\-t\-ar]

seismic exploration  [ENG]  The exploration for economic deposits by using seismic techniques, usually involving explosions, to map subsurface structures.  ['seiz-mik, \-ek-spl\-a\-r\-a\-shon]

seismic load  [ENG]  The force on a structure caused by acceleration induced on its mass by an earthquake.  ['seiz-mik, \-l\-\-\-d]

seismic profiler  [ENG]  A continuous seismic reflection system used to study the structure beneath the sea floor to depths of 10,000 feet (3000 meters) or more, using a rotating drum to record reflections.  ['seiz-mik, \-pr\-\-f\-\-l\-\-r]

seismic shooting  [ENG]  A method of geophysical prospecting in which elastic waves are produced in the earth by the firing of explosives.  ['seiz-mik, \-sh\-\-\-h\-\-d\-\-\-\-i\-n]

seismic survey  [ENG]  See reflection survey.  ['seiz-mik, \-s\-\-\-r, \-v\-\-a]

seismochronograph  [ENG]  A chronograph for determining the time at which an earthquake shock appears.  ['seiz-ma\-kr\-\-\-n\-a\-graf]

seismogram  [ENG]  The record made by a seismograph.  ['seiz-ma, \-gra\-f]

seismograph  [ENG]  An instrument that records vibrations in the earth, especially earthquakes.  ['seiz-ma, \-graf]

seismometer  [ENG]  An instrument that detects movements in the earth.  ['seiz-ma\-m\-m\-d\-\-\-\-r\-\-ar]

seismoscope  [ENG]  An instrument for recording only the occurrence or time of occurrence (not the magnitude) of an earthquake.  ['seiz-ma, \-sk\-\-\-p]

seizing  [ENG]  Abrasive damage to a metal surface caused when the surface is rubbed by another metal surface.  ['seiz-i\-n]

selected time  [IND ENG]  An observed actual time value for an element, measured by time study, which is identified as being the most representative of the situation observed.  ['\-i\-l\-e\-k\-t\-\-d\-t\-\-l\-\-i\-m]

selective adsorbent  [CHEM ENG]  Material that will selectively adsorb (or reject) one or more specific components from a multicomponent mixture of gases or liquids; common adsorbents are silica gel, carbon and activated carbon, activated alumina, and synthetic or natural zeolites (molecular sieves).  ['\-i\-l\-e\-k\-t\-\-i\-v, \-d\-\-s\-\-t\-b\-\-\-nt]

selective cracking  [CHEM ENG]  A refinery process in which recycled stock is distilled in equipment kept separate from that used for distillation of original stock.  ['\-i\-l\-e\-k\-t\-\-i\-v, \-k\-\-\-r\-\-k\-\-i\-\-n]

selectively doped heterojunction transistor  Set high-electron-mobility transistor.  ['\-i\-l\-e\-k\-t\-\-i\-v, \-d\-\-j\-\-\-t\-\-d\-\-\-p\-t, \-h\-\-e\-\-\-zd\-\-\-r\-\-i\-k, \-a\-\-g\-k\-\-\-shon, \-t\-\-r\-\-n\-\-z\-z\-t]

selective polymerization  [CHEM ENG]  The polymerization of a single type of molecule in a mixture of monomers; for example, the production of diisobutylene from a mixture of butyl- enes.  ['\-i\-l\-e\-k\-t\-\-i\-v, \-p\-a, \-l\-\-m, \-a\-\-\-r\-\-z\-a\-shon]

selective solubility diffusion  [CHEM ENG]  The transmission of fluids through a nonporous,
polymeric barrier (membrane) by an adsorption-solution-diffusion-desorption sequence. {si lek-tiv, səl-yəb'il-əd-əl, fə-yə-zən} self-cleaning

selective solvent [CHEM ENG] A solvent that, at certain temperatures and ratios with other materials, preferentially dissolves more of one component of a liquid or solids mixture than of another, thereby permitting partial separation. {si lek-tiv, səl-vənt} selective transmission [MECH ENG] A gear transmission with a single lever for changing from one gear ratio to another, used in automotive vehicles. {si lek-tiv tranz-mish-an} selectivity diagram [CHEM ENG] A triangular plot of solubilities in a ternary liquid system; used to calculate the ability of a solvent to extract a component from a mixture (its selectivity) at various concentration combinations. {sa lek'tiv-əd-əl di'ər-əm} selector [CIV ENG] A device that automatically connects the appropriate railroad signal to control the track selected. [ELEC] An automatic or other device for making connections to any one of a number of circuits, such as a selector relay or selector switch. [ENG] 1. A device for selecting objects or materials according to predetermined properties. 2. A device for starting or stopping at predetermined positions. [MECH ENG] 1. The part of the gearshift in an automotive transmission that selects the required gearshift bar. 2. The lever with which a driver operates an automatic gearshift. {si lek'tar} selenium cell [ELECTR] A photocathode cell in which a thin film of selenium is used between suitable electrodes; the resistance of the cell decreases when the illumination is increased. {sa le-nə-mən, sel} selenium diode [ELECTR] A small area selenium rectifier which has characteristics similar to those of selenium rectifiers used in power systems. {sa le-nə-mən 'dəd} selenium rectifier [ELECTR] A metallic rectifier in which a thin layer of selenium is deposited on one side of an aluminum plate and a conductive metal coating is deposited on the selenium. {sa le-nə-mən 'rek-təf-jər} selenu trope [ENG] A device used in geodetic surveying for reflecting the moon's rays to a distant point, to aid in long-distance observations. {sa le-no-trop} self-adapting system [SYS ENG] A system which has the ability to modify itself in response to changes in its environment. {self adap-tən 'sistem} self-centering chuck [MECH ENG] A drill chuck that, when closed, automatically positions the drill rod in the center of the drive rod of a diamond-drill swivel head. {self cən-tən 'chak} self-cleaning [ENG] Pertaining to any device that is designed to clean itself without disassembly, for example, a filter in which accumulated filter cake or sludge is removed by an internal scraper or by a blowdown or backwash action. {self 'klən-in} self-contained breathing apparatus [ENG] A portable breathing unit which permits freedom of movement. {self kən-tənd b'reth-in, ap-ət-rad-os} self-contained range finder [ENG] Instrument used for measuring range by direct observation, without using a base line, the two types are the coincidence range finder and the stereoscopic range finder. {self kən-tənd rən, fən-dər} self-energizing brake [MECH ENG] A brake designed to reinforce the power applied to it, such as a hand brake. {self en-ariz-in 'bræk} self-excited vibration See self-induced vibration. {self ik'səd-əd vən'træk-shən} self-faced stone [CIV ENG] A type of stone used in masonry that splits along natural cleavage planes and does not have to be dressed. {self fa'st 'ston} self-healing dielectric breakdown [ELECTR] A dielectric breakdown in which the breakdown process itself causes the material to become insulating again. {self mel-in, də-lək-trik 'bræk, dəun} self-induced vibration [MECH] The vibration of a mechanical system resulting from conversion, within the system, of nonoscillatory excitation to oscillatory excitation. Also known as self-excited vibration. {self in'di-st vəli-bræ-shən} self-loading [MECH ENG] The capability of a powered industrial truck to pick up, transport, and deposit its load by using components that are part of its standard equipment, for example, a forklift. {self ləd-in} self-locking nut [DES ENG] A nut having an inherent locking action, so that it cannot readily be loosened by vibration. {self lək-in 'nət} self-locking screw [DES ENG] A screw that locks itself in place without requiring a separate nut or lock washer. {self lək-in 'skrə} self-organizing function [CONT SYS] That level in the functional decomposition of a large-scale control system which modifies the modes of control action or the structure of the control system in response to changes in system objectives, contingency events, and so forth. {self or-gə-nə-zən 'fənk-shən} self-organizing system [SYS ENG] A system that is able to affect or determine its own internal structure. {self or-gə-nə-zən 'sis-təm} self-propelled [MECH ENG] Pertaining to a vehicle given motion by means of a self-contained motor. {self prop'əld} self-sealing [ENG] A fluid container, such as a fuel tank or a tire, lined with a substance that allows it to close immediately over any small puncture or rupture. {self 'səl-in} self-starter [MECH ENG] An attachment for automatically starting an internal combustion engine. {self stər'dər} self-tapping screw [DES ENG] A screw with a specially hardened thread that makes it possible for the screw to form its own internal thread in sheet metal and soft materials when driven into
self-timer

A hole. Also known as sheet-metal screw; tapping screw. {self 'tap-ı n skru}'

self-timer {ENG} A device that delays the tripping of a camera shutter so that the photographer can be included in the photograph. {self 'tim-ar}'

self-tuning regulator {CONT SYS} A type of adaptive control system composed of two loops, an inner loop which consists of the process and an ordinary linear feedback regulator, and an outer loop which is composed of a recursive parameter estimator and a design calculation, and which adjusts the parameters of the regulator. Abbreviated STR. {self 'tüm-ı n reg-yo'läd-ar}'

sellers hob {MECH ENG} A hob that turns on the centers of a lathe, the work being fed to it by the lathe carriage. {self-ar 'háb}'

Selwood engine {MECH ENG} A revolving-block engine in which two curved pistons opposed 180° run in toroidal tracks, forcing the entire engine block to rotate. {self-wud 'en-ı n}'

semiautomatic transmission {MECH ENG} An automobile transmission that assists the driver to shift from one gear to another. {sem-ı l'de-zam-ı n-tısh-ın}'

semibatch chemical reactor {CHEM ENG} A reactor in which a constant liquid volume is maintained without any overflow, and with the continuous addition of one reactant, usually a gas. {sem-i'bach 'kem-ı-kal rë'ak-tar}'

semichemical pulping {CHEM ENG} A method of producing wood-fiber products in which the wood chips are merely softened by chemical treatment (neutral sodium sulfite solution), while the remainder of the pulping action is supplied by a disk attrition mill or by some similar mechanical device for separating the fibers. {sem-i'kem-ı-kal 'pal-pı n}'

semiclosed-cycle gas turbine {MECH ENG} A heat engine in which a portion of the expanded gas is recirculated. {sem-i'klo-zed-stı-kal 'gas-tı-rban}'

semiconductor loading tube {ENG} A loading tube for blasthole explosives which dissipates static electric charges to prevent premature blasts. {sem-i'kan-dak-tiv 'lod-ı n täb}'

semiconductor device {ELECTR} Electronic device in which the characteristic distinguishing electronic conduction takes place within a semiconductor. {sem-i'kan-dak-taır di-vis}'

semiconductor diode {ELECTR} Also known as crystal diode, crystal rectifier, diode. 1. A two-electrode semiconductor device that utilizes the rectifying properties of a pn junction or a point contact. 2. More generally, any two-terminal electronic device that utilizes the properties of the semiconductor from which it is constructed. {sem-i'kan-dak-tar 'dıl',ı dı}'

semiconductor-diode parametric amplifier {ELECTR} Parametric amplifier using one or more varactors. {sem-i'kan-dak-tar 'dıl',ı dı par-'o-mı tro̊k 'am-pıl-fı r}'

semiconductor doping See doping. {sem-i'kan-dak-tar 'döp-ı n}'

semiconductor heterostructure {ELECTR} A structure of two different semiconductors in junction contact having useful electrical or electrooptical characteristics not achievable in either conductor separately, used in certain types of lasers and solar cells. {sem-i'kan-dak-tar 'hed-ı r',ı çı-kı char}

semiconductor junction {ELECTR} Region of transition between semiconducting regions of different electrical properties, usually between p-type and n-type material. {sem-i'kan-dak-tar 'ın',ı çı-kı shan}'

semiconductor rectifier See metallic rectifier. {sem-i'kan-dak-tar 'rek-ta',ı r'}

semiconductor thermocouple {ELECTR} A thermocouple made of a semiconductor, which offers the prospect of operation with high-temperature gradients, because semiconductors are good electrical conductors but poor heat conductors. {sem-i'kan-dak-tar 'thar-ma',ı kap-ı ı l}’

semidiesel engine {MECH ENG} 1. An internal combustion engine of a type resembling the diesel engine in using heavy oil as fuel but employing a lower compression pressure and spray- ing it under pressure, against a hot (uncooled) surface or spot, or igniting it by the precombustion or supercompression of a portion of the charge in a separate member or uncooled portion of the combustion chamber. 2. A true diesel engine that uses a means other than compressed air for fuel injection. {sem-i'de-zal 'en-ı n}'

semifloating axle {MECH ENG} A supporting member in motor vehicles which carries torque and wheel loads at its outer end. {sem-i'flöd-ı n 'ak-sal}'

semilive skid {ENG} A platform having two fixed legs at one end and two wheels at the other, used for moving bulk materials. {sem-i'li'v skıd}'

semimember {CIV ENG} A part in a frame or truss that ceases to bear a load when the stress in it starts to reverse. {sem-i'mem-ı bar}'

semipositive mold {ENG} A plastics mold that allows a small amount of excess material to escape when it is closed. {sem-i'pâz-ı d-ıv 'müld}'

semitrailer {ENG} A cargo-carrying piece of equipment that has one or two axles at the rear; the load is carried on these axles and on the fifth wheel of the tractor that supplies motive power to the semitrailer. {sem-i'tral-ı r}'

sems {DES ENG} A preassembled screw and washer combination. {semz}'

send See scend. {send}'

sense {ENG} To determine the arrangement or position of a device or the value of a quantity. {sens}'

sensible heat {THERMO} 1. The heat absorbed or evolved by a substance during a change of temperature that is not accompanied by a change of state. 2. See enthalpy. {sen-sı-bal 'het}'

sensible-heat factor {THERMO} The ratio of space sensible heat to space total heat; used
for air-conditioning calculations. Abbreviated SHF. ['sen-sa-bal] hēt [fak-tar]

sensible-heat flow [THERMO] The heat given up or absorbed by a body upon being cooled or heated, as the result of the body’s ability to hold heat, excludes latent heats of fusion and vaporization. ['sen-sa-bal] hēt [fɪt]}
sensing element See sensor. ['sens-Øn el-æ-

sensitive altimeter [ENG] An aneroid altimeter constructed to respond to pressure changes (alti-
tude changes) with a high degree of sensitivity; it contains two or more pointers to refer to differ-
ent scales, calibrated in hundreds of feet, thou-
sands of feet, and so on. ['sen-sæ-dɪv al-tɪm-
er]
sensitivity [ELECTR] 1. The minimum input sig-
nal required to produce a specified output signal, for a radio receiver or similar device. 2. Of a camera tube, the signal current developed per unit incident radiation, that is, per watt per unit area. [ENG] 1. A measure of the ease with which a substance can be caused to explode. 2. A measure of the effect of a change in severity by means of numbers. Also known as spread. ['sen-sæ fɪl-tɪv-æ-d-æ] sensitiv

sensitivity function [CONT SYS] The ratio of the fractional change in the system response of a feedback-compensated feedback control system to the fractional change in an open-loop param-
ter, for some specified parameter variation. ['sen-sæ-tɪv-æ-d-æ,ʃænk-æn]
sensitometer [ENG] An instrument for measur-
ing the sensitivity of light-sensitive materials. ['sen-sæ-tɪm-æ-tør]
sensor [ENG] The generic name for a device that senses either the absolute value or a change in a physical quantity such as temperature, pressure, flow rate, or pH, or the intensity of light, sound, or radio waves and converts that change into a useful input signal for an information-gathering system; a television camera is there-
fore a sensor, and a transducer is a special type of sensor. Also known as primary detector, sensing element. ['sen-sæ]

sensory control [CONT SYS] Control of a robot’s actions on the basis of its sensor readings. ['sen-sæ-æ ræ kæntɪlɪd] sensory controlled robot [CONT SYS] A robot whose programmed sequence of instructions can be modified by information about the envi-

ronment received by the robot’s sensors. ['sen-sæ-æ kæntɪlɪd r̃ʊ,bæt]
separate sewage system [CIV ENG] A drainage system in which sewage and groundwater are carried in separate sewers. ['sep-ræ tʃiˌstæn]

separating power [CHEM ENG] The measure of the ability of a system (such as a rectifying sys-
tem) to separate the components of a mixture, when the components have increasingly close boiling points. ['sep-æ,ɹæd-ɪŋˌpær] sequential collation of range

sequential collation of range

separation [CHEM ENG] The separation of liq-
uids or gases in a mixture, as by distillation or extraction. [ENG] 1. The action segregating phases, such as gas-liquid, gas-solid, liquid-
solid. 2. The segregation of solid particles by size range, as in screening. [ENG ACOUS] The degree, expressed in decibels, to which left and right stereo channels are isolated from each other. ['sep-æˌræ-ʃæn]

separation theorem [CONT SYS] A theorem in optimal control theory which states that the so-
lution to the linear quadratic Gaussian problem separates into the optimal deterministic controller (that is, the optimal controller for the corres-
ponding problem without noise) in which the state used is obtained as the output of an opti-

mal state estimator. ['sep-æˌræ-ʃænˌθɪr-æn]

separator [ELECTR] A porous insulating sheet used between the plates of a storage battery. [ELECTR] A circuit that separates one type of signal from another by clipping, differentiating, or integrating action. [ENG] 1. A machine for separating materials of different specific gravity by means of water or air. 2. Any machine for separating materials, as the magnetic separator. [MECH ENG] See cage. ['sep-æˌræd-ær]

separator-filter [ENG] A vessel that removes solids and entrained liquid from a liquid or gas stream, using a combination of a baffle or co-
alescer and a separator. ['sep-æˌræˌθɪŋˌfɪl-tær]

separatrix [CONT SYS] A curve in the phase plane of a control system representing the solution to the equations of motion of the system which would cause the system to move to an unstable point. ['sep-æˌtriks]

septic tank [CIV ENG] A settling tank in which settled sludge is in immediate contact with sewage flowing through the tank while solids are decomposed by anaerobic bacterial action. ['sep-tɪk] sequence [ENG] An orderly progression of items of information or of operations in accord-

ance with some rule. ['sɛkwaŋ]

sequencer [ENG] A mechanical or electronic device that may be set to initiate a series of events and to make the events follow in a given sequence. ['sɛkwaŋˌsær]

sequence robot See preprogrammed robot. ['sɛk-
wænsˌrəˌbæt]

sequence-stressing loss [ENG] In postten-
sioning, the loss of elasticity in a stressed tendon that results from the shortening of the member as additional tendons are stressed. ['sɛk-
wænsˌstres-ɪŋˌlʊs]

sequencing [IND ENG] Designating the order of performance of tasks to assure optimal utiliza-

tion of available production facilities. ['sɛk-
wænsˌɪŋ]

sequential collation of range [ENG] Spherical, long-baseline, phase-comparison trajectory-
measuring system using three or more ground stations, time-sharing a single transponder, to provide nonambiguous range measurements to
determine the instantaneous position of a vehicle in flight. \( s'il\text{-}kwen\text{-}chəl \text{ kālā\text{-}shan \ av \ 'tān} \)

**sequential logic element** \[ \text{ELECTR} \] A circuit element having at least one input channel, at least one output channel, and at least one internal state variable, so designed and constructed that the output signals depend on the past and present states of the inputs. \( s'il\text{-}kwen\text{-}chəl \ [lā\text{'ik} \ ,el\text{-}ə\text{-}mant] \)

**sequential sampling** \[ \text{IND ENG} \] A sampling plan in which an undetermined number of samples are tested one by one, accumulating the results until a decision can be made. \( s'il\text{-}kwen\text{-}chəl \ [s\text{-}mə\text{-}plə\text{-}jə] \)

**serial** \[ \text{IND ENG} \] An element or a group of elements within a series which is given a numerical or alphabetical designation for convenience in planning, scheduling, and control. \( s'il\text{-}ē\text{-}ə\text{-}l \)

**series** \[ \text{ELEC} \] An arrangement of circuit components end to end to form a single path for current. \( s'il\text{-}ē\text{-}z \)

**series circuit** \[ \text{ELEC} \] A circuit in which all parts are connected end to end to provide a single path for current. \( s'il\text{-}ē\text{-}z \ [sə\text{-}rə\text{-}kət] \)

**series compensation** \[ \text{CONT SYS} \] See cascade compensation. \[ \text{ELEC} \] The insertion of variable, controlled, high-voltage series capacitors into transmission lines in order to modify the impedance structure of a transmission network so as to adjust the power-flow distribution on individual lines and thus increase the power flow across such compensated lines. \( s'il\text{-}ē\text{-}z \ [kām\text{'pän\'sā\text{-}shan}] \)

**series connection** \[ \text{ELEC} \] A connection that forms a series circuit. \( s'il\text{-}ē\text{-}z \ [kə\text{-}nē\text{-}kə\text{-}shən] \)

**series firing** \[ \text{ENG} \] The firing of detonators in a round of shots by passing the total supply current through each of the detonators. \( s'il\text{-}ē\text{-}z \ [\text{fər-ə}\text{-}j] \)

**series-parallel firing** \[ \text{ENG} \] The firing of detonators in a round of shots by dividing the total supply current into branches, each containing a certain number of detonators wired in series. \( s'il\text{-}ē\text{-}z \ [gər\text{-}ə\text{-}le] \ [\text{fər-ə}] \)

**series production** \[ \text{IND ENG} \] The manufacture of a product or service by a group of operations sequenced so that all materials will be routed successively through each production state. Also known as batch production. \( s'il\text{-}ē\text{-}z \ [prə\text{dək\text{-}shan}] \)

**series reliability** \[ \text{SYS ENG} \] Property of a system composed of elements in such a way that failure of any one element causes a failure of the system. \( s'il\text{-}ē\text{-}z \ [ri\text{-}tə\text{-}bə\text{-}ə\text{-}l \text{ə\text{-}dē\text{-}e}] \)

**series shots** \[ \text{ENG} \] The connecting and firing of a number of loaded holes one after the other. \( s'il\text{-}ē\text{-}z \ [shāts] \)

**serpentine cooler** See cascade cooler. \( s'ar\text{-}pàn\text{'tən} \ [\text{kāl\text{-}ə\text{-}r}] \)

**service** \[ \text{ENG} \] To perform services of maintenance, supply, repair, installation, distribution, and so on, for or upon an instrument, installation, vehicle, or territory. \( sə\text{-}rə\text{-}və\text{-}s \)

**serviceability** \[ \text{IND ENG} \] The reliability of equipment according to some objective criterion such as serviceability ratio, utilization ratio, or operating ratio. \( sə\text{-}rə\text{-}və\text{-}s\text{'ə\text{-}bil\text{-}ə\text{-}dē\text{-}e} \)

**serviceability ratio** \[ \text{IND ENG} \] The ratio of up time to the sum of up time and down time. \( sə\text{-}rə\text{-}və\text{-}s\text{'ə\text{-}bil\text{-}ə\text{-}dē\text{-}e} \ [rā\text{-}shō] \)

**service agreement** \[ \text{ENG} \] A contract which agrees to provide mechanical maintenance of a machine for a fixed period of time at a stated charge. \( sə\text{-}rə\text{-}vəs \ [ə\text{grə\text{-}mənt}] \)

**service brake** \[ \text{MECH ENG} \] The brake used for ordinary driving in an automotive vehicle, usually foot-operated. \( sə\text{-}rə\text{-}vəs \ [brək] \)

**service dead load** \[ \text{ENG} \] The calculated dead load that will be supported by a member. \( sə\text{-}rə\text{-}vəs \ [dɛd \ [ləd]] \)

**service engineering** \[ \text{ENG} \] The function of determining the integrity of material and services in order to measure and maintain operational reliability, approve design changes, and assure their conformance with established specifications and standards. \( sə\text{-}rə\text{-}vəs \ [ən\text{-}ʒə\text{-}nɪr\text{-}j] \)

**service factor** \[ \text{ENG} \] For a chemical or a petroleum processing plant or its equipment, the measure of the continuity of an operation, computed by dividing the time on-stream (actual running time) by the total elapsed time. \( sə\text{-}rə\text{-}vəs \ [fək\text{-}tər] \)

**service life** \[ \text{ENG} \] The length of time during which a machine, tool, or other apparatus or device can be operated or used economically or before breakdown. \( sə\text{-}rə\text{-}vəs \ [lɪf] \)

**service pipe** \[ \text{CIV ENG} \] A pipe linking a building to a main pipe. \( sə\text{-}rə\text{-}vəs \ [pɪp] \)

**service road** \[ \text{CIV ENG} \] A small road parallel to the main road for convenient access to shops and houses. \( sə\text{-}rə\text{-}vəs \ [rəd] \)

**service time** \[ \text{ENG} \] Time machine attention time. \( sə\text{-}rə\text{-}vəs \ [tɪm] \)

**service valve** \[ \text{ENG} \] In a pipework system, a valve that isolates a piece of equipment from the rest of the system. \( sə\text{-}rə\text{-}vəs \ [vəl] \)

**service wires** \[ \text{ELEC} \] The conductors that bring the electric power into a building. \( sə\text{-}rə\text{-}vəs \ [wɜrt] \)

**servicing** \[ \text{ENG} \] Replacement of consumable material or items needed to keep equipment in operating condition, does not include preventive or corrective maintenance. \( sə\text{-}rə\text{-}vəs\text{-}ɪ\text{j} \)

**servo** See servomotor. \( sə\text{-}rə\text{-}və \)

**servoarm attachment** \[ \text{MECH ENG} \] A device that enhances the maximum distance over which the manipulator of a simple robot can travel. \( sə\text{-}rə\text{-}və\text{-}ɔrm \ [ə\text{tʃə\text{-}mənt}] \)

**servo brake** \[ \text{MECH ENG} \] 1. A brake in which the motion of the vehicle is used to increase the pressure on one of the shoes. 2. A brake in which the force applied by the operator is augmented by a power-driven mechanism. \( sə\text{-}rə\text{-}və \ [brək] \)

**servolink** \[ \text{CONT SYS} \] A power amplifier, usually mechanical, by which signals at a low power level are made to operate control surfaces requiring relatively large power inputs, for example, a relay and motor-driven actuator. \( sə\text{-}rə\text{-}və\text{-}lɪŋk \)
servo loop  See single-loop servomechanism.

servomechanism [CONT SYS] An automatic feedback control system for mechanical motion; it applies only to those systems in which the controlled quantity or output is mechanical position or one of its derivatives (velocity, acceleration, and so on). Also known as servo system. {'sərvəvɒ,mərkəmənizəm}

servomotor [CONT SYS] The electric, hydraulic, or other type of motor that serves as the final control element in a servomechanism; it receives power from the amplifier element and drives the load with a linear or rotary motion. Also known as servo. {'sərvəvɒ,mɒdər}

servonoise [ENG] Hunting action of the tracking servomechanism of a radar, which results from backlash and compliance in the gears, shafts, and structures of the mount. {'sərvəvɒ,ˈnɔɪz}

servo system  See servomechanism. {'sərvəvɒ,sɪstəm}

servovalve [MECH ENG] A transducer in which a taper on a turned piece can be obtained. A low-energy signal controls a high-energy fluid. {sərvəvɒˌvɔlv}

set  [ELECTR] The placement of a storage device in a prescribed state, for example, a binary storage cell in the high or 1 state. [ENG] 1. A combination of units, assemblies, and parts connected or otherwise used together to perform an operational function, such as a radar set. 2. In plastics processing, the conversion of a liquid resin or adhesive into a solid state by curing or evaporation of solvent or suspending medium, or by gelling. 3. Saw teeth bent out of the plane of the saw body, resulting in a wide cut in the workpiece. [MECH] See permanent set. {'set}

setback [BUILD] 1. A withdrawal of the face of a building to a line forward of the building line or the rear of the wall below in order to reduce obstruction of sunlight reaching the street or the lower stories of adjacent buildings. 2. See offset. [CIV ENG] The distance that a section of a building is set back from the property line as required by local zoning codes. [MECH] The relative rearward movement of component parts in a projectile, missile, or fuse undergoing forward acceleration during its launching; these movements, and the setback force which causes them, are used to promote events which participate in the arming and eventual functioning of the fuse. {'set,bæk}

setback force [MECH] The rearward force of inertia which is created by the forward acceleration of a projectile or missile during its launching phase; the forces are directly proportional to the acceleration and mass of the parts being accelerated. {'set,bæk,ˈfɔrs}

set bit  [DES ENG] A bit insert with diamonds or other cutting media. {'set,ˈbit}

set casing  [ENG] Introducing cement between the casing and the wall of the hole to seal off intermediate formations and prevent fluids from entering the hole. {'set,ˈkæsən}

set forward [MECH] Relative forward movement of component parts which occurs in a projectile, missile, or bomb in flight when impact occurs; the effect is due to inertia and is opposite in direction to setback. {'set ˈfɔ:rdər}

set forward force [MECH] The forward force of inertia which is created by the deceleration of a projectile, missile, or bomb when impact occurs; the forces are directly proportional to the deceleration and mass of the parts being decelerated. Also known as impact force. {'set ˈfɔ:rdər ˈfɔrs}

set forward point [MECH] A point on the expected course of the target at which it is predicted the target will arrive at the end of the time of flight. {'set ˈfɔ:rdər ˈpeɪnt}

set hammer [DES ENG] 1. A hammer used as a shaping tool by blacksmiths. 2. A hollow-face tool used in setting rivets. {'setˌ,hæmər}

setover [ENG] A device which helps move a lathe tailstock or headstock on its base so that a taper on a turned piece can be obtained. {'setˌ,ɔvər}

set point [CONT SYS] The value selected to be maintained by an automatic controller. {'setˌ,poɪnt}

set pressure [MECH ENG] The inlet pressure at which a relief valve begins to open as required by the code or standard applicable to the pressure vessel to be protected. {'setˌ,preʃər}

set screw [DES ENG] A small headless machine screw, usually having a point at one end and a recessed hexagonal socket or a slot at the other end, used for such purposes as holding a knob or gear on a shaft. {'setˌ,skrɔ}

setting angle [MECH ENG] The angle, usually 90°, between the straight portion of the tool shank of the machined portion of the work. {'sedˌɪŋˌ,æŋˈɡəl}

setting circle [ENG] A coordinate scale on an optical pointing instrument, such as a telescope or surveyor’s transit. {'sedˌɪŋˌ,sərkəl}

setting gage [ENG] A standard gage for testing a limit gage or setting an adjustable limit gage. {'sedˌɪŋˌ,ɹɛʃər}

setting temperature [ENG] The temperature at which a liquid resin or adhesive, or an assembly involving them, will set, that is, harden, gel, or cure. {'sedˌɪŋˌˌtemˌprəˈʃær}

setting time [ENG] The length of time that a resin or adhesive must be subjected to heat or pressure to cause them to set, that is, harden, gel, or cure. {'sedˌɪŋˌˌtɛmˌprəˈʃær}

settleable solids test [CIV ENG] A test used in examination of sewage to help determine the sludge-producing characteristics of sewage, a measurement of the part of the suspended solids heavy enough to settle is made in an Imhoff cone. {'sedˌələˌbælˌsæləˌɛdzˌtest}

settlement [CIV ENG] The gradual downward movement of an engineering structure, due to compression of the soil below the foundation. {'sedˌələˌment}
settler  [ENG] A separator, such as a tub, pan, vat, or tank in which the partial separation of a mixture is made by density difference, used to separate solids from liquid or gas, immiscible liquid from liquid, or liquid from gas. {'set-lər}

setting  [ENG] The gravity separation of heavy from light materials, for example, the settling out of dense solids or heavy liquid droplets from a liquid carrier, or the settling out of heavy solid grains from a mixture of solid grains of different densities. {'set-lিং}

settling basin  [CIV ENG] An artificial trap designed to collect suspended stream sediment before discharge of the stream into a reservoir. {'set-লিং,বাস-ন]}

settling chamber  [ENG] A vessel in which solids or heavy liquid droplets settle out of a liquid carrier by gravity during processing or storage. {'set-লিং,চাম্বার]}

settling reservoir  [CIV ENG] A reservoir consisting of a series of basins connected in steps by long weirs, only the clear top layer of each basin is drawn off. {'set-লিং,রেজ-ু-র,বার}]

settling tank  [ENG] A tank into which a twophase mixture is fed and the entrained solids settle by gravity during storage. {'set-লিং,রেঙ্ক]}

settling time  See correction time. {'set-লিং,টিম]

settling velocity  [MECH] The velocity reached by a particle as it falls through a fluid, dependent on its size and shape, and the difference between its specific gravity and that of the settling medium, used to sort particles by grain size. {'set-লিং বা-লিঃ,অদ-এ}

setup  [ELECTR] The ratio between the reference black level and the reference white level in television, both measured from the blanking level, usually expressed as a percentage. {'সেড,অপ}

setup person  [CONT SYS] A person who uses a teach pendant to instruct a robot in its motions. {'সেড,অপ,পার-সন]}

setup time  [CONT SYS] The total time needed to prepare a robot to carry out a task, including the time required to obtain the proper tools or end effectors and any work pieces. {'সেড,অপ,টিম]}

severity factor  [CHEM ENG] A measure of the severity or intensity of overall reaction conditions in a chemical reaction; for example, the temperature, pressure, or conversion in a catalytic cracker or reformer. {'সিভের-অদ-এ,ফাক-টার]}

sewage  [CIV ENG] The fluid discharge from medical, domestic, and industrial sanitary appliances. Also known as sewerage. {'সু-লিঃ}

sewage disposal plant  [CIV ENG] The land, building, and apparatus employed in the treatment of sewage by chemical precipitation or filtration, bacterial action, or some other method. {'সু-লিঃ দিস্পো-ল,প্লান্ট]}

sewage sludge  [CIV ENG] A semiliquid waste with a solid concentration in excess of 2500 parts per million, obtained from the purification of municipal sewage. Also known as sludge. {'সু-লিঃ স্লুধ}

sewage system  [CIV ENG] A drainage system for carrying surface water and sewage for disposal. {'সু-লিঃ সিস্টম]}

sewage treatment  [CIV ENG] A process for the purification of mixtures of human and other domestic wastes, the process can be aerobic or anaerobic. {'সু-লিঃ ত্রেট-ম্যান্ট]}

sewer  [CIV ENG] An underground pipe or open channel in a sewage system for carrying water or sewage to a disposal area. {'সু-র]}

sewerage  See sewage. {'সু-রেঙ্ক]}

sewing machine  [MECH ENG] A mechanism that stitches cloth, leather, book pages, or other material by means of a double-pointed or eye-pointed needle. {'সো-লিঃ মা,শেন]}

SFC  See specific fuel consumption.

shackle  [DES ENG] An open or closed link of various shapes with extended legs, each leg has a transverse hole to accommodate a pin, bolt, or the like, which may or may not be furnished. {'শ্যাক-ল]}

shackle bolt  [DES ENG] A cylindrically shaped metal bar for connecting the ends of a shackles. {'শ্যাক-ল বোল্ট]}

shading coefficient  [ENG] A ratio of the solar energy transmitted through a window to the incident solar energy, used to express the effectiveness of a shading device. {'শ্যাড-লিঃ কো-ই,ফিশ-অন্ট]}

shading ring  [ENG ACOUS] A heavy copper ring sometimes placed around the central pole of an electrodynamic loudspeaker to serve as a shorted turn that suppresses the hum voltage produced by the field coil. {'শ্যাড-লিঃ রিঙ্ক]}

shadow photometer  [ENG] A simple photometer in which a rod is placed in front of a screen and two light sources to be compared are adjusted in position until their shadows touch and are equal in intensity. {'শ্যাড-এ ফো-তাম-দার]}

shaft  [MECH ENG] A cylindrical piece of metal used to carry rotating machine parts, such as pulleys and gears, to transmit power or motion. {'শ্যাফ্ট]}

shaft balancing  [DES ENG] The process of redistributing the mass attached to a rotating body in order to reduce vibrations arising from centrifugal force. Also known as rotor balancing. {'শ্যাফ্ট,বাল-ান্স-ইন]}

shaft furnace  [ENG] A vertical, refractory-lined cylinder in which a fixed bed (or descending column) of solids is maintained, and through which an ascending stream of hot gas is forced, for example, the pig-iron blast furnace and the phosphors-from-phosphate-rock furnace. {'শ্যাফ্ট,ফাল-নাস]}

shaft hopper  [MECH ENG] A hopper that feeds
shearing machine

shafts or tubes to grinders, threaders, screw machines, and tube benders. ('shaft ğap-ār)

**shear horsepower** [MECH ENG] The output power of an engine, motor, or other prime mover, or the input power to a compressor or pump. ('shaft ğors,paū-ār)

**shifting** [MECH ENG] The cylindrical machine element used to transmit rotary motion and power from a driver to a driven element, for example, a steam turbine driving a ship's propeller. ('shaft-iŋ)

**shaft kiln** [ENG] A kiln in which raw material fed into the top, moves down through hot gases flowing up from burners on either side at the bottom, and emerges as a product from the bottom, used for calcining operations. ('shaft-kil)

**shaft spillway** [CIV ENG] A vertical shaft which has a funnel-shaped mouth and ends in an outlet tunnel, providing an overflow duct for a reservoir. Also known as morning glory spillway. ('shaft 'spil,wa)

**shakedown test** [ENG] An equipment test made during the installation work. ('shāk ,daūn ,test)

**shak table** See vibration machine. ('shāk ,tā-bal)

**shake-table test** [ENG] A laboratory test for vibration tolerance, in which the device to be tested is placed on a shake table. ('shāk ,tā-bal ,test)

**shaking-out** [CHEM ENG] A procedure in which a sample of crude oil is centrifuged at high speed to separate its components; used to determine sediment and water content. ('shāk-iŋ 'aūt)

**shaking screen** [MECH ENG] A screen used in separating material into desired sizes; has an eccentric drive or an unbalanced rotating weight to produce shaking. ('shāk-iŋ skrēn)

**shank** [DES ENG] 1. The end of a tool which fits over guys, and provided with a tackle. Also known as a worker's tool composed of a sharp-edged steel piece used for caulking. ('shāv ,hük)

**shave hook** [DES ENG] A plumber's or metal-worker's tool composed of a sharp-edged steel plate on a shank; used for scraping metal. ('shāv ,šir)

**shearing machine** [MECH ENG] A machine for bending, pressing, or otherwise shaping a material to a desired form. ('šāp-īŋ ,diź)

**shapometer** [ENG] A device used to measure the shape of sedimentary particles. (šāp-pām-ād-ār)

**sharp-crested weir** [CIV ENG] A weir in which the water flows over a thin, sharp edge. ('šārp kres-tād 'wer)

**sharpen** [ENG] To give a thin keen edge or a sharp acute point to. ('šārp-pan)

**sharpening stone** [ENG] A device such as a whetstone used for sharpening by hand. ('šār-pa-niŋ ,ston)

**sharp iron** [ENG] A tool used to open seams for caulking. ('šārp 'r-ān)

**sharp V thread** [DES ENG] A screw thread having a sharp crest and root; the included angle is usually 60°. ('šārp 've ,thread)

**shattering** [MECH] The breaking up into highly irregular, angular blocks of a very hard material that has been subjected to severe stresses. ('šād-a-rīng)

**shave** [ENG ACOUS] Removing material from the surface of a disk recording medium to obtain a new recording surface. [MECH ENG] 1. Cutting off a thin layer from the surface of a workpiece. 2. Trimming uneven edges from stampings, forgings, and tubing. ('šāv-iŋ)

**shear** [DES ENG] A cutting tool having two opposing blades between which a material is cut. [ENG] An apparatus for hoisting heavy loads consisting of two or more poles fastened together at their upper ends and spread apart at their lower ends, secured or steadied by a guy or guys, and provided with a tackle. Also known as shear legs. [MECH] See shear strain. ('šir)

**shear angle** [MECH ENG] The angle made by the shear plane with the work surface. ('šir ān-gāl)

**shear cell** [ENG] The component for holding the powder in an apparatus for making measurements of the failure properties of a sample of powder. ('šir, sel)

**shear center** See center of twist. ('šir ,sen-tār)

**shear diagram** [MECH] A diagram in which the shear at every point along a beam is plotted as an ordinate. ('šir ,di-ā ,gram)

**shear fracture** [MECH] A fracture resulting from shear stress. ('šir ,frak-chār)

**shearing** [MECH ENG] Separation of material by the cutting action of shears. ('šir-īŋ)

**shearing die** [MECH ENG] A die with a punch for shearing the work from the stock. ('šir-īŋ ,di)

**shearing forces** [MECH] Two forces that are equal in magnitude, opposite in direction, and act along two distinct parallel lines. ('šir-īŋ ,fōrs-āz)

**shearing machine** [MECH ENG] A machine for...
shearing punch

1. A pin or wire provided in a fuse design to hold parts in a fixed relationship until forces are exerted on one or more of the parts which cause shearing of the pin or wire, the shearing is usually accomplished by setback or set forward (impact) forces, the shear member may be augmented during transportation by an additional safety device. 2. In a propellant-actuated device, a locking member which is released by shearing. 3. In a power train, such as a winch, any pin, as through a gear and shaft, which is designed to fail at a predetermined force in order to protect a mechanism.  

shear test  [ENG] Any of various tests to determine shear strength of soil samples.  

shear wave  [MECH] A wave that causes an element of an elastic medium to change its shape without changing its volume. Also known as rotational wave.  

sheath  [ELEC] A protective outside covering on a cable.  

sheathed explosive  [ENG] An permitted explosive enveloped by a sheath containing a non-combustible powder which reduces the temperature of the resultant gases of the explosion and, therefore, reduces the risk of these hot gases causing a fire and explosion.  

sheave  [DES ENG] A grooved wheel or pulley.  

sheepsfoot roller  [DES ENG] A cylindrical steel drum to which knob-headed spikes are fastened, used for compacting earth.  

sheepskin wheel  [DES ENG] A polishing wheel made of sheepskin disks or wedges either quilted or glued together.  

sheet forming  [ENG] The process of producing thin, flat sections of solid materials, for example, sheet metal, sheet plastic, or sheet glass.  

sheet-metal screw  See self-tapping screw.  

sheet piling  [CIV ENG] Closely spaced piles of wood, steel, or concrete driven vertically into the ground to obstruct lateral movement of earth or water, and often to form an integral part of the permanent structure.  

shelby tube  [ENG] A thin-shelled tube used to take deep-soil samples; the tube is pushed into the undisturbed soil at the bottom of the casting of the borehole driven into the ground.  

shelf angle  [CIV ENG] A mild steel angle section, riveted or welded to the web of an I beam to support the formwork for hollow tiles or the floor or roof units, or to form a seat for precast concrete.  

shelf life  [ENG] The time that elapses before stored food, chemicals, batteries, and other materials or devices become inoperative or unusable due to age or deterioration.  

shell  [BUILD] A building without internal partitions or furnishings.  

shellac wheel  [DES ENG] A grinding wheel having the abrasive bonded with shellac.  

shell-and-tube exchanger  [ENG] A device for the transfer of heat from a hot fluid to a cooler
shell capacity [ENG] The amount of liquid that a tank car or tank truck will hold when the liquid just touches the underside of the top of the tank shell. ('shell ka,pas-əd-ə)

shell clearance [DES ENG] The difference between the outside diameter of a bit or core barrel and the outside set or gage diameter of a reaming shell. ('shell ,klər-əns)

shell innage [ENG] The depth of a liquid in a tank car or tank truck shell. ('shell ,ınn-ıj)

shell knocker [ENG] A device to strike the external surface of a horizontally rotating process vessel (for example, a klin or a dryer) to loosen accumulations of solid materials from the inner walls or flanks of the shell. Also known as knocker. ('shell,nak-ar)

shell outage [ENG] The unfilled portion of a tank car or tank truck shell; the distance between the underside of the top of the shell to the level of the liquid in the shell. ('shell ,əud-ıj)

shell pump [MECH ENG] A simple pump for removing wet sand or mud; consists of a hollow cylinder with a ball or clack valve at the bottom. ('shell ,pump)

shell reamer [DES ENG] A machine reamer consisting of two parts, the arbor and the replaceable reamer, with straight or spiral flutes, designed as a sizing or finishing reamer. ('shell ,rem-ar)

shell roof [BUILD] A roof made of a thin, curved, plate-like structure, usually of concrete but lumber and steel are also used. ('shell ,rüf)

shell still [CHEM ENG] A distillation device formerly used in petroleum refineries; oil was charged into a closed, cylindrical shell and heat was applied to the outside of the bottom by a firebox. ('shell ,stil)

Shenstone effect [ELECTR] An increase in photoelectric emission of certain metals following passage of an electric current. (‘šenˌstôn ħəˌekt)

SHF See sensible-heat factor.

shield [ENG] An iron, steel, or wood framework used to support the ground ahead of the lining in tunneling and mining. (‘sheld)

shielded wire [ELEC] Insulated wire covered with a metal shield, usually of tinned braided copper wire. (‘shelˌdəd ˈwır)

shift [IND ENG] The number of hours or part of any day worked. Also known as tour. [MECH ENG] To change the ratio of the driving to the driven gears to obtain the desired rotational speed or to avoid overloading and stalling an engine or a motor. (‘shift)

shift joint [BUILD] A vertical joint placed on a solid member of the course below. (‘shiftˌjoı̄nt)

shift work [IND ENG] Work paid for by day wage. (‘shiftˌwərk)

shim [ENG] 1. In the manufacture of plywood, a long, narrow patch glued into the panel or cemented into the lumber core itself. 2. A thin piece of material placed between two surfaces to obtain a proper fit, adjustment, or alignment. (‘shım)

shimmy [MECH] Excessive vibration of the front wheels of a wheeled vehicle causing a jerking motion of the steering wheel. (‘shım-ə)

shingle lap [DES ENG] A lap joint in which the two surfaces are tapered, with the thinner surface lapped over the thicker one. (‘shı̄ŋ-gəlˌlap)

shingle nail [DES ENG] A nail about a half to a full gage thicker than a common nail of the same length. (‘shı̄ŋ-gəlˌnäl)

ship auger [DES ENG] An auger consisting of a spiral body having a single cutting edge, with or without a screw; there is no spur at the outer end of the cutting edge. (‘shipˌög-ər)

shipbuilding [CIV ENG] The construction of ships. (‘shipˌbil-dı̄j)

shipfitter [CIV ENG] A worker who builds the steel structure of a ship, including laying-off and fabricating the individual members, subassembly, and erection on the shipway. (‘shipˌfid-ər)

ship motion [ENG] Translational and rotational motions of a ship in a wave system which cause the center of gravity to deviate from simple straight-line motion; these motions are heave, surge, sway, roll, pitch, and yaw. (‘shipˌmō-ʃan)

shipping and storage container [IND ENG] A reusable noncollapsible container of any configuration designed to provide protection for a specific item against impact, vibration, climatic conditions, and the like, during handling, shipment, and storage. (‘shipˌı̄nˌənˌstörˌı̄jˌkɑnˌtäˌnær)

shipping document [IND ENG] A document listing the items in a shipment, and showing other supply and transportation information that is required by agencies concerned in the movement of material. (‘shipˌı̄nˌdəkˌəˌvəˌmənt)

shipping time [ENG] The time elapsing between the shipment of material by the supplying activity and receipt of material by the requiring activity. (‘shipˌı̄nˌtı̄m)

shipping ton See ton. (‘shipˌı̄nˌtən)

shipway [CIV ENG] 1. The ways on which a ship is constructed. 2. The supports placed underneath a ship in dry dock. (‘shipˌwā)

shipwright [CIV ENG] A worker whose responsibility is to ensure that the structure of a ship is straight and true and to the designed dimensions; the work starts with the laying down of the keel blocks and continues throughout the steelwork, applicable also to wood ship builders. (‘shipˌrit)

shipyard [CIV ENG] A facility adjacent to deep water where ships are constructed or repaired. (‘shipˌyärd)

SHM See harmonic motion.

shock [MECH] A pulse or transient motion or force lasting thousandths to tenths of a second which is capable of exciting mechanical resonances; for example, a blast produced by explosives. (‘shäk)
**shock absorber**  [MECH ENG] A spring, a dashpot, or a combination of the two, arranged to minimize the acceleration of the mass of a mechanism or portion thereof with respect to its frame or support.  (šák,əz'o�-bər)

**shock isolation**  [MECH ENG] The application of isolators to alleviate the effects of shock on a mechanical device or system. (šák,əz'oł-ə-shən)

**Shockley diode**  [ELECTR] A pn junction silicon controlled switch having characteristics that permit operation as a unidirectional diode switch. (šək-ə-le di'əd)

**shock mount**  [MECH ENG] A mount used with sensitive equipment to reduce or prevent transmission of shock motion to the equipment. (šák,əmənt)

**shock resistance**  [ENG] The property which prevents cracking or general rupture when impacted. (šák ˌrā-zi'ənts)

**shock test**  [ENG] The test to determine whether the armor sample will crack or spall under impact by kinetic energy or high-explosive projectiles. (šák, test)

**shock tunnel**  [ENG] A hypervelocity wind tunnel in which a shock wave generated in a shock tube ruptures a second diaphragm in the throat of a nozzle at the end of the tube, and gases emerge from the nozzle into a vacuum tank with Mach numbers of 6 to 25. (šák, tan-əl)

**shoe**  [ENG] In glassmaking, an open-ended crucible placed in a furnace for heating the blowing irons. [MECH ENG] 1. A metal block used as a form or support in various bending operations. 2. A replaceable piece used to break rock in certain crushing machines. 3. See brake shoe. (šū)

**shoe brake**  [MECH ENG] A type of brake in which friction is applied by a long shoe, extending over a large portion of the rotating drum; the shoe may be external or internal to the drum. (šū,brāk)

**shoot**  [ENG] To detonate an explosive, used to break coal loose from a seam in blasting operation or in a borehole. (šūt)

**shooting board**  [ENG] 1. A fixture used as a guide in planing boards; it is more accurate than a miter. 2. A table and plane used for trimming printing plates. (šūp,əbārd)

**shop fabrication**  [ENG] Making parts and materials in the shop rather than at the work site. (šup,ə-fab-rə,kə-shən)

**shop standards**  [ENG] Written criteria established to govern methods and procedures at an installation. (šup ˌstænd-ərdz)

**shop supplies**  [ENG] Expendable items consumed in operation and maintenance (for example, waste, oils, solvents, tape, packing, flux, or welding rod). (šup ˌspör'fliz)

**shop weld**  [ENG] A weld made in the workshop prior to delivery to the construction site. (šup, weld)

**shore**  [ENG] Timber or other material used as a temporary prop for excavations or buildings; may be sloping, vertical, or horizontal. (šör)

**Shore hardness**  [ENG] A method of rating the hardness of a metal or of a plastic or rubber material. (šör,ˌhär-də-nəs)

**shore protection**  [CIV ENG] Preventing erosion of the ground bordering a body of water. (šör ˈprek-ə-shən)

**Shore scleroscope**  [ENG] A device used in rebound hardness testing of rubber, metal, and plastic; consists of a small, conical hammer fitted with a diamond point and acting in a glass tube. (šör ˈskler-o,skōp)

**shoring**  [ENG] Providing temporary support with shores to a building or an excavation. (šör-ing)

**short**  [ELEC] See short circuit.  [ENG] In plastics injection molding, the failure to fill the mold completely. Also known as short shot. (short)

**short circuit**  [ELEC] A low-resistance connection across a voltage source or between both sides of a circuit or line, usually accidental and usually resulting in excessive current flow that may cause damage. Also known as short. (short ˌsȯr-kāt)

**short-circuiting transfer**  [ENG] Transfer of melted material from a consumable electrode during short circuits. (short ˌsȯrkəd-iŋ ˈtranz-fər)

**short column**  [CIV ENG] A column in which both compression and bending is significant, generally having a slenderness ratio between 30 and 120–150. (short ˈkal-əm)

**shortcoming**  [DES ENG] An imperfection or malfunction occurring during the life cycle of equipment, which should be reported and which must be corrected to increase efficiency and to render the equipment completely serviceable. (short ˌkōr-ming)

**short-delay blasting**  [ENG] A method of blasting by which explosive charges are detonated in a given sequence with short time intervals. (short ˈdi-lād ˈblas-tən)

**short-delay detonator** See millisecond delay cap. (short ˈdi-lə ˌdet-ən,əd-ər)

**short fuse**  [ENG] 1. Any fuse that is cut too short. 2. The practice of firing a blast, the fuse on the primer of which is not sufficiently long to reach from the top of the charge to the collar of the borehole; the primer, with fuse attached, is dropped into the charge while burning. (short ˈfyūz)

**short leg**  [ENG] One of the wires on an electric blasting cap, which has been shortened so that when placed in the borehole, the two splices or connections will not come opposite each other and make a short circuit. (short ˈleg)

**short-range radar**  [ENG] Radar whose maximum line-of-sight range, for a reflecting target having 1 square meter of area perpendicular to the beam, is between 50 and 150 miles (80 and 240 kilometers). (short ˈranˈtən ˈrä,drär)

**short residuum**  [CHEM ENG] A petroleum refinery term for residual oil from crude-oil distillation operations in which neutral oils are taken
overhead with the distillate. {'short ri'ziːj-a-wam} 

shorts [ENG] Oversize particles held on a screen after sieving the fines through the screen. {'shorts'}

short shipment [ENG] Freight listed or manifested but not received. {'short 'ship-manť} 

short stop [CHEM ENG] A substance added during a polymerization process to terminate the reaction. {'short stăp} 

short supply [IND ENG] An item is in short supply when the total of stock on hand and anticipated receipts during a given period is less than the total estimated demand during that period. {'short sa'pil} 

short-term repeatability [CONT SYS] The close agreement of positional movements of a robotic system repeated under identical conditions over a short period of time and at the same location. {'short ,tarm ri,ped-a'bil-əd-ə} 

short ton See ton. {'short 'ton} 

short-tube vertical evaporator [CHEM ENG] A liquid evaporation process unit with a vertical bundle of tubes 2–3 inches (5–8 centimeters) in diameter and 4–6 feet (1.2–1.8 meters) long; the heating fluid is inside the tubes, and the liquid to be evaporated is in the shell area outside the tubes; used mainly to evaporate cane-sugar juice. Also known as calandria evaporator, Roberts evaporator, standard evaporator. {'šōt tub'ard-a-kal ' vap-o-răd-ar} 

2. Small spherical particles of steel. 
3. Small steel balls used as the cutting agent of a shot drill. 
4. The firing of a blast. 
5. In plastics molding, the yield from one complete molding cycle, including scrap. {'šāt} 

shot bit [DES ENG] A short length of heavy-wall steel tubing with diagonal slots cut in the flat-faced bottom edge. {'šāt ,bit} 

shot boring [ENG] The act or process of producing a borehole with a shot drill. {'šāt ,bōr-iŋ} 

shot break [ENG] In seismic prospecting, the electrical impulse which records the instant of explosion. {'šāt ,brāk} 

shot capacity [ENG] The maximum weight of molten resin that an accumulator can push out with one forward stroke of the ram during plastic forming operations. {'šāt ka,pas- əd-ə} 

shotcreting [ENG] A process of conveying mortar or concrete through a hose at high velocity onto a surface; the material bonds tenaciously to a properly prepared concrete surface and to a number of other materials. {'šāt,kred-iŋ} 

shot depth [ENG] The distance from the surface to the charge. {'šāt ,depth} 

shot drill See calyx drill. {'šāt ,dril} 

shot elevation [ENG] Elevation of the dynamite charge in the shot hole. {'šāt ,el-ə-vā-shan} 

shot feed [MECH ENG] A device to introduce chilled-steel shot, at a uniform rate and in the proper quantities, into the circulating fluid flowing forward through the rods or pins connected to the core barrel and bit of a shot drill. {'šāt ,fēd} 

shothole [ENG] The borehole in which an explosive is placed for blasting. {'šāt,hōl} 

shotcasing [ENG] A lightweight pipe, usually about 4 inches (10 centimeters) in diameter and 10 feet (3 meters) long, with threaded connections on both ends, used to prevent the shothole from caving and bridging. {'šāt,hōl ,kās-iŋ} 

shot hole drill [MECH ENG] A rotary or churn drill for drilling shotholes. {'šāt,hōl ,dril} 

shot mill [ENG] A high-speed, continuous mill for deagglomerating, dispersing, and milling paints, inks, dyestuffs, adhesives, food, and pharmaceuticals; consists of a chamber with rotating disks that is filled with small steel or ceramic spheres (shot), and a pump to propel material through the mill. Also know as a media mill. {'šāt ,mil} 

shot point [ENG] The point at which an explosion (such as in seismic prospecting) originates, generating vibrations in the ground. {'šāt ,point} 

shot rock [ENG] Blasted rock. {'šāt ,rāk} 

shoulder [DES ENG] The portion of a shaft, a stepped object, or a flanged object that shows an increase of diameter. ['šōl,dar ,sēd-ar] 

shoulder harness [ENG] A harness in a vehicle that fastens over the shoulders to prevent a person’s being thrown forward in the seat. {'šōl,dar ,hār-nas} 

shoulder screw [DES ENG] A screw with an unthreaded cylindrical section, or shoulder, between threads and screwhead; the shoulder is larger in diameter than the threaded section and provides an axis around which close-fitting moving parts operate. {'šōl,dar ,skrū} 

shovel [DES ENG] A hand tool having a flattened scoop at the end of a long handle for moving soil, aggregate, cement, or other similar material. ['šēv-ə] 

shovel dozer See tractor loader. {'šhav-əl ,dōz-ər} 

shovel loader [MECH ENG] A loading machine mounted on wheels, with a bucket hinged to the chassis which scoops up loose material, elevates it, and discharges it behind the machine. {'šhav-əl ,lōd-ər} 

shrinkage [ENG] 1. Contraction of a molded material, such as metal or resin, upon cooling. 
2. Contraction of a plastics casting upon polymerizing. {'šrīnk,kij} 

shrink fit [DES ENG] A tight interference fit between mating parts made by shrinking-on, that is, by heating the outer member to expand the bore for easy assembly and then cooling so that the outer member contracts. {'šrīnk ,fit} 

shrink forming [DES ENG] Forming metal wherein the piece undergoes shrinkage during cooling following the application of heat, cold upset, or pressure. {'šrīnk ,fōr-ming} 

shrink ring [DES ENG] A heated ring placed on
shrink wrapping

an assembly of parts, which on subsequent cool-
ing fixes them in position by contraction. (’shrink’, ’rig’)

shrink wrapping [ENG] A technique of packag-
ing with plastics in which the strains in plastics film are released by raising the temperature of the film, causing it to shrink-fit over the object being packaged. (’shrink’, ’rap-iq’)

shroud [ENG] A protective covering, usually of metal plate or sheet. (shraud)

shrouded propeller See ducted fan. (’shraud-ad prap-el-ar’)

shunt [CIV ENG] To shove or turn off to one side, as a car or train from one track to another. [ELEC] 1. A precision low-value resistor placed across the terminals of an ammeter to increase its range by allowing a known fraction of the circuit current to go around the meter. Also known as electric shunt. 2. To place one part in parallel with another. 3. See parallel. (shant)

shunt valve [ENG] A valve that gives a fluid under pressure a more readily available escape route than the normal route. (’shant’, ’valv’)

shut-down circuit [ENG] An electronic, electric, or pneumatic system designed to shut off and close down process systems or equipment, can be used for routine or emergency situations. (’shat’, ’daum’, ’sar-kat’)

shut height [MECH ENG] The distance in a press between the bottom of the slide and the top of the bed, indicating the maximum die height that can be accommodated. (’shat’, ’bit’)

shutoff head [MECH ENG] The pressure developed in a centrifugal or axial flow pump when there is zero flow through the system. (’shat’, ’of’, ’hed’)

shutter dam [CIV ENG] A dam consisting of a series of pieces that can be lowered or raised by revolving them about their horizontal axis. (’shad-ar’, ’dam’)

shuttering See formwork. (’shad-ar-riq’)

shutter [MECH ENG] A back-and-forth motion of a machine which continues to face in one direction. (’shad-al’)

shuttered conveyor [MECH ENG] Any conveyor in a self-contained structure movable in a defined path parallel to the flow of the material. (’shad-al kan’, ’vär-ar’)

shutting [ENG] A movement involving two or more trips or partial trips by the same motor vehicles between two points. (’shad-al-iq’)

Siacci method [MECH] An accurate and useful method for calculation of trajectories of high-velocity missiles with low quadrant angles of departure; basic assumptions are that the atmospheric density anywhere on the trajectory is approximately constant, and the angle of departure is less than about 15°. (’së-’e-chë-’meth-ad’)

siamese blow [ENG] In the plastics industry, the blow molding of two or more parts of a product in a single blow, then cutting them apart. (’si-’a-mèz ’blu’)

siamese connection [ENG] A Y-shaped stand-
pipe installed close to the ground outside a building to provide two inlet connections for fire hoses to the standpipes and to the sprinkler system. (’si-’a,mèz ’ka-nek-shan’)

SIC See dielectric constant.

sickle [DES ENG] A hand tool consisting of a hooked metal blade with a short handle, used for cutting grain or other agricultural products. (’sik-’al’)

side bar [ENG] A bar on which molding pins are carried, operated from outside the mold. (’sid’, ’bår’)

side-channel spillway [CIV ENG] A dam spill-
way in which the initial and final flow are approximately perpendicular to each other. Also known as lateral flow spillway. (’sid ’chan-al ’spil ’wa’)

side direction [MECH] In stress analysis, the di-
rection perpendicular to the plane of symmetry of an object. (’sid ’di-reek-shan’)

side draw pin [ENG] Projection used to core a hole in a molded article at an angle other than the line of mold closing; must be withdrawn before the article is ejected. (’sid ’drö- pin’)

side-facing tool [ENG] A single-point cutting tool having a nose angle of less than 60° and used for finishing the tailstock end of work being machined between centers or the face of a work-

piece mounted in a chuck. (’sid ’fass-i’, ’tül’)

sidehill bit [DES ENG] A drill bit which is set off-
center so that it cuts a hole of larger diameter than that of the bit. (’sid ’hil ’bit’)

side hook See bench hook. (’sid ’huk’)

side-looking radar [ENG] A high-resolution air-
borne radar having antennas aimed to the right and left of the flight path, used to provide high-
resolution strip maps with photographlike detail, to map unfriendly territory while flying along its perimeter, and to detect submarine snorkels against a background of sea clutter. (’sid ’luk-’in ’ra-’där’)

side milling [MECH ENG] Milling with a side-
milling cutter to machine one vertical surface. (’sid ’mil-iq’)

side-milling cutter [DES ENG] A milling cutter with teeth on one or both sides as well as around the periphery. (’sid ’mil-iq ’kod-ar’)

side rake [MECH ENG] The angle between the tool face and a reference plane for a single-point turning tool. (’sid ’räk’)

side relief angle [DES ENG] The angle that the portion of the flanks of a cutting tool below the cutting edge makes with a plane normal to the base. (’sid ’ri-lef ’paj-gal’)

side rod [MECH ENG] 1. A rod linking the crank-
pins of two adjoining driving wheels on the same side of a locomotive; distributes power from the main rod to the driving wheels. 2. One of the rods linking the piston-rod crossheads and the side levers of a side-lever engine. (’sid ’rad’)

siderograph [ENG] An instrument that keeps the time of the Greenwich longitude, consists of a clock and a navigation instrument. (’sid ’-ra-graf’)

side shot [ENG] A reading or measurement from a survey station to locate a point that is
that portion of solid particles to create a high-rate stream of single-solid particles on a series of standard sieves of decreasing size, expressed as a weight percent. Also known as sieve mesh.

sieve plate | CHEM ENG | A distillation-tower tray that is perforated so that the vapor emerges vertically through the tray, passing through the liquid holdup on top of the tray, used as a replacement for bubble-cap trays in distillation. Also known as sieve tray.

sieve shaker | CHEM ENG | A device used to shake a stacked column of standard sieve-test trays to cause solids to sift progressively from the top (large openings) to the bottom (small openings and a final pan), according to particle size.

sieving | See sieve analysis.

sight-feed | [ENG] Pertaining to piping in which the flowing liquid can be observed through a transparent tube or wall.

sight glass | [ENG] A glass tube or a glass-faced section on a process line or vessel; used for visual reading of liquid levels or of manometer pressures.

sighting tube | [ENG] A tube, usually ceramic, inserted into a hot chamber whose temperature is to be measured; an optical pyrometer is sighted into the tube to observe the interior end of the tube to give a temperature reading.


sidewalk section | [ENG ACOUS] A wall in a sound-recording studio with reversible panels or rotating columns that are sound-absorbent on one side and reflective on the other, used to vary the acoustic environment.

sightrod | See range rod.

sigma-delta analog-to-digital converter | [ELECTR] A converter that uses an analog circuit to generate a single-valued pulse stream in which the frequency of pulses is determined by the analog source, and then uses a digital circuit to repeat reciprocally sum these pulses over a fixed time interval, converting the pulses to numeric values.

sigma-delta converter | [ELECTR] A class of electronic systems containing both analog and digital subsystems whose most common application is the conversion of analog signals to digital form, and vice versa, using pulse density modulation to create a high-rate stream of single-amplitude pulses over a fixed time interval, either in the case as delta-sigma converter.

sigma-delta digital-to-analog converter | [ELECTR] A converter that uses a digital circuit to convert numeric values from a digital processor to a pulse stream and then uses an analog low-pass filter to produce an analog waveform.

sigma-delta modulator | [ELECTR] The circuit used to generate a pulse stream in a sigma-delta converter. Also known as delta-sigma modulator.
sigma function
2. The horizontal overflow line of a dam spillway or other weir structure. 3. A horizontal member on which a lift gate rests when closed. 4. A low concrete or masonry dam in a small stream to retard bottom erosion. [CONT SYS] A type of robot articulation that has three degrees of freedom. { sim₁ }

sill anchor [BUILD] A fastener projecting from a foundation wall or foundation slab to secure the sill to the foundation. { sim₂ˌən-kər }

silo [CIV ENG] A large vertical, cylindrical structure, made of reinforced concrete, steel, or timber, and used for storing grain, cement, or other materials. { si-lo }

sitting [CIV ENG] The filling up or raising of the bed of a body of water by depositing silt. { sîl-ɪŋ }

sitting index [ENG] The measurement of the tendency of a solids- or gel-carrying fluid to cause silt in close-tolerance devices, such as valves or other process-line flow constrictions. { sîl-ɪŋ , in , deks }

silver-disk pyrheliometer [ENG] An instrument used for the measurement of direct solar radiation; it consists of a silver disk located at the lower end of a diaphragmed tube which serves as the radiation receiver for a calorimeter; radiation falling on the silver disk is periodically intercepted by means of a shutter located in the tube, causing temperature fluctuations of the calorimeter which are proportional to the intensity of the radiation. { sîl-ˌvar , d ˈisk , pîr-hê-lêm-ər }

silvered mica capacitor [ELECTR] A mica capacitor in which a coating of silver is deposited directly on the mica sheets to serve in place of conducting metal foil. { sîl-ˌvard mî-ko kəˈpəs-ər }

silver migration [ELEC] A process, causing reduction in insulation resistance and dielectric failure; silver, in contact with an insulator, at high humidity, and subjected to an electrical potential, is transported ionically from one location to another. { sîl-ˌvar mîˈgra-shən }

similarity principle See principle of dynamical similarity. { sim-ˌələr əd ˈe , prinˈsa-pal }

similitude [ENG] A likeness or resemblance, for example, the scale-up of a chemical process from a laboratory or pilot-plant scale to a commercial scale. { sîmˈlit-ət , təd }

simmer [ENG] The detectable leakage of fluid in a safety valve below the popping pressure. { sîmˌər }

simo chart [INDENG] A basic motion-time chart used to show the simultaneous nature of motions; commonly a therbig chart for two-hand work with motion symbols plotted vertically with respect to time, showing the therbig abbreviation and a brief description for each activity, and individual times values and body-member detail. Also known as simultaneous motion-cycle chart. { sîmˌmô , ˈchært }

Simon's theory [ENG] A theory of drilling which includes the effects of drilling by percussion and by vibration with a rotary (oil well) bit, cable tool, and pneumatic hammer, the rate of penetration of a chisel-shaped bit into brittle rock may be defined as follows: \( R = N A f \sqrt{\frac{D}{r}} \), where \( R \) equals the rate of advance of bit, \( N \) equals the number of impacts per unit time, \( D \) equals the diameter of the bit, and \( A \) equals the cross-sectional area of the crater at the periphery of the drill hole. { sîmˌmânz , ˌthē-ə-ˌrē }

simple balance [ENG] An instrument for measuring in which a beam can rotate about a knife-edge or other point of support, the unknown weight is placed in one of two pans suspended from the ends of the beam and the known weights are placed in the other pan, and a small weight is slid along the beam until the beam is horizontal. { sîmˌpālˌbāl-ənˈs }

simple continuous distillation See equilibrium flash vaporization. { sîmˌpāl kənˈtīnˌya-wəs,dīˈləshən }

simple engine [MECH ENG] An engine (such as a steam engine) in which expansion occurs in a simple cylinder, after which the working fluid is used to exhaust the radiation receiver for a calorimeter; radiation falling on the silver disk is periodically intercepted by means of a shutter located in the tube, causing temperature fluctuations of the calorimeter which are proportional to the intensity of the radiation. { sîmˌpāl hêtˌmənˌikˌmôˌsən }

simple harmonic motion See harmonic motion. { sîmˌpāl hârˈmən-ikˌmôˌshən }

simple machine [MECH ENG] Any of several elementary machines, one or more being incorporated in each mechanical machine; usually, only the lever, wheel and axle, pulley (or block and tackle), inclined plane, and screw are included, although the gear drive and hydraulic press may also be considered simple machines. { sîmˌpāl məˈshən }

simple pendulum [MECH] A device consisting of a small, massive body suspended by an inextensible object of negligible mass from a fixed horizontal axis about which the body and suspension are free to rotate. { sîmˌpāl ˈpenˌjaˌləm }

simplex concrete pile [CIV ENG] A molded-in-place pile made by using a hollow cylindrical mandrel which is filled with concrete after having been driven to the desired depth and raised a few feet at a time, the concrete flowing out at the bottom and filling the hole in the earth. { sîmˌpleks ˈkänˌkrētˌpîl }

simplex pump [MECH ENG] A pump with only one steam cylinder and one water cylinder. { sîmˌpleks ˈpump }

SIMS See secondary ion mass spectrometer. { sîmz }

simulate [ENG] To mimic some or all of the behavior of one system with a different, dissimilar system, particularly with computers, models, or other equipment. { sîmˌyaˌlāt }

simulator [ENG] A computer or other piece of equipment that simulates a desired system or condition and shows the effects of various applied changes, such as a flight simulator. { sîmˌyaˌlātˌər }

simultaneity [MECH] Two events have simultaneity, relative to an observer, if they take place at the same time according to a clock which is
simultaneous motion-cycle chart

fixed relative to the observer. \[\text{sí-mál-ta'né-\ér} \]

simultaneous motion-cycle chart See simo chart. \[\text{sí-mál-ta'né-ás 'mő-shán \text{[vi-kál, chárt]} \]

sine bar \[\text{[DES ENG]} \text{A device consisting of a steel straight edge with two cylinders of equal diameter attached near the ends with their centers equidistant from the straightedge, used to measure angles accurately and to lay out work at a desired angle in relationship to a surface.} \{\text{sín, bár} \]

sine galvanometer \[\text{[ENG]} \text{A type of magnetometer in which a small magnet is suspended in the center of a pair of Helmholtz coils, and the rest position of the magnet is measured when various known currents are sent through the coils.} \{\text{síng, gél-ván'né-mäd-ár} \]

sine-wave response See frequency response. \{\text{sín \[\text{ý} \text{wáv n'ép\text{á}n} \}

singing \[\text{[CONT SYS]} \text{An undesired, self-sustained oscillation in a system or component, at a frequency in or above the passband of the system or component, generally due to excessive positive feedback.} \{\text{síng, íj} \]

singing margin \[\text{[CONT SYS]} \text{The difference in level, usually expressed in decibels, between the singing point and the operating gain of a system or component.} \{\text{síng-gí̃, má-rí̃-án} \]

singing point \[\text{[CONT SYS]} \text{The minimum value of gain of a system or component that will result in singing.} \{\text{síng-gí̃, pó̃̃nt} \]

single acting \[\text{[MECH ENG]} \text{Acting in one direction only, as a single-acting plunger, or a single-acting engine (admitting the working fluid on one side of the piston only).} \{\text{síng-gí̃, ák-í̃j} \]

single-action press \[\text{[MECH ENG]} \text{A press having a single slide.} \{\text{síng-gí̃, xá̃k-shán 'pí̃s} \]

single-axis gyrooscope \[\text{[ENG]} \text{A gyrooscope suspended in just one gimbal whose bearings form its output axis; an example is a rate gyrooscope.} \{\text{síng-gí̃, ák-sás 'jí̃-rá, skóp} \]

single-block brake \[\text{[MECH ENG]} \text{A friction brake consisting of a short block fitted to the contour of a wheel or drum and pressed up against the surface by means of a lever on a fulcrum, used on railroad cars.} \{\text{síng-gí̃, blåk 'brák} \]

single-button carbon microphone \[\text{[ENG ACOUS]} \text{Microphone having a carbon-filled buttonlike container on only one side of its flexible diaphragm.} \{\text{síng-gí̃, båt-on 'ká-rán 'mí̃-krá-fón} \]

single-cut file \[\text{[DES ENG]} \text{A file with one set of parallel teeth, extending diagonally across the face of the file.} \{\text{síng-gí̃, kát 'fíl} \]

single-degree-of-freedom gyro \[\text{[MECH]} \text{A gyro the spin reference axis of which is free to rotate about only one of the orthogonal axes, such as the input or output axis.} \{\text{síng-gí̃, dí̃̃ggré áv 'jí̃-rén-dám 'jí̃-rá} \]

single-edged push-pull amplifier circuit \[\text{[ELECTR]} \text{Amplifier circuit having two transmission paths designed to operate in a complementary manner and connected to provide a single unbalanced output without the use of an output transformer.} \{\text{síng-gí̃, léj-d ĩ̃push, pül 'ám-plá, fí̃̃, sá-rá-kát} \]

single-effect evaporation \[\text{[CHEM ENG]} \text{An evaporation process completed entirely in one vessel or by means of a single heating unit.} \{\text{síng-gí̃, fí̃̃k ék-tí̃̃, sá-pá-rá-shán} \]

single-electron transistor \[\text{[ELECTR]} \text{A transistor whose dimensions are extremely small, in the nanometer range, causing it to exhibit characteristics that are sensitive to the transport and storage of single electrons.} \{\text{síng-gí̃, lí̃̃k ék-trán 'tránzí̃̃s-tán} \]

single-ended signal \[\text{[ELECTR]} \text{A circuit signal that is the voltage difference between two nodes, one of which can be defined as being at ground or reference voltage.} \{\text{síng-gí̃, nén-dád 'tí̃ng-nál} \]

single-ended spread \[\text{[ENG]} \text{A spread of geophones in which the shot point is located at one end of the arrangement.} \{\text{síng-gí̃, nén-dád 'spred} \]

single-hand drilling \[\text{[ENG]} \text{A method of rock drilling in which the drill steel, which is held in the hand, is struck with a 4-pound (1.8-kilogram) hammer, the drill being turned between the blows.} \{\text{síng-gí̃, hán 'dril-í̃j} \]

single-in-line package \[\text{[ELECTR]} \text{A packaged re-} sistor network or other assembly that has a single row of terminals or lead wires along one edge of the package. Abbreviated SIP.} \{\text{síng-gí̃, í̃̃n, lí̃̃n 'pá-kí̃̃j} \]

single-layer bit See surface-set bit. \{\text{síng-gí̃, lí̃̃̄st̃̄ 'bí̃} \]

single-loop feedback \[\text{[CONT SYS]} \text{A system in which feedback may occur through only one electrical path.} \{\text{síng-gí̃, lí̃̃̄p 'féd, bák} \]

single-loop servomechanism \[\text{[CONT SYS]} \text{A servomechanism which has only one feedback loop. Also known as servo loop.} \{\text{síng-gí̃, lí̃̃̄p 'sá-ró, vó, mék-a, ní̃̃-ám} \]

single-phase \[\text{[ELEC]} \text{Energized by a single alternating voltage.} \{\text{síng-gí̃, fá̃z} \]

single-phase circuit \[\text{[ELEC]} \text{Either an alternating-current circuit which has only two points of entry, or one which, having more than two points of entry, is intended to be so energized that the potential differences between all pairs of points of entry are either in phase or differ in phase by 180°.} \{\text{síng-gí̃, fá̃z 'sá-ró-kát} \]

single-phase flow \[\text{[CHEM ENG]} \text{The flow of a material, as a gas, single-phase liquid, or a solid, but not in any combination of the three.} \{\text{síng-gí̃, fá̃z 'fó̃̄} \]

single-phase meter \[\text{[ENG]} \text{A type of power-factor meter that contains a fixed coil that carries the load current, and crossed coils that are connected to the load voltage; there is no spring to restrain the moving system, which takes a position to indicate the angle between the current and voltage.} \{\text{síng-gí̃, fá̃z 'mé̃d-ár} \]

single-phase motor \[\text{[ELEC]} \text{A motor energized by a single alternating voltage.} \{\text{síng-gí̃, fá̃z 'mó̃́d-ár} \]

single-piece milling \[\text{[MECH ENG]} \text{A milling method whereby one part is held and milled in one machining cycle.} \{\text{síng-gí̃, pés 'mí̃l-í̃j} \]

single-point grounding \[\text{[ELEC]} \text{Grounding sys- tem that attempts to confine all return currents to a network that serves as the circuit reference;} \]

single-range device \[\text{[ELEC]} \text{A device having a single adjustable range.} \{\text{síng-gí̃, réng-gí̃, dĩ̃ž̃̄bl-ár} \]

single-sideband \[\text{[ELEC]} \text{A method of transmitting information in which only one side of the signal's frequency spectrum is used.} \{\text{síng-gí̃, sá-pá-'sí̃̄nd} \]

single-throw switch \[\text{[ELEC]} \text{A switch that closes or opens only once.} \{\text{síng-gí̃, thó̃̄ũ̃ 'swĩ̄tch} \]

single-turn coil \[\text{[ELEC]} \text{A coil having only one turn of wire.} \{\text{síng-gí̃, tó̃̄n 'swĩ̄l} \]
to be effective, no appreciable current is allowed to flow in the circuit reference, that is, the sum of the return currents is zero. (ˈsīn-gəl ˈpoint)

**single-point tool** [ENG] A cutting tool having one face and one continuous cutting edge. (ˈsīn-gəl ˈpoint ˈtūl)

**single-pole double-throw** [ELEC] A three-terminal switch or relay contact arrangement that connects one terminal to either of two other terminals. Abbreviated SPDT. (ˈsīn-gəl ˈpōl ˈdab-əl ˈthró)

**single-pole single-throw** [ELEC] A two-terminal switch or relay contact arrangement that opens or closes one circuit. Abbreviated SPST. (ˈsīn-gəl ˈpōl ˈsīn-gəl ˈthró)

**single sampling** [IND ENG] A sampling inspection in which the lot is accepted or rejected on the basis of one sample. (ˈsīn-gəl ˈsāmpl-əŋ)

**single-shot blocking oscillator** [ELEC] Blocking oscillator modified to operate as a single-shot trigger circuit. (ˈsīn-gəl ˈshāt ˈblāk-əŋ ˈās-ə-ləd-ə)

**single-shot explorer** [ENG] A magneto explorer operated by the twist action given by a half turn of the firing key. (ˈsīn-gəl ˈshāt ˈik ˈsplōd-ə)

**single-shot multivibrator** See monostable multivibrator. (ˈsīn-gəl ˈshāt ˈmāl-ˈtvīl,b्रād-ər)

**single-shot trigger circuit** [ELECTR] Trigger circuit in which one triggering pulse initiates one complete cycle of conditions ending with a stable condition. Also known as single-trip trigger circuit. (ˈsīn-gəl ˈshāt ˈtrīp-ər ˈsār-kat)

**single-sided amplifier** See single-end amplifier. (ˈsīn-gəl ˈsīd-əd ˈəm-pləˈfrər)

**single-sided board** [ELECTR] A printed wiring board that contains all of the interconnect material on one of the external layers. (ˈsīn-gəl ˈsīd-əd ˈbȯrd)

**single-stage compressor** [MECH ENG] A machine that effects overall compression of a gas or vapor from suction to discharge conditions without any sequential multiplicity of elements, such as cylinders or rotors. (ˈsīn-gəl ˈstākənˈprēs-ər)

**single-stage pump** [MECH ENG] A pump in which the head is developed by a single impeller. (ˈsīn-gəl ˈstākəˈpamp)

**single thread** [DES ENG] A screw thread having a single helix in which the lead and pitch are equal. (ˈsīn-gəl ˈthread)

**single-shot switch** [ELECTR] A switch in which the same pair of contacts is always opened or closed. (ˈsīn-gəl ˈthroʊ ˈswich)

**single-trip trigger circuit** See single-shot trigger circuit. (ˈsīn-gəl ˈtrip ˈtrīp-ər ˈsār-kat)

**single-tuned amplifier** [ELECTR] An amplifier characterized by resonance at a single frequency. (ˈsīn-gəl ˈtōnd ˈəm-pləˈfrər)

**single-unit semiconductor device** [ELECTR] Semiconductor device having one set of electrodes associated with a single carrier stream. (ˈsīn-gəl ˈyu-nət ˈsem-əl-ˈkən,dək-tər diˈvēz)

**sincular arc** [CONT SYS] In an optimal control problem, that portion of the optimal trajectory in which the Hamiltonian is not an explicit function of the control inputs, requiring higher-order necessary conditions to be applied in the process of solution. (ˈsīn-gəl ˈar̩)

**sink Float Separation Process** [ENG] A simple gravity process used in ore dressing that separates particles of different sizes or composition on the basis of differences in specific gravity. (ˈsīŋk ˈflōt ˌsep-ər-əˈshən ˌprā-səs)

**sinking fund** [IND ENG] A fund established by periodically depositing funds at compound interest in order to accumulate a given sum at a given future time for some specific purpose. (ˈsīŋk ˈfənd)

**sink mark** [ENG] A shallow depression or dimple on the surface of an injection-molded plastic part due to collapsing of the surface following local internal shrinkage after the gate seals. (ˈsīŋk ˈmark)

**sinter setting** See mechanical setting. (ˈsīn-tər ˈset-əng)

**sinosoidal current** See simple harmonic current. (ˈsī-nəˌsōd-əl ˈkərənt)

**SIP** See single in-line package. (ˈsip)

**siphon** [ENG] A tube, pipe, or hose through which a liquid can be moved from a higher to a lower level by atmospheric pressure forcing it up the shorter leg while the weight of the liquid in the longer leg causes continuous downward flow. (ˈsīfən)

**siphon barograph** [ENG] A recording siphon barometer. (ˈsīfən ˈbərəˌgərf)

**siphon barometer** [ENG] A shaped mercury barometer in which the stem of the L is capped and the cusp is open to the atmosphere. (ˈsī-fən ˈbərəˌmərd-ər)

**siphon recorder** [ENG] A recorder in which a small siphon discharges ink to make the record; used in submarine telegraphy. (ˈsī-fən ˈrəkər)

**siphon spillway** [CIV ENG] An enclosed spillway passing over the crest of a dam in which flow is maintained by atmospheric pressure. (ˈsī-fən ˈspilˌwā)

**siren** [ENG ACOUS] An apparatus for generating sound by the mechanical interruption of the flow of fluid (usually air) by a perforated disk or cylinder. (ˈsīrən)

**sister hook** [DES ENG] 1. Either of a pair of hooks which can be fitted together to form a closed ring. 2. A pair of such hooks. (ˈsīstər ˈhūk)

**site** [ENG] Position of anything; for example, the position of a gun emplacement. (ˈsit)

**six-axis system** [MECH ENG] A robot that has six degrees of freedom, three rectangular and three rotational. (ˈsīks ˈak-səs ˈsīks-təm)

**six-phase circuit** [ELEC] Combination of circuits energized by alternating electromotive forces which differ in phase by one-sixth of a cycle (60°). (ˈsīks ˈfāz ˈsārkət)

**Six’s thermometer** [ENG] A combination maximum thermometer and minimum thermometer, the tube is shaped in the form of a U with a bulb
six-tenths factor

at either end; one bulb is filled with creosote which expands or contracts with temperature variation, forcing before it a short column of mercury having iron indexes at either end; the indexes remain at the extreme positions reached by the mercury column, thus indicating the maximum and minimum temperatures; the indexes can be reset with the aid of a magnet. \( \{ \text{six-tenths factor} \} \)

sixty degrees Fahrenheit British thermal unit See British thermal unit. \( \{ \text{sixty degrees Fahrenheit British thermal unit} \} \)

size analysis See particle-size analysis. \( \{ \text{size analysis} \} \)

size block See gauge block. \( \{ \text{size block} \} \)

size classification See sizing. \( \{ \text{size classification} \} \)

size dimension \[ \text{DES ENG} \] In dimensioning, a specified value of a diameter, width, length, or other geometrical characteristic related to the size of an object. \( \{ \text{size dimension} \} \)

size enlargement \[ \text{CHEM ENG} \] Making large particles out of small ones by crystallization, particle cementation, tabletting, briquetting, agglomeration, flocculation, melting, casting, compaction and extrusion, and sintering or nodulizing. \( \{ \text{size enlargement} \} \)

size-frequency analysis See particle-size analysis. \( \{ \text{size-frequency analysis} \} \)

size reduction \[ \text{MECH ENG} \] The breaking of large pieces of coal, ore, or stone by a primary breaker, or of small pieces by grinding equipment. \( \{ \text{size reduction} \} \)

sizing \[ \text{ENG} \] 1. Separating an aggregate of mixed particles into groups according to size, using a series of screens. Also known as size classification. 2. See sizing treatment \[ \text{MECH ENG} \] A finishing operation to correct surfaces and shapes to meet specified dimensions and tolerances. \( \{ \text{sizing} \} \)

sizing screen \[ \text{DES ENG} \] A mesh sheet with standard-size apertures used to separate granular material into classes according to size; the Tyler standard screen is an example. \( \{ \text{sizing screen} \} \)

sizing treatment \[ \text{ENG} \] Also known as sizing, surface sizing. 1. Application of material to a surface to fill pores and thus reduce the absorption of subsequently applied adhesive or coating, used for textiles, paper, and other porous materials. 2. Surface-treatment applied to glass fibers used in reinforced plastics. \( \{ \text{sizing treatment} \} \)

SK See Stefan number.

skeleton framing \[ \text{BUILD} \] Framing in which steel framework supports all the gravity loading of the structure, this system is used for skyscrapers. \( \{ \text{skeleton framing} \} \)

skew \[ \text{ELECTR} \] 1. The deviation of a received facsimile frame from rectangularity due to lack of synchronism between scanner and recorder, expressed numerically as the tangent of the angle of this deviation. 2. The degree of non-synchronism of supposedly parallel bits when bit-coded characters are read from magnetic tape. \( \{ \text{skew} \} \)

skewback \[ \text{CIV ENG} \] The beveled or inclined support at each end of a segmental arch. \( \{ \text{skewback} \} \)

skew bridge \[ \text{CIV ENG} \] A bridge which spans a gap obliquely and is therefore longer than the width of the gap. \( \{ \text{skew bridge} \} \)

skew chisel \[ \text{ENG} \] A tool used for wood turning that has a straight cutting edge sharpened at an angle to the shank. \( \{ \text{skew chisel} \} \)

skewed bridge \[ \text{CIV ENG} \] A bridge for which the deck in plan is a parallelogram. \( \{ \text{skewed bridge} \} \)

skew level gear \[ \text{DES ENG} \] A level gear whose axes are not in the same place. \( \{ \text{skew level gear} \} \)

skid \[ \text{ENG} \] 1. A device attached to a chain and placed under a wheel to prevent its turning when descending a steep hill. 2. A timber, bar, rail, or log placed under a heavy object when it is being moved over bare ground. 3. A wood or metal platform support on wheels, legs, or runners used for handling and moving material. Also known as skid platform. \( \{ \text{skid} \} \)

skid-mounted \[ \text{ENG} \] Equipment or processing systems mounted on a portable platform. \( \{ \text{skid-mounted} \} \)

skim coat \[ \text{BUILD} \] A finish coat of plaster composed of lime putty and fine white sand. \( \{ \text{skim coat} \} \)

skimming plant \[ \text{CHEM ENG} \] A petroleum refinery designed to remove and finish only the lighter constituents of crude oil, such as gasoline and kerosene; the heavy ends are sold as fuel oil or for further processing elsewhere. \( \{ \text{skimming plant} \} \)

skin \[ \text{BUILD} \] The exterior wall of a building. \( \{ \text{skin} \} \)

skinning plant \[ \text{CHEM ENG} \] A petroleum refinery designed to remove and finish only the lighter constituents of crude oil, such as gasoline and kerosene; the heavy ends are sold as fuel oil or for further processing elsewhere. \( \{ \text{skinning plant} \} \)

skid \[ \text{ENG} \] A wood or metal platform support on wheels, legs, or runners used for handling and moving material. Also known as skid platform. \( \{ \text{skid} \} \)

skin diving \[ \text{ENG} \] Diving without breathing apparatus, using fins and faceplate only. \( \{ \text{skin diving} \} \)

skintle \[ \text{CIV ENG} \] To set bricks in an irregular fashion so that they are out of alignment with the face by 1/4 inch (6 millimeters) or more. \( \{ \text{skintle} \} \)

skip \[ \text{ENG} \] See skip hoist. \( \{ \text{skip} \} \)

skip distance \[ \text{ENG} \] In angle-beam ultrasonic testing, the distance between the point of entry on the workpiece and the point of first reflection. \( \{ \text{skip distance} \} \)

skip hoist \[ \text{MECH ENG} \] A basket, bucket, or open car mounted vertically or on an incline on wheels, rails, or shafts and hoisted by a cable, used to raise materials. Also known as skip. \( \{ \text{skip hoist} \} \)

skip logging \[ \text{ENG} \] A phenomenon during
acoustical (sonic) logging in which the acoustical energy is attenuated by low-elasticity formations and lacks the energy to trip the second sonic receiver (skips a cycle). Also known as cycle skip. ['skip, slak—in]

skip trajectory [MECH] A trajectory made up of ballistic phases alternating with skipping phases; one of the basic trajectories for the unpowered portion of the flight of a reentry vehicle or spacecraft reentering earth’s atmosphere. ['skip tro:jek-tré]

skirt See baseboard. ['skort]

skirt See baseboard. ['skør-iː]

skirting See baseboard. ['skær-iː]

skirting block [BUILD] Also known as base block, plinth block. 1. A corner block where a base strip and vertical enframement meet. 2. A concealed block to which a baseboard is anchored. ['skør-iː, slak]

skirt roof [BUILD] A false band of roofing projecting from between the stories of a building. ['skort, ruf]

skiving [MECH ENG] 1. Removal of material in thin layers or chips with a high degree of shear or slippage of the cutting tool. 2. A machining operation in which the cut is made with a form tool with its face at an angle allowing the cutting edge to progress from one end of the work to the other as the tool feeds tangentially past ten rotating workpieces. ['skiev-iŋ]

skull cracker [ENG] A heavy iron or steel ball that can be swung freely or dropped by a derrick to raze buildings or to compress bulky scrap. Also known as wrecking ball. ['skul kræk-ər]

skylight [ENG] An opening in a roof or ship deck that is covered with glass or plastic and designed to admit daylight. ['skilt]

skyscraper [BUILD] A very tall, multistory building. ['skræp-or]

slab [CIV ENG] That part of a reinforced concrete floor, roof, or platform which spans beams, columns, walls, or piers. [ELECTR] A relatively thick-cut crystal from which blanks are obtained by subsequent transverse cutting. [ENG] The outside piece cut from a log when sawing it into boards. (slab)

slabbing cutter [MECH ENG] A face-milling cutter used to make wide, rough cuts. ['slæb-iŋ, kəd-or]

slab cutter See plain milling cutter. ['slæb, kəd-ar]

slabstone See slab. ['slæb,stön]

slack [ENG] Looseness or play in a mechanism, as the play in the trigger of a small-arms weapon. ['slæk]

slackline cableway [MECH ENG] A machine, widely used in sand-and-gravel plants, employing an open-ended dragline bucket suspended from a carrier that runs upon a track cable, which can dig, elevate, and convey materials in one continuous operation. ['slæk, lın ‘ka-bal, vä]

slack time [ENG] For an activity in a PERT or critical-path-method network, the difference between the latest possible completion time of each activity which will not delay the completion of the overall project, and the earliest possible completion time, based on all predecessor activities. ['slæk,tim]

slave millingstile [BUILD] The vertical strip that a closed door abuts; it receives the bolt when the lock engages. ['slaiv-iŋ, stil]

slant depth [DES ENG] The distance between the crest and root of a screw thread measured along the angle forming the flank of the thread. {'slænt , deθp}

slant drilling [ENG] The drilling of a borehole or well at an angle to the vertical. {'slænt, dril-iŋ]

slat conveyor [MECH ENG] A conveyor consisting of horizontal slats on an endless chain. ['slæt kæn, va-ar]

slave [CONT SYS] A device whose motions are governed by instructions from another machine. ['slaiv]

slave arm [ENG] A component of a remote manipulator that automatically duplicates the motions of a master arm, sometimes with changes of scale in displacement or force. ['slaiv, arm]

sled [ENG] An item equipped with runners and a suitable body designed to transport loads over ice and snow. (sled)

sledgehammer [DES ENG] A large heavy hammer that is usually wielded with two hands, used for driving stakes or breaking stone. ['slaiv , ˈhæm-ar]

sleeper [CIV ENG] A timber, steel, or precast concrete beam placed under rails to hold them at the correct gage. {'slaip-ar]

sleeve [ELEC] 1. The cylindrical contact that is furthest from the tip of a phone plug. 2. Insulating tubing used over wires or components. Also known as bushing; sleeveing. [ENG] A cylindrical part designed to fit over another part. (sleiv)

sleeve bearing [MECH ENG] A machine bearing in which the shaft turns and is lubricated by a sleeve. (‘slaiv, ber-iŋ)

sleeve burner [ENG] A type of oil burner for domestic heating. {'slaiv, ˈbær-nar]

sleeve coupling [DES ENG] A hollow cylinder which fits over the ends of two shafts or pipes, thereby joining them. {'slaiv, kəp-liŋ]

sleeve joint [DES ENG] A device for joining the ends of two wires or cables together, constructed by forcing the ends of the wires or cables into both ends of a hollow sleeve. {'slaiv , ˈʃaʊt]

sleeve valve [MECH ENG] An admission and exhaust valve on an internal-combustion engine consisting of one or two hollow sleeves that fit around the inside of the cylinder and move with the piston so that their openings align with the inlet and exhaust ports in the cylinder at proper stages in the cycle. {'slaiv , ˈvalv}

slenderness ratio [CIV ENG] The ratio of the length of a column L to the radius of gyration r about the principal axes of the section. {‘slen-dər-nes, ˈraʃoʊ}

slewing [ENG] Moving a radar antenna or a sonar transducer rapidly in a horizontal or vertical direction, or both. {'slæiv-iŋ]
slewing mechanism

slewing mechanism [ENG] Device which permits rapid traverse or change in elevation of a weapon or instrument. \('slı́d-ı́n \, mek-a, niž-ı́m-a\)
slew rate [CONT SYS] The maximum rate at which a system can follow a command. [ELECTR] The maximum rate at which the output voltage of an operational amplifier changes for a square-wave or step-signal input; usually specified in volts per microsecond. \('slı́d \, rät \)
slice bar [ENG] A broad, flat steel blade used for chopping and scraping. \('slı́s \, bär \)
slide [ENG] 1. A sloping chute with a flat bed. 2. A sliding mechanism. [MECH ENG] The main reciprocating member of a mechanical press, guided in a press frame, to which the punch or upper die is fastened. \('slı́d \)slide conveyor [ENG] A slanted gravity slide for the forward downward movement of flowable solids, slurries, liquids, or small objects. \('slı́d kör, va-rör \)
slide gate [CIV ENG] A crest gate which has high frictional resistance to opening because it slides on its bearings in opening and closing. \('slı́d ɣät \)
slide projector See optical lantern. \('slı́d pra, jek-tar \)
slider [ELEC] Sliding type of movable contact. \('slı́d-or \)
slide rail See guardrail. \('slı́d Ʉål \)
slider coupling [MECH ENG] A device for connecting shafts that are laterally misaligned. Also known as double-slider coupling; Oldham coupling. \('slı́d-or, kıp-liıp \)
slide rest [MECH ENG] An adjustable slide for holding a cutting tool, as on an engine lathe. \('slı́d rest \)
slider support [ENG] A support designed to allow longitudinal movement of pipework in a horizontal plane. \('slı́d-or sa-pört \)
slide-rule dial [ENG] A dial in which a pointer moves in a straight line over long straight scales resembling the scales of a slide rule. \('slı́d Ʉıl, dıl \)
slide valve [MECH ENG] A sliding mechanism to cover and uncover ports for the admission of fluid, as in some steam engines. \('slı́d Ʉavl \)
sliding-block linkage [MECH ENG] A mechanism in which a crank and sliding block serve to convert rotary motion into translation, or vice versa. \('slı́d-ı́n ɬblək Ɂıp-kiː \)
sliding-chain conveyor [MECH ENG] A conveying machine to handle cases, cans, pipes, or similar products on the plain or modified links of a set of parallel chains. \('slı́d-ı́n ɿchan kör, va-rör \)
sliding fit [DES ENG] A fit between two parts that slide together. \('slı́d-ı́n ɿit \)
sliding form See slip form. \('slı́d-ı́n ɿ orm \)
sliding friction [MECH] Rubbing of bodies in sliding contact. \('slı́d-ı́n ɿrık-ʃan \)
sliding gear [DES ENG] A change gear in which speed changes are made by sliding gears along their axes, so as to place them in or out of mesh. \('slı́d-ı́n ɿr \)
sliding-gear transmission [MECH ENG] A transmission system utilizing a pair of sliding gears. \('slı́d-ı́n ɿ̱r tranz-ı́nə \)
sliding pair [MECH ENG] Two adjacent links, one of which is constrained to move in a particular path with respect to the other; the lower, or closed, pair is completely constrained by the design of the links of the pair. \('slı́d-ı́n ɿ̱r \per \)
sliding-vane compressor [CHEM ENG] A rotary-element gas compressor in which spring-loaded sliding vanes (evenly spaced around a cylinder off-center in a surrounding chamber) pick up, compress, and discharge gas as the cylinder revolves. \('slı́d-ı́n ɿ̱n kam ɿpres-ər \)
sliding vector [MECH] A vector whose direction and line of application are prescribed, but whose point of application is not prescribed. \('slı́d-ı́n ɿ̱k-tar \)
sliding way [CIV ENG] One of the timbers which form the upper part of the cradle supporting a ship during its construction, and which slide over the ground ways with the ship when it is launched. \('slı́d-ı́n ɿ̱w \)
slime [ENG] Liquid slurry of very fine solids with slime- or mudlike appearance. Also known as mud; pulp; sludge. \('slı́m \)
slim hole [ENG] A drill hole of the smallest practicable size, drilled with less-than normal-diameter tools, used primarily as a seismic shothole for structure tests and sometimes for stratigraphic tests. \('slı́m ɿ̱hol \)
sling [ENG] A length of rope, wire rope, or chain used for attaching a load to a crane hook. \('slı́n \)
sling psychrometer [ENG] A psychrometer in which the wet- and dry-bulb thermometers are mounted upon a frame connected to a handle at one end by means of a bearing or a length of chain; the psychrometer may be whirled in the air for the simultaneous measurement of wet- and dry-bulb temperatures. \('slı́n ɿ̱kra̧m-əd-ar \)
sling thermometer [ENG] A thermometer mounted upon a frame connected to a handle at one end by means of a bearing or length of chain, so that the thermometer may be whirled by hand. \('slı́n ɿ̱rDAQ ɿ̱m-m-em-əd-ar \)
slip [CIV ENG] A narrow body of water between two piers. [ELEC] 1. The difference between synchronous and operating speeds of an induction machine. Also known as slip speed. 2. Method of interconnecting multiple wiring between switching units by which trunk number 1 becomes the first choice for the first switch, trunk number 2 first choice for the second switch, trunk number 3 first choice for the third switch, and so on. [ELECTR] Distortion produced in the recorded facsimile image which is similar to that produced by skew but is caused by slippage in the mechanical drive system. \('slı́p \)
slip casting [ENG] A process in the manufacture of shaped refractories, cermets, and other materials in which the slip is poured into porous plaster molds. \('slı́p, kast-ı́n \)
**slip form** [CIV ENG] A narrow section of formwork that can be easily removed as concrete placing progresses. 

**slip forming** [ENG] A plastics-sheet forming technique in which some of the sheet is allowed to slip through the mechanically operated clamping rings during stretch-forming operations. 

**slip friction clutch** [MECH ENG] A friction clutch designed to slip when too much power is applied to it. 

**slip joint** [CIV ENG] 1. Contraction joint between two adjoining wall sections, or at the horizontal bearing of beams, slabs, or precast units, consisting of a vertical tongue fitted into a groove which allows independent movement of the two sections. 2. A telescoping joint between two parts [ENG] 1. A method of laying-up plastic veneers in flexible-bag molding, wherein edges are beveled and allowed to overlap part or all of the scarfed area. 2. A mechanical union that allows limited endwise movement of two solid items for example, pipe, rod, or duct with relation to each other. 

**slippage** [ENG] The leakage of fluid between the plunger and the bore of a pump piston. Also known as slippage loss. 

**slippage loss** [ENG] 1. Unintentional movement between the faces of two solid objects. 2. See slippage. 

**slip brake** [MECH ENG] 1. A plate placed against a moving part to slow or stop it. 2. A plate applied to the wheel of a vehicle or to the track roadway to slow or stop the vehicle. 

**slip speed** See slip. 

**slip plane** [ENG] A plane visible by reflected light in a transparent material; caused by poor welding and shrinkage during cooling. 

**slip ratio** [MECH ENG] For a screw propeller, relates the actual advance to the theoretic advance determined by pitch and spin. 

**slips** [ENG] A wedge-shaped steel collar fabricated in two sections, designed to hold a string of casing between various portions of the drilling operation. 

**slip speed** See slip. 

**slip tongue** [ENG] A pole on a horse-drawn wagon that is fastened by slipping it between two plates connected to the forecarriage. 

**slipway** [CIV ENG] The space in a shipyard where a foundation for launching ways and keel blocks exists and which is occupied by a ship while under construction. 

**slit** [DES ENG] A long, narrow opening through which radiation or streams of particles enter or leave certain instruments. 

**slitter** [MECH ENG] A synchronized feeder-knife variation of a rotary cutter, used for precision cutting of sheet material, such as metal, rubber, plastics, or paper, into strips. 

**slitting** [MECH ENG] The passing of sheet or strip material (metal, plastic, paper, or cloth) through rotary knives. 

**slop** [CHEM ENG] A petroleum-refinery term for odds and ends of oil produced in the refinery; the slop must be rerun or further processed to make it suitable for use. Also known as slop oil. 

**slopetape** A thinned belt conveyor used for transporting material on steep grades. 

**slope conveyor** [MECH ENG] A thinned belt conveyor used for transporting material on steep grades. 

**slope course** [ENG] A proving ground facility consisting of a large mound of earth with various sloping sides on which are roads having different grades; this slope course is used to measure the slope performance of military and other vehicles, including maximum speed on various grades, the most suitable gear for best performance, traction, and the holding ability of brakes. 

**slope of fall** [MECH] Ratio between the drop of a projectile and its horizontal movement: tangent of the angle of fall. 

**slop oil** See slope. 

**slosh test** [ENG] A test to determine the ability of the control system of a liquid-propelled missile to withstand or overcome the dynamic movement of the liquid within its fuel tanks. 

**slot** [DES ENG] A narrow, vertical opening. 

**slot distributor** [ENG] A long, narrow discharge opening (slot) in a pipe or conduit, used for the extrusion of sheet material, such as plastics. 

**slot doing** [ENG] A method of moving large quantities of material with a bulldozer using the same path for each trip so that the spillage from the sides of the blade builds up along each side, after which all material pushed into the slot is retained in front of the blade. 

**slot extrusion** [ENG] A method of extruding plastics-film sheet in which the molten thermoplastic compound is forced through a straight slot. 

**slotted-head screw** [DES ENG] A screw fastener with a single groove across the diameter of the head. 

**slotted nut** [DES ENG] A regular hexagon nut with slots cut across the flats of the hexagon so that a cotter pin or safety wire can hold it in place. 

**slotter** [MECH ENG] A machine tool used for making a mortise or shaping the sides of an aperture. 

**slotting** [MECH ENG] Cutting a mortise or a similar narrow aperture in a material using a machine with a vertically reciprocating tool. 

**slotted machine** [MECH ENG] A vertically reciprocating planing machine, used for making mortises and for shaping the sides of openings. 

**slot washer** [DES ENG] 1. A lock washer with an indentation on its edge through which a nail or screw can be driven to hold it in place. 2. A
sluice with a slot extending from its edge to the center hole to allow the washer to be removed without first removing the bolt. {'slät ,wäschar-}

slough [ENG] The fragments of rocky material from the wall of a borehole. Also known as cavings. {'slâu}

slow igniter cord [ENG] An igniter cord made with a central copper wire around which is strung a plastic incendiary material with an iron wire embedded to give greater strength; the whole is enclosed in a thin extruded plastic coating. {'slō ignid-ər-kord}

slow match [ENG] A match or fuse that burns at a known slow rate; used for igniting explosive charges. {'slō 'mäch}

slow sand filter [CIV ENG] A bed of fine sand 20–48 inches (151–122 centimeters) deep through which water, being made suitable for human consumption and other purposes, is passed at a fairly low rate, 2,500,000 to 10,000,000 gallons per acre (25,000 to 94,000 cubic meters per hectare); an underdrain system of graded gravel and perforated pipes carries the water from the filters to the point of discharge. {'slō 'sand 'fil-tər'}

slow-spiral drill See low-helix drill. {'slō 'spīr-ral 'dril}

sludge [CHEM ENG] 1. Residue left after acid treatment of petroleum oils. 2. Any semisolid waste from a chemical process. [CIV ENG] See sewage sludge. [ENG] 1. Mud from a drill hole in boring. 2. Sediment in a steam boiler. 3. A precipitate from petroleum oils or liquid fuels, for example, the insoluble degradation products formed during the operation of an internal combustion engine. 4. An amorphous deposit that has accumulated on the surface of a tube in a heat exchanger or of an evaporating device, but is not bonded to the fouled surface. 5. See slime. {'slāj}

sludge bucket See calyx. {'slāj ,bak-ət}

sludge coking [CHEM ENG] The recovery of sulfuric acid from dry acid sludge. {'slāj ,kōk-əj}

sludge pit See slushpit. {'slāj ,pit}

sludge pond See slushpit. {'slāj ,pānd}

sludge pump See sand pump. {'slāj ,pāmp}

sluff [ENG] The mud cake detached from the wall of a borehole. {'släff}

slug [MECH] A unit of mass in the British gravitational system of units, equal to the mass which experiences an acceleration of 1 foot per second per second when a force of 1 pound acts on it; equal to approximately 32.1740 pounds mass or 14.5939 kilograms. Also known as geepound. {'släg}

slug bit See insert bit. {'släg, bit}

sluice [CIV ENG] 1. A passage fitted with a vertical sliding gate or valve to regulate the flow of water in a channel or lock. 2. A body of water retained by a floodgate. 3. A channel serving to drain surplus water. {'slü s}

sluice gate [CIV ENG] The vertical slide gate of a sluice. {'slü s ɡət}

sluicing pond See scouring basin. {'slü s-iŋ 'pænd}

slump test [ENG] Determining the consistency of concrete by filling a conical mold with a sample of concrete, then inverting it over a flat plate and removing the mold; the amount by which the concrete drops below the mold height is measured and this represents the slump. {'slämp _test}

slurry bed reactor See ebullating-bed reactor. {'slär-i, bed rē,ak-ər}

slurrying [ENG] The formation of a mud or a suspension from a liquid and nonsoluble solid particles. {'slär-i-ŋ}

slurry preforming [ENG] The preparation of reinforced plastics preforms by wet-processing techniques; similar to pulp molding. {'slär-i prēfōr-m-əŋ}

slurry truck [ENG] A mobile unit that transports dry blasting ingredients, and mixes them in required proportions for introduction as explosive slurry into blastholes. {'slär-i, trāk}

slusher [ENG] A method for the application of vitreous enamel slip to ware by dashing it on the ware to cover all its parts, excess then being removed by shaking the ware. {'slaʃ-ər}

slush grouting [CIV ENG] Spreading a portland cement slurry over a surface that will subsequently be covered by concrete. {'slaʃ ,graud-əŋ}

slush molding [ENG] A thermoplastic casting in which a liquid resin is poured into a hot, hollow mold where a viscous skin forms; excess slush is drained off, the mold is cooled, and the molded product is stripped out. {'slaʃ ,mōld-əŋ}

slushpit [ENG] An excavation or diked area to hold water, mud, sludge, and other discharged matter from an oil well. Also known as mud pit, sludge pit, sludge pond. {'slaʃ ,pit}

small calorie See calorie. {'som'l kal-ərē}

small-diameter blasthole [ENG] A blast hole 1/2 to 3 inches (3.8 to 7.6 centimeters) in diameter, in low-face quarries. {'som'l dət'am-ərd-ər 'blast,hol}

small-lot storage [JND ENG] Generally, a quantity of less than one pallet stack, stacked to maximum storage height, thus, the term refers to a lot consisting of from one container to two or more pallet loads, but is not of sufficient quantity to form a complete pallet column. {'som'l lət 'stor-iŋ}

small-scale hydropower [MECH ENG] The generation of electricity by using hydraulic turbines in which the installed capacity of the plant lies within the range from 5 kilowatts to 5 megawatts. {'som'l ,skäl 'hi-drə,pār-ər}

smart sensor [ENG] A microsensor integrated with signal-conditioning electronics such as analog-to-digital converters on a single silicon chip to form an integrated microelectromechanical component that can process information itself or communicate with an embedded microprocessor. Also known as intelligent sensor. {'smār't 'sen-sər
smarter structures  [ENG] Structures that are capable of sensing and reacting to their environment in a predictable and desired manner, through the integration of various elements, such as sensors, actuators, power sources, signal processors, and communications network. In addition to carrying mechanical loads, smart structures may alleviate vibration, reduce acoustic noise, monitor their own condition and environment, automatically perform precision alignments, or change their shape or mechanical properties on command. {smart 'stræk-ʃærz}

smart tool  [CONT SYS] A robot end effector or fixed tool that uses sensors to measure the tool's position relative to reference markers or a workpiece or jig, and an actuator to adjust the tool's position with respect to the workpiece. {smart 'tül}

Smithells's burner  [ENG] Two concentric tubes that can be added to a bunsen burner to separate the inner and outer flame cones. {smith-əlz 'bər-nər}

Smith-McIntyre sampler  [MECH ENG] A device for taking samples of sediment from the ocean bottom; the digging and hoisting mechanisms are independent: the digging bucket is forced into the sediment before the hoisting action occurs. {smith 'mæk-an-fər,sam-plər}

smoke  [ENG] Dispersions of finely divided (0.01–5.0 micrometers) solids or liquids in a gasous medium. {smök}

smokebox  [MECH ENG] A chamber external to a boiler for trapping the unburned products of combustion. {smök,båks}

smoke chamber  [ENG] That area in a fireplace directly above the smoke shelf. {smök 'cham-bər}

smoke detector  [ENG] A photoelectric system for an alarm when smoke in a chimney or other location exceeds a predetermined density. {smök di.tek-tər}

smoke point  [ENG] The maximum flame height in millimeters at which kerosine will burn without out smoking, tested under standard conditions, used as a measure of the burning cleanliness of jet fuel and kerosine. {smök 'pɔɪnt}

smoke shelf  [ENG] A horizontal surface directly behind the throat of a fireplace to prevent down-drafts. {smök 'shelf}

smokestack  [ENG] A chimney for the discharge of flue gases from a furnace operation such as in a steam boiler, powerhouse, heating plant, ship, locomotive, or foundry. {smök.stak}

smoke test  [ENG] A test used on kerosine to determine the highest point to which the flame can be turned before smoking occurs. {smök 'test}

smoke washer  [ENG] A device for removing particles from smoke by forcing it through a spray of water. {smök 'wəsh-ər}

smooth blasting  [ENG] Blasting to ensure even faces without cracks in the rock. {smōth 'bləst-ən}

smooth drilling  [ENG] Drilling in a rock formation in which a fast rotation of the drill stem, a fast rate of penetration, and a high recovery of core can be achieved with vibration-free rotation of the drill stem. {smōth 'dril-iŋ}

smoothing  [ENG] Making a level, or continuously even, surface. {smōth-iŋ}

smoothing mill  [MECH ENG] A revolving stone wheel used to cut and bevel glass or stone. {smōth-iŋ, 'mıl}

smoothing plane  [DES ENG] A finely set hand tool, usually 5.5–10 inches (14–25.4 centimeters) long, for finishing small areas on wood. {smōth-iŋ 'plən}

smother kiln  [ENG] A kiln into which smoke can be introduced for blackening pottery. {smōt.hər 'kil}

smudging  [ENG] A frost-preventive measure used in orchards; properly, it means the production of heavy smoke, supposed to prevent radiational cooling, but it is generally applied to both heating and smoke production. {sməj-iŋ}

S/N See signal-to-noise ratio.

snagging  [MECH ENG] Removing surplus metal or large surface defects by using a grinding wheel. {snäg-iŋ}

snake hole  [ENG] 1. A blasting hole bored directly under a boulder. 2. A drill hole used in quarrying or bench blasting. {snäk 'hɔl}

snaking  [ENG] Towing a load with a long cable. {snäk-iŋ}

snap-back forming  [ENG] A plastic-sheet-forming technique in which an extended, heated, plastic sheet is allowed to contract over a form shaped to the desired final contour. {snap, 'bæk 'fo:m-əŋ}

snapback method  See repetitive time method. {snap,bæk 'meth-əd}

snap fastener  [DES ENG] A fastener consisting of a ball on one edge of an article that fits in a socket on an opposed edge, and used to hold edges together, such as those of a garment. {snap 'fæst.nər}

snap gage  [DES ENG] A device with two flat, parallel surfaces spaced to control one limit of tolerance of an outside diameter or a length. {snap 'ɡæ}

snap hook  See spring hook. {snap 'huk}

snap-off diode  [ELECTR] Planar epitaxial passivated silicon diode that is processed so a charge is stored close to the junction when the diode is conducting, when reverse voltage is applied, the stored charge then forces the diode to snap off or switch rapidly to its blocking state. {snap, of 'drd, 'od}

snapper  [ENG] A device for collecting samples from the ocean bottom, and which closes to prevent the sample from dropping out as it is raised to the surface. {snap-ər}

snap ring  [DES ENG] A form of spring used as a fastener, the ring is elastically deformed, put in place, and allowed to snap back toward its unstressed position into a groove or recess. {snap 'rɪŋ}

snatch block  [DES ENG] A pulley frame or sheave with an eye through which lashing can
be passed to fasten it to a scaffold or pole. \{\textprime\} \text{snach\_pl}\text{át}\}

**snowpipe**  
[ENG] A thick steel plate through which a hole about one-sixteenth of an inch larger than the outside diameter of the drill rod on which it is to be used is drilled, the plate is slipped over the drill rod and one edge is fastened to a securely anchored chain, and if rods must be pulled because high-pressure water is encountered, the eccentric pull of the chain causes the outside of the rods to be gripped and held against the pressure of water; the rod is moved a short distance out of the hole each time the plate is tapped. \{\textprime\} \text{snach\_pl}\text{át}\}

**S-N diagram**  
[ENG] In fatigue testing, a graphic representation of the relationship of stress S and the number of cycles N before failure of the material. \{\textprime\} \text{jes\prime\_en\_di\_a\_gram}\}

**snifter valve**  
[ENG] A valve on a pump that allows air to enter or escape, and accumulated water to be released. \{\textprime\} \text{snif\_tor\_val}\}

**snorkel**  
[ENG] Any tube which supplies air for an underwater operation, whether it be for material or personnel. \{\textprime\} \text{snor\_kål}\}

**snow bin**  
[ENG] A box for measuring the amount of snowfall, a type of snow gage. \{\textprime\} \text{snō\_bin}\}

**snow blower**  
[MECH ENG] A machine that removes snow from a road surface or pavement using a screw-type blade to push the snow into the machine and from which it is ejected at some distance. \{\textprime\} \text{snō\_błô\_or}\}

**snowbreak**  
[CIV ENG] Any barrier designed to shelter an object or area from snow. \{\textprime\} \text{snō\_bräk}\}

**snow fence**  
[CIV ENG] An open-slatted board fence usually 4 to 10 feet (1.2 to 3.0 meters) high, placed about 50 feet (15 meters) on the windward side of a railroad track or highway, the fence serves to disrupt the flow of the wind so that the snow is deposited close to the fence on the leeward side, leaving a comparatively clear, protected strip parallel to the fence and slightly farther downwind. \{\textprime\} \text{snō\_lōd}\}

**snow load**  
[CIV ENG] The unit weight factor considered in the design of a flat or pitched roof for the probable amount of snow lying upon it. \{\textprime\} \text{snō\_lōd}\}

**snow mat**  
[ENG] A device used to mark the surface between old and new snow, consisting of a piece of white duck 28 inches (71 centimeters) square, having in each corner triangular pockets in which are inserted slats placed diagonally to keep the mat taut and flat. \{\textprime\} \text{snō\_mat}\}

**snow-melting system**  
[CIV ENG] A system of pipes containing a circulating nonfreezing liquid or electric-heating cables, embedded beneath the surface of a road, walkway, or other area to be protected from snow accumulation. \{\textprime\} \text{snō\_melt\_ing\_sys\_tom}\}

**snow pillow**  
[ENG] A device used to record the changing weight of the snow cover at a point, consisting of a fluid-filled bladder lying on the ground with a pressure transducer or a vertical pipe and float connected to it. \{\textprime\} \text{snō\_pil\_ō\_d}\}

**snowplow**  
[MECH ENG] A device for clearing away snow, as from a road or railway track. \{\textprime\} \text{snō\_plō}\}

**snow resistograph**  
[ENG] An instrument for recording a hardness profile of a snow cover by recording the force required to move a blade up through the snow. \{\textprime\} \text{snō\_r\_iz\_ta\_graf}\}

**snow sampler**  
[ENG] A hollow tube for collecting a sample of snow in place. Also known as snow tube. \{\textprime\} \text{snō\_sam\_plar}\}

**snow scale**  
[ENG] See snow stake. \{\textprime\} \text{snō\_skål}\}

**snowshaded**  
[CIV ENG] A structure to protect an exposed area as a road or rail line from snow. \{\textprime\} \text{snō\_shed}\}

**snow stake**  
[ENG] A wood scale, calibrated in inches, used in regions of deep snow to measure its depth; it is bolted to a wood post or angle iron set in the ground. Also known as snow scale. \{\textprime\} \text{snō\_stål}\}

**snow tube**  
[ENG] See snow sampler. \{\textprime\} \text{snō\_tūb}\}

**SNR**  
[ENG] See signal-to-noise ratio. \{\textprime\} \text{snē\_brô\_or}\}

**Snyder sampler**  
[ENG] A mechanical device for obtaining small representative quantities from a moving stream of pulverized or granulated solids; it consists of a cast-iron plate revolving in a vertical plane on a horizontal axis with an inclined sample spout; the material to be sampled comes to the sampler by way of an inclined chute whenever the sample spout comes in line with the moving stream. \{\textprime\} \text{snō\_sne\_dér\_sam\_plar}\}

**soaking drum**  
[CHEM ENG] A heated petroleum-refinery process vessel used in connection with petroleum thermal-cracking coils to furnish the residence time needed to complete the cracking reaction. \{\textprime\} \text{so\_k\_ing\_drum}\}

**soap bubble test**  
[ENG] A leak test in which a soap solution is applied to the surface of the vessel under internal pressure test; soap bubbles form if the tracer gas leaks from the vessel. \{\textprime\} \text{sō\_b\_blu\_t\_test}\}

**socket**  
[ELEC] A device designed to provide electric connections and mechanical support for an electronic or electric component requiring convenient replacement. [ENG] A device designed to receive and grip the end of a tubular object, such as a tool or pipe. \{\textprime\} \text{sā\_k\_at}\}

**socket-head screw**  
[DES ENG] A screw fastener with a geometric recess in the head into which an appropriate wrench is inserted for driving and turning, with consequent improved nontamperability. \{\textprime\} \text{sā\_k\_at\_hed\_skrų}\}

**socket wrench**  
[DES ENG] A wrench with a socket to fit the head of a bolt or a nut. \{\textprime\} \text{sā\_k\_at\_rench}\}

**soda-acid extinguisher**  
[ENG] A fire-extinguisher from which water is expelled at a high rate by the generation of carbon dioxide, the result of mixing (when the extinguisher is tilted) of sulfuric acid and sodium bicarbonate. \{\textprime\} \text{sō\_dā\_as\_ə\_d ik\_st\_ing\_gwā\_shār}\}
soda pulping process  [CHEM ENG] The digestion of wood chips by caustic soda; used to manufacture pulp for paper products.  

solar  [ENG] Sound-wave transmitting and receiving equipment that is used to remotely measure the vertical turbulence structure and wind profile of the lower layer of the atmosphere by analyzing sound reflected in scattering by atmospheric turbulence. Derived from sonic detection and ranging.  

sodium sulfite process  [CHEM ENG] A process for the digestion of wood chips in a solution of magnesium, ammonium, or calcium disulfite containing free sulfur dioxide; used in papermaking.  

soft  [MECH ENG] The underside of a horizontal structural member, such as a beam or a slab.  

soft hammer  [ENG] A hammer having a head made of a soft material, such as copper, lead, rawhide, or plastic; used to prevent damage to a finished surface.  

soft iron ammeter  [ENG] An ammeter in which vents thermal energy from the sun into electrical, soft-iron ammeter, soft hammer.  

soft automation  [ENG] Automatic control, chiefly through the use of computer processing, with relatively little reliance on computer hardware.  

soft flow  [ENG] The free-flowing characteristics of a plastic material under conventional molding conditions.  

soft mill base  [CIV ENG] A missile-launching base that is not protected against a nuclear explosion.  

soft patch  [ENG] A patch in a crack in a vessel such as a steam boiler consisting of a soft material inserted in the crack and covered by a metal plate bolted or riveted to the vessel.  

soft-wired numerical control  [ENG] Computer numerical control.  

soil  [ENGLISH][1] See soil pipe.  

soil line  [ENG] See soil pipe.  

soil mechanics  [ENG] The application of the laws of solid and fluid mechanics to soils and similar granular materials as a basis for design, construction, and maintenance of stable foundations and earth structures.  

soil pipe  [CIV ENG] A cast-iron or plastic pipe for carrying discharges from toilet fixtures from a building into the soil drain. Also known as soil line.  

soil stack  [BUILD] The main vertical pipe into which flows the waste water from the soil pipes in a structure.  

soil thermometer  [ENG] A thermometer used to measure the temperature of the soil, usually the mercury-in-glass thermometer. Also known as earth thermometer.  

solar battery  [ELECTR] An array of solar cells, usually connected in parallel and series.  

solar attachment  [ENG] A device for determining the true meridian directly from the sun, used an an attachment on a surveyor’s transit or compass.  

solar chimney  [ENG] A natural-draft drive device that uses solar radiation to provide upward momentum to a mass of air, thereby converting the thermal energy to kinetic energy, which can be extracted from the air with suitable wind machines.  

solar collector  [ENG] An installation designed to gather and accumulate energy in the form of solar radiation.  

solar distillation  [CHEM ENG] A procedure in which the sun’s heat is used to evaporate seawater in order to produce sodium chloride and other salts or potable water.  

solar engine  [MECH ENG] An engine which converts thermal energy from the sun into electrical, mechanical, or refrigeration energy; may be used as a method of spacecraft propulsion, either directly by photon pressure on huge solar sails, or indirectly from solar cells or from a reflector-boiler combination used to heat a fluid.  

solar furnace  [ENG] An image furnace in which high temperatures are produced by focusing solar radiation.  

solar heating  [MECH ENG] The conversion of solar radiation into heat for technological, comfort-heating, and cooking purposes.  

solar heat storage  [ENG] The storage of solar energy for later use, usually accomplished by the heating of water or fusing a salt, although sand and gravel have been used as storage media.  

solar house  [BUILD] A house with large expanses of glass designed to catch solar radiation for heating.  

solarimeter  [ENG] 1. A type of pyranometer consisting of a Moll thermopile shielded from the wind by a bell glass. 2. See pyranometer.  

solar magnetograph  [ENG] An instrument that utilizes the Zeeman effect to directly measure the strength and polarity of the complex patterns of magnetic fields at the sun’s surface, comprises a telescope, a differential analyzer, a spectrograph, and a photoelectric or photographic means of differencing and recording.  

solar pond  [MECH ENG] A type of nonfocusing solar pond
**solar power**

Solar power is the conversion of the energy of sunlight to useful work. Solar panels, also known as solar cells, are devices that convert sunlight into electrical energy. They consist of a semiconductor, such as silicon, which allows the flow of electrical current when exposed to light. Solar power systems can be used for various applications, including residential, commercial, and industrial energy generation.

**solar power** [MECH ENG] The conversion of the energy of the sun’s radiation to useful work. (söl′ə-lər’ pānd)

**solar power satellite** [ENG] A proposed collector of solar energy that would be placed in geostationary orbit where sunlight striking the satellite would be converted to electricity and then to microwaves, which would be beamed to earth. (söl′ə-lər’ pōō′ə-r)

**solar sensor** [ELECTR] A light-sensitive diode that sends a signal to the attitude-control system of a spacecraft when it senses the sun. Also known as sun sensor. (söl′ə-lər’ sen-sər)

**solar still** [CHEM ENG] A device for evaporating seawater, in which water is confined in one or more shallow pools, over which is placed a roof-shaped transparent cover made of glass or plastic film; the sun’s heat evaporates the water, leaving behind a residue of salt; the vapor from the evaporated water condenses on the surface of the cover and trickles down into gutters, which thus collect fresh water. (söl′ə-lər’ stil)

**soldering gun** [ENG] A soldering iron shaped like a gun. (söl′ə-dər’ jən)

**soldering iron** [ENG] A rod of copper with a handle on one end and pointed or wedge-shaped at the other end, and used for applying heat in soldering. (söl′ə-dər’ jərn)

**soldering pencil** [ENG] A small soldering iron, about the size and weight of a standard lead pencil, used for soldering or unsoldering joints on printed wiring boards. (söl′ə-dər’ pen-səl)

**solder track** [ELECTR] A conducting path on a printed circuit board that is formed by applying molten solder to the board. (söl′ə-drak)

**solder course** [CIV ENG] A course of bricks laid on their ends so that only their long sides are visible. (söl′ə-drər’ korś)

**sole** [BUILD] The horizontal member beneath the studs in a framed building. [ELECTR] Electrode used in magnetrons and backward-wave oscillators to carry a current that generates a magnetic field in the direction wanted. (sōl)

**solenoid brake** [MECH ENG] A device that retards or arrests rotational motion by means of the magnetic resistance of a solenoid. (sōl′ə-noid′ brak)

**solenoid valve** [MECH ENG] A valve actuated by a solenoid, for controlling the flow of gases or liquids in pipes. (sōl′ə-noid′ valv)

**solepiece** [CIV ENG] One of two steel plates, port and starboard, whose forward parts are bolted to the ground ways supporting a ship about to be launched, while their aft parts are attached to the sliding ways; at the start of the launch, they are cut simultaneously with burning torches to release the ship. Also known as sole-plate. (sōl’pēs)

**soleplate** [BUILD] The plate on which stud bases butt in a stud partition. [CIV ENG] See solepiece. [ENG] 1. The supporting base of a machine. 2. A plate on which a bearing can be attached and, if necessary, adjusted slightly. (sōl’plät)

**solid box** [MECH ENG] A solid, unadjustable ring bearing lined with babbit metal, used on light machinery. (sōl′əd əd’ baiks)

**solid coupling** [MECH ENG] A flanged-face or a compression-type coupling used to connect two shafts to make a permanent joint and usually designed to be capable of transmitting the full load capacity of the shaft; a solid coupling has no flexibility. (sōl′əd əd’ kăp-lip)

**solid cutter** [DES ENG] A cutter made of a single piece of material. (sōl′əd əd’ ķid-ər)

**solid die** [DES ENG] A piece of material. (sōl′əd əd’ ķid)

**solid dielectric** [ELECTR] A method of soldering. (sōl′əd əd ər’ krōt)

**solid-dielectric gas transducer** [ENG] A device in which the concentration of a particular gas in a mixture is determined from the diffusion voltage across a heated solid electrolyte placed between this mixture and a reference gas. (sōl′əd əd əl’ ək-tra, lit’ əs tranz, ṭüs-dər)

**solidification** [MECH ENG] A fuel injection system for a diesel engine in which a pump forces fuel through a fuel line and an atomizing nozzle into the combustion chamber. (sōl′əd əd in’jek-tra, lit’’ əs tən-təm)

**solid logic technology** [ELECTR] A method of computer construction that makes use of miniaturized modules, resulting in faster circuitry because of the reduced distances that current must travel. (sōl′əd əd əl’ ijk tek’nəl-ə-jē)

**solid-shaft tool** [ENG] A cutting tool in which the shank and cutting edges are machined from one piece. (sōl′əd əd əd’ ʃaft-ə-lip)

**solid state** [ENG] Pertaining to a circuit, device, or system that depends on some combination of electrical, magnetic, and optical phenomena within a solid that is usually a crystalline semiconductor material. (sōl′əd əd əd’stāt)

**solid-state circuit** [ELECTR] Complete circuit formed from a single block of semiconductor material. (sōl′əd əd əd’stāt əd’srəkət)

**solid-state circuit breaker** [ELECTR] A circuit breaker in which a Zener diode, silicon controlled rectifier, or solid-state device is connected to sense when load terminal voltage exceeds a safe value. (sōl′əd əd əd’stāt əd’ ər’ bkr-ə)

**solid-state component** [ELECTR] A component whose operation depends on the control of electrical or magnetic phenomena in solids, such as a transistor, crystal diode, or ferrite device. (sōl′əd əd əd’ əd kən’pō-nənt)

**solid-state device** [ELECTR] A device, other than a conductor, which uses magnetic, electri-
The process to generate an external source. {solvay process}

A petroleum refinery process used to extract mercaptans from gasoline or naphtha; uses sound, at sonic or ultrasonic frequencies, to degas the precipitated oil; the solvent is recovered for reuse. {solvant dewaxing}

The separation of materials of different chemical types and solubilities by selective solvent action, that is, some materials are more soluble in one solvent than in another, hence there is a preferential extractive action, used to refine petroleum products, chemicals, vegetable oils, and vitamins. {solvant extraction}

solvent dewaxing | [CHEM ENG] A petroleum refinery process for solvent removal of wax from oils; the mixture of waxy oil and solvent is chilled, then filtered or centrifuged to remove the precipitated oil, the solvent is recovered for reuse. {solvant dewaxing}

sonar boomer transducer

solvent deasphalting | [CHEM ENG] A petroleum refinery process used to remove asphaltic and resinous materials from reduced crude oils, lubricating oil stocks, gas oils, or middle distillates through the extractive or precipitant action of solvents. Also known as solvent desersining. {solvant deasphalting}

solvent desersining | [CHEM ENG] A petroleum refinery process used to extract asphaltic and resinous materials from reduced crude oils, lubricating oil stocks, gas oils, or middle distillates through the extractive or precipitant action of solvents. Also known as solvent desersining. {solvant deasphalting}

solvent recovery | [CHEM ENG] For reuse purposes, the catching and recovery of solvent vapors from vent lines, process vessels, or other sources of evaporative loss, usually with a solid adsorbent material. {solvant recovery}

solvent-refined | [CHEM ENG] Pertaining to any product material whose final quality and condition is in part the result of a solvent treatment during processing of the feedstock material. {solvant-refined}

solvent welding | [ENG] A technique for joining plastic pipework in which a mixture of solvent and cement is applied to the pipe end and to the socket, with the parts then being joined and allowed to set. {solvant welding}

sonar | [ENG] 1. A system that uses underwater sound, at sonic or ultrasonic frequencies, to detect and locate objects in the sea, or for communication, the commonest type is echo-ranging sonar; other versions are passive sonar, scanning sonar, and searchlight sonar. Derived from sound navigation and ranging. 2. See sonar set. {sonar}

sonar beacon | [ENG ACOUS] An underwater beacon that transmits sonic or ultrasonic signals for the purpose of providing bearing information; it may have receiving facilities that permit triggering an external source. {sonar beacon}

sonar boomer transducer | [ENG ACOUS] A sonar transducer that generates a large pressure wave in the surrounding water when a capacitor
sonar capsule

bank discharges into a flat, epoxy-encapsulated coil, creating opposed magnetic fields from the coil and from eddy currents in an adjacent aluminum disk, which cause the disk to be driven away from the coils with great force. {'sɔnə,nɑr bʌm-ər trans,dju-ər}

sonar capsule [ENG ACOUS] A capsule that reflects high-frequency sound waves; the sonar capsule, if attached to a reentry body, may be used to locate the reentry body. {'sɔnə,nɑrˌkap-səl}

sonar dome [ENG] A streamlined, watertight enclosure that provides protection for a sonar transducer, sonar projector, or hydrophone and associated equipment, while offering minimum interference to sound transmission and reception. {'sɔnə,nɑrˌdəm}

sonar projector [ENG ACOUS] An electromechanical device used under water to convert electrical energy to sound energy; a crystal or magnetostriiction transducer is usually used for this purpose. {'sɔnəˌnɑr prəˈtek-tər}

sonar set [ENG] A complete assembly of sonar equipment for detecting and ranging or for communication. Also known as sonar. {'sɔnəˌnɑrˌsɛt}

sonor target [ENG ACOUS] An object which reflects a sufficient amount of a sonar signal to produce a detectable echo signal at the sonar equipment. {'sɔnəˌnɑrˌtɑr-gət}

sonar transducer [ENG ACOUS] A transducer used under water to convert electrical energy to sound energy and sound energy to electrical energy. {'sɔnəˌnɑr transˌdju-ər}

sonar transmission [ENG ACOUS] The process by which underwater sound signals generated by a sonar set travel through the water. {'sɔnəˌnɑr tranzˌmish-an}

sonar window [ENG ACOUS] The portion of a sonar dome or sonar transducer that passes sound waves at sonar frequencies with little attenuation while providing mechanical protection for the transducer. {'sɔnəˌnɑrˌwin-dəɾ}

sonde [ENG] An instrument used to obtain weather data during ascent and descent through the atmosphere, in a form suitable for telemetering to a ground station by radio, as in a radiosonde. {'sɔndə}

sonic altimeter [ENG] An instrument for determining the height of an aircraft above the earth by measuring the time taken for sound waves to travel from the aircraft to the surface of the earth and back to the aircraft again. {'sɔnˈɪk ɔlˈtɪm-ər}

sonic anemometer [ENG] An anemometer which measures wind speed by means of the properties of wind-borne sound waves; it operates on the principle that the propagation velocity of a sound wave in a moving medium is equal to the velocity of sound with respect to the medium plus the velocity of the medium. {'sɔnˈɪkˌan-ərˌməm-əd-ər}

sonicate [ENG] To apply high-frequency sound waves to matter. {'sən-əˌkət}

sonicator [ENG ACOUS] An instrument for producing high-intensity ultrasound, consisting of a converter that transforms electrical energy into mechanical energy in the form of oscillation of piezoelectric transducers at a frequency of 20 kilohertz, and a titanium horn that focuses this oscillation and radiates energy into the liquid being treated through a tip. {'sən-əˌkəd-ər}

sonic chemical analyzer [ENG] A device to characterize the composition of a gas, liquid, or solid by the attenuation or change in the velocity of sound waves through a sample; the effect is related to molecular structure and intermolecular interactions. {'sən-ikˌ kém-əˌkəlˌən-əˌliz-ər}

sonic cleaning [ENG] Cleaning of contaminated materials by the action of intense sound in the liquid in which the material is immersed. {'sən-ikˌklən-əŋ}

sonic depth finder [ENG] A sonar-type instrument used to measure ocean depth and to locate underwater objects; a sound pulse is transmitted vertically downward by a piezoelectric or magnetostriiction transducer mounted on the hull of the ship; the time required for the pulse to return after reflection is measured electronically. Also known as echo sounder. {'sən-ikˌdɛʧˈfɪndər}

sonic detection and ranging [ENG] Seer sodar. {'sən-ikˌdɛʧˌtek-shən \ənˈræŋ-əŋ}

sonic drilling [MECH ENG] The process of cutting or shaping materials with an abrasive slurry driven by a reciprocating tool attached to an audio-frequency electromechanical transducer and vibrating at sonic frequency. {'sən-ikˌdrij-əŋ}

sonic flaw detection [ENG] The process of locating imperfections in solid materials by observing internal reflections or a variation in transmission through the materials as a function of sound-path location. {'sən-ikˌflɔ dɪˌtek-shən}

sonic liquid-level meter [ENG] A meter that detects a liquid level by sonic-reflection techniques. {'sən-ikˌlɪk-wədˌlev-əlˌmɛd-ər}

sonic nucleation [CHEM ENG] In supersaturated solutions, the use of sonic or ultrasonic radiation to help bring about nucleation and corresponding crystallization of substances otherwise difficult to crystallize. {'sən-ikˌˌnjuˌkləˈneɪʃənˌˌməd-ər}

sonic sifter [MECH ENG] A high-speed vibrating apparatus used in particle size analysis. {'sən-ikˌˈsɪftər}

sonic sounding [ENG] Determining the depth of the ocean bottom by measuring the time for an echo to return to a shipboard sound source. {'sən-ikˌˌsoʊnd-əŋ}

sonic thermometer [ENG] A thermometer based upon the principle that the velocity of a sound wave is a function of the temperature of the medium through which it passes. {'sən-ikˌˌthəˌmətərˌəd-ər}

sonic well logging [ENG] A well logging technique that uses a pulse-echo system to measure
the distance between the instrument and a sound-reflecting surface, used to measure the size of cavities around brine wells, and capacities of underground liquefied petroleum gas storage chambers.  {sán·ık kern, jāg-r̥j̥ }  

sonobuoy  [ENG] An acoustic receiver and radio transmitter mounted in a buoy that can be dropped from an aircraft by parachute to pick up underwater sounds of a submarine and transmit them to the aircraft; to track a submarine, several buoys are dropped in a pattern that includes the known or suspected location of the submarine, with each buoy transmitting an identifiable signal; an electronic computer then determines the location of the submarine by comparison of the received signals and triangulation of the resulting time-delay data. Also known as radio sonobuoy.  {sán·əˌbɔ́i }  

sonograph  [ENG] 1. An instrument for recording sound or seismic vibrations. 2. An instrument for converting sounds into seismic vibrations.  {sán·əˌgrɒf }  

sonometer  [ENG] 1. In general, any device which consists of a thin metallic wire stretched over two bridges that are usually mounted on a soundboard and which is used to measure the vibration frequency, tension, density, or diameter of the wire, or to verify relations between these quantities. Also known as monochord. 2. In particular, an instrument for measuring rock stress by means of a piano wire stretched between two bolts in the rock; any change of pitch after destressing is observed and used to indicate stress.  {sán·əˌsɔ́rn̥ }  

sonoscan  [ENG] A type of acoustic microscope in which an unfocused acoustic beam passes through the object and produces deformations in a liquid-solid interface that are sensed by a laser beam reflected from the surface.  {sán·əˌskɒn }  

soot blower  [ENG] A system of steam or air jets used to maintain cleanliness, efficiency, and capacity of heat-transfer surfaces by the periodic removal of ash and slag from the heat-absorbing surfaces.  {sútˌbl̩r̥ }  

sophisticated robot  [CONT SYS] A robot that can be programmed and is controlled by a microprocessor.  {səˌfɪs·tɪ·kæd·ədˈ r̥ʊˌbɔ́t̥ }  

 sorption pumping  [ENG] A technique used to reduce the pressure of gas in an atmosphere; the gas is adsorbed on a granular sorbent material such as a molecular sieve in a metal container; when this sorbent-filled container is immersed in liquid nitrogen, the gas is sorbed.  {sɔr·pʃənˌpʌmp·ɪŋ }  

sound-field enhancement  [ENG ACOUS] A system for enhancing the acoustical properties of both indoor and outdoor spaces, particularly for unamplified speech, song, and music; may consist of one or more microphones, systems for amplification and electronic signal processing, and one or more loudspeakers.  {səʊnˌfɪld ɪnˌhænˈmənt̬ }  

sortie number  [ENG] A reference used to identify the images taken by all the sensors during one air reconnaissance sortie.  {sɔr·tēˌn̥nəˌmər̥̊ }  

sorting table  [ENG] Any horizontal conveyor belt for operators, along its side, sort bulk material, packages, or objects from the conveyor.  {sɔr·tɪŋˌt̬eɪlˌb̩ɔ́l̥ }  

sound analyzer  [ENG] An instrument which measures the amount of sound energy in various frequency bands; it generally consists of a set of fixed electrical filters or a tunable electrical filter, along with associated amplifiers and a meter which indicates the filter output.  {sɔnd̩ˌəˌn̥əˌlər̥ }  

sound effects  [ENG ACOUS] Mechanical devices or recordings used to provide lifelike imitations of various sounds.  {səʊnd̩ˌɛkt̬ɪʃən̥ }  

sound film  [ENG ACOUS] Motion picture film having a sound track along one side for reproduction of the sounds that are to accompany the film.  {səʊnd̩ˌfɪlm }  

sound filmstrip  [ENG ACOUS] A filmstrip that has accompanying sound on a separate disk or tape, which is manually or automatically synchronized with projection of the pictures in the strip.  {səʊnd̩ˌfɪlmˌstr̥ɪp̥ }  

sound gate  [ENG ACOUS] The gate through which film passes in a sound-film projector for conversion of the sound track into audio-frequency signals that can be amplified and reproduced.  {səʊnd̩ˌgæt̥ }  

sound head  [ENG ACOUS] 1. The section of a sound motion picture projector that converts the photographic or magnetic sound track to audible sound signals. 2. In a sonar system, the cylindrical container for the transmitting projector and the receiving hydrophone.  {səʊnd̩ˌhɛd̥ }  

sound  [ENG] 1. Determining the depth of a body of water by an echo sounder or sounding line. 2. Measuring the depth of bedrock by driving a steel rod into the soil. 3. Any penetration of the natural environment for scientific observation.  {səʊnd̩ˌɪŋ̥ }  

sound balloon  [ENG] A small free balloon used for carrying radiosonde equipment aloft.  {səʊnd̩ˌbɔ̌l̥n̥ }  

sound lead  [ENG] A lead used for determining the depth of water.  {səʊnd̩ˌl̥ɛd̥ }  

sound line  [ENG] The line attached to a sounding lead. Also known as lead line.  {səʊnd̩ˌl̥ɪn̥ }  

sound meter  [ENG] An instrument used for measuring the depth of water, consisting essentially of a reel of wire; to one end of this wire there is attached a weight which carries a device for measuring and recording the depth; a crank or motor reels in the wire.  {səʊnd̩ˌmɛt̬ər̥ }  

sound pole  [ENG] A pole or rod used for sounding in shallow water, and usually marked to indicate various depths.  {səʊnd̩ˌpol̥ }  

sound sextant  [ENG] An instrument for determining the depth of water.  {səʊnd̩ˌsɛkt̬ənt̬ }  

soundwire  [ENG] A wire used with a sound-film projector in determining depth of water.  {səʊnd̩ˌw̥ɪr̥ }  

sound-level meter  [ENG] An instrument used
sound locator

to measure noise and sound levels in a specified manner, the meter may be calibrated in decibels or volume units and includes a microphone, an amplifier, an output meter, and frequency-weighting networks. {saʊnd ‘næv-əl, ‘mɪd-ər} sound locator [ENG ACOUS] A device formerly used to detect aircraft in flight by sound, consisting of four horns, or sound collectors (two for azimuth detection and two for elevation), together with their associated mechanisms and controls, which enabled the listening operator to determine the position and angular velocity of an aircraft. {saʊnd ‘lɔ,kɑd-ər} sound navigation and ranging [ENG] Sonar. {saʊnd ‘næv-ə; gæ-ʃən ən ‘rənj-ɪŋ} sound-powered telephone [ENG ACOUS] A telephone operating entirely on current generated by the speaker’s voice, with no external power supply, sound waves cause a diaphragm to move a coil back and forth between the poles of a powerful but small permanent magnet, generating the required audio-frequency voltage in the coil. {saʊnd ‘pɔʊr-əd ‘tel-ə,fʌn} sound production [ENG ACOUS] Conversion of energy from mechanical or electrical into acoustical form, as in a siren or loudspeaker. {saʊnd ‘prɑ,da k-ʃən} soundproofing [ENG] Sealing. {saʊnd,prʊf-ɪŋ} sound ranging [ENG ACOUS] Determining the location of a gun or other sound source by measuring the travel time of the sound wave to microphones at three or more different known positions. {saʊnd ‘rɑn-ɪŋ} sound reception [ENG ACOUS] Conversion of acoustical energy into another form, usually electrical, as in a microphone. {saʊnd ‘ri,sɛp-ʃən} sound recording [ENG ACOUS] The process of recording sound signals so they may be reproduced at any subsequent time, as on a phonograph disk, motion picture sound track, or magnetic tape. {saʊnd ‘ri,koʊrd-ɪŋ} sound-reinforcement system [ENG ACOUS] An electronic means for augmenting the sound output of a speaker, singer, or musical instrument in cases where it is either too weak to be heard above the general noise or too reverberant; basic elements of such a system are microphones, amplifiers, volume controls, and loudspeakers. Also known as public address system. {saʊnd ‘rə,ɪn-foʊr-mɑnt, ‘sɪs-təm} sound-reproducing system [ENG ACOUS] A combination of transducing devices and associated equipment for picking up sound at one location and time and reproducing it at the same or some other location and at the same or some later time. Also known as audio system; reproducing system; sound system. {saʊnd ‘rɛ-prɑ,dɪs-ɪŋ, ‘sɪs-təm} sound reproduction [ENG ACOUS] The use of a combination of transducing devices and associated equipment to pick up sound at one point and reproduce it either at the same point or at some other point, at the same time or at some subsequent time. {saʊnd ‘rɛ-prɑ,dɑ k-ʃən} sound spectrograph [ENG ACOUS] An instrument that records and analyzes the spectral composition of audible sound. {saʊnd ‘spekt-ər, ˈgreft} sound speed [ENG] The speed of sound motion picture film, standardized at 24 frames per second (silent film speed is 18 frames per second). {saʊnd ,spɛd} soundstripe [ENG ACOUS] A longitudinal stripe of magnetic material placed on some motion picture films for recording a magnetic sound track. {saʊnd,strɪp} sound system See sound-reproducing system. {saʊnd ,sɪs-təm} sound track [ENG ACOUS] A narrow band, usually along the margin of a sound film, that carries the sound record, it may be a variable-width or variable-density optical track or a magnetic track. {saʊnd ,trak} sound transducer See electroacoustic transducer. {saʊnd tɹæn,dɪs-ər} sound trap [ELECTR] A wave trap in a television receiver circuit that prevents sound signals from entering the picture channels. [ENG ACOUS] A pit between adjoining instrument sections in a sound-recording studio, generally filled with fiberglass panels, to absorb sound that would otherwise propagate from instruments in one section to microphones in adjacent sections. {saʊnd ,træp} source [ELEC] The circuit or device that supplies signal power or electric energy or charge to a transducer or load circuit. [ELECTR] The terminal in a field-effect transistor from which majority carriers flow into the conducting channel in the semiconductor material. [THERMO] A device that supplies heat. {sɔːr} source degeneration [ELECTR] The addition of a circuit element between a transistor source and ground, with several effects, including a reduction in gain. {sɔːr sɔːr, dɪ, ʃɛn-ˈɑtrə,ʃən} source-follower amplifier See common-drain amplifier. {sɔːr fɔːl-ər-ər ˈæm-plɪ-fr-ər} space centredro [MECH] The path traced by the instantaneous center of a rotating body relative to an inertial frame of reference. {spɑs ˈsen,trod} space cloth [CHEM ENG] Woven cloth or wire used for solids screening, and for which the openings between the fibers or strands are designated in terms of space or clear opening. {spɑs ˈklɔθ} space cone [MECH] The cone in space that is swept out by the instantaneous axis of a rigid body during Poinsot motion. Also known as herpolhode cone. {ˈspɑs ,kɔn} spacecraft ground instrumentation [ENG] Instrumentation located on the earth for monitoring, tracking, and communicating with manned spacecraft, satellites, and space probes. Also known as ground instrumentation. {ˈspɑs ˈkrɑnt ˈɡrɑnd ,ɪn-stra,ˈmɑnt-ə-ʃən} spacecraft tracking [ENG] The determination of the positions and velocities of spacecraft
through radio and optical means. { 'spās,kräft \ttrak\-iŋ} 

**space detection and tracking system** [ENG] System capable of detecting and tracking space vehicles from the earth, and reporting the orbital characteristics of these vehicles to a central control facility. Abbreviated SPADATS. { 'spās dɪ\jekt\-ʃən \ttrak\-iŋ,sɪs-tom} 

**spaced loading** [ENG] Loading shot holes so that cartridges are separated by open spacers which do not prevent the concussion from one charge from reaching the next. { 'spāst \lɒd\-iŋ} 

**space frame** [BUILD] A three-dimensional steel building frame which is stable against wind loads. { 'spās \fræm} 

**space lattice** [BUILD] A space frame built of lattice girders. { 'spās \lad\-əs} 

**space processing** [ENG] The carrying out of various processes aboard orbiting spacecraft, utilizing the low-gravity, high-vacuum environment associated with these vehicles. { 'spās \præ\,ses-iŋ} 

**spacer** [ENG] 1. A piece of metal wire twisted at one end to form a guard to keep the explosive in a shothole in place and twisted at the other end to form a guard to hold the tampering in its place. 2. A piece of wood doweling interposed between charges to extend the column of explosive. 3. A device for holding two members at a given distance from each other. Also known as spacer block. 4. The tapered section of a lug joining the barrel to the die; clay is compressed in this section before it issues through the die. { 'spās\-ər} 

**spacer block** See spacer. { 'spās\-ər \bławk} 

**space suit** [ENG] A pressure suit for wear in space or at very low ambient pressures within the atmosphere, designed to permit the wearer to leave the protection of a pressurized cabin. { 'spās \sùt} 

**Space Tracking and Data Acquisition Network** [ENG] A network of ground stations operated by the National Aeronautics and Space Administration, which tracks, commands, and receives telemetry for United States and foreign unmanned satellites. Abbreviated STADAN. { 'spās \trak\-iŋ \tstr\,\ak\-wɔ\,\əs\-\ən,\net \\wark} 

**space velocity** [CHEM ENG] The relationship between feed rate and reactor volume in a flow process, defined as the volume or weight of feed (measured at standard conditions) per unit time per unit volume of reactor (or per unit weight of catalyst). { 'spās \vɔ\,\əs\-\əd\-e} 

**spackling** [ENG] The process of repairing a part of a plaster wall or mural by cleaning out the defective spot and then patching it with a plastering material. { 'spāk\-liŋ} 

**SPADATS** See space detection and tracking system. { 'spā\,dæ\,tæs} 

**spade** [DES ENG] A showelike implement with a flat oblong blade, used for turning soil by pushing against the blade with the foot. { 'spád\-ər} 

**spade bolt** [DES ENG] A bolt having a spade-shaped flattened head with a transverse hole, used to fasten shielded coils, capacitors, and other components to a chassis. { 'spád \böl} 

**spade drill** [DES ENG] A drill consisting of three main parts: a cutting blade, a blade holder or shank, and a device, such as a screw, which fastens the blade to the holder; used for cutting holes over 1 inch (2.54 centimeters) in diameter. { 'spād \drl} 

**spade lug** [DES ENG] An open-ended flat termination for a wire lead, easily slipped under a terminal nut. { 'spād \læg} 

**spall** [ENG] 1. To reduce irregular stone blocks to an approximate size by chipping with a hammer. 2. To break off thin chips from, and parallel to, the surface of a material, such as a metal or rock. { 'spól} 

**spalling hammer** [ENG] A heavy axlike hammer with chisel edge, used for breaking and rough-dressing stone. { 'spōl\-iŋ \hæm\-ər} 

**span** [ENG] A structural dimension measured between certain extremities. { 'spán} 

**spandrel** [BUILD] The part of a wall between the sill of a window and the head of the window below it. { 'spān\-drål} 

**spandrel beam** [BUILD] In steel or concrete construction, the exterior beam that extends from column to column and marks the floor level between stories. { 'spān\-drål \bɛm} 

**spandrel frame** [BUILD] A triangular framing, as below a stair. { 'spān\-drål \fræm} 

**spandrel wall** [BUILD] A wall on the outer surface of a vault to fill the spandrels. { 'spān\-drål \wʊl} 

**spanner** [DES ENG] A wrench with a semicircular head having a projection or hole at one end. [ENG] 1. A horizontal brace. 2. An artificial horizon attachment for a sextant. { 'spər\-ər} 

**spare part** [ENG] In supply usage, any part, component, or subassembly kept in reserve for the maintenance and repair of major items of equipment. { 'spār \pərts \\lɪst} 

**spargor** See perforated-pipe distributor. { 'spār\-ər} 

**sparging** [CHEM ENG] The process of forcing air through water to remove undesirable gases. { 'spər\-iŋ} 

**spark** [ELEC] A short-duration electric discharge due to a sudden breakdown of air or some other dielectric material separating two terminals, accompanied by a momentary flash of light. Also known as electric spark. spark discharge, sparkover. { 'spərk} 

**spark arrester** [ENG] 1. An apparatus that prevents sparks from escaping from a chimney. 2. A device that reduces or eliminates electric sparks at a point where a circuit is opened and closed. { 'spərk \ər\ɛ\,stə} 

**spark-coil leak detector** [ENG] A coil similar to a Tesla coil which detects leaks in a vacuum
system by jumping a spark between the leak hole and the core of the coil.  ('spärk 'kōl 'lek di 'tek-tor.)

**spark discharge** See spark.  ('spärk 'dīs, 'chorj) [ENG] A rodlike fishing tool having

**spark-ignition combustion cycle** See Otto cycle.  ('spärk igni-shən-kam'tas-chan -sē-kal)

**spark-ignition engine** [MECH ENG] An internal combustion engine in which an electrical discharge ignites the explosive mixture of fuel and air.  ('spärk igni-shən-en en-'jan)

**sparking potential** See breakdown voltage.  ('spärk-ing,'pa-ten-chəl)

**sparking voltage** See breakdown voltage.  ('spärk-'iŋ-'vōl-tij)

**spark knock** [MECH ENG] The knock produced in an internal combustion engine precedes the arrival of the piston at the top dead-center position.  ('spärk, 'nāk)

**spark lead** [MECH ENG] The amount by which the spark precedes the arrival of the piston at its top (compression) dead-center position in the cylinder of an internal combustion engine.  ('spärk, 'lēd)

**sparkover-initiated discharge machining** [MECH ENG] An electromachining process in which a potential is impressed between the tool (cathode) and workpiece (anode) which are separated by a dielectric material. A heavy discharge current flows through the ionized path when the applied potential is sufficient to cause rupture of the dielectric.  ('spärk, ə-var 'nišesh-e, əd-'ad 'dīs ʧe'ri, ma, 'shen-'iŋ)

**sparkproof** [ENG] 1. Treated with a material to prevent ignition or damage by sparks.  2. Generating no sparks.  ('spärk-prüf)

**spark recorder** [ENG] Recorder in which the recording paper passes through a spark gap formed by a metal plate underneath and a moving metal pointer above the paper, sparks from an induction coil pass through the paper periodically, burning small holes that form the record trace.  ('spärk rī-'kord-ər)

**spatial linkage** [MECH ENG] A linkage that involvesthe motion in all three dimensions.  ('spā-shəl 'lig-kij)

**spatter dash** [CIV ENG] 1. A finish put on stucco by dashing a mortar and sand mixture against it.  2. Paint spattered on a different-colored ground coat.  ('spā-dər-'dash)

**speaker** See loudspeaker.  ('spēk-'ər)

**speaker identification** [ENG ACOUS] The use of automated equipment to find the identity of a Talker, in a known population of talkers, using the speech input.  (ˌspēk-'ər tən-tə-'tak-a-'shon)

**speaker verification** [ENG ACOUS] The use of automated equipment to authenticate a claimed speaker identity from a voice signal based on speaker-specific characteristics reflected in spoken words or sentences. Abbreviated SV.  (ˌspēk-'ər, ər-i-'tak-a-'shon)

**spear** [DES ENG] A rodlke fishing tool having a barbed-hook end, used to recover rope, wire line, and other materials from a borehole.  (spər)

**special cargo** [IND ENG] Cargo which requires special handling or protection, such as pyrotechnics, detonators, watches, and precision instruments.  (ˌspēsh-əl 'kār-go)

**special-purpose item** [ENG] In supply usage, any item designed to fill a special requirement, and having a limited application; for example, a wrench or other tool designed to be used for one particular model of a piece of machinery.  (ˌspēsh-əl 'pər-pəs 'Īd-'ən)

**special-purpose vehicle** [ENG] A vehicle having a special chassis, or a general-purpose chassis incorporating major modifications, designed to fill a specialized requirement; all tractors (except truck tractors) and tracklaying vehicles, regardless of design, size, or intended purpose, are classified as special-purpose vehicles.  (ˌspēsh-əl 'pər-pəs 'vē-ə-kl)

**specifications** [ENG] An organized listing of basic requirements for materials of construction, product compositions, dimensions, or test conditions; a number of organizations publish standards (for example, American Society of Mechanical Engineers, American Petroleum Institute, and American Society for Testing and Materials), and many companies have their own specifications. Also known as specs.  [IND ENG] A quantitative description of the required characteristics of a device, machine, structure, product, or process.  (ˌspez-ə-ˈfak-a-shən)

**specific charge** [ELEC] The ratio of a particle's charge to its mass.  (spəsɪfɪk ˈkærj)

**specific conductance** [ELEC] See conductivity.  (spəsɪfɪk ˈkɔn-dənt-kənsəns)

**specific energy** [THERMO] The internal energy of a substance per unit mass.  (spəsɪfɪk ˈɛn-ərˈdʒi)

**specific fuel consumption** [MECH ENG] The weight flow rate of fuel required to produce a unit of power or thrust, for example, pounds per horsepower-hour. Abbreviated SFC. Also known as specific propellant consumption.  (spəsɪfɪk ˈfjuːl ˌkɑnˌsənˌmənˈʃən)

**specific gravity** [MECH] The ratio of the density of a material to the density of some standard material, such as water at a specified temperature, for example, 4°C or 60°F, or (for gases) air at standard conditions of pressure and temperature. Abbreviated sp gr. Also known as relative density.  (spəsɪfɪk ˈɡreɪvɪ-əd-ə)

**specific-gravity bottle** [ENG] A small bottle or flask used to measure the specific gravities of liquids; the bottle is weighed when it is filled with the liquid whose specific gravity is to be determined, when filled with a reference liquid, and when empty. Also known as density bottle, relative-density bottle.  (spəsɪfɪk ˈgreɪvɪ-əd-ə, ˈbæd-əl)

**specific-gravity hydrometer** [ENG] A hydrometer which indicates the specific gravity of a liquid, with reference to water at a particular temperature.  (spəsɪfɪk ˈgreɪvɪ-əd-ə ˈhɪdrəm-ərər)

**specific heat** [THERMO] 1. The ratio of the amount of heat required to raise a mass of material 1 degree in temperature to the amount of
heat required to raise an equal mass of a reference substance, usually water. 1 degree in temperature, both measurements are made at a reference temperature, usually at constant pressure or constant volume. 2. The quantity of heat required to raise a unit mass of homogeneous material one degree in temperature in a specified way, it is assumed that during the process no phase or chemical change occurs. \( \text{specific inductive capacity} \) See dielectric constant. \( \text{specific insulation resistance} \) See volume resistivity. \( \text{specific propellant consumption} \) See specific fuel consumption. \( \text{specific resistance} \) See electrical resistivity.

specific speed | MECH ENG | A number, \( N_s \), used to predict the performance of centrifugal and axial pumps or hydraulic turbines: for pumps, \( N_s = \sqrt{Q/H^{5/4}} \), for turbines, \( N_s = N / \sqrt{H^{5/4}} \), where \( N \) is specific speed, \( N_s \) is the rotational speed in revolutions per minute, \( Q \) is the rate of flow in gallons per minute, \( H \) is head in feet, and \( P \) is shaft horsepower. \( \text{specific surface} \) | CHEM ENG | The surface area per unit weight or volume of a particulate solid; used in size-reduction [crushing and grinding] calculations. \( \text{specific weight} \) | MECH | The volume of a substance per unit mass; it is the reciprocal of the density. Abbreviated sp vol. \( \text{speed} \) | MECH | The time rate of change of position of a body without regard to direction; in other words, the magnitude of the velocity vector. \( \text{speed cone} \) | MECH ENG | A cone-shaped pulley, or a pulley composed of a series of pulleys of increasing diameter forming a stepped cone. \( \text{speed lathe} \) | MECH ENG | A light, pulley-driven lathe, usually without a carriage or back gears, used for work in which the tool is controlled by hand. \( \text{speedometer} \) | ENG | An instrument that indicates the speed of travel of a vehicle in miles per hour, kilometers per hour, or knots. \( \text{speed-power product} \) | ELECTR | The product of the gate speed or propagation delay of an electronic circuit and its power dissipation. \( \text{speed reducer} \) | MECH ENG | A train of gears placed between a motor and the machinery which it will drive, to reduce the speed with which power is transmitted. \( \text{speed-reliability tradeoff} \) | MECH ENG | The relationship between the maximum speed at which a machine can move a workpiece and the reliability with which the machine's operations can be achieved to some degree of satisfaction. \( \text{Sperry process} \) | CHEM ENG | The electrolytic manufacture of basic lead carbonate (white lead) from desilverized lead that contains some bismuth, impure lead collects at the anode, and carbon dioxide is passed into the solution to convert the lead to carbonate.
spin casting [ENG] A technique for manufacturing telescope mirrors in which molten glass is poured into a rotating mold and, as the glass cools and solidifies, the surface of the relatively thin mirror takes on a shape that is relatively close to the desired one, reducing substantially the need for grinding away excess glass. { spin kast-inก}

spin compensation [MECH] Overcoming or reducing the effect of projectile rotation in decreasing the penetrating capacity of the jet in shaped-charge ammunition. { spin 깊-pan 깃-sans 한 }

spin-decelerating moment [MECH] A couple about the axis of the projectile, which diminishes spin. { spin 디ж-라-드-이 '모바' 맨트 }

spindle [DES ENG] A short, slender or tapered shaft. { 'spin-dʌl }

spin electronics See magnetoelectronics. { 'spin-lek, tran-iks }

spinning [ENG] The accidental release of some material, such as nuclear material or oil, from a container. { 'spin-ʌl }

spinning machine [MECH ENG] 1. A machine that winds insulation on electric wire. 2. A machine that shapes metal hollow ware. { spin-ing ma-shen }

spin diode [MECH] Shaping and finishing part with four projections that is pivoted between the forked ends of two shafts and transmits motion between the shafts. Also known as cross. { 'spin-dא-רד }

spin diode [MECH] Overcoming or reducing the effect of projectile rotation in decreasing the penetrating capacity of the jet in shaped-charge ammunition. { spin 디지-라-드-이 '모바' 맨트 }

spin gr See specific gravity.
baffles and proper location of diffusers. {‘spir’ral ‘fliɔ̃ ‘tærŋk’
spiral flow test [ENG] The determination of the flow properties of a thermoplastic resin by measuring the length and weight of resin flowing along the path of a spiral cavity. {‘spir’ral ‘fliɔ̃ ‘tɛst’
spiral gage See spiral pressure gage. {‘spir’ral ‘gæʒ
spiral gear [MECH ENG] A helical gear that transmits power from one shaft to another, non-parallel shaft {‘spir’ral ‘gɛər
spiral-jaw clutch [MECH ENG] A modification of the square-jaw clutch permitting gradual meshing of the mating faces, which have a helical section. {‘spir’ral ‘ʤəu ‘klʌtʃ
spiral mold cooling [ENG] Cooling an injection mold by passing a liquid through a spiral cavity in the mold body. {‘spir’ral ‘mɔld ‘kɪl-’iŋ
spiral pipe [DES ENG] Strong, lightweight steel pipe with a single continuous welded helical seam from end to end. {‘spir’ral ‘pɪp
spiral plate exchanger [ENG] A heat-transfer device made from a pair of plates rolled in a spiral to provide two relatively long, rectangular passages for heat-transfer between fluids in countercurrent flow. {‘spir’ral ‘plet ‘iks ‘çʰæn-’jar
spiral pressure gage [ENG] A device for measurement of pressures, a hollow tube spiral receives the system pressure which deforms (unwinds) the spiral in direct relation to the pressure in the tube. Also known as spiral gage. {‘spir’ral ‘prɛʃ-’or ‘gæʒ
spiral scanning [ENG] Scanning in which the direction of maximum radiation describes a portion of a spiral; the rotation is always in one direction; used with some types of radar antennas. {‘spir’ral ‘skæn-’ŋ
spiral spring [DES ENG] A spring bar or wire wound in an Archimedes spiral in a plane; each end is fastened to the force-applying link of the mechanism. {‘spir’ral ‘spring
spiral thermometer [ENG] A temperature-measurement device consisting of a bimetal spiral that winds tighter or opens with changes in temperature. {‘spir’ral ‘ðɛrmətər
spiral-tube heat exchanger [ENG] A countercurrent heat-exchange device made of a group of concentric spirally wound coils, generally connected by manifolds; used for cryogenic exchange in air-separation plants. {‘spir’ral ‘htəb ‘hɛt ‘iks-’çʰæn-’jar
spiral welded pipe [DES ENG] A steel pipe made of long strips of steel plate fitted together to form helical seams, which are welded. {‘spir’ral ‘weld-’æð ‘pɪp
spirit level See level. {‘spir-’æt ‘lev-’æl
spirit thermometer [ENG] A temperature-measurement device consisting of a closed capillary tube with a liquid (for example, alcohol) reservoir bulb at the bottom, as the bulb is heated, the liquid expands up into the capillary tubing, indicating the temperature of the bulb. {‘spir-’æt ‘θær’mæm-’æd-’ær
spit [ENG] To light a fuse. {‘spit
spitted fuse [ENG] A slow-burning fuse which has been cut open at the lighting end for ease of ignition. {‘spir-’æd ‘fjuːz
spitting rock [ENG] A rock mass under stress that breaks and ejects small fragments with considerable velocity. {‘spir-’æŋ ‘ræk
splash block [BUILD] A small masonry block with a concave surface placed on the ground below a downspout at a sloping angle to carry roof drainage water away from a building and to prevent erosion of the soil. {‘splash ‘blæk
splash lubrication [ENG] An engine-lubrication system in which the connecting-rod bearings dip into troughs of oil, splashing the oil onto the cylinder and piston rods. {‘splash ‘lʌ-’bra, ’kæ-ʃən
splay [ENG] A slanted or beveled surface making an oblique angle with another surface. {splaɪ
splayed arch [CIV ENG] An arch whose opening has a larger radius in front than at the back. {‘splæd ‘ɑrŋch
splice [ELEC] A joint used to connect two lengths of conductor with good mechanical strength and good conductivity. [ENG] To unite two parts, such as rope or wire, to form a continuous length. {splɪs
splice plate [CIV ENG] A plate for joining the web plates or the flanges of girders. {splɪs ‘plæt
spline [DES ENG] One of a number of equally spaced keys cut integral with a shaft, or similarly, keyways in a hubbed part; the mated pair permits the transmission of rotation or translatory motion along the axis of the shaft. [ENG] A strip of wood, metal, or plastic. {splɪn
spline broach [MECH ENG] A broach for cutting straight-sided splines, or multiple keyways in holes. {splɪn ‘brɔʃ
splined shaft [DES ENG] A shaft with longitudinal gearlike ridges along its interior or exterior surface. {splɪnd ‘ʃæft
split barrel [DES ENG] A core barrel that is split lengthwise so that it can be taken apart and the sample removed. {‘split ‘bɑːr-’æl
split-barrel sampler [DES ENG] A drive-type soil sampler with a split barrel. {‘split ‘bɑːr-’æl ‘sæm-’plɑːr
split bearing [DES ENG] A shaft bearing composed of two pieces bolted together. {‘split ‘bər-’iŋ
split cavity [ENG] A cavity, such as in a mold, made in sections. {‘split ‘kæv-’æd-’e
split link [DES ENG] A metal link in the shape of a two-turn helix pressed together. {‘split ‘lɪŋk
split nut [ENG] A nut cut axially into halves to allow for rapid engagement (closed) or disengagement (open). {‘split ’nʌt
split pin [DES ENG] A pin with a split at one end so that it can be spread to hold it in place. {‘split ‘pɪn
split-ring core lifter [DES ENG] A hardened steel ring having an open slit, an outside taper, and
split-ring lifter

spontaneous combustion

spontaneous-potential well logging
spring gravimeter [ENG] An instrument for making relative measurements of gravity; the elongation $s$ of the spring may be considered proportional to gravity $g$, $s = (1/\kappa)g$, and the basic

spread footing [CIV ENG] A wide, shallow footing usually made of reinforced concrete. { 'spread fôd-ig}

spreading coefficient [THERMO] The work done in spreading one liquid over a unit area of another, equal to the surface tension of the stationary liquid, minus the surface tension of the spreading liquid, minus the interfacial tension between the liquids. { 'spread-ing-kôf-i,fish-nt}

Sprengel pump [MECH ENG] An air pump that exhausts by trapping gases between drops of mercury in a tube. { 'spren-gəl,pump}

sprig [DES ENG] A small brad having no head. {eng ses glazer’s point. (sprig)

spring [ENG] To enlarge the bottom of a drill hole by small charges of a high explosive in order to make room for the full charge; to chamber a drill hole. [MECH ENG] An elastic, stressed, stored-energy machine element that, when released, will recover its basic form or position. Also known as mechanical spring. {spring}

spring balance [ENG] An instrument which measures force by determining the extension of a helical spring. { 'spring bal-æns}

spring bolt [DES ENG] A bolt which must be retracted by pressure and which is shot into place by a spring when the pressure is released. {spring bolt}

spring box mold [ENG] A compression mold with a spacing fork that is removed after partial compression. { ‘spring bôks,mold}

spring buffer [ENG] A buffer in the form of a spring that stores and dissipates the kinetic energy of an impact. { ‘spring,buf-er}

spring calipers [ENG] Calipers in which tension against the adjusting nut is maintained by a circular spring. { ‘spring bab-ar}

spring clip [DES ENG] 1. A U-shaped fastener used to attach a leaf spring to the axle of a vehicle. 2. A clip that grips an inserted part under spring pressure; used for electrical connections. {‘spring klip}

spring collet [DES ENG] A bushing that surrounds and holds the end of the work in a machine tool; the bushing is slotted and tapered, and when the collet is slipped over it, the slot tends to close and the bushing thereby grips the work. { ‘spring kəl-ar}

spring cotter [DES ENG] A cotter made of an elastic metal that has been bent double to form a split pin. {‘spring kâr-ar}

spring coupling [MECH ENG] A flexible coupling with resilient parts. {‘spring kop-lih}

spring die [DES ENG] An adjustable die consisting of a hollow cylinder with internal cutting teeth, used for cutting screw threads. {‘spring di}

spring faucet [ENG] A faucet that is kept closed by a spring; force must be exerted to open it, and it closes when the force is removed. {‘spring fós-ar}

spring gravimeter [ENG] An instrument for making relative measurements of gravity, the elongation $s$ of the spring may be considered proportional to gravity $g$, $s = (1/\kappa)g$, and the basic
spring hammer

formula for relative measurements is \( g_2 - g_1 = \tilde{g}(s_2 - s_1) \). \{spring grávim-ôd-or\}

spring hammer [MECH ENG] A machine-driven hammer actuated by a compressed spring or by compressed air. \{spring hám-ar\}

spring hinge [DES ENG] A hinge fitted with one or more springs \{spring hín\}

spring hook [DES ENG] A hook closed at the end by a spring snap. Also known as snap hook. \{spring húk\}

spring-joint caliper [DES ENG] An outside or inside caliper having a heavy spring joining the legs together at the top; legs are opened and closed by a knurled nut. \{spring jöint ,kal-a-par\}

spring lifter See split-ring core lifter. \{spring lif-tar\}

spring-load [ENG] To load or exert a force on an object by means of tension from a spring or by compression. \{spring löd\}

spring-loaded meter [ENG] A variable-area flowmeter in which the force on an obstruction in a tapered tube created by the fluid flowing past the obstruction is balanced by the force of a spring to which the obstruction is attached, and the resulting differential pressure is used to determine the flow rate. \{spring löd-ôd 'méd-ar\}

spring-loaded regulator [MECH ENG] A pressure-regulator valve for pressure vessels or flow systems; the regulator is preloaded by a calibrated spring to open (or close) at the upper (or lower) limit of a preset pressure range. \{spring löd-ôd 'reg-ya,lâd-ar\}

spring modulus [MECH] The additional force necessary to deflect a spring an additional unit distance; if a certain spring has a modulus of 100 newtons per centimeter, a 100-newton weight will compress it 1 centimeter, a 200-newton weight 2 centimeters, and so on. \{spring m Cáj-a-lôb\}

spring pin [MECH ENG] An iron rod which is mounted between spring and axle on a locomotive, and which maintains a regulated pressure on the axle. \{spring pin\}

spring scale [ENG] A scale that utilizes the deflection of a spring to measure the load. \{spring skál\}

spring shack [ENG] A shackle for supporting the end of a spring, permitting the spring to vary in length as it deflects. \{spring shákl\}

spring shackl [ENG] A shackle for supporting the end of a spring, permitting the spring to vary in length as it deflects. \{spring shákl\}

spring stop-nut locking fastener [DES ENG] A locking fastener that functions by a spring action clamping down on the bolt. \{spring ståp,nat 'lák-in ,fas-nar\}

spring switch [CIV ENG] A railroad switch that contains a spring to return it to the running position after it has been thrown over by trailing wheels moving on the diverging route. \{spring swich\}

sprinkler system [ENG] A fire-protection system of pipes and outlets in a building, mine, or other enclosure for delivering a fire extinguishing liquid or gas, usually automatically by the action of heat on the sprinkler head. Also known as fire sprinkling system. \{spring-lår sis-tom\}

sprocket [DES ENG] A tooth on the periphery of a wheel or cylinder to engage in the links of a chain, the perforations of a motion picture film, or other similar device. \{språk-at\}

sprocket chain [MECH ENG] A continuous chain which meshes with the teeth of a sprocket and thus can transmit mechanical power from one sprocket to another. \{språk-at ,chän\}

sprocket hole [ENG] One of a series of perforations at the edge of a motion picture film, paper tape, or roll of continuous stationery, which are engaged by the teeth of a sprocket wheel to drive the material through some device. \{språk-at hól\}

sprocket wheel [DES ENG] A wheel with teeth or cogs, used for a chain drive or to engage the blocks on a cable. \{språk-at ,wël\}

sprue [ENG] 1. A feed opening or vertical channel through which molten material, such as metal or plastic, is poured in an injection or transfer mold. 2. A slug of material that solidifies in the channel. \{sprü\}

sprue bushing [ENG] A steel insert in an injection mold which contains the sprue hole and has a seat for the injection cylinder nozzle. \{sprü ,bush-în\}

sprue gate [ENG] A passageway for the flow of molten resin from the nozzle to the mold cavity. \{spring gråt\}

sprue puller [ENG] A pin with a Z-shaped slot to pull the sprue out of the sprue bushing in an injection mold. \{sprü ,pîl-ôr\}

sprung axle [MECH ENG] A supporting member for carrying the rear wheels of an automobile. \{sprung ak-sal\}

sprung weight [MECH ENG] The weight of a vehicle which is carried by the springs, including the frame, radiator, engine, clutch, transmission, body, load, and so forth. \{spring 'wát\}

spud [DES ENG] 1. A diamond-point drill bit. 2. An offset type of fishing tool used to clear a space around tools stuck in a borehole. 3. Any of various spade- or chisel-shaped tools or mechanical devices. 4. See grouser. \{spåd\}

spur dike See groin. \{spar ,gîr\}

spur gear [DES ENG] A toothed wheel with radial teeth parallel to the axis. \{spar ,gîr\}

spur pile See batter pile. \{spar ,pîl\}

sputtering [ELECTR] Also known as cathode sputtering. 1. The ejection of atoms or groups of atoms from the surface of the cathode of a vacuum tube as the result of heavy-ion impact. 2. The use of this process to deposit a thin layer of metal on a glass, plastic, metal, or other surface in vacuum. \{spåd-a-rîj\}

sputter-ion pump See getter-ion pump. \{spåd-a-rîj ,an ,påmp\}

sp vol See specific volume.

sq See square.

square [MECH] Denotes a unit of area, if x is a unit of length, a square x is the area of a square whose sides have a length of 1x, for example, a square meter, or a meter squared, is the area of
a square whose sides have a length of 1 meter. Also known as monomino. Abbreviated sq.

**square-edged orifice** [ENG] An orifice plate with straight-through edges for the hole through which fluid flows, used to measure fluid flow in fluid conduits by means of differential pressure drop across the orifice.

**square engine** [MECH ENG] An engine in which the stroke is equal to the cylinder bore.

**square-head bolt** [DES ENG] A cylindrical threaded fastener with a square head.

**square-jaw clutch** [MECH ENG] A type of positive clutch consisting of two or more jaws of square section which mesh together when they are aligned.

**square joint** See straight joint.

**square key** [DES ENG] A machine key of square, usually uniform, but sometimes tapered, cross section.

**square mesh** [DES ENG] A wire-cloth textile mesh count that is the same in both directions.

**square-nose bit** See flat-face bit.

**square thread** [DES ENG] A screw thread having a square cross section, the width of the thread is equal to the pitch or distance between threads.

**square wave** [ELEC] An oscillation the amplitude of which shows periodic discontinuities between two values, remaining constant between jumps.

**square-wave amplifier** [ELECTR] Resistance-coupled amplifier, the circuit constants of which are to amplify a square wave with the minimum amount of distortion.

**square-wave generator** [ELECTR] A signal generator that generates a square-wave output voltage.

**square-wave response** [ELECTR] The response of a circuit or device when a square wave is applied to the input.

**square wheel** [DES ENG] A wheel with a flat spot on its rim.

**squeaking** [ELECTR] A measure of transistor amplifier's bias stability, equal to the rate of change of collector current with respect to handle with a blade of rubber or leather set transversely at one end and used for spreading, pushing, or wiping liquids off or across a surface.

**squeeze** [ENG] 1. To inject a grout into a borehole under high pressure. 2. The plastic movement of a soft rock in the walls of a borehole or mine working that reduced the diameter of the opening.

**squeeze roll** [MECH ENG] A roller designed to exert pressure on material passing between it and a similar roller.

**squib** [ENG] A small tube filled with fine-grained black powder. Upon the lighting and burning of the ignition match, the squib assumes a rocket effect and darts back into the hole to ignite the powder charge.

**SQUID** See superconducting quantum interference device.

**squirt can** [ENG] An oil can with a flexible bottom and a tapered spout, pressure applied to the bottom forces oil out the spout.

**squirt gun** [ENG] A device with a bulb and nozzle, when the bulb is pressed, liquid squirts from the nozzle.

**SRA-size** [ENG] One of a series of sizes to which untrimmed paper is manufactured; for reels of paper the standard sizes are 450, 640, 900, and 1280 millimeters; for sheets of paper the sizes are SRA0, 900 × 1280 millimeters; SRA1, 640 × 900 millimeters, and SRA2, 450 × 640 millimeters; SRA sizes correspond to A sizes when trimmed.

**stab** [ENG] In a drilling operation, to insert the threaded end of a pipe joint into the collar of the joint already placed in the hole and to rotate it slowly to engage the threads before screwing up.

**stability** [CONT SYS] The property of a system for which any bounded input signal results in a bounded output signal.

**stability criterion** [CONT SYS] A condition which is necessary and sufficient for a system to be stable, such as the Nyquist criterion, or the condition that poles of the system's overall transmittance lie in the left half of the complex-frequency plane.

**stability exchange principle** [CONT SYS] In a linear system, which is either dynamically stable or unstable depending on the value of a parameter, the complex frequency varies with the parameter in such a way that its real and imaginary parts pass through zero simultaneously, the principle is often violated.

**stability matrix** See stiffness matrix.
stability test  [ENG] Accelerated test to determine the probable suitability of an explosive material for long-term storage.  [sta'b'il- ə-t] test

stabilization  [CHEM ENG] A petroleum-refinery process for separating light gases from petroleum or gasoline, thus leaving a stable (less volatile) liquid so that it can be handled or stored with less change in composition. See compensation.  [ELECTR] Feedback introduced into vacuum tube or transistor amplifier stages to reduce distortion by making the amplification substantially independent of electrode voltages and tube constants.  [ENG] Maintenance of a desired orientation independent of the roll and pitch of a ship or aircraft.  [sta'ba-ləza'shan ]

stabilized feedback  See negative feedback.  ('sta-ba-la'zə-fak')

stabilizer  [CHEM ENG] The fractionation column in a petroleum refinery used to stabilize (remove fractions from) hydrocarbon mixtures.  [ENG] 1. A hardened, splined bushing, sometimes freely rotating, slightly larger than the outer diameter of a core barrel and mounted directly above the core barrel back head. Also known as ferrule; fluted coupling.  2. A tool located near the bit in the drilling assembly to modify the deviation angle in a well by controlling the location of the contact point between the hole and the drill collars.  ('sta'ba-li-zər)

stabilizer bar  [MECH ENG] In an automotive vehicle, a shaft that interconnects the two lower suspension arms in order to reduce body roll when the vehicle is turning. Also known as sway bar.  ('sta'ba-li-zər,  bār)

stable element  [ENG] Any instrument or device, such as a gyroscope, used to stabilize a radar antenna, turret, or other piece of equipment mounted on an aircraft or ship.  ('sta-bal 'el-a-ment)

stable vertical  [ENG] Vertical alignment of any device or instrument maintained during motion of the mount.  ('sta-bal 'vərd-ə-kal)

stack  [BUILD] The portion of a chimney rising above the roof.  [CHEM ENG] In gas works, a row of benches containing retorts.  [ELECTR] See pileup.  [ENG] 1. To stand and rack drill rods in a drill tripod or derrick.  2. Any structure or part thereof that contains a flue or flues for the discharge of gases.  3. One or more filter cartridges mounted on a single column.  4. Tall, vertical conduit (such as smokestack, flue) for venting of combustion or evaporation products or gaseous process wastes.  5. The exhaust pipe of an internal combustion engine.  ('stak)

stacked-beam radar  [ENG] Three-dimensional radar system that derives elevation by emitting narrow beams stacked vertically to cover a vertical segment, azimuth information from horizontal scanning of the beam, and range information from echo-return time.  ('stak 'bekm 'rā,dār)

stack effect  [MECH ENG] The pressure difference between the confined hot gas in a chimney or stack and the cool outside air surrounding the outlet.  ('stak 'ə-fekt)

stacker  [MECH ENG] A machine for lifting merchandise on a platform or fork and arranging it in tiers, operated by hand, or electric or hydraulic mechanisms.  ('stak-ar)

stacker-reclaimer  [MECH ENG] Equipment which transports and builds up material stockpiles, and recovers and transports material to processing plants.  ('stak-ar ré'klām-ər)

stack gas  [ENG] Gas passed through a chimney.  ('stak, 'gaz)

stack pollutants  [ENG] Smokestack emissions subject to Environmental Protection Agency standards regulations, including sulfur oxides, particulates, nitrogen oxides, hydrocarbons, carbon monoxide, and photochemical oxidants.  ('stak pə'lit-əns)

stack vent  [ENG] An extension to the atmosphere of a waste stack or a soil stack above the highest horizontal branch drain or fixture branch that is connected to the stack. Also known as soil vent; waste vent.  ('stak, 'vent)

stactometer  See stalagmometer.  ('stak'tām-əd-ər)

STADAN  See Space Tracking and Data Acquisition Network.  ('sta'dan)

stadia  [ENG] A surveying instrument consisting of a telescope with special horizontal parallel lines or wires, used in connection with a vertical graduated rod.  ('stä-di-ə)

stadia hairs  [ENG] Two horizontal lines in the reticule of a theodolite arranged symmetrically above and below the line of sight. Also known as stadia wires.  ('stä-di-ə, 'hers)

stadia rod  [ENG] A graduated rod used with a stadia to measure the distance from the observation point to the rod by observation of the length of rod subtended by the distance between the stadia hairs.  ('stä-di-ə, 'rād)

stadia tables  [ENG] Mathematical tables from which may be found, without computation, the horizontal and vertical components of a reading made with a transit and stadia rod.  ('stä-di-ə 'stä-bal)

stadia wires  See stadia hairs.  ('stä-di-ə, 'wīr)

stadiometer  [ENG] An instrument for determining the distance to an object, but its height must be known; the angle subtended by the object's rods in a drill tripod or derrick.  ('stä-di-ə-'mētər)

staff bead  [BUILD] 1. A bead between a wooden frame and adjacent masonry.  2. A molded or beaded angle of wood or metal set into the corner of plaster walls.  ('staf, 'bed)

staff gage  [ENG] A graduated scale placed in a position so that the stage of a stream may be read directly therefrom, a type of river gage.  ('stäf, 'gāz)

stage loader  See feeder conveyor.  ('stäj, loĎ-ər)

stagger-tooth cutter  [MECH ENG] Side-milling cutter with successive teeth having alternating helix angles.  ('stag-ər tūth, 'loĎ-ər)

stained glass  [ENG] Glass colored by any of
standard output

several means and assembled to produce a varicolored mosaic or representation. \( \text{standard glass} \)

stair [CIV ENG] A series of steps between levels or from floor to floor in a building. \( \text{stair} \)

stairway [CIV ENG] One or more flights of stairs connected by landings. \( \{ \text{stair, \text{wai}} \} \)

stairwell [BUILD] A vertical compartment that extends through a building to hold a stairway. \( \{ \text{stair, \text{wel}} \} \)

stake [ELEC] An iron peg used as a power electrode to transfer current into the ground in electrical prospecting. \( \{ \text{stake} \} \)

stakeout [ENG] Driving stakes into the earth to indicate the foundation location of a structure to be built. \( \{ \text{stakeout} \} \)

stalagmeter [ENG] An instrument for measuring the size of drops suspended from a capillary tube, used in the drop-weight method. Also known as stactometer, stalagometer. \( \{ \text{stalagmeter} \} \)

stall torque [MECH ENG] The amount of torque provided by a motor at close to zero speed. \( \{ \text{stall torque} \} \)

stalagometer [ENG] An instrument for standardization, when both the reactants and the products of the reaction are in their standard states. \( \{ \text{stalagometer} \} \)

standard gage [CIV ENG] A railroad gage measuring 4 feet 8 1/2 inches (1.4351 meters). \( \{ \text{standard gage} \} \)

standard gravity [MECH] A value of the acceleration of gravity equal to 9.80665 meters per second per second. \( \{ \text{standard gravity} \} \)

standard heat of formation [THERMO] The heat needed to produce one mole of a compound from its elements in their standard state. \( \{ \text{standard heat of formation} \} \)

standard hour [IND ENG] The quantity of output required of an operator to meet an hourly production quota. Also known as allowed hour. \( \{ \text{standard hour} \} \)

standard-hour plan [IND ENG] A wage incentive plan in which standard work times are expressed as standard hours and the worker is paid for standard hours instead of the actual work hours. \( \{ \text{standard-hour plan} \} \)

standardization [DES ENG] The adoption of generally accepted uniform procedures, dimensions, materials, or parts that directly affect the design of a product or a facility. \( \{ \text{standardization} \} \)

standard product [DES ENG] A product that conforms to specifications resulting from the same technical requirements. \( \{ \text{standard product} \} \)

standard deviation [SURVEY] The reciprocal of standard time. \( \{ \text{standard deviation} \} \)

standard time for individual work elements. \( \{ \text{standard time} \} \)

standard evaportor [THERMO] See short-tube vertical evaporator. \( \{ \text{standard evaporator} \} \)

standard fit [DES ENG] A fit whose allowance and tolerance are standardized. \( \{ \text{standard fit} \} \)

standard free-energy increase [THERMO] The increase in Gibbs free energy in a chemical reaction, when both the reactants and the products of the reaction are in their standard states. \( \{ \text{standard free-energy increase} \} \)

standard gage [CIV ENG] A railroad gage measuring 4 feet 8 1/2 inches (1.4351 meters). \( \{ \text{standard gage} \} \)

standard hollow [DES ENG] A hole with zero allowance plus a specified tolerance; fit allowance is provided for by the shaft in the hole. \( \{ \text{standard hollow} \} \)

standardization [DES ENG] The adoption of generally accepted uniform procedures, dimensions, materials, or parts that directly affect the design of a product or a facility. \( \{ \text{standardization} \} \)

standard output [IND ENG] The quantity of output required of an operator to meet an hourly production quota. Also known as allowed hour. \( \{ \text{standard output} \} \)

standard deviation [SURVEY] The reciprocal of standard time. \( \{ \text{standard deviation} \} \)

standard time for individual work elements. \( \{ \text{standard time} \} \)
**standard performance**  [IND ENG] The performance of an individual or of a group on meeting standard output.  [‘stan-dard pərˈfɔr-məns]

**standard shaft**  [DES ENG] A shaft with zero allowance minus a specified tolerance.  [‘stan-dard ‘ʃaft]

**standard time**  [IND ENG] A unit time value for completion of a work task as determined by the proper application of the appropriate work measurement techniques. Also known as direct labor standard, output standard, production standard, time standard.  [‘stan-dard ‘tɪm]

**standard ton**  See ton.  [‘stan-dard ‘tʌn]

**standard trajectory**  [MECH] Path through the air that it is calculated a projectile will follow under given conditions of weather, position, and material, including the particular fuse, projectile, and propelling charge that are used; firing tables are based on standard trajectories.  [‘stan-dard ‘traɪˈɛkt-rɪ]

**standard wire rope**  [DES ENG] Wire rope made of six wire strands laid around a sisal core. Also known as hemp-core cable.  [‘stan-dard wɜr ‘rɒp]

**standby battery**  [ELEC] A storage battery held in reserve as an emergency power source in event of failure of regular power facilities at a radio station or other location.  [‘stan-dɪbɪ, ˈbæd-ərɛ]

**standing ways**  See ground ways.  [‘stan-dɪŋ ‘wɔz]

**standpipe**  [ENG] 1. A vertical pipe for holding a water supply for fire protection. 2. A high tank or reservoir for holding water that is used to maintain a uniform pressure in a water-supply system.  [‘stand,pɪp]

**standpipe system**  [ENG] A system that contains standpipes, pumps, siamese connections, piping, and equipment with hose outlets and is provided with an adequate supply of water for fire fighting.  [‘stan,pɪp, ˈsɪz-tɒm]

**standstill feature**  [CONT SYS] A device which insures that false signals such as fluctuations in the power supply do not cause a controller to be altered.  [‘stan,stɪl, fɛrˈtʃər]

**Stanton number**  [THERMO] A dimensionless number used in the study of forced convection, equal to the heat-transfer coefficient of a fluid divided by the product of the specific heat at constant pressure, the fluid density, and the fluid velocity. Symbolized $N_	ext{st}$. Also known as Margouls number (M).  [‘staʊn, nərˈbɑːr]

**staple**  [DES ENG] A U-shaped loop of wire with points at both ends; used as a fastener.  [‘stæpəl]

**stapler**  [ENG] 1. A device for inserting wire staples into paper or wood. 2. A hammer for inserting staples.  [‘stæplər]

**star drill**  [DES ENG] A tool with a star-shaped point, used for drilling in stone or masonry.  [‘stɑr ,dɪrl]

**Stark number**  See Stefan number.  [‘stɑrk ,nərˈbɑːr]

**starling**  [CIV ENG] A protective enclosure around the pier of a bridge that consists of piles driven close together and is often filled with gravel or stone to protect the pier by serving as a break to water, ice, or drift.  [‘stɑr-lɪŋ]

**starter**  [ELECTR] 1. A device used to start an electric motor and to accelerate the motor to normal speed. 2. See engine starter.  [‘stɑɹtɚ] An auxiliary control electrode used in a gas tube to establish sufficient ionization to reduce the anode breakdown voltage. Also known as trigger electrode.  [ENG] A drill used for making the upper part of a hole, the remainder of the hole being made with a drill of smaller gage, known as a follower.  [‘stɑɹt-dɑɹ]

**starting barrel**  [ENG] A short (12 to 24 inches or 30 to 60 centimeters) core barrel used to begin coring operations when the distance between the drill chuck and the bottom of the hole or to the rock surface in which a borehole is to be collared is too short to permit use of a full 5- or 10-foot-long (1.5- or 3.0-meter) core barrel.  [‘stɑɹt-ɪŋ ,bɑr-əl]

**starting friction**  See static friction.  [‘stɑɹt-ɪŋ ,friɡ-ʃɔn]

**starting resistance**  [MECH ENG] The force needed to produce an oil film on the journal bearings of a train when it is at a standstill.  [‘stɑɹt-ɪŋ ri,zɪs-tɒns]

**starting taper**  [DES ENG] A slight end taper on a reamer to aid in starting.  [‘stɑɹt-ɪŋ ,tɑr-pər]

**start time**  [IND ENG] The calendar time at which the manufacturing work for a specific job begins on a machine or in a facility.  [‘stɑɹt ,tɪm]

**start-to-leak pressure**  [MECH ENG] The amount of inlet pressure at which the first bubble occurs at the outlet of a safety relief valve with a resilient disk when the valve is subjected to an air test under a water seal.  [‘stɑɹt tuˈlɛk ,prɛʃr-kər]

**start-up curve**  [IND ENG] A learning curve applied to a job for the purpose of adjusting work times that are longer than the standard because of the introduction of new jobs or new workers.  [‘stɑɹt-ʌp ,kɜr]

**starved joint**  [ENG] A glued joint containing insufficient or inadequate adhesive. Also known as hungry joint.  [‘stɑɹd ˌjoʊnt]

**state**  [CONT SYS] A minimum set of numbers which contain enough information about a system’s history to enable its future behavior to be computed.  [stɑːt]

**state equations**  [CONT SYS] Equations which express the state of a system and the output of a system at any time as a single valued function of the system’s input at the same time and the state of the system at some fixed initial time.  [‘stɑːt ɪ,ˈkwə tɔn]  

**state estimator**  See observer.  [‘stɑːt ,es-ə,tɔr, ˈmɑd-ər]

**state feedback**  [CONT SYS] A class of feedback control laws in which the control inputs are explicit memoryless functions of the dynamical system state, that is, the control inputs at a given time $t_k$ are determined by the values of the state variables at $t_k$ and do not depend on the values of these variables at earlier times $t_i$.  [‘stɑːt ‘fɛd,bɛk]

**state observer**  See observer.  [‘stɑːt əbˈzɔr-ər]
state of strain [MECH] A complete description, including the six components of strain, of the deformation within a homogeneously deformed volume. \( \{ \text{st\'at av 'str\'en} \} \)

state of stress [MECH] A complete description, including the six components of stress, of a homogeneously stressed volume. \( \{ \text{st\'at av 'stres} \} \)

state parameter See thermodynamic function of state. \( \{ \text{st\'at pa,ram-'ad-z\'or} \} \)

state space [CONT SYS] The set of all possible values of the state vector of a system. \( \{ \text{st\'at ,sp\'as} \} \)

state transition equation [CONT SYS] The equation satisfied by the \( n \times n \) state transition matrix \( \Phi(t,t_0) \): \( \Phi(t,t_0) = A(t) \Phi(t_0,t_0) \) if here \( I \) is the unit \( n \times n \) matrix, and \( A(t) \) is the \( n \times n \) matrix which appears in the vector differential equation \( d\mathbf{x}(t)/dt = A(t)\mathbf{x}(t) \) for the \( n \)-component state vector \( \mathbf{x}(t) \). \( \{ \text{st\'at tran'izh-on i,kw\'a-\'zan} \} \)

state transition matrix [CONT SYS] A matrix \( \Phi(t,t_0) \) whose product with the state vector \( x \) at an initial time \( t_0 \) gives the state vector at a later time \( t \), that is, \( x(t) = \Phi(t,t_0)x(t_0) \). \( \{ \text{st\'at tran'izh-on ,na-tri\'ks} \} \)

state variable [CONT SYS] One of a minimum set of numbers which contain enough information about a system's history to enable computation of its future behavior. See thermodynamic function of state. \( \{ \text{st\'at ,vek-'tar} \} \)

statically admissible loads [MECH] Any set of external loads and internal forces which fulfills conditions necessary to maintain the equilibrium of a mechanical system. \( \{ \text{st\'ad-ik 'o-l\'e ad'mis-'a-bal 'lo\'dz} \} \)

static bed [CHEM ENG] A layer of solids in a process vessel (absorber, catalytic reactor, packed distillation column, or granular filter bed) in which the particles rest upon one another at essentially the settled bulk density of the solids phase, contrasted to moving-solids or fluidized-solids beds. \( \{ \text{st\'ad-ik 'bed} \} \)

static charge [ELEC] An electric charge accumulated on an object. \( \{ \text{st\'ad-ik 'cha\'ri} \} \)

static discharger [ELEC] A rubber-covered cloth wick about 6 inches (15 centimeters) long, sometimes attached to the trailing edges of the surfaces of an aircraft to discharge static electricity in flight. \( \{ \text{st\'ad-ik 'dis'char\'a-jar} \} \)

static electricity [ELEC] 1. The study of the effects of macroscopic charges, including the transfer of a static charge from one object to another by actual contact or by means of a spark that bridges an air gap between the objects. 2. See electrostatics. \( \{ \text{st\'ad-ik 'lek'tris-'ad-e} \} \)

static equilibrium See equilibrium. \( \{ \text{st\'ad-ik ,\'e-kw\'a-lib\'je-um} \} \)

static friction [MECH] 1. The force that resists the initiation of sliding motion of one body over the other with which it is in contact. 2. The force required to move one of the bodies when they are at rest. Also known as limiting friction; starting friction. \( \{ \text{st\'ad-ik 'frik-shan} \} \)

static load [MECH] A nonvarying load, the basal pressure exerted by the weight of a mass at rest, such as the load imposed on a drill bit by the weight of the drill-stem equipment or the pressure exerted on the rocks around an underground opening by the weight of the superimposed rocks. Also known as dead load. \( \{ \text{st\'ad-ik 'lo\'d} \} \)

static moment [MECH] 1. A scalar quantity (such as area or mass) multiplied by the perpendicular distance from a point connected with the quantity (such as the centroid of the area or the center of mass) to a reference axis. 2. The magnitude of some vector (such as force, momentum, or a directed line segment) multiplied by the length of a perpendicular dropped from the line of action of the vector to a reference point. \( \{ \text{st\'ad-ik 'mo\-'mant} \} \)

static-pressure tap See pressure tap. \( \{ \text{st\'ad-ik 'pres-'ar\'t\'ap} \} \)

static-pressure tube [ENG] A smooth tube with a rounded nose that has radial holes in the portion behind the nose and is used to measure the static pressure within the flow of a fluid. \( \{ \text{st\'ad-ik 'pres-'ar\'t\'ub} \} \)

static reaction [MECH] The force exerted on a body by other bodies which are keeping it in equilibrium. \( \{ \text{st\'ad-ik re\'ak-shan} \} \)

statics [MECH] The branch of mechanics which treats of force and force systems abstracted from matter, and of forces which act on bodies in equilibrium. \( \{ \text{st\'ad-iks} \} \)

static seal See gasket. \( \{ \text{st\'ad-ik 's\'el} \} \)

static test [ENG] A measurement taken under conditions where neither the stimulus nor the environmental conditions fluctuate. \( \{ \text{st\'ad-ik 't\'e-st} \} \)

static tube [ENG] A device used to measure the static (not kinetic or total) pressure in a stream of fluid; consists of a perforated, tapered tube that is placed parallel to the flow, and has a branch tube that is connected to a manometer. \( \{ \text{st\'ad-ik ,t\'ub} \} \)

station [ELEC] An assembly line or assembly machine location at which a wiring board or chassis is stopped for insertion of one or more parts. \( \{ \text{ELEC} \} \)

stationary cone classifier [MECH ENG] In a pulverizer directly feeding a coal furnace, a device which returns oversize coal to the pulverizing zone. \( \{ \text{sta\'shen 'ner\-'e k\'on 'klas-'a-fl\'ar} \} \)

stationary engine [MECH ENG] A permanently placed engine, as in a power house, factory, or mine. \( \{ \text{sta\'shen 'ner\-'e 'en-\'jan} \} \)

station pole [CIV ENG] One of various rods used in surveying to mark stations, to sight points and lines, or to measure elevation with respect to the transit. \( \{ \text{sta\'shen 'po\'l} \} \)

station roof [BUILD] 1. A roof supported by a
single central post and having a shape that resembles an umbrella. Also known as umbrella roof. 2. A long roof supported by a single row of posts and by cantilevers on one or both sides, typically used for railroad platforms. "stà-shàn, rìf".

**Statistical multiplexer** [ELECTR] A device which combines several low-speed communications channels into a single high-speed channel, and which can manage more communications traffic than a standard multiplexer by analyzing traffic and choosing different transmission patterns. "stà'tis-ti-kəl ‘məl-tə-plek-sər".

**Statistical quality control** [IND ENG] The use of statistical techniques as a means of controlling the quality of a product or process. "stà'tis-ti-kəl ‘məl-tə-plek-sər".

**Stator** [ELEC] The portion of a rotating machine that contains the stationary parts of the magnetic circuit and their associated windings. [MECH ENG] A stationary machine part in or about which a rotor turns. "stà-tor".

**Statoscope** [ENG] 1. A barometer that records small variations in atmospheric pressure. 2. An instrument that indicates small changes in an aircraft’s altitude. "stà-d-ə-skōp".

**Statute mile** See mile. "stàt-əch-út ‘mil”.

**Stave** [DES ENG] 1. A rung of a ladder. 2. Any of the narrow wooden strips or metal plates placed edge to edge to form the sides, top, or lining of a vessel or structure, such as a barrel. "stàv”.

**Stay** [ENG] In a structure, a tensile member which holds other members of the structure rigidly in position. "stà”.

**Staybolt** [DES ENG] A bolt with a thread along the entire length of the shaft, used to attach machine parts that are under pressure to separate. "stà-bót”.

**Stayed-cable bridge** [CIV ENG] A modified cantilever bridge consisting of girders or trusses cantilevered both ways from a central tower and supported by inclined cables attached to the tower at the top or sometimes at several levels. "stàd-ə ‘kā-bal, ‘brij”.

**STD recorder** See salinity-temperature-depth recorder. "stàd-ə ‘nàs”.

**steadiness** [CONT SYS] Freedom of a robot arm or end effector from high-frequency vibrations and jolts. "stàd-ə ‘nàs”.

**steady pin** [ENG] 1. A retaining device such as a dowel, pin, or key that prevents a pulley from turning on its axis. 2. A guide pin used to lift a cope or pattern. "stàd-ə ‘pin”.

**steady rest** [MECH ENG] A device that is used to support long, slender workpieces during turning or grinding and permits them to rotate without eccentric movement. "stàd-ə ‘rest”.

**steady-state conduction** [THERMO] Heat conduction in which the temperature and heat flow at each point does not change with time. "stàd-ə ‘stāt ‘kən-dək-shən”.

**steady-state creep** See secondary creep. "stàd-ə ‘stāt ‘krep”.

**steady-state error** [CONT SYS] The error that remains after transient conditions have disappeared in a control system. "stàd-ə ‘stāt ‘er-ər”.

**steady-state flow** [CHEM ENG] Fluid flow without any change in composition or phase equilibrium relationships. "stàd-ə ‘stāt ‘flō”.

**steady-state vibration** [MECH] Vibration in which the velocity of each particle in the system is a continuous periodic quantity. "stàd-ə ‘stāt ‘vīl-brā-ən”.

**Steam accumulator** [MECH ENG] A pressure vessel in which water is heated by steam during off-peak demand periods and regenerated as steam when needed. ʻstèm ə’kwi-lə-ma, ūd-ər”.

**Steam atomizing oil burner** [ENG] A burner which has two supply lines, one for oil and the other for a jet of steam which assists in the atomization process. ʻstèm ‘ad-ə, mi-zən ‘oil, ‘bɔr-ən”.

**Steam tempering** [MECH ENG] The control of the maximum temperature of superheated steam by water injection or submerged cooling. ʻstèm ə’təm-pər-ə-rə-shən”.

**Steam bending** [ENG] Forming wooden members to a desired shape by pressure after first softening by heat and moisture. ʻstèm ‘bend-ən”.

**Steam boiler** [MECH ENG] A pressurized system in which water is vaporized to steam by heat transferred from a source of higher temperature, usually the products of combustion from burning fuels. Also known as steam generator. ʻstèm ‘bōl-lər”.

**Steam calorimeter** [ENG] 1. A calorimeter, such as the Joly or differential steam calorimeter, in which the mass of steam condensed on a body is used to calculate the amount of heat supplied. 2. See throttling calorimeter. ʻstèm ‘kəl-ə’rim-əd-ər”.

**Steam cock** [ENG] A valve for the passage of steam. ʻstèm ‘kāk”.

**Steam condenser** [MECH ENG] A device to maintain vacuum conditions on the exhaust of a steam prime mover by transfer of heat to circulating water or air at the lowest ambient temperature. ʻstèm kən-dən-sər”.

**Steam cracking** [CHEM ENG] High-temperature cracking of petroleum hydrocarbons in the presence of steam. ʻstèm ‘kra-kən”.

**Steam cure** [ENG] To cure concrete or mortar in water vapor at an elevated temperature, at either atmospheric or high pressure. ʻstèm ‘kyur”.

**Steam cycle** See Rankine cycle. ʻstèm ‘rənk-ən”.

**Steam distillation** [CHEM ENG] A distillation in which vaporization of the volatile constituents of a liquid mixture takes place at a lower temperature by the introduction of steam directly into the charge, steam used in this manner is known as open steam. Also known as steam stripping. ʻstèm ‘dɪs-tə-lə-shən”.

**Steam drive** [MECH ENG] Any device which uses power generated by the pressure of expanding steam to move a machine or a machine part. ʻstèm ‘dri-ə”.

530
steam dryer [MECH ENG] A device for separating liquid from vapor in a steam supply system. { 'ştem ,mold-i:p-
steam emulsion test [ENG] A test used for measuring the ability of oil and water to separate, especially for steam-turbine oil; after emulsification and separation, the time required for the emulsion to be reduced to 3 milliliters or less is recorded at 5-minute intervals. { 'ştem ,mal-shon ,test }
steam engine [MECH ENG] A thermodynamic device for the conversion of heat in steam into work, generally in the form of a positive displacement, piston and cylinder mechanism. { 'ştem ,jen-ian }
steam engine indicator [ENG] An instrument that plots the steam pressure in an engine cylinder as a function of piston displacement. { 'ştem ,jen-ian 'in-da,kad-ar }
steam gage [ENG] A device for measuring steam pressure. { 'ştem ,gaj }
steam-generating furnace See boiler furnace. { 'ştem ,jen-ô,rad-iq ,far-nas }
steam generator See steam boiler. { 'ştem ,jen-ô,rad-ar }
steam hammer [MECH ENG] A forging hammer in which the ram is raised, lowered, and operated by a steam cylinder. { 'ştem ,ham-ar }
steam-heated evaporator [MECH ENG] A structure using condensing steam as a heat source on one side of a heat-exchange surface to evaporate liquid from the other side. { 'ştem ,hêd-ad 'vap-ô,rad-ar }
steam heating [MECH ENG] A system that used steam as the medium for a comfort or process heating operation. { 'ştem ,hêd-iq }
steam jacket [MECH ENG] A casing applied to the cylinders and heads of a steam engine, or other space, to keep the surfaces hot and dry. { 'ştem ,jak-at }
steam jet [ENG] A blast of steam issuing from a nozzle. { 'ştem ,jet }
steam-jet cycle [MECH ENG] A refrigeration cycle in which water is used as the refrigerant; high-velocity steam jets provide a high vacuum in the evaporator, causing the water to boil at low temperature and at the same time compressing the flashed vapor up to the condenser pressure level. { 'ştem ,jet ,sî-kaI }
steam-jet ejector [MECH ENG] A fluid acceleration vacuum pump or compressor using the high velocity of a steam jet for entrainment. { 'ştem ,jet i'jek-tar }
steam line [THERMO] A graph of the boiling point of water as a function of pressure. { 'ştem ,fîn }
steam locomotive [MECH ENG] A railway propulsion power plant using steam, generally in a reciprocating, noncondensing engine. { 'ştem ,lo-kal ,mold-îv }
steam loop [ENG] Two vertical pipes connected by a horizontal one, used to condense boiler steam so that it can be returned to the boiler without a pump or injector. { 'ştem ,lîp }
steam molding [ENG] The use of steam, either directly on the material or indirectly on the mold surfaces, as a heat source to mold parts from presexpanded polystyrene beads. { 'ştem ,mold-i:p }
steam nozzle [MECH ENG] A streamlined flow structure in which heat energy of steam is converted to the kinetic form. { 'ştem ,nâz-ôl }
steam point [THERMO] The boiling point of pure water whose isotopic composition is the same as that of sea water at standard atmospheric pressure, it is assigned a value of 100°C on the International Practical Temperature Scale of 1968. { 'ştem ,poon }
steam pump [MECH ENG] A pump driven by steam acting on the coupled piston rod and plunger. { 'ştem ,pam-p }
steam purifier See steam separator. { 'ştem ,pyû-ô,fil-ar }
steam refining [CHEM ENG] A petroleum refining distillation process, in which the only heat used comes from steam in open and closed coils near the bottom of the still, used to produce gasoline and naphthas where odor and color are of prime importance; where open steam is used, it is known as steam distillation. { 'ştem ,rî'fin-iq }
steam reheater [MECH ENG] A steam boiler component in which heat is added to intermediate-pressure steam, which has given up some of its energy in expansion through the high-pressure turbine. { 'ştem ,rêhêd-ar }
steam roller [MECH ENG] A road roller driven by a steam engine. { 'ştem ,rû-tar }
steam separator [MECH ENG] A device for separating a mixture of the liquid and vapor phases of water. Also known as steam purifier. { 'ştem ,sep-ô,rad-ar }
steam shovel [MECH ENG] A power shovel operated by steam. { 'ştem ,shav-ôl }
steam still [CHEM ENG] A still in which steam provides most of the heat; distillation requires a lower temperature than in standard equipment (except for a vacuum distillation unit). { 'ştem ,stil }
steam stripping See steam distillation. { 'ştem ,strip-iq }
steam superheater [MECH ENG] A boiler component in which sensible heat is added to the steam after it has been evaporated from the liquid phase. { 'ştem ,sû-ô,rad-hêd-ar }
steam tracing [ENG] A steam-carrying heater (such as tubing or piping) next to or twisted around a process-fluid or instrument-air line, used to keep liquids from solidifying or condensing. { 'ştem ,trâs-iq }
steam trap [MECH ENG] A device which drains and removes condensate automatically from steam lines. { 'ştem ,trap }
steam-tube dryer [MECH ENG] Rotary dryer with steam-heated tubes running the full length of the cylinder and rotating with the dryer shell. { 'ştem ,tûb ,dri-ar }
steam turbine [MECH ENG] A prime mover for the conversion of heat energy of steam into work on a rotating shaft, utilizing fluid acceleration.
steam valve

principles in jet and vane machinery. \{stêmn\ (tar-ban)\}

stem valve \[ENG\] A valve used to regulate the flow of steam. \{stêm_valv\}

stemming rod \[ENG\] Pertaining to a

steam washer \[ENG\] A device for removing contaminants, such as silica, from the steam produced in a boiler. \{stêm_wash-ar\}

steel-cable conveyor belt \[DES ENG\] A rubber conveyor belt in which the carcass is composed of a single plane of steel cables. \{stêl_kâ-bal kan_vâ-ar\, belt\}

steel-clad rope \[DES ENG\] A wire rope made from flat strips of steel wound helically around each of the six strands composing the rope. \{stêl_klåd rôp\}

Steiflex coupling \[MECH ENG\] A flexible coupling made with two grooved steel hubs keyed to their respective shafts and connected by a specially tempered alloy-steel member called the grid. \{stêl_fleks kâp_ljâg\}

steelyard \[ENG\] A weighing device with a counterbalanced arm supporting the load to be weighed on the short end. \{stîl-yard\}

steenn \[CIV ENG\] To line an excavation such as a cellar or well with stone, cement, or similar material without the use of mortar. \{stên\}

steering arm \[MECH ENG\] An arm that transmits turning motion from the steering wheel of an automotive vehicle to the drag link. \{stîr_iŋ əm\}

steering brake \[MECH ENG\] Means of turning, stopping, or holding a tracked vehicle by braking the tracks individually. \{stîr_iŋ brâk\}

steering gear \[MECH ENG\] The mechanism, including gear train and linkage, for the directional control of a vehicle or ship. \{stîr_iŋ gîr\}

steering wheel \[MECH ENG\] A hand-operated wheel for controlling the direction of the wheels of an automotive vehicle or of the rudder of a ship. \{stîr_iŋ wîl\}

Stefan number \[THERMO\] A dimensionless number used in the study of radiant heat transfer, equal to the Stefan-Boltzmann constant times the cube of the temperature times the thickness of a layer divided by the layer's thermal conductivity. Symbolized St. \{Stefan number (S)\} \{štîn, fân, nâm-bar\}

Steiner’s theorem \See parallel axis theorem. \{štîn-r̩z, thîr-əm\}

stem \[ENG\] 1. The heavy iron rod acting as the connecting link between the bit and the balance short and essentially uniform angular movement. 2. To insert packing or tamping material in a shothole. \{stem\}

stem correction \[THERMO\] A correction which must be made in reading a thermometer in which part of the stem, and the thermometric fluid within it, is at a temperature which differs from the temperature being measured. \{stem ka_rek-chan\}

stemming rod \[ENG\] A nonmetallic rod used to push explosive cartridges into position in a shothole and to ram tight the stemming. \{stem-iŋ râd\}

stem-winding \[MECH ENG\] Pertaining to a
timepiece that is wound by an internal mechanism turned by an external knob and stem (the winding button of a watch). \{stem \(\text{wind-iŋ}\)\}

stenometer \[ENG\] An instrument for measuring distances; employs a telescope in which two target images a known distance apart are superimposed by turning a micrometer screw. \{sto’ nâm-ad-ar\}

step \[ENG\] A small offset on a piece of core or in a drill hole resulting from a sudden sideways deviation of the bit as it enters a hard, tilted stratum or rock underlying a softer rock. \{step\}

step aeration \[CIV ENG\] An activated sludge process in which the settled sewage is introduced into the aeration tank at more than one point. \{step e, râ-shan\}

step bearing \[MECH ENG\] A device which supports the bottom end of a vertical shaft. Also known as pivot bearing. \{step ber-iŋ\}

step block \[ENG\] A metal block, usually of steel or cast iron, with integral stepped sections to allow application of clamps when securing a workpiece to a machine tool table. \{step blâk\}

step-by-step system \[CONT SYS\] A control system in which the drive motor moves in discrete steps when the input element is moved continuously. \{step bî step sistôm\}

step gage \[DES ENG\] 1. A plug gage containing several cylindrical gages of increasing diameter mounted on the same axis. 2. A gage consisting of a body in which a blade slides perpendicularly, used to measure steps and shoulders. \{step gâi\}

stepped cone pulley \[DES ENG\] A one-piece pulley with several diameters to engage transmission belts and thereby provide different speed ratios. \{step kon pîl-e\}

stepped footing \[CIV ENG\] A widening at the bottom of a wall consisting of a series of steps in the proportion of one horizontal to two vertical units. \{step ʃûd-iŋ\}

stepped gear wheel \[DES ENG\] A gear wheel containing two or more sets of teeth on the same rim, with adjacent sets slightly displaced to form a series of steps. \{step gîr wîl\}

stepped screw \[DES ENG\] A screw from which sectors have been removed, the remaining screw surfaces forming steps. \{step sîkrû\}

stepper motor \[ELEC\] A motor that rotates in short and essentially uniform angular movements rather than continuously, typical steps are 30, 45, and 90°; the angular steps are obtained electromagnetically rather than by the ratchet and pawl mechanisms of stepping relays. Also known as magnetic stepping motor, stepping motor, step-servo motor. \{step_môd-ar\}

stepping See zoning. \{step-iŋ\}

stepping motor See stepper motor. \{step-ınj, môd-ar\}

step pulley \[MECH ENG\] A series of pulleys of various diameters combined in a single concentric unit and used to vary the velocity ratio of shafts. Also known as cone pulley. \{step pûl-e\}
step-recovery diode [ELECTR] A varactor in which forward voltage injects carriers across the junction, but before the carriers can combine, voltage reverses and carriers return to their origin in a group; the result is abrupt cessation of reverse current and a harmonic-rich waveform. { 'step riʃəkrəʊav-riʃədər}

step response [CONT SYS] The behavior of a system when its input signal is zero before a certain time and is equal to a constant nonzero value after this time. { 'step riˈspiːns}

step-up transformer [ELEC] Transformer in which the energy transfer is from a low-voltage winding to a high-voltage winding or windings. { 'step up tranз,ˈfɔːr-mər}

step voltage regulator [ELEC] A type of voltage regulator used on distribution feeder lines; it provides increments or steps of voltage change. { 'step ˈvəʊl-tʃiˌriˌdʒəˌriˌdʒəˌtɔrdər}

stère [MECH] A unit of volume equal to 1 cubic meter, it is used mainly in France, and in measuring timber volumes. { 'stirə}

stereo See stereophonic; stereo sound system. { 'stɛroʊ-ə}

stereo amplifier [ENG ACOUS] An audio-frequency amplifier having two or more channels, as required for use in a stereo sound system. { 'stɛroʊ-ə ˈɛmˈpləˌfiər-ər}

stereolithography [IND ENG] A three-dimensional printing process whereby a CAD drawing of a part is processed to create a file of the part in slices and the part is constructed one slice (or layer) at a time (from bottom to top) by depositing layer upon layer of material (usually a liquid resin that can be hardened using a scanning laser), used for rapid prototyping. { ˈstɛrəˌlɪθəˌlaɪtəˈθrɪŋ}

stereomicrocimeter [ENG] An instrument attached to an optical instrument (such as a telescope) to measure small angles. {ˈstɛrəˌmɪˈkroʊˌsaɪˈmɒtər}

stereophonic [ENG ACOUS] Pertaining to three-dimensional pickup or reproduction of sound, as achieved by using two or more separate audio channels. Also known as stereo. {ˈstɛrəˌfən-ɪk}

stereophonics [ENG ACOUS] The study of reproducing or reinforcing sound in such a way as to produce the sensation that the sound is coming from sources whose spatial distribution is similar to that of the original sound sources. {ˈstɛrəˌfən-əˈsɛs}

stereophonic sound system See stereo sound system. {ˈstɛrəˌfən-əˈsaʊndˌsɪsˈtəm}

stereo pickup [ENG ACOUS] A phono-graph pickup designed for use with standard single-groove two-channel stereo records; the pickup cartridge has a single stylus that actuates two elements, one responding to stylus motion at 45° to the right of vertical and the other responding to stylus motion at 45° to the left of vertical. {ˈstɛrəˌfən-əˈpɪkˌəp}

stereoplanigraph [ENG] An instrument for drawing topographic maps from observations of stereoscopic aerial photographs with a stereocomparator. {ˈstɛrəˌe-oʊˈplænˌəˌgræf}

stereo preamplifier [ENG ACOUS] An audio-frequency preamplifier having two channels, used in a stereo sound system. {ˈstɛrəˌe-oʊˈpɹeˌɛmˌpləˌfiər-ər}

stereo record [ENG ACOUS] A single-groove disk record having V-shaped grooves at 45° to the vertical, each groove wall has one of the two recorded channels. {ˈstɛrəˌe-oʊˌrɛkˌərd}

stereo recorded tape [ENG ACOUS] Recorded magnetic tape having two separate recordings, one for each channel of a stereo sound system. {ˈstɛrəˌe-oʊˌriʃəkərdˌədˌtæp}

stereo sound system [ENG ACOUS] A sound reproducing system in which a stereo pickup, stereo tape recorder, stereo tuner, or stereo microphone system feeds two independent audio channels, each of which terminates in one or more loudspeakers arranged to give listeners the same audio perspective that they would get at the original source sound. Also known as stereo; stereophonic sound system. {ˈstɛrəˌe-oʊˌsəʊndˌsɪsˈtəm}

stereo tape recorder [ENG ACOUS] A magnetic-tape recorder having two stacked playback heads, used for reproduction of stereo recorded tape. {ˈstɛrəˌe-oʊˌtæpˌriʃəkərdˌər}

stereo tuner [ENG ACOUS] A tuner having provisions for receiving both channels of a stereo broadcast. {ˈstɛrəˌe-oʊˌtʊnˌər}

sterhydraulic [MECH ENG] Pertaining to a hydraulically pressurized system; the result is abrupt cessation of flow in a stereo sound system. {ˈstɛrəˌhiˈdɹɔrˌɪk}

sterilizer [ENG] An apparatus for sterilizing by dry heat, steam, or water. {ˈstɛrəˌlɪzər}

sthène [MECH] The force which, when applied to a body whose mass is 1 metric ton, results in an acceleration of 1 meter per second per second, equal to 1000 newtons. Formerly known as newton. {ˈstɛθənə}

stick [ENG] 1. A rigid bar hinged to the boom of a dipper or pull shovel and fastened to the bucket. 2. A long slender tool bonded with an abrasive for honing or sharpening tools and for dressing of wheels. {ˈstɪk}

stick gage [ENG] A suitably divided vertical rod, or stick, anchored in an open vessel so that the magnitude of rise and fall of the liquid level may be observed directly. {ˈstɪkˌgæj}

stick-slip friction [MECH] Friction between two surfaces that are alternately at rest and in motion with respect to each other. {ˈstɪkˌslɪpˌfrikˈʃən}

stiction [MECH] Friction that tends to prevent relative motion between two movable parts at their null position. {ˈstɪkˌʃən}

stiffener [CIV ENG] A steel angle or plate attached to a slender beam to prevent its buckling by increasing its stiffness. {ˈstɪfənər}

stiffleg derrick [MECH ENG] A derrick consisting of a mast held in the vertical position by a fixed tripod of steel or timber legs. Also
stiffness

known as derrick crane; Scotch derrick. (ˈstif ˈleg ˈdɛr-ik)

stiffness  [MECH] The ratio of a steady force acting on a deformable elastic medium to the resulting displacement. (ˈstɪf-nəs)

stiffness coefficient  [MECH] The ratio of the force acting on a linear mechanical system, such as a spring, to its displacement from equilibrium. (ˈstɪf-nəs ˈkō-ˌfish-ənt)

stiffness constant  [MECH] Any one of the coefficients of the relations in the generalized Hooke’s law used to express stress components as linear functions of the strain components. Also known as elastic constant. (ˈstɪf-nəs ˈkän-stənt)

stiffness matrix  [MECH] A matrix \( \mathbf{K} \) used to express the potential energy \( V \) of a mechanical system during small displacements from an equilibrium position, by means of the equation \( V = \frac{1}{2} \mathbf{q}^\top \mathbf{K} \mathbf{q} \), where \( \mathbf{q} \) is the vector whose components are the generalized coordinates of the system with respect to time and \( \mathbf{q} \) is the transpose of \( \mathbf{q} \). Also known as stability matrix. (ˈstɪf-nəs ˈmā-triks)

stigma  [MECH] A unit of length used mainly in nuclear measurements, equal to \( 10^{-12} \) meter. Also known as bicon. (ˈstɪg-mə)

stile  [BUILD] The upright outside framing piece of a window or door. (ˈstil)

still  [CHEM ENG] A device used to evaporate liquids; heat is applied to the liquid, and the resulting vapor is condensed to a liquid state. (ˈstil)

stilling basin  [ENG] A depressed area in a channel or reservoir that is deep enough to reduce the velocity of the flow. Also known as stilling basin. (ˈstɪl-iŋ ˈbæs-aŋ)

stilling box  SIR stilling basin. (ˈstɪl-iŋ ˈbāks)

stimulus  [CONT SYS] A signal that affects the controlled variable in a control system. (ˈstim-yə-ləs)

Stirring cycle  [THERMO] A regenerative thermodynamic power cycle using two isothermal and two constant volume phases. (ˈstɪr-iŋ ˈstɜr-kl)

Stirring engine  [MECH ENG] An engine in which work is performed by the expansion of a gas at high temperature; heat for the expansion is supplied through the wall of the piston cylinder. (ˈstɪr-iŋ ˈen-jən)

stirred-flow reactor  [CHEM ENG] A reactor in which there is a device for achieving effective mixing, frequently in the form of a rapidly rotating basket holding the catalyst. (ˈstɪrd ˈflō rē-ək-ˈtār)

stirrup  [CIV ENG] In concrete construction, a U-shaped bar which is anchored perpendicular to the longitudinal steel as reinforcement to resist shear force. (ˈstər-əp)

stitch bonding  [ENG] A method of making wire connections between two or more points on an integrated circuit by using impulse welding or heat and pressure while feeding the connecting wire through a hole in the center of the welding electrode. (ˈstɪch ˈbænd-əp)

stitching  [ENG] Progressive welding of thermoplastic materials (resins) by successive applications of two small, mechanically operated, radio-frequency-heated electrodes; the mechanism is similar to that of a normal sewing machine. (ˈstɪch-ɪŋ)

stitch rivet  [ENG] One of a series of rivets joining the parallel elements of a structural member so that they act as a unit. (ˈstich ˈriv-ət)

stochastic control theory  [CONT SYS] A branch of control theory that aims at predicting and minimizing the magnitudes and limits of the random deviations of a control system through optimizing the design of the controller. (ˈstoʊkəs-tík ˈkæntrəl ˈθiə-ə-rē)

stock  [IND ENG] 1. A product or material kept in storage until needed for use or transferred to some ultimate point for use, for example, crude oil tankage or paper-pulp feed. 2. Designation of a particular material, such as bright stock or naphtha stock. (ˈstæk)

stock accounting  [IND ENG] The establishment and maintenance of formal records of material in stock reflecting such information as quantities, values, or condition. (ˈstæk əˈkɑnt-ət)

stock control  [IND ENG] Process of maintaining inventory data on the quantity, location, and condition of supplies and equipment due in, on hand, and due out, to determine quantities of material and equipment available or required for issue and to facilitate distribution and management of material. (ˈstæk ˈkoʊntrəl)

stock coordination  [IND ENG] A supply management function exercised usually at department level which controls the assignment of material cognizance for items or categories of material to inventory managers. (ˈstæk ˈkoʊrd-ən,ə-ˈʃan)

stocking cutter  [MECH ENG] 1. A gear cutter having side rake or curved edges to rough out the gear-tooth spaces before they are formed by the regular gear cutter. 2. A concave gear cutter ganged beside a regular gear cutter and used to finish the periphery of a gear blank by milling ahead of the regular cutter. (ˈstɪk-iŋ ˈkæd-ər)

stock number  [IND ENG] Number assigned to an item, principally to identify that item for storage and issue purposes. (ˈstæk ˈnæm-bər)

stockpile  [ENG] A reserve stock of material, equipment, raw material, or other supplies. (ˈstʊk-pil)

stock rail  [CIV ENG] The fixed rail in a track, against which the switch rail operates. (ˈstæk ˈreɪl)

stock record account  [IND ENG] A basic record showing by item the receipt and issuance of property, the balances on hand, and such other identifying or stock control data as may be required by proper authority. (ˈstæk ˈtek-ərd əˈkɑnt)

Stodola method  [MECH] A method of calculating the deflection of a uniform or nonuniform beam in free transverse vibration at a specified frequency, as a function of distance along the beam, in which one calculates a sequence of
storage reservoir

Stokes number 2 \([\text{ENG}]\) A dimensionless number used in the calibration of rotometers, equal to \(1.042 \cdot n \cdot \rho \cdot g \cdot (1 - P_{\text{r}}) R^3 \mu^2\), where \(P_{\text{r}}\) and \(\mu\) are the density and dynamic viscosity of the fluid respectively, \(n\) and \(g\) are the mass and density of the float respectively, and \(R\) is the ratio of the radius of the tube to the radius of the float. 
\[ \text{Symbol } S_t \] 

stone \([\text{MECH}]\) A unit of mass in common use in the United Kingdom, equal to 14 pounds or 6.35029318 kilograms. 
\[ \text{Symbol } t \] 

stonework \([\text{CIV ENG}]\) A structure or the part of a structure built of stone. 
\[ \text{Symbol } \text{stn} \] 

Stoney gate \([\text{CIV ENG}]\) A crest gate which moves along a series of rollers traveling vertically in grooves in masonry piers, independently of the gate and piers. 
\[ \text{Symbol } \text{stn}, \text{gat} \] 

stop \([\text{CONT SYS}]\) A bound or final position of a robot’s movement. 
\[ \text{Symbol } \text{stp} \] 

stop and stay See absolute stop. 
\[ \text{Symbol } \text{stp \ an \ st} \] 

stop bead \([\text{BUILD}]\) A molding on the pulley stile of a window frame, forms one side of the groove for the inner sash. 
\[ \text{Symbol } \text{stp}, \text{b} \] 

stop cock \([\text{ENG}]\) A small valve for stopping or regulating the flow of a fluid through a pipe. 
\[ \text{Symbol } \text{stpl}, \text{k\=k} \] 

stop log \([\text{ENG}]\) A log, plank, or steel or concrete beam that fits into a groove or rack between walls or piers to prevent the flow of water through an opening in a dam, conduit, or other channel. 
\[ \text{Symbol } \text{stpl, lot} \] 

stop nut \([\text{DES ENG}]\) 1. An adjustable nut that restricts the travel of an adjusting screw. 2. A nut with a compressible insert that binds it so that a lock washer is not needed. 
\[ \text{Symbol } \text{stn}, \text{nat} \] 

stopping capacitor See coupling capacitor. 
\[ \text{Symbol } \text{stp-i}\=\=k, \text{pas-\=ad-ar} \] 

stop valve \([\text{ENG}]\) A valve that can be opened or closed to regulate or stop the flow of fluid in a pipe. 
\[ \text{Symbol } \text{stv}, \text{valv} \] 

storage battery \([\text{ELEC}]\) A connected group of two or more storage cells or a single storage cell. Also known as accumulator, accumulator battery, rechargeable battery, secondary battery. 
\[ \text{Symbol } \text{stb-j}, \text{bad-ar} \] 

storage calibrator See cylinder. 
\[ \text{Symbol } \text{st Dj}, \text{kal-o-r\=a, \=fi-ar} \] 

storage cell \([\text{ELEC}]\) An electrolytic cell for generating electric energy, in which the cell after being discharged may be restored to a charged condition by sending a current through it in a direction opposite to that of the discharging current. Also known as secondary cell. 
\[ \text{Symbol } \text{stb-j}, \text{sel} \] 

storage reservoir See impounding reservoir. 
\[ \text{Symbol } \text{stb-j}, \text{re-\=ov, w\=ar} \] 

storage-retrieval machine \([\text{CONT SYS}]\) A computer-controlled machine for an automated storage and retrieval system that operates on rails and moves material either vertically or horizontally between a storage compartment and a transfer station. 
\[ \text{Symbol } \text{stb-j}, \text{r\=itre-\=ov, m\=ok, \=shen} \] 

stored-program numerical control See computer numerical control. 
\[ \text{Symbol } \text{st-r-pro} \text{num, \=n, a-kal, k·, tr\=ol} \] 

storm cellar See cyclone cellar. 
\[ \text{Symbol } \text{strom}, \text{sel-ar} \] 

storm drain \([\text{CIV ENG}]\) A drain which conducts storm surface, or wash water, or drainage after a heavy rain from a building to a storm or a combined sewer. Also known as storm sewer. 
\[ \text{Symbol } \text{strom}, \text{dran} \] 

storm sash See storm window. 
\[ \text{Symbol } \text{strom}, \text{sash} \] 

storm sewage \([\text{CIV ENG}]\) Refuse liquids and waste carried by sewers during or following a period of heavy rainfall. 
\[ \text{Symbol } \text{strom}, \text{sul-i} \] 

storm sewer See storm drain. 
\[ \text{Symbol } \text{strom}, \text{sul-ar} \] 

storm window \([\text{BUILD}]\) A sash placed on the outside of an ordinary window to give added protection from the weather. Also known as storm sash. 
\[ \text{Symbol } \text{strom}, \text{win-d\=o} \] 

Storrow whirling hygrometer \([\text{ENG}]\) A hygrometer in which the two thermometers are mounted side by side by a brass frame and fitted with a loose handle so that it can be whirled in the atmosphere to be tested, the instrument is whirled at some 200 revolutions per minute for about one minute and the readings on the wet- and dry-bulb thermometers are recorded; used in conjunction with Glaiser’s or Marvin’s hygrometrical tables. 
\[ \text{Symbol } \text{st-r-o, w\=ar, fl, gr\=am, \=ad-ar} \] 

story \([\text{BUILD}]\) The space between two floors or between a floor and the roof. 
\[ \text{Symbol } \text{stro-\=e} \] 

story pole See story rod. 
\[ \text{Symbol } \text{st-r-e, pol} \] 

story rod \([\text{DES ENG}]\) A pole cut to the exact specified height from finished floor to ceiling and used as a measuring device in the course of construction. Also known as story pole. 
\[ \text{Symbol } \text{st-r-e, r\=ad} \] 

stove \([\text{ENG}]\) A chamber within which a fuel-air mixture is burned to provide heat, the heat itself being radiated outward from the chamber, used for space heating, process-fluid heating, and steel blast furnaces. 
\[ \text{Symbol } \text{stv} \] 

stove bolt \([\text{DES ENG}]\) A coarsely threaded bolt with a slotted head, which with a square nut is used to join metal parts. 
\[ \text{Symbol } \text{stv}, \text{bol-t} \] 

stovepipe \([\text{ENG}]\) Large-diameter pipe made of sheet steel. 
\[ \text{Symbol } \text{stv}, \text{plp} \] 

stoving See baking. 
\[ \text{Symbol } \text{stv-i-n} \] 

STR See self-tuning regulator. 

straddle milling \([\text{MECH ENG}]\) Face milling of two parallel vertical surfaces of a workpiece simultaneously by using two side-milling cutters. 
\[ \text{Symbol } \text{strad-al, \=mil-i-n} \] 

straddle truck \([\text{MECH ENG}]\) A self-loading outrigger type of industrial truck that straddles the load below lifting it between the outrigger arms. 
\[ \text{Symbol } \text{str-\=ad-al, trk} \] 

straight beam \([\text{ENG}]\) In ultrasonic testing, a longitudinal wave emitted from an ultrasonic
straight bevel gear

search unit in a wavetrain which travels perpen-
dicularly to the test surface. (ˈstrætˈbevl)

straight bevel gear [DES ENG] A simple form of bevel gear having straight teeth which, if ex-
tended inward, would come together at the inter-
section of the shaft axes. (ˈstrætˈbevlˌgir)

straightedge [DES ENG] A strip of wood, plas-
tic, or metal with one or more long edges made
straight with a desired degree of accuracy.
ˈstrætˌɛdʒ]

straightening vanes [ENG] Horizontal vanes mounted on the inside of fluid conduits to re-
duce the swirling or turbulent flow ahead of the orifice or the venturi meters. (ˈstrætˌınˌvänz)

straight filing [ENG] Filing by pushing a file in
a straight line across the work. (ˈstrætˌfılˌıŋ)

straight-flow turbine [MECH ENG] A horizontal-
axis, low-head hydraulic turbine in which the upstream and downstream reservoirs are con-
ected by a straight tube into which the runners are integrated, with the generator placed directly on
the periphery of these runners. (ˈstrætˌflıˌroupsˌtərˌbän]

straight joint [BUILD] 1. A continuous joint formed by the ends of parallel floor boards or
masonry units and oriented perpendicularly to
their length. 2. A joint between two pieces of
wood that are set edge to edge without tongues and 
grooves, dowels, or overlaps to bind them. Also
known as square joint. (ˈstrætˌjöŋ]

straight-line mechanism [MECH ENG] A linkage
so proportioned and constrained that some
point on it describes over part of its motion a
straight or nearly straight line. (ˈstrætˌlınˌmek-
əˌnizəm)

straight-line motion [CONT SYS] A method of
moving a robot between via or way points in
which the end effector moves only along seg-
ments of straight lines, stopping momentarily for
any change in direction. (ˈstrætˌlınˌməˌshən)

straight piecework system See one-hundred-per-
cent premium plan. (ˈstrætˌpēˌwərkˌsıməˌtım)

straight proportional system See one-hundred-per-
cent premium plan. (ˈstrætəˌpərˌshənˌəˌˌsıməˌtım)

straight-run [CHEM ENG] Petroleum fractions
derived from the straight distillation of crude oil
without chemical reaction or molecular modifi-
cation. Also known as virgin. (ˈstrætˌrən]

straight-run distillation [CHEM ENG] Continuous
nonreactive distillation of petroleum oil to sep-
erate it into products in the order of their
boiling points. (ˈstrætˌrənˌdısˌtəˈləˌshən)

straight strap clamp [DES ENG] A clamp made of
flat stock with an elongated slot for convenient
positioning; held in place by a T bolt and nut.
(ˈstrætˌstrapˌkləmp)

straight-tube boiler [MECH ENG] A water-tube
boiler in which all the tubes are devoid of curva-
ture and therefore require suitable connecting
devices to complete the circulatory system. Also
known as header-type boiler. (ˈstrætˌtəbˈboʊˌlə]

straight turning [MECH ENG] Work turned in a
lathe so that the diameter is constant over the
length of the workpiece. (ˈstrætˌtərnˌıŋ]

straightway pump [MECH ENG] A pump with
suction and discharge valves arranged to give a
direct flow of fluid. (ˈstrætˌwāˌpəmp]

straight wheel [DES ENG] A grinding wheel
whose sides or face are straight and not in any
way changed from a cylindrical form. (ˈstrætˌwıl]

strain [MECH] Change in length of an object in
some direction per unit undistorted length in
some direction, not necessarily the same, the
nine possible strains form a second-rank ten-
sor. (ˈsträn)

strain axis See principal axis of strain. (ˈstränˌakˌsæs)

strain ellipsoid [MECH] A mathematical represen-
tation of the strain of a homogeneous body
by a strain that is the same at all points or of
unequal stress at a particular point. Also
known as deformation ellipsoid. (ˈstränˌilˌipsoid)

strain energy [MECH] The potential energy
stored in a body by virtue of an elastic deforma-
tion, equal to the work that must be done to
produce this deformation. (ˈstränˌenərˌjı]

strainer [ENG] A porous or screen medium used
ahead of equipment to filter out harmful solid
objects and particles from a fluid stream, used
for example, in river-water intakes for process
plants or to remove decomposition products
from the circulating fluid in a hydraulic system.
(ˈstränˌər]

strain foil [ENG] A strain gage produced from
thin foil by photoetching techniques, may be
applied to curved surfaces, has low transverse
sensitivity, exhibits negligible hysteresis under
cycling loads, and creeps little under sustained
loads. (ˈstränˌfól]

strain gage [ENG] A device which uses the
change of electrical resistance of a wire under
strain to measure pressure. (ˈstränˌgæ]

strain-gage accelerometer [ENG] Any acceler-
ometer whose operation depends on the fact
that the resistance in a wire changes when it is
strained, these devices are classified as bonded
or unbonded. (ˈstränˌgæˌəˌˌkəˌsɛltˌəˈrəmˌəˌˌdər]

strain-gage bridge [ENG] A bridge arrangement
of four strain gages, cemented to a stressed part
in such a way that two gages show increases in
resistance and two show decreases when the
part is stressed; the change in output voltage
under stress is thus much higher than that for
a single gage. (ˈstränˌgæˌbrı]

straining beam [CIV ENG] A short piece of tim-
ber in a truss that holds the ends of struts or
rafters. Also known as straining piece.
(ˈstränˌɪŋˌbəm]

straining piece See straining beam. (ˈstränˌɪŋˌpēz]

strain rate [MECH] The time rate for the usual
tensile test. (ˈstränˌrät]

strain rosette [MECH] A pattern of intersecting
lines on a surface along which linear strains are
measured to find stresses at a point. \{ \text{strän rözet} \}

\textbf{strain seismograph} \textsc{ENG} A seismograph that detects secular strains related to tectonic processes and tidal yielding of the solid earth; also detects strains associated with propagating seismic waves. \{ \text{strän säiz-mägraf} \}

\textbf{strain seismometer} \textsc{ENG} A seismometer that measures relative displacement of two points in order to detect deformation of the ground. \{ \text{strän säiz-mäm-ad-ar} \}

\textbf{strain tensor} \textsc{MECH} A second-rank tensor whose components are the nine possible strains. \{ \text{strän ten-sör} \}

\textbf{strap} \textsc{BUILD} A device that determines the rate at which a propellant burns at various pressures by using a propellant strand. \{ \text{strän bär-nar} \}

\textbf{stranded caisson} \textsc{See} box caisson. \{ \text{strän-dad 'kä-sän} \}

\textbf{stranding machine} \textsc{See} closing machine. \{ \text{strän-di ing ma-shen} \}

\textbf{strap bolt} \textsc{DES ENG} 1. A bolt with a hook or flat extension instead of a head. 2. A bolt with a flat center portion and which can be bent into a U shape. \{ \text{strap bolt} \}

\textbf{strap hammer} \textsc{MECH ENG} A heavy hammer controlled and operated by a belt drive in which the head is slung from a strap, usually of leather. \{ \text{stram-par-ar} \}

\textbf{strap hinge} \textsc{DES ENG} A hinge fastened to a door and the adjoining wall by a long strap. \{ \text{strap hin} \}

\textbf{strapped wall} \textsc{See} battened wall. \{ \text{strapt 'wol} \}

\textbf{strategic material} \textsc{IND ENG} A material needed for the industrial support of a war effort. \{ \text{straße-jik ma-tir-ërôl} \}

\textbf{stratified charge engine} \textsc{MECH ENG} An internal combustion engine that uses a fuel charge consisting of two layers; a rich mixture is close to the spark plug, and combustion promotes ignition of a lean mixture in the remainder of the cylinder. \{ \text{sträd-å-ftd 'chärj, en-jän} \}

\textbf{stray capacitance} \textsc{ELECTR} Undesirable capacitance between circuit wires, between wires and the chassis, or between components and the chassis of electronic equipment. \{ \text{sträd 'kap-pas-ad-ans} \}

\textbf{stray current} \textsc{ELEC} 1. A portion of a current that flows over a path other than the intended path, and may cause electrochemical corrosion of metals in contact with electrolytes. 2. An undesirable current generated by discharge of static electricity; it commonly arises in loading and unloading petroleum fuels and some chemicals, and can initiate explosions. \{ \text{sträd 'kap-n-tant} \}

\textbf{stray line} \textsc{ENG} An ungraded portion of the line connected to a current pole, used so that the pole will acquire the speed of the current before a measurement is begun. \{ \text{sträd 'lîn} \}

\textbf{stream day} \textsc{CHEM} Denoting a 24-hour actual operation of a processing unit, in contrast to the hours actually operated during a calendar (24-hour) day. \{ \text{ström 'dâ} \}

\textbf{stream gage} \textsc{See} river gage. \{ \text{ström ,gæ} \}

\textbf{streamlining} \textsc{DES ENG} The contouring of a body to reduce its resistance to motion through a fluid. \{ \text{ström ,lin-i} \}

\textbf{street} \textsc{CIV ENG} A paved road for vehicular traffic in an urban area. \{ \text{strêt} \}

\textbf{street elbow} \textsc{DES ENG} A pipe elbow with an internal thread at one end and an external thread at the other. \{ \text{strêt ,el-bo} \}

\textbf{stremmatograph} \textsc{ENG} An instrument for measuring longitudinal stress in rails as trains pass over. \{ \text{stram-mad-å-graf} \}

\textbf{strength} \textsc{MECH} The stress at which material ruptures or fails. \{ \text{streikth} \}

\textbf{stress} \textsc{MECH} The force acting across a unit area in a solid material resisting the separation, compacting, or sliding that tends to be induced by external forces. \{ \text{stres} \}

\textbf{stress amplitude} \textsc{MECH ENG} One half the algebraic difference between the maximum and minimum stress in one fatigue test cycle. \{ \text{stres am-pla-tud} \}

\textbf{stress axis} \textsc{See} principal axis of stress. \{ \text{stres ,ak-sas} \}

\textbf{stress concentration} \textsc{MECH} A condition in which a stress distribution has high localized stresses, usually induced by an abrupt change in the shape of a member, in the vicinity of notches, holes, changes in diameter of a shaft, and so forth, maximum stress is several times greater than where there is no geometrical discontinuity. \{ \text{stres ,kän-san ,trâ-shan} \}

\textbf{stress concentration factor} \textsc{MECH ENG} A theoretical factor K, expressing the ratio of the greatest stress in the region of stress concentration to the corresponding nominal stress. \{ \text{stres ,kän-santrâ-shan ,fak-tar} \}

\textbf{stress crack} \textsc{MECH} An external or internal crack in a solid body (metal or plastic) caused by tensile, compressive, or shear forces. \{ \text{stres ,krâk} \}

\textbf{stress difference} \textsc{MECH} The difference between the greatest and the least of the three principal stresses. \{ \text{stres ,dif-rans} \}

\textbf{stressed skin construction} \textsc{CIV ENG} A type of construction in which the outer skin and the framework interact, thus contributing to the flexural strength of the unit. \{ \text{stres skän }strak-shan} \}

\textbf{stress ellipsoid} \textsc{MECH} A mathematical representation of the state of stress at a point that is defined by the minimum, intermediate, and maximum stresses and their intensities. \{ \text{stres ,lîp,sôid} \}
stress equivalent  [IND ENG] A quantitative expression that can be used to compare the physiological outputs generated by different types of work stress.  ['stres ˌekvələnt]

stress function  [MECH] A single function, such as the Airy stress function, or one of two or more functions, such as Maxwell's or Morera's stress functions, that uniquely define the stresses in an elastic body as a function of position.  ( ['stres ˌfʌŋkʃən]

stress intensity  [MECH] Stress at a point in a structure due to pressure resulting from combined tension (positive) stresses and compression (negative) stresses.  ( ['stres ˈɪntəstəsɪk] or ['stres ˈɪntəsɪstɪk])

stress lines See isostatics.  ( ['stres ˈlайн])

stress range  [MECH] The algebraic difference between the maximum and minimum stress in one fatigue test cycle.  ( ['stres ˌræŋ])

stress ratio  [MECH] The ratio of minimum to maximum stress in fatigue testing, considering tensile stresses as positive and compressive stresses as negative.  ( ['stres ˌraʊʃə] stresor 'shə)

stress sensor  [CONT SYS] A contact sensor that responds to the forces produced by mechanical contact.  ( ['stres ˌsɛnsər] stresor 'sənər)

stress-strain curve See deformation curve.  ( ['stres ˌstrɛnˌkərv]

stress tensor  [MECH] A second-rank tensor whose components are stresses exerted across surfaces perpendicular to the coordinate directions.  ( ['stres ˌtenˈsær])

stress test  [ENG] A test of equipment under extreme conditions, outside the range anticipated in normal operation.  ( ['stres ˌtest]

stress trajectories See isostatics.  ( ['stres ˌtrækˌtreq̩资源优势]

stress transmittal  [IND ENG] Transfer of external force from a human-equipment interface to various points of the body.  ( ['stres trænˌmidəl]

stretcher  [CIV ENG] A brick or block that is laid with its length parallelling the wall.  ( ['strı̇ttə] stresor 'strı̇tə)

stretcher bond  [CIV ENG] A bond that consists entirely of stretchers, with each vertical joint lying between the centers of the stretchers above and below.  ( ['strı̇ttəˌbænd]

stretch former  [MECH ENG] A machine used to form materials, such as metals and plastics, by stretching over a mold.  ( ['strı̇tʃˌfɔːrmər]

stretch forming  [MECH ENG] Shaping metals and plastics by applying tension to stretch the heated sheet or part, wrapping it around a die, and then cooling it. Also known as wrap forming.  ( ['strı̇tʃˌfoːrmɪŋ]

stretch out  [IND ENG] A reduction in the delivery rate specified for a program without a reduction in the total quantity to be delivered.  ( ['strı̇tʃˌaut]

strich See millimeter.  ( ['strı̇k]

striking compass  [ENG] A compass mounted on a theodolite for orientation.  ( ['strı̇kɪŋˌkəmpəs]

strike-off board  [ENG] A straight-edge board used to remove excess, freshly placed plaster, concrete, or mortar from a surface.  ( ['strı̇kˌəf]

strike plate  [DES ENG] A metal plate or box which is set in a door jamb and is either pierced or recessed to receive the bolt or latch of a lock.  ( ['strı̇kˌplæt]

striking hammer  [ENG] A hammer used to strike a rock drill.  ( ['strı̇kɪŋˌhæmər]

striking velocity See impact velocity.  ( ['strı̇kɪŋˌvəˌlæsˌoʊdˌdʒi]

string  [ENG] A piece of pipe, casing, or other down-hole drilling equipment coupled together and lowered into a borehole.  ( ['strı̇ŋ]

string course  [BUILD] A horizontal band of masonry, generally narrower than other courses and sometimes projecting, extending across the facade of a structure and in some instances encircling pillars or engaged columns. Also known as belt course.  ( ['strı̇ŋˌkɔːrs] stresor 'kɔːrs)

string electrometer  [ENG] An electrometer in which a conducting fiber is stretched midway between two oppositely charged metal plates; the electrostatic field between the plates displaces the fiber laterally in proportion to the voltage between the plates.  ( ['strı̇ŋˌɪˌlekˈtræmˌədər] stresor 'litəmədər)

stringer  [CIV ENG] 1. A long horizontal member used to support a floor or to connect uprights in a frame. 2. An inclined member supporting the treads and risers of a staircase.  ( ['strı̇ŋə] stresor 'strı̇nə)

string galvanometer  [ENG] A galvanometer consisting of a silver-plated quartz fiber under tension in a magnetic field, used to measure oscillating currents. Also known as Einthoven galvanometer.  ( ['strı̇ŋˌgəˌvəˌnæmˌədər] stresor 'vəˌnæmədər)

stringing  [MECH ENG] A milling method in which parts are placed in a row and milled consecutively.  ( ['strı̇ŋˌmilɪŋ] stresor 'milɪŋ)

strip  [ENG] 1. To remove insulation from a wire. 2. To break or otherwise damage the threads of a nut or bolt.  ( ['strı̇p]

strip-borer drill  [MECH ENG] An electric or diesel skid- or caterpillar-mounted drill used at quarry or opencast sites to drill 3- to 6-inch-diameter (8- to 15-centimeter), horizontal blast holes up to 100 feet (30 meters) in length, without the use of flush water.  ( ['strı̇pˌbɔːrˌdrlˌdrıl]

strip-chart recorder  [ENG] A recorder in which one or more writing pens or other recording devices trace changes in a measured variable on the surface of a strip chart that is moved at constant speed by a time-clock motor.  ( ['strı̇pˌchɑːrt riˌkɔːrdə] stresor 'kɔːrdə)

stripper  [CHEM ENG] An evaporative device for the removal of vapors from liquids, can be in a bubble-tray distillation tower, a vacuum vessel, or an evaporator, if it is a part of a distillation column below the feed tray, it is called the stripping section.  ( ['strı̇pˌstrip] stresor 'strip)

stripiper plate  [ENG] In plastics molding, a plate
that strips a molded article free of core pins or force plugs. ('strip-or,plât')

**stripping** [CHEM ENG] In petroleum refining, the removal (by flash evaporation or steam-induced vaporization) of the more volatile components from a cut or fraction; used to raise the flash point of kerosine, gas oil, or lubricating oil. ('strip-ing')

**strip printer** [ENG] A device that prints computer, telegraph, or industrial output information along a narrow paper tape which resembles a ticker tape. ('strip,'print-ar')

**stroboscope** [ENG] An instrument for making moving bodies visible intermittently, either by illuminating the object with brilliant flashes of light or by imposing an intermittent shutter between the viewer and the object, a high-speed vibration can be made visible by adjusting the strobe frequency close to the vibration frequency. ('stro-bôskôp')

**stroboscopic disk** [ENG] A printed disk having a number of concentric rings each containing a different number of dark and light segments; when the disk is placed on a phonograph turntable or rotating shaft and illuminated at a known frequency by a flashing discharge tube, speed can be determined by noting which pattern appears to stand still or to rotate slowly. ('strôb-ôskâp-ik disk')

**stroboscopic tachometer** [ENG] A stroboscope having a scale that reads in flashes per minute or in revolutions per minute; the speed of a rotating device is measured by directing the stroboscopic lamp on the device, adjusting the flashing rate until the device appears to be stationary, then reading the speed directly on the scale of the instrument. ('strôb-ôskâp-ik tâ'kâm-ôd-ar')

**stroke** [ELECTR] The penlike motion of a focused electron beam in cathode-ray-tube displays. [MECH ENG] The linear movement, in either direction, of a reciprocating mechanical part. Also known as throw. ('strôk')

**stroke-bore ratio** [MECH ENG] The ratio of the distance traveled by a piston in a cylinder to the diameter of the cylinder. ('strôk bôr,ڑ-ô-shô')

**strongly typed language** [CONT SYS] A high-level programming language in which the type of each variable must be declared at the beginning of the program, and the language itself then enforces rules concerning the manipulation of variables according to their types. ('strông-lê ŏpt 'lân-gwûi')

**Strouhal number** [MECH] A dimensionless number used in studying the vibrations of a body past which a fluid is flowing; it is equal to a characteristic dimension of the body times the frequency of vibrations divided by the fluid velocity relative to the body; for a taut wire perpendicular to the fluid flow, with the characteristic dimension taken as the diameter of the wire, it has a value between 0.185 and 0.2 Symbolized St. Also known as reduced frequency. ('strûl nam-bôr')

**struck joint** [CIV ENG] A mortar joint in brickwork formed by pressing the trowel in at the lower edge, so that a recess is formed at the bottom of the joint, suitable only for interior work. ('strûk jönt')

**structural analysis** [ENG] The determination of stresses and strains in a given structure. ('strôk-'châ-ral ə'nâl-ə-sôz')

**structural connection** [CIV ENG] A means of joining the individual members of a structure to form a complete assembly. ('strôk-châ-ral kô'nek-shûn')

**structural deflections** [MECH] The deformations or movements of a structure and its flexural members from their original positions. ('strôk-châ-ral dîl'flek-shûn')

**structural drill** [MECH ENG] A highly mobile diamond- or rotary-drill rig complete with hydraulically controlled derrick mounted on a truck, designed primarily for rapidly drilling holes to determine the structure in subsurface strata or for use as a shallow, slim-hole producer or seismograph drill. ('strôk-châ-ral 'drîl')

**structural drilling** [ENG] Drilling done specifically to obtain detailed information delineating the location of folds, domes, faults, and other subsurface structural features indiscernible by studying strata exposed at the surface. ('strôk-châ-ral 'drîl-ing')

**structural engineering** [CIV ENG] A branch of civil engineering dealing with the design of structures such as buildings, dams, and bridges. ('strôk-châ-ral 'en'pô-nîr-ing')

**structural frame** [BUILD] The entire set of members of a building or structure required to transmit loads to the ground. ('strôk-châ-ral 'fîm')

**structural riveting** [ENG] Riveting structural members by using punched holes. ('strôk-châ-ral 'riv-ôd-ing')

**structural wall** See bearing wall. ('strôk-châ-ral 'wûl')

**structure** [CIV ENG] Anything, as a bridge or a building, that is built or constructed and designed to sustain a load. ('strôk-char')

**structured analysis** [SYS ENG] A method of breaking a large problem or process into smaller components to aid in understanding, and then identifying the components and their interrelationships and reassembling them. ('strôk-chârd ə'nâl-ə-sôz')

**structure number** [DES ENG] A number, generally from 0 to 15, indicating the spacing of abrasive grains in a grinding wheel relative to their grit size. ('strôk-char, nam-bôr')

**strut** [CIV ENG] A long structural member of timber or metal, or a bar designed to resist pressure in the direction of its length. [ENG] 1. A brace or supporting piece. 2. A diagonal brace between two legs of a drill tripod or derrick. ('strôt)

**Stuart windmill** See Fales-Stuart windmill. ('stûr 'win-mîl')

**stub** [CIV ENG] A projection on a sewer pipe for use as a shallow, slim-hole producer or seismic drill. ('stôb)

**stub axle** [MECH ENG] An axle carrying only one wheel. ('stôb ək-sôl')

---

stub axle
stub mortise  [ENG] A mortise which passes through only part of a timber.  (ˈstəbˌmɔrt-iˈs)  
Subs gage  [DES ENG] A number system for denoting the thickness of steel wire and drills.  (ˈstəbˌz ˌgæl)  
stub switch  [ENG] A pair of short switch rails, held only at or near one end and free to move to the other end, used in mining and to some extent on narrow-gage industrial tramways.  (ˈstəbˌswı́tʃ)  
stub tenon  [ENG] A tenon that fits into a stub mortise.  (ˈstəbˌtən)  
stub tube  [MECH ENG] A short tube welded to a boiler or pressure vessel to provide for the attachment of additional parts.  (ˈstəbˌtəb)  
stud  [BUILD] One of the vertical members in the walls of a framed building to which wallboards, lathing, or paneling is nailed or fastened.  [DES ENG] 1. A rivet, boss, or nail with a large, ornamental head.  2. A short rod or bolt threaded at both ends without a head.  (ˈstʊd)  
stud driver  [MECH ENG] A device, such as an impact wrench, for driving a hardened steel nail (stud) into concrete or other hard materials.  (ˈstʊdˌdrı́ˈvə́r)  
stud wall  [BUILD] A wall formed with timbers; studs are usually spaced 12–16 inches (30–41 centimeters) on center.  (ˈstʊdˌwɔl)  
stuffing  [ENG] A method of sealing the mechanical joint between two metal surfaces, packing (stuffing) material is inserted within the seal area container (the stuffing or packing box), and compressed to a liquid-proof seal by a threaded packing ring follower. Also known as packing.  (ˈstʊfˈɪŋ)  
stuffing box  [ENG] A packed, pressure-tight joint for a rod that moves through a hole, to reduce or eliminate fluid leakage.  (ˈstʊfˈɪŋˌbæks)  
stuffing nut  [ENG] A nut for adjusting a stuffing box.  (ˈstʊfˈɪŋˌnət)  
style  See gnomon.  (ˈstɪl)  
stylus  [ENG ACOUS] The portion of a phonograph pickup that follows the modulations of a record groove and transmits the resulting mechanical motions to the transducer element of the pickup for conversion to corresponding audio-frequency signals. Also known as needle; phonograph needle; reproducing stylus.  (ˈstɪˈləs)  
subaperture  [ENG] Any subset of an array of transmitters of acoustic or electromagnetic radiation.  (ˈsəbˌæpəˈrætər)  
subassembly  [ELECTR] Two or more components combined into a unit for convenience in assembling or servicing equipment, within a high-frequency-frequency strip for a receiver is an example.  [ENG] A structural unit, which, though manufactured separately, was designed for incorporation with other parts in the final assembly of a finished product.  (ˈsəbˌəsˌəmˈblə)  
subatmospheric heating system  [MECH ENG] A system which regulates steam flow into the main throttle valve under automatic thermostatic control and maintains a fixed vacuum different from both supply and return by means of a differential controller and a vacuum pump.  (ˈsəbˌətˌməˈʃər-ikˌbɛdˌɪŋˌsɪsˌtəm)  
subbottom depth recorder  [ENG] A compact seismic instrument which can provide continuous soundings of strata beneath the ocean bottom utilizing the low-frequency output of an intense electrical spark discharge source in water.  (ˈsəbˌbɑ́ˌdəm ˌdɛpθˌnˌkɔrˈdər)  
subcarrier oscillator  [ELECTR] 1. The crystal oscillator that operates at the chrominance subcarrier or burst frequency of 3.579545 megahertz in a color television receiver, this oscillator, synchronized in frequency and phase with the transmitter master oscillator, furnishes the continuous subcarrier frequency required for demodulators in the receiver 2. An oscillator used in a telemetering system to translate variations in an electrical quantity into variations of a frequency-modulated signal at a subcarrier frequency.  (ˈsəbˌkɑ́rˈe-ər ˌəsˌkoˌrədˌər)  
subcomponent  [DES ENG] A part of a component having characteristics of the component.  (ˈsəbˌkɑ́mˌpəˈnənt)  
subcontract  [ENG] A contract made with a third party by one who has contracted to perform work or service for whole or part performance of that work or service.  (ˈsəbˌkɑ́nˌtrakt)  
subcontractor  [ENG] A manufacturer or organization that receives a contract from a prime contractor for a portion of the work on a project.  (ˈsəbˌkɑ́nˌtraktˌɔ̀r)  
subdrainage  [CIV ENG] Natural or artificial removal of water from beneath a lined conduit.  (ˈsəbˌdraˈni]  
subdrilling  [ENG] Refers to the breaking of the base in which boreholes are drilled 1 foot (0.3 meter) or several feet below the level of the quarry floor.  (ˈsəbˌdrı́ˈliŋ)  
subfloor  [BUILD] The rough floor which rests on the floor joists and on which the finished floor is laid. Also known as blind floor, counterfloor.  (ˈsəbˌfɔ́r)  
subgrade  [CIV ENG] The soil or rock leveled off to support the foundation of a structure.  (ˈsəbˌɡrɑ́d)  
sublimation  [THERMO] The process by which solids are transformed directly to the vapor state or vice versa without passing through the liquid phase.  (ˈsəbˌlaˈməˌʃən)  
sublimation cooling  [THERMO] Cooling caused by the extraction of energy to produce sublimation.  (ˈsəbˌlaˈməˌʃənˌkʊlɪŋ)  
sublimation curve  [THERMO] A graph of the vapor pressure of a solid as a function of temperature.  (ˈsəbˌlaˈməˌʃənˌkuːr)  
sublimation energy  [THERMO] The increase in internal energy when a unit mass, or 1 mole, of a solid is converted into a gas, at constant pressure and temperature.  (ˈsəbˌlaˈməˌʃənˌɛnˈtərˌeɪjə)  
sublimation point  [THERMO] The temperature at which the vapor pressure of the solid phase
of a compound is equal to the total pressure of the gas phase in contact with it, analogous to the boiling point of a liquid. \( \text{[sab'la'maːʃən 'pɔint]} \)

**sublimation pressure** [THERMO] The vapor pressure of a solid. \( \text{[sab'la'maːʃən 'preshər]} \)

**sublime** [THERMO] To change from the solid to the gaseous state without passing through the liquid phase. \( \text{[sa'blim]} \)

**submarine blast** [ENG] A charge of high explosives fired in boreholes drilled in the rock underwater for dislodging dangerous projections and for deepening channels. \( \text{[səb'maːrən 'blæst]} \)

**submarine gate** [ENG] An edge gate with the opening from the runner into the mold positioned below the printing line or mold surface. \( \text{[səb'maːrən 'ɡæt]} \)

**submarine oscillator** [ENG ACOUS] A large, electrically operated diaphragm horn which produces a powerful sound for signaling through water. \( \text{[səb'maːrən 'aɪsəʊˌdərə]} \)

**submarine pipeline** [ENG] A pipeline installed under water, resting on the bed of the waterway, frequently used for petroleum or natural gas transport across rivers, lakes, or bays. \( \text{[səb'maːrən 'piplˌɪn]} \)

**submarine sentry** [ENG] A form of underwater kite towed at a predetermined constant depth in search of elevations of the bottom; the kite rises to the surface upon encountering an obstruction. \( \text{[səb'maːrən 'senˈtroʊ]} \)

**submarine wave recorder** [ENG] An instrument for measuring the changing water height above a hovering submarine by measuring the time required for sound emitted by an inverted echo sounder on the submarine to travel to the surface and return. \( \text{[səb'maːrən 'wəv riˌkɔrdər]} \)

**submerged-combustion evaporator** [ENG] A liquid-evaporation device in which heat is provided by combustion gases bubbling up through the liquid; the burner is submerged in the body of the liquid. \( \text{[səb'maːrɪd kaʊmbəstʃən 'ɪvəpərətər]} \)

**submerged-combustion heater** [ENG] A combustion device in which fuel and combustion air are mixed and ignited below the surface of a liquid; used in heaters and evaporators where absorption of the combustion products will not be detrimental. \( \text{[səb'maːrɪd kaʊmbəstʃən 'hedər]} \)

**submerged weir** [CIV ENG] A dam which, when in use, has the downstream water level at an elevation equal to or higher than the crest of the dam. \( \text{[səb'maːrjɪd 'wer]} \)

**submersible pump** [MECH ENG] A pump and its electric motor together in a protective housing which permits the unit to operate under water. \( \text{[səb'maːraɪl 'pʊmp]} \)

**suboptimization** [SYS ENG] The process of fulfilling or optimizing some chosen objective which is an integral part of a broader objective, usually the broad objective and lower-level objective are different. \( \text{[səbˌɒptərəməzərən]} \)

**subsidiary conduit** [CIV ENG] Terminating branch of an underground conduit run extending from a manhole or handhole to a nearby building, handhole, or pole. \( \text{[səb'sɪdərərə 'kænədrən]} \)

**subsonic inlet** [ENG] An entrance or orifice for the admission of fluid flowing at speeds less than the speed of sound in the fluid. \( \text{[səb'saɪnˈık 'ɪnˌlɛt]} \)

**subsonic nozzle** [ENG] A nozzle through which a fluid flows at speed less than the speed of sound in the fluid. \( \text{[səb'saɪnˈɪk səˈnəʊl]} \)

**substation** [ELEC] A power electric power substation. [ENG] An intermediate compression station to repressurize a fluid being transported by pipeline over a long distance. \( \text{[səb'steɪnˈʃən wətəprəˈsteɪnə]} \)

**substitution weighing** [MECH] A method of weighing to allow for differences in lengths of the balance arms, in which the object to be weighed is first balanced against a counterpoise, and the known weights needed to balance the same counterpoise are then determined. Also known as counterpoise method. \( \text{[səb'steɪnˈʃən wətəprəˈsteɪnə]} \)

**substrate** [ELECTR] The physical material on which a microcircuit is fabricated; used primarily for mechanical support and insulating purposes, as with ceramic, plastic, and glass substrates; however, semiconductor and ferrite substrates may also provide useful electrical functions. \( \text{[səb'stræt]} \)

**substructure** [CIV ENG] The part of a structure which is below ground. \( \text{[səb'strækˈchar]} \)

**subsurface radar** [ENG] Ground-probing radar. \( \text{[səbˌsɜːfəs 'rædər]} \)

**subsurface waste disposal** [ENG] A waste disposal method for manufacturing wastes in porous underground rock formations. \( \text{[səbˌʃærˌfɒs 'wɑːst ˌdɪˌspəzəl]} \)

**subsynchrotron** [ELEC] Operating at a frequency or speed that is related to a submultiple of the source frequency. \( \text{[səbˌsaɪnˈkrəʊnɔʊz]} \)

**subsystem** [ENG] A major part of a system which itself has the characteristics of a system, usually consisting of several components. \( \text{[səbˌsaɪsˌtəm]} \)

**subtense bar** [ENG] The horizontal bar of fixed length in the subtense technique of distance measurement method. \( \text{[səbˈtɛns bər]} \)

**subtense technique** [CIV ENG] A distance measuring technique in which the transit angle subtended by the subtense bar enables the computation of the transit-to-bar distance. \( \text{[səbˈtɛns tekˈnɛk]} \)

**subtracted time** [IND ENG] In a continuous timing technique, the difference between two successive readings of a stopwatch. \( \text{[səbˈtrakˈtɪd tɪm]} \)

**subtractive synthesis** [ENG ACOUS] A method of synthesizing musical tones, in which an electronic circuit produces a standard waveform (such as a sawtooth wave), which contains a very large number of harmonics at known relative
amplitudes, and this circuit is followed by a variety of electric or electronic filters to convert the basic tone signals into the desired musical waveforms.  

**subtractor** [ELECTR] A circuit whose output is determined by the differences in analog or digital input signals.  

**subway** [CIV ENG] An underground passage.  

**subwoofer** [ENG ACOUS] A loudspeaker designed to reproduce extremely low audio frequencies, extending into the infrasonic range, generally used in conjunction with a crossover network, a woofer, and a tweeter.  

**Sucksmith ring balance** [ENG] A magnetic balance in which the specimen is rigidly suspended from a phosphor bronze ring carrying two mirrors that convert small deflections of the specimen in a nonuniform magnetic field into large deflections of a light beam, used chiefly to measure paramagnetic susceptibility.  

**suction anemometer** [ENG] An anemometer consisting of an inverted tube which is half-filled with water that measures the change in water level caused by the wind's force.  

**suction cup** [ENG] A cup, often of flexible material such as rubber, in which a partial vacuum is created when it is inverted on a surface, the vacuum tends to hold the cup in place.  

**suction-cutter dredger** [MECH ENG] A dredger in which rotary blades dislodge the material to be excavated, which is then removed by suction as in a sand-pump dredger.  

**suction head** See suction lift.  

**suction lift** [MECH ENG] The head, in feet, that a pump must provide on the inlet side to raise the liquid from the supply well to the level of the pump. Also known as suction head.  

**suction line** [ENG] A pipe or tubing feeding into the inlet of a fluid impelling device (for example, pump, compressor, or blower), consequently under suction.  

**suction pump** [MECH ENG] A pump that raises water by the force of atmospheric pressure pushing it into a partial vacuum under the valved piston, which retreats on the upstroke.  

**suction stroke** [MECH ENG] The piston stroke that draws a fresh charge into the cylinder of a pump, compressor, or internal combustion engine.  

**Suhl effect** [ELECTR] When a strong transverse magnetic field is applied to an $x$-type semiconducting filament, holes injected into the filament are deflected to the surface, where they may recombine rapidly with electrons or be withdrawn by a probe.  

**sulfate pulping** [CHEM ENG] A wood-pulping process in which sodium sulfate is used in the caustic soda pulp-digestion liquor. Also known as kraft process; kraft pulping.  

**sulfur hexameter** [ENG] An instrument used to measure or to continuously monitor the amount of sulfur hexafluoride present in a waveguide or other device in which this gas is used as a dielectric.  

**sulfuric acid alkylation** [CHEM ENG] A petroleum refinery alkylation process in which three-, four-, and five-carbon olefins combine with isobutane in the presence of a sulfuric acid catalyst to form high-octane, branched-chain hydrocarbons, used in motor gasoline.  

**sullage** [CIV ENG] Drainage or wastewater from a building, farmyard, or street.  

**Sullivan angle compressor** [MECH ENG] A two-stage compressor in which the low-pressure cylinder is horizontal and the high-pressure cylinder is vertical, a compact compressor driven by a belt, or directly connected to an electric motor or diesel engine.  

**Sulzer two-cycle engine** [MECH ENG] An internal combustion engine utilizing the Sulzer Company system for the effective scavenging and charging of the two-cycle diesel engine.  

**summing amplifier** [ELECTR] An amplifier that delivers an output voltage which is proportional to the sum of two or more input voltages or currents.  

**sump** [ENG] A pit or tank which receives and temporarily stores drainage at the lowest point of a circulating or draining system. Also known as sump pit.  

**sump fuse** [ENG] A fuse used for underwater blasting.  

**sump pit** See sump.  

**sump pump** [MECH ENG] A small, single-stage vertical pump used to drain shallow pits or sumps.  

**sun-and-planet motion** [MECH ENG] A train of two wheels moving epicyclically with a small wheel rotating a wheel on the central axis.  

**sun gear** See central gear.  

**sunk draft** [BUILD] A recessed margin around a building stone that imparts a raised appearance to the stone.  

**sunk face** [BUILD] A building stone from whose face some material has been removed in order to impart the appearance of a sunk panel.  

**sunk panel** [BUILD] A panel that is recessed below the face of its framing or other surrounding surface.  

**sunshine integrator** [ENG] An instrument for determining the duration of sunshine (daylight) in any locality.  

**sunshine recorder** [ENG] An instrument designed to record the duration of sunshine without regard to intensity at a given location; sunshine recorders may be classified in two groups according to the method by which the time scale
supersonic compressor

is obtained. In one group the time scale is obtained from the motion of the sun in the manner of a sun dial, in the second group the time scale is supplied by a chronograph. {\textit{sun},\textit{shin ri kord-ar}}

\textbf{supercritical} [THERMO] A fluid at a temperature and pressure above its critical point; also, a fluid above its critical temperature regardless of pressure. {\textit{su\textperiodcentered par\textperiodcentered kid-\textperiodcentered a-kal} \textit{flu\textperiodcentered ad ik strak\textperiodcentered shan}}

\textbf{supercritical fluid extraction} [CHEM ENG] A separation process that uses a supercritical fluid as the solvent. {\textit{su\textperiodcentered par\textperiodcentered kid-\textperiodcentered a-kal} \textit{flu\textperiodcentered ad ik strak\textperiodcentered shan}}

\textbf{superdirectional microphone} [ENG] A microphone whose response pattern resembles a cardioid but is exaggerated along the axis of maximum response, so that it is highly sensitive in one direction and insensitive in all others. Also known as superdirectional microphone. {\textit{s\textperiodcentered par\textperiodcentered kar\textperiodcentered d\textperiodcentered f\textperiodcentered ad\textperiodcentered fon}}

\textbf{superfactor} [COMP ENG] A method for measuring the shock limited power, under supercharge rich-mixture conditions, of fuels for use in spark-ignition aircraft engines. {\textit{s\textperiodcentered par\textperiodcentered cha\textperiodcentered r\textperiodcentered j\textperiodcentered ad\textperiodcentered ad}}

\textbf{superheater} [MECH ENG] A component of a steam-generating unit in which steam, after it has left the boiler drum, is heated above its saturation temperature. {\textit{s\textperiodcentered par\textperiodcentered he\textperiodcentered de\textperiodcentered a-r}}

\textbf{superimposed back pressure} [MECH ENG] The static pressure at the outlet of an operating pressure relief device, resulting from pressure in the discharge system. {\textit{s\textperiodcentered par\textperiodcentered im\textperiodcentered p\textperiodcentered oz\textperiodcentered d\textperiodcentered bak\textperiodcentered presh\textperiodcentered a-r}}
supersonic diffuser

the stator blades, or both, producing oblique shock waves over the blades to obtain a high-temperature managing in a diffuser. [sju:pˈsɔːrənˌsænik ˈkɒmpresər]
supersonic diffuser  [MECH ENG] A diffuser designed to reduce the velocity and to increase the pressure of fluid moving at supersonic velocities. [sju:pˈsɔːrənˌsænik ɪk ˈdɪfljuːʒər]
supersonic nozzle  See convergent-divergent nozzle. [sju:pˈsɔːrənˌsænik ˈnæzəl]
superstructure  [CIV ENG] The part of a structure that is raised on the foundation. [sjuˈpɜːrˌstrɔːkinˈtʃɑːr]
supertweeter  [ENG ACOUS] A loudspeaker designed to reproduce extremely high audio frequencies, extending into the ultrasonic range, generally used in conjunction with a crossover network, a tweeter, and a woofer. [sjuˈpɜːrˌtwiːdər]
supervisory control  [ENG] A control panel or room showing key readings or indicators (temperature, pressure, or flow rate) from an entire operating area, allowing visual supervision and control of the overall operation. [sjuˈpɜːrˌsɪvɪriˌkestral tɔːrəl]
supervisory control and data acquisition  [ENG] A version of telemetry commonly used in wide-area industrial applications, such as electrical power generation and distribution and water distribution, which includes supervisory control of remote stations as well as data acquisition from those stations over a bidirectional communications link. Abbreviated SCADA. [sjuˈpɜːrˌsɪvɪriˌkestralˌdɑːtəˈkestrəl ˈkeɪˈweɪzɪzən]n]
supervisory controlled manipulation  [ENG] A form of remote manipulation in which a computer enables the operator to teach the manipulator motion patterns to be remembered and repeated later. [sjuˈpɜːrˌsɪvɪriˌkestralˌmənˈpærəˌʌrˌtɒld məˌniːpˈjʊərəlaːʃən]
supervisory expert control system  [CONT SYS] A control system in which an expert system is used to supervise a set of control, identification, and monitoring algorithms. [sjuˈpɜːrˌsɪvɪriˌkestralˌɛkˈspɔːrt ˈkeɪˈweɪzɪzəˌteɪm]n]
supervoltage  [ELEC] A voltage in the range of 500 to 2000 kilovolts, used for some x-ray tubes. [sjuˈpɜːrˌvɜːlˈtɪ]
supination  [CONT SYS] The orientation and motion of a robot component with its front or unprotected side facing upward and exposed. [sjuˈpɜːrˈteɪm]nˌsɪzn]n]
supplied-air respirator  [ENG] An atmospheric-supplying device which provides the wearer with respirable air from a source outside the contaminated area; only those with manual or motor-operated blowers are approved for immediately harmful or oxygen-deficient atmospheres. [səˈpleɪdˈeər ˈresɪˌpɔːrdər]
supply chain management  [IND ENG] An inventory process involving planning and processing orders, handling, transporting and storing all materials purchased, processed, or distributed, and managing inventories in a coordinated manner among all the players on the chain to fulfill customer orders as they arise rather than to build up stock level to fulfill anticipated future demand. [ˈsəpˈpilˌtʃænˌmenˌajmans]nt]n]
supply control  [IND ENG] The process by which an item of supply is controlled within the supply system, including requisitioning receipt, storage, stock control, shipment, disposition, identification, and accounting. [səˈpplɪˌkɔnˌtroʊl]
supply voltage  [ELEC] The voltage obtained from a power source for operation of a circuit or device. [səˈpplɪˌvɔlˈtɪ]
support base  [ENG] A place from which logistic support is provided for a group of launch complexes and their control center. [səˈpɔːrtˌbæs]
supported end  [MECH] An end of a structure, such as a beam, whose position is fixed but whose orientation may vary, for example, an end supported on a knife-edge. [səˈpɔːrdˌeнд]
suppressed-zero instrument  [ENG] An indicating or recording instrument in which the zero position is below the lower end of the scale markings. [səˈprep ˈzɪrəˌɪnˌstrɔːˌmɑnt]
suppression  [ELECTR] Elimination of any component of an emission, as a particular frequency or group of frequencies in an audio-frequency of a radio-frequency signal. [səˈpréʃən]n]
suppressor  [ELEC] 1. In general, a device used to reduce or eliminate noise or other signals that interfere with the operation of a communication system, usually at the noise source. 2. Specifically, a resistor used in series with a spark plug or distributor of an automobile engine or other internal combustion engine to suppress spark noise that might otherwise interfere with radio reception. See suppressor grid. [səˈpresər]
surge charge  [CIV ENG] The load supported above the level of the top of a retaining wall. [ˈsʊrˌʧɑːr]n]n]
surcharge  [CIV ENG] A retaining wall with an embankment on the top. [ˈsʊrˌʧɑːrd ˈwʊl]n]
surface  [ENG] The outer part (skin with a thickness of zero) of a body; can apply to structures, to micrometer-sized particles, or to extended-surface zeolites. [ˈsɜːrfəs]
surface analyzer  [ENG] An instrument that measures or records irregularities in a surface by moving the stylus of a crystal pickup or similar device over the surface, amplifying the resulting voltage, and feeding the output voltage to an indicator or recorder that shows the surface irregularities magnified as much as 50,000 times. [ˈsɜːrfəˌænˌɑːˌlɪzər]n]
surface barrier  [ELECTR] A potential barrier formed at a surface of a semiconductor by the trapping of carriers at the surface. [ˈsɜːrfəˌbærər]n]n]
surface-barrier diode  [ELECTR] A diode utilizing thin-surface layers, formed either by deposition of metal films or by surface diffusion, to serve as a rectifying junction. [ˈsɜːrfəˌbærərˌdiəd]n]n]
surface-barrier transistor  [ELECTR] A transistor in which the emitter and collector are formed
on opposite sides of a semiconductor wafer, usually made of n-type germanium, by training two jets of electrolyte against its opposite surfaces to etch and then electroplate the surfaces. \{ \text{sər-fəs ,bārn-ɪn} \}

**surface burning** See glowing combustion. \{ \text{sər-fəs ,bārn-ɪn} \}

**surface carburetor** [MECH ENG] A carburetor in which air is passed over the surface of gasoline to charge it with fuel. \{ \text{sər-fəs ,kær-bər-doʊ} \}

**surface-charge transistor** [ELECTR] An integrated-circuit transistor element based on controlling the transfer of stored electric charges along the surface of a semiconductor. \{ \text{sər-fəs ,kær-trən-zɪs-tər} \}

**surface combustion** [ENG] Combustion brought about near the surface of a heated refractory material by forcing a mixture of air and combustible gases through it or through a hole in it, or having the gas impinge directly upon it; used in muffles, crucibles, and certain types of boiler furnaces. \{ \text{sər-fəs ,kæm-bəs-ʃən} \}

**surface condenser** [MECH ENG] A heat-transfer device used to condense a vapor, usually steam under vacuum, by absorbing its latent heat in cooling fluid, ordinarily water. \{ \text{sər-fəs kæn-dən-sər} \}

**surface-controlled avalanche transistor** [ELECTR] Transistor in which avalanche breakdown voltage is controlled by an external field applied through surface-insulating layers, and which permits operation at frequencies up to the 10-gigahertz range. \{ \text{sər-fəs kæn-tərol'd əv-ə-lənch tran-zis-tər} \}

**surface-effect ship** [MECH ENG] A transportation device with fixed side walls, which is supported by low-pressure, low-velocity air and operates on water only. \{ \text{sər-fəs ɪflɛkt ʃɪp} \}

**surface finish** [ENG] The surface roughness of a component after final treatment, measured by a surface profile. \{ \text{sər-fəs ʃɪŋ-ɪsh} \}

**surface force** [MECH] An external force which acts only on the surface of a body, an example of which is the force exerted by another object with which the body is in contact. \{ \text{sər-fəs ,fɔr-sə} \}

**surface gage** [DES ENG] 1. A scribing tool in an adjustable stand, used to mark off castings and to test the flatness of surfaces. 2. A gage for determining the distances of points on a surface from a reference plane. \{ \text{sər-fəs ,gæ} \}

**surface grinder** [MECH ENG] A grinding machine that produces a plane surface. \{ \text{sər-fəs ,ɡrɪn-der} \}

**surface ignition** [ENG] The initiation of a flame in the combustion chamber of an automobile engine by any hot surface other than the spark discharge. \{ \text{sər-fəs ɪɡ-nish-ən} \}

**surface leakage** [ELECT] The passage of current over the surface of an insulator. \{ \text{sər-fəs ,lɛ-ki} \}

**surface micromachining** [ENG] A set of processes based upon deposition, patterning, and selective etching of thin films to form a freestanding microsensor on the surface of a silicon wafer. \{ \text{sər-fəs ,mɪk-rə-ma-shən-ɪg} \}

**surface-mount technology** [ELECTR] The technique of mounting electronic circuit components and their electrical connections on the surface of a printed board, rather than through holes. \{ \text{sər-fəs ,mɔnt tek-nəl-ər-jə} \}

**surface noise** [ELECTR] The noise component in the electric output of a phonograph pickup due to irregularities in the contact surface of the groove. Also known as needle scratch. \{ \text{sər-fəs ,nəʊz} \}

**surface of section** See Poincaré surface of section. \{ \text{sər-fəs av əv-ə-skən-ən} \}

**surface passivation** [ELECTR] A method of coating the surface of a p-type wafer for a diffused junction transistor with an oxide compound, such as silicon oxide, to prevent penetration of the impurity in undesired regions. \{ \text{sər-fəs ,pə-sən-əv-ə-shən} \}

**surface-penetrating radar** See ground-probing radar. \{ \text{sər-fəs ,pən-ə-trən-ɪŋ ˈrɑrdər} \}

**surface planer** See surface. \{ \text{sər-fəs ,pla-nər} \}

**surface plate** [DES ENG] A plate having a very accurate plane surface used for testing other surfaces or to provide a true surface for accurately measuring and locating testing fixtures. \{ \text{sər-fəs ,plæt} \}

**surface** [DES ENG] A machine that is used to dress or plane the surface of a material such as stone, metal, or wood. Also known as surface planer. \{ \text{sər-fəs -ər} \}

**surface resistivity** [ELEC] The electric resistance of the surface of an insulator, measured between the opposite sides of a square on the surface; the value in ohms is independent of the size of the square and the thickness of the surface film. \{ \text{sər-fəs ,rɪz-ɪstɪv-əd-i} \}

**surface roughness** [ENG] The closely spaced unevenness of a solid surface (pits and projections) that results in friction for solid-solid movement or for fluid flow across the solid surface. \{ \text{sər-fəs ,rʌf-nəs} \}

**surface-set bit** [DES ENG] A bit containing a single layer of diamonds set so that the diamonds protrude on the surface of the crown. Also known as single-layer bit. \{ \text{sər-fəs ,sɛt-ət} \}

**surface sizing** See sizing treatment. \{ \text{sər-fəs ,səz-ing} \}

**surface thermometer** [ENG] A thermometer, mounted in a bucket, used to measure the temperature of the sea surface. \{ \text{sər-fəs ,θɜrm-ətər} \}

**surface treating** [ENG] Any method of treating a material (metal, polymer, or wood) so as to alter the surface, rendering it receptive to inks, paints, lacquers, adhesives, and various other treatments, or resistant to weather or chemical attack. \{ \text{sər-fəs ,trɪd-ɪŋ} \}

**surface vibrator** [MECH ENG] A vibrating device used on the surface of a pavement or flat slab to consolidate the concrete. \{ \text{sər-fəs ,vɪbr-ətər} \}

**surface waterproofing** [ENG] Waterproofing concrete by painting a waterproofing liquid on the surface. \{ \text{sər-fəs ,wərd-ər ,prəl-ɪŋ} \}

**surface wave** See Rayleigh wave. \{ \text{sər-fəs ,wɔːv} \}

545
surfacing mat

surfing mat See overlay. {sarˈfoːˌsətʃərˌmat}
surge [ELEC] A momentary large increase in the current or voltage in an electric circuit. [ENG] 1. An upheaval of fluid in a processing system, frequently causing a carryover (puking) of liquid through the vapor lines. 2. The peak system pressure. 3. An unstable pressure buildup in a plastic extruder leading to variable throughput and waviness of the hollow plastic tube. {sərj}
surge arrester [ELEC] A protective device designed primarily for connection between a conductor of an electrical system and ground to limit the magnitude of transient overvoltages on equipment. Also known as arrester, lightning arrester. {sərˈjər esˈtər} surge current [ELEC] A short-duration, high-amperage electric current wave that may sweep through an electrical network, as a power transmission network, when some portion of it is strongly influenced by the electrical activity of a surge protector [ELEC] A device placed in an electrical circuit to prevent the passage of surges and spikes that could damage electronic equipment. {sərˈjər prətekˈtər} surge pressure [MECH] The physical stress on surviving at a given age. {sərˈvərər keɪmˈpæs} surge protector [ELEC] A device placed in an electrical circuit to prevent the passage of surges and spikes that could damage electronic equipment. {sərˈjər prətekˈtər} surge suppressor [ELECTR] A circuit that responds to the rate of change of a current or voltage to prevent a rise above a predetermined value, it may include resistors, capacitors, coils, gas tubes, and semiconducting disks. Also known as transient suppressor. {sərˈjər seˈpresə} surge tank [ENG] 1. A standpipe or storage reservoir at the downstream end of a closed aque-duct or feeder pipe, as for a water wheel, to absorb sudden rises of pressure and to furnish water quickly during a drop in pressure. Also known as surge drum. 2. An open tank to which the top of a surge pipe is connected so as to avoid loss of water during a pressure surge. {sərˈjər seˈræŋk} surging [ENG] Motion of a ship that alternately moves forward and aft, usually when moored. {sərˈjərɪŋ} surveillance [ENG] Systematic observation of air, surface, or subsurface areas or volumes by visual, electronic, photographic, or other means, for intelligence or other purposes. {sərˈvərəl ˈvəns} survey [ENG] 1. The process of determining accurately the position, extent, contour, and so on, of an area, usually for the purpose of preparing a chart. 2. The information so obtained. {sərˈvərəl ˈvərə} survey foot [MECH] A unit of length, used by the U.S. Coast and Geodetic Survey, equal to 12 39 37 meter, or approximately 1 0000002 feet. {sərˈvərˌfʊt} surveying altimeter [ENG] A barometric-type instrument consisting of a pressure-sensitive element which contracts or expands in proportion to atmospheric pressure, connected to a linkage to a pointer, its dial is graduated in units of linear measurement (feet or meters) to indicate differences of elevation only. {sərˈvərəl əlˈtɪməˈɒrdər} surveying sextant See hydrographic sextant. {sərˈvərəl ˌsɛksˌtənt} surveyor’s compass [ENG] An instrument used to measure horizontal angles in surveying. {sərˈvərər ˈkrəmpˈpæs} surveyor’s cross [ENG] An instrument for setting out right angles in surveying; consists of two bars at right angles with sights at each end. {sərˈvərər ˈkrəs} surveyor’s level [ENG] A telescope and spirit level mounted on a tripod, rotating vertically and having leveling screws for adjustment. {sərˈvərəl ˌlevəl} surveyor’s measure [ENG] A system of measurement used in surveying having the engineer’s, or Gunter’s chain, as a unit. {sərˈvərər ˈmezhər} survey traverse See traverse. {sərˈvərət rəˈvɔrs} survivor curve See intelligence or other purposes. {sərˈvərər ˈkəvər} suspended formwork [CIV ENG] Formwork suspended from supports for the floor being cast. {sərˈvərər ˈfɔrmˌwɜrk} suspended span [CIV ENG] A simple span supported from the free ends of cantilevers. {sərˈvərər ˈspæn} suspended transformation [THERMO] The cessation of change before true equilibrium is
reached, or the failure of a system to change immediately after a change in conditions, such as in supercooling and other forms of metastable equilibrium. {sə'spen-dəd ,træn-zər 'mæ-shən'}

suspended tray conveyor [MECH ENG] A vertical conveyor having pendant trays or other carriers on one or more endless chains. {sə'spen-dəd ˈtræn-kənˈvā-ər}

suspension [ENG] A fine wire or coil spring that supports the moving element of a meter. {sə'spen-shən}

suspension bridge [CIV ENG] A fixed bridge consisting of either a roadway or a truss suspended from two cables which pass over two towers and are anchored by backstays to a firm foundation. {sə'spen-shənˌbrɪdʒ}

suspension cable [ENG] A freely hanging cable; may carry mainly its own weight or a uniformly distributed load. {sə'spen-shənˌkæl-bəl}

suspension roof [BUILD] A roof that is supported by steel cables. {sə'spen-shənˌrʌf}

suspension system [MECH ENG] A system of springs, shock absorbers, and other devices supporting the upper part of a motor vehicle on its running gear. {sə'spen-shənˌsɪstəm}

sustainable development [ENG] Development of industrial and natural resources that meets the energy needs of the present without compromising the ability of future generations to meet their needs in a similar manner. {sə,stən-ə-bal di'vel-əp-ment}

sustained oscillation [CONT SYS] Continued oscillation due to insufficient attenuation in the feedback path. {sə,stən-əd ,ə-sərənˈʃən}

Sutro weir [CIV ENG] A dam with at least one curved side and horizontal crest, so formed that the head above the crest is directly proportional to the discharge. {səˈtrərˈwər}

SV [səˈviː] Speaker verification.

swage bolt [DES ENG] A bolt having indentations with which it can be gripped in masonry. {swæg bolt}

swallow buoy See swallow float. {swɔːləʊˌbɔɪ}

swallow float [ENG] A tubular buoy used to measure current velocities, it can be adjusted to be neutrally buoyant and to drift at a selected density level while being tracked by shipboard listening devices. Also known as neutrally buoyant float; swallow buoy. {swɔːləʊˌflɔt}

swamp buggy [MECH ENG] A wheeled vehicle that runs on sand, on mud, or through shallow water; used especially in swamps. {swampˈbɪg}

swamping resistor [ELECTR] Resistor placed in the emitter lead of a transistor circuit to minimize the effects of temperature on the emitter-base junction resistance. {swamp-ing ,nəˌziː-rənˈtʃən}

swarf [ENG] Chips, shavings, and other fine particles removed from the workpiece by grinding tools. {swɔrf}

swash-plate pump [MECH ENG] A rotary pump in which the angle between the drive shaft and the plunger-carrying body is varied. {swăshˈplætˌpəmp}

sway bar See stabilizer bar. {ˈswæ ,bær}

sway brace [CIV ENG] One or a pair of diagonal members designed to resist horizontal forces, such as wind. {ˈswæ ,bræs}

sway frame [CIV ENG] A unit in the system of members of a bridge that provides bracing against side sway; consists of two diagonals, the verticals, the floor beam, and the bottom strut. {ˈswæˌfrʌm}

sweating [CHEM ENG] Separation of paraffin oil from low-melting petroleum wax obtained from paraffin wax in a chamber (sweater) by first cooling the mixture until it is a solid cake, then warming gradually to cause partial fusion of the mixture to allow drainage of liquid from the cake. Also known as exudation. {ˈswed-ən}

sweetening [CHEM ENG] Improvement of a petroleum-product color and odor by converting sulfur compounds into disulfides with sodium thiosulphate (doctor treating), or by removing them by contacting the petroleum stream with alkalies or other sweetening agents. {ˈswet-ənˌin}

swing [ELEC] Variation in frequency or amplitude of an electrical quantity. [ENG] 1. The arc or curve described by the point of a pick or mandril when being used. 2. Rotation of the superstructure of a power shovel on the vertical shaft in the mounting. 3. To rotate a revolving shovel on its base. {swīng}

swing bridge [CIV ENG] A movable bridge that pivots in a horizontal plane about a center pier. {swīŋˌbrɪdʒ}

swing-frame grinder [MECH ENG] A grinding machine hanging by a chain so that it may swing in all directions for surface grinding heavy work. {swīŋˌfræmˌgrɪn-dər}

swinging load [ENG] The load in pressure equipment which changes at frequent intervals. {swiŋ&lqut;lad}

swinging joint [DES ENG] A pipe joint in which the parts may be rotated relative to each other. {swīŋˌjʊnt}

swinging pipe [ENG] A discharge pipe whose intake end can be raised or lowered on a tank. {swīŋˌpɪp}

swing shift [IND ENG] Working arrangement in a three-shift, continuously run plant with working hours changed at regular intervals; during a swing shift the morning shift becomes the afternoon shift, while the afternoon shift becomes the morning shift of the next day, with only an 8-hour break on the first day of change. {swiŋˌʃift}

swirl fl owmeter See vortex precession flowmeter. {swərəl fl ˌəʊ,m éd-ər}

Swiss pattern file [DES ENG] A type of fine file used for precision filing of jewelry, instrument parts, and dies. {swisˈpæt-nərnˌfiːl}

switch [CIV ENG] 1. A device for enabling a railway car to pass from one track to another. 2. The junction of two tracks. [ELEC] A manual or mechanically actuated device for making.
switching time  [ELECTR]  1. The time interval between the reference time and the last instant at which the instantaneous voltage response of a magnetic cell reaches a stated fraction of its peak value.  2. The time interval between the reference time and the first instant at which the instantaneous integrated voltage response of a magnetic cell reaches a stated fraction of its peak value.  

switching transistor  [ELECTR]  A transistor designed for on/off switching operation.  

switching jack  [ELEC]  Any of the devices that provide terminals for the control circuits of the switch.  

switch coupling  [MECH ENG]  A coupling that gives complete rotary freedom to a deflecting wedge-setting assembly.  

switch head  [MECH ENG]  The assembly of a spindle, chuck, feed nut, and feed gears on a diamond-drill machine that surrounds, rotates, and advances the drill rods and drilling stem; on a hydraulic-feed drill the feed gears are replaced by a hydraulically actuated piston assembly.  

switch hook  [DES ENG]  A hook with a swivel connection to its base or eye.  

swivel joint  [DES ENG]  A joint with a packed swivel that allows one part to move relative to the other.  

swivel pin  [DES ENG]  An INHIBIT circuit. Also known as logical gate.  

swivelling key  

swivelling mechanism  

switching station  [ELEC]  An electric power station whose equipment is mainly for connections and interconnections, and does not include transformers.  

switching surface  [CONT SYS]  In feedback control systems employing bang-bang control laws, the surface in state space which separates a region of maximum control effort from one of minimum control effort.  

switching-through relay  [ELEC]  Control relay of a line-finder selector, connector, or other stepping switch, which extends the loop of a calling telephone through to the succeeding switch in a switch train.  

symmetrical avalanche rectifier  [ELECTR]  Avalanche rectifier that can be triggered in either direction, after which it has a low impedance in the triggered direction.  

symmetrical band-pass filter  [ELECTR]  A band-pass filter whose attenuation as a function of frequency is symmetrical about a frequency at the center of the pass band.  

symmetrical band-reject filter  [ELECTR]  A band-rejection filter whose attenuation as a
function of frequency is symmetrical about a frequency at the center of the rejection band.\{ sa\’me-tra-kol’ band ri\’ekt\ ,fill-tar\}

**symmetrical clipper** [ELECTR] A clipper in which the upper and lower limits on the amplitude of the output signal are positive and negative values of equal magnitude. \{ sa\’me-tra-kol’ k\’lip-ar\}

**symmetrical deflection** [ELECTR] Type of electrostatic deflection in which voltages that are equal in magnitude and opposite in sign are applied to the two deflector plates. \{ sa\’me-tra-kol’ dif\’lek\’shon\}

**symmetrical H attenuator** [ELECTR] An H attenuator in which the impedance near the input terminals equals the corresponding impedance near the output terminals. \{ sa\’me-tra-kol’ ’ach a\’ten-ya\’wad-ar\}

**symmetrical O attenuator** [ELECTR] An O attenuator in which the impedance near the input terminals equals the corresponding impedance near the output terminals. \{ sa\’me-tra-kol’ ’o a\’ten-ya\’wad-ar\}

**symmetrical pi attenuator** [ELECTR] A pi attenuator in which the impedance near the input terminals equals the corresponding impedance near the output terminals. \{ sa\’me-tra-kol’ ’pi a\’ten-ya\’wad-ar\}

**symmetrical T attenuator** [ELECTR] A T attenuator in which the impedance near the input terminals equals the corresponding impedance near the output terminals. \{ sa\’me-tra-kol’ ’te a\’ten-ya\’wad-ar\}

**symmetrical transducer** [ELECTR] A transducer is symmetrical with respect to a specified pair of terminations when the interchange of that pair of terminations will not affect the transmission. \{ sa\’me-tra-kol’ tranz\’d\’u-sar\}

**symmetry axis** See axis of symmetry. \{ si\’m-oh\’tr\ ,ak-\’sas\}

**sympathetic detonation** [ENG] Explosion caused by the transmission of a detonation wave through any medium from another explosion. \{ si\’m-pa\’thed-ik ’det-ar-a\’shon\}

**sync** See synchronization. \{ si\’jk\}

**synchro** [ELEC] Any of several devices which are used for transmitting and receiving angular position or angular motion over wires, such as a synchro transmitter or synchro receiver. Also known as mag-slip (British usage); self-synchronous device; self-synchronous repeater, selsyn. \{ si\’j-kro\}

**synchromesh** [MECH ENG] An automobile transmission device that minimizes clashing; acts as a friction clutch, bringing gears approximately to correct speed just before meshing. \{ si\’j-kro,nesh\}

**synchronization** [ENG] The maintenance of one operation in step with another, as in keeping the electron beam of a television picture tube in step with the electron beam of the television camera tube at the transmitter. Also known as sync. \{ si\’j-kro-na\’shon\}

**synchronization indicator** [ENG] An indicator that presents visually the relationship between two varying quantities or moving objects. \{ si\’j-kro-na\’shon\}

**synchronous shifting** [MECH ENG] Changing speed gears, with the gears being brought to the same speed before the change can be made. \{ si\’j-kro,niz\’d ’shif-t-ig\}

**synchronous** [ENG] In step or in phase, as applied to two or more circuits, devices, or machines. \{ si\’j-kro-nas\}

**synchronous belt** See timing belt. \{ si\’j-kro-nas’ belt\}

**synchronous gate** [ELECTR] A time gate in which the output intervals are synchronized with an incoming signal. \{ si\’j-kro-nas’ gat\}

**synchroscope** [ELECTR] A cathode-ray oscilloscope designed to show a short-duration pulse by using a fast sweep that is synchronized with the pulse signal to be observed. \{ ENGL\] An instrument for indicating whether two periodic quantities are synchronous, the indicator may be a rotating-pointer device or a cathode-ray oscilloscope providing a rotating pattern; the position of the rotating pointer is a measure of the instantaneous phase difference between the quantities. \{ si\’j-kro,skop\}

**synchro-shutter** [ENG] A camera shutter with a circuit that flashes a light the instant the shutter opens. \{ si\’j-kro’,shad-ar\}

**syngas** See synthesis gas. \{ si\’n-gas\}

**syntactic semigroup** [SYS ENG] For a sequential machine, the set of all transformations performed by all input sequences. \{ si\’n-tak-tik ’sem-i-grup\}

**synthesis** See system design. \{ si\’n-tha\’sas\}

**synthesis gas** [CHEM ENG] A mixture of gases prepared as feedstock for a chemical reaction, for example, carbon monoxide and hydrogen to make hydrocarbons or organic chemicals, or hydrogen and nitrogen to make ammonia. Also known as syngas. \{ si\’n-tha\’sas’ gas\}

**synthetic aperture** [ENG] A method of increasing the ability of an imaging system, such as radar or acoustical holography, to resolve small details of an object, in which a receiver of large size (or aperture) is in effect synthesized by the motion of a smaller receiver and the proper correlation of the detected signals. \{ si\’n-thed-ik’ ’ap-\’char\}

**synthetic-aperture radar** [ENG] A radar system in which an aircraft moving along a very straight path emits microwave pulses continuously at a frequency constant enough to be coherent for a period during which the aircraft may have traveled about 1 kilometer, all echoes returned during this period can then be processed as if a single antenna as long as the flight path had been used. \{ si\’n-thed-ik’ ’ap-\’char\}

**synthetic data** [IND ENG] Any production data applicable to a given situation that are not obtained by direct measurement. \{ si\’n-thed-ik’ ’dad-a\}

**synthol process** [CHEM ENG] A reaction of carbon monoxide and hydrogen with an iron and sodium carbonate catalyst, produces a mixture of higher alcohols, aldehydes, ketones, higher
fatty acids, and aliphatic hydrocarbons, usable as a synthetic gasoline. {ˈsɪn,θοːl ,prəˈsɑːs}
syntony  [ELEC] Condition in which two oscillating circuits have the same resonant frequency. {ˈsɪn-tɑːnɛ́}
system  [ELECTR] A combination of two or more sets generally physically separated when in operation, and such other assemblies, subassemblies, and parts necessary to perform an operational function or functions. [ENG] A combination of several pieces of equipment integrated to perform a specific function; thus a fire control system may include a tracking radar, computer, and gun. {ˈsɪs-tɑːm}
system analysis  [CONT SYS] The use of mathematics to determine how a set of interconnected components whose individual characteristics are known will behave in response to a given input or set of inputs. {ˈsɪs-tɑːm ə,naːl-ə-sɑːs}
systematic error  [ENG] An error due to some known physical law by which it might be predicted; these errors produced by the same cause affect the mean in the same sense, and do not tend to balance each other but rather give a definite bias to the mean. {ˈsis-təˈmad-ik ˈer-ə́r}
system bandwidth  [CONT SYS] The difference between the frequencies at which the gain of a system is $\sqrt{2}/2$ (that is, 0.707) times its peak value. {ˈsis-tɑːm ˈbænd,ˈwidtʃ}
system design  [CONT SYS] A technique of constructing a system that performs in a specified manner, making use of available components. Also known as synthesis. {ˈsis-tɑːm ˈdɪ,ˈzn}
system effectiveness  [ENG] A measure of the extent to which a system may be expected to achieve a set of specific mission requirements expressed as a function of availability, dependability, and capability. {ˈsis-tɑːm ɪˈfek-tɪv-əˌnas}
system engineering  See systems engineering. {ˈsis-tɑːm ɪnˈˈɑːnɪrəˌip}
system life cycle  [ENG] The continuum of phases through which a system passes from conception through disposition. {ˈsis-tɑːm ˈlɪf,ˈsi-ˈkɑl}
system optimization  See optimization. {ˈsis-tɑːm əpˈtoʊ-mɑːtəˌnæn}
system reliability  [ENG] The probability that a system will accurately perform its specified task under stated environmental conditions. {ˈsis-tɑːm ˈri,liˈæbəl-ədʒé}
system safety  [ENG] The optimum degree of safety within the constraints of operational effectiveness, time, and cost, attained through specific application of system safety engineering throughout all phases of a system. {ˈsis-tɑːm ˈsɑːf-tɛ́}
system safety engineering  [ENG] An element of systems management involving the application of scientific and engineering principles for the timely identification of hazards, and initiation of those actions necessary to prevent or control hazards within the system. {ˈsis-tɑːm ˈsɑːf-tɛ́ ənˌjɑːˌnɪrəˌin}
systems analysis  [ENG] The analysis of an activity, procedure, method, technique, or business to determine what must be accomplished and how the necessary operations may best be accomplished. {ˈsis-tɑːməˌzə,naːl-ə-ˈsɑːs}
systems architecting  [SYS ENG] The discipline that combines elements which, working together, create unique structural and behavioral capabilities in a system that none could produce alone. Also known as systems architecture. {ˈsis-tɑːməˌzəˌɑr-ˈkɑːˌtek-tɪp}
systems architecture  See systems architecting. {ˈsis-tɑːməˌzəˌɑr-ˈkɑːˌtek-ˈchar}
systems engineering  [ENG] The design of a complex interrelation of many elements (a system) to maximize an agreed-upon measure of system performance, taking into consideration all of the elements related in any way to the system, including utilization of worker power as well as the characteristics of each of the system's components. Also known as system engineering. {ˈsis-tɑːməˌzəˌɑn-ˈʃɑːˌnɪrəˌin}
systems implementation test  [ENG] The test program that exercises the complete system in its actual environment to determine its capabilities and limitations; this test also demonstrates that the system is functionally operative, and is compatible with the other subsystems and supporting elements required for its operational employment. {ˈsis-tɑːməˌzəˌɪmpˌplaˌmɑntəˌtʃɑːnˌtest}
systems integration  [SYS ENG] A discipline that combines processes and procedures from systems engineering, systems management, and product development for the purpose of developing large-scale complex systems that involve hardware and software and may be based on existing or legacy systems coupled with totally new requirements to add significant functionality. {ˈsis-tɑːməˌzəˌɪnˌtɹiˈɡrɑːˌʃɑn}
systems-management reengineering  See organizational reengineering. {ˈsis-tɑːməˌzəˌmænˌɪjˈmɑntˌrɪˌenˌˈɑːnɪrəˌin}
systems test  [ENG] A test of an entire interconnected set of components for the purpose of determining proper functions and interconnections. {ˈsis-tɑːməˌtest}
Szechman cell  [CHEM ENG] An electrolytic process for manufacture of chlorine that is a variation of both the mercury cell and molten salt cell. {ˈsɛktˈmɔnˌsel}
t See troy system.

\textbf{tab-card cutter} [DES ENG] A device for die-cutting card stock to uniform tabulating-card size. \{‘tæb,kænd ’kɑrd, ə’dər\}

\textbf{table} [BUILD] A horizontal projection or molding on the exterior or interior face of a wall. [MECH ENG] That part of a grinding machine which directly or indirectly supports the work being ground. \{‘tæl\}

\textbf{tabbed joint} [CIV ENG] In cut stonework, a bed joint formed by a broad, shallow channel in the surface of one stone that fits a corresponding projection of the stone above or below. \{‘tælkd, ə’dʒənt\}

\textbf{tablespoonful} [MECH] A unit of volume used particularly in cookery, equal to 4 fluid drams or 1/2 fluid ounce; in the United States this is equal to approximately 14.7868 cubic centimeters, in the United Kingdom to approximately 14.2065 cubic centimeters. Abbreviated tbsp. \{‘tæb,spuːn,fəl\}

\textbf{tableting} [ENG] A punch-and-die procedure for the compaction of powdered or granular solids; used for pharmaceuticals, food products, fireworks, vitamins, and dyes. \{‘tæb,læd,ɪŋ\}

\textbf{tabling} [BUILD] Formation of a horizontal masonry joint by arranging building stones in a course so that they extend into the next course and thus prevent slippage. \{‘tæb,liŋ\}

\textbf{tab stop} [DES ENG] A column position to which the printing mechanism of a typewriter or computer printer advances upon receipt of a command. \{‘tæb, stæp\}

\textbf{tachometer} [ENG] An instrument that measures the revolutions per minute or the angular speed of a rotating shaft. \{‘tæk,kæm ə’dær\}

\textbf{tack} [DES ENG] A small, sharp-pointed nail with a broad flat head. \{‘tæk\}

\textbf{tack coat} [CIV ENG] A thin layer of bitumen, road tar, or emulsion laid on a road to enhance adhesion of the course above it. \{‘tæk ,kɒt\}

\textbf{tackiness} See tack. \{‘tæk, ə’nas\}

\textbf{tackle} [MECH ENG] Any arrangement of ropes and pulleys to gain a mechanical advantage. \{‘tæk, əl or ‘tæk, əl (nautical usage)\}

\textbf{tack range} [ENG] The length of time during which an adhesive will remain in the tacky-dry condition after application to an adherent. \{‘tæk ,rænɪ\}

\textbf{tactical aircraft shelter} [CIV ENG] A shelter to house fighter-type aircraft and to provide protection to the aircraft from attack by conventional weapons, or damage from high winds or other elemental hazards. \{‘tæk,to’kal ,ɛr,kraft ,ʃel’tər\}

\textbf{tactical control radar} [ENG] Anti-aircraft artillery radar which has essentially the same inherent capabilities as the target acquisition radar (physically it may be the same type of set) but whose function is chiefly that of providing tactical information for the control of elements of the antiaircraft artillery defenses in battle. \{‘tæk,to’kal kan’trol ,rɑ,ðər\}

\textbf{tactical range recorder} [ENG] A sonar device in surface ships used to plot the time-range coordinates of submarines and determine firing of depth charges. \{‘tæk,to’kal ‘tɑnɪ ,rɑ,kɑrd,ɛr\}

\textbf{taffrail log} [ENG] A log consisting essentially of a rotator towed through the water by a braided log line attached to a distance-registering device usually secured at the taffrail, the railing at the stern. Also known as patent log. \{‘tæk, ræl ,læg\}

\textbf{Tag-Robinson colorimeter} [ENG] A laboratory device used to determine the color shades of lubricating and other oils, the color, reported as a number, is determined by varying the thickness of a column of oil until its color matches that of a standard color glass. \{‘tæg ,rəbən’son ,kə’lər’im,ə’dær\}

\textbf{tailboard} See tailgate. \{‘tæl,bɔrd\}

\textbf{tailgate} [CIV ENG] The downstream gate of a canal lock. [ENG] A hinged gate at the rear of a vehicle that can be let down for convenience in loading. Also known as tailboard. \{‘tæl,gæt\}

\textbf{tail house} [CHEM ENG] An installation in a refinery containing a look box, facilities for sampling, and controls for diverting the products to storage tanks or to other locations in the refinery for further processing. \{‘tæl ,hɔı̆s\}

\textbf{tailing} [BUILD] The projecting portion of a stone or brick that has been set into a wall, for example, a cornice. \{‘tæl, ɪn\}

\textbf{tailings} [ENG] The lighter particles which pass over a sieve in milling, crushing, or purifying operations. \{‘tæl,ɪŋz\}
tail pulley [MECH ENG] A pulley at the tail of the belt conveyor opposite the normal discharge end, may be a drive pulley or an idler pulley.  

tailrace [ENG] A channel for carrying water away from a turbine, waterwheel, or other industrial application.  

tailstock [MECH ENG] A part of a lathe that holds the end of the work not being shaped, allowing it to rotate freely.  

tail warning radar [ENG] Radar installed in the tail of an aircraft to warn the pilot that an aircraft is approaching from the rear.  


takeup [MECH ENG] A tensioning device in a belt-conveyor system for taking up slack of loose parts.  

takeup pulley [MECH ENG] An adjustable idler pulley to accommodate changes in the length of a conveyor belt to maintain proper belt tension.  

takeup reel [ENG] The reel that accumulates magnetic tape as it is recorded or played by a tape recorder.  

takt time [IND ENG] 1. The rate of customer demand, calculated by dividing the available production time by the quantity the customer requires in that time.  

2. The reciprocal of the production rate.  

talk-listen switch [ENG ACOUS] A switch provided on intercommunication units to permit using the loudspeaker as a microphone when desired.  

talk building [CIV ENG] A structure that, because of its height, is affected by lateral forces due to wind or earthquake to the extent that the forces constitute an important element in structural design. Also known as high-rise building.  

tamp [ENG] To tightly pack a drilled hole with clay or other stemming material after the charge has been placed.  

tamper [CIV ENG] A ramming device for compacting a granular material such as soil, backfill, or unfomed concrete, usually powered by a motor.  

tamping bag [ENG] A bag filled with stemming material such as sand for use in horizontal and upward sloping shotholes.  

tamping bar [ENG] A piece of wood for pushing explosive cartridges or forcing the stemming into shotholes.  

tamping plug [ENG] A plug of iron or wood used instead of tamping material to close up a loaded blasthole.  

tamping roller See sheepfoot roller.  

tampion [ENG] A cone-shaped hand tool usually fashioned of hardwood that is forced into a lead pipe to increase its diameter.  

tandem compensation See cascade compensation.  

tandem distributed numerical control [CONT SYS] A form of distributed numerical control involving a series of machines connected by a conveyor and automatic loading and unloading devices that are under control of the central computers.  

tan-dem-drive conveyor [MECH ENG] A conveyor having the conveyor belt in contact with two drive pulleys, both driven with the same motor.  

tandem roller [MECH ENG] A steam- or gasoline-driven road roller in which the weight is divided between heavy metal rolls, of dissimilar diameter, one behind the other.  

tang [ENG] 1. The part of a file that fits into a handle.  

2. The end of a drill shank which allows transmission of torque from the drill press spindle to the body of the drill.  

tangent galvanometer [ENG] A galvanometer in which a small compass is mounted horizontally in the center of a large vertical coil of wire, the current through the coil is proportional to the tangent of the angle of deflection of the compact needle from its normal position parallel to the magnetic field of the earth.  

tangent acceleration [MECH] The component of linear acceleration tangent to the path of a particle moving in a circular path.  

tangent galvanometer [ENG] A galvanometer in which a small compass is mounted horizontally in the center of a large vertical coil of wire, the current through the coil is proportional to the tangent of the angle of deflection of the compact needle from its normal position parallel to the magnetic field of the earth.  

tangent heel [ENG] See helical-flow turbine.  

tangent stress See shearing stress.  

tangent velocity [MECH] 1. The instantaneous linear velocity of a body moving in a circular path, its direction is tangential to the circular path at the point in question.  

2. The component of the velocity of a body that is perpendicular to a line from an observer or reference point to the body.  

tangent offset [ENG] In surveying, a method of plotting traverse lines; angles are laid out by linear measurement, using a constant times the natural tangent of the angle.  

tangent point See point of tangency.  

tangent screw [ENG] A screw providing tangential movement along an arc, such as the screw which provides the final angular adjustment of a marine sextant during an observation.  

tank [ELECTR] 1. A unit of acoustic delay-line storage containing a set of channels, each forming a separate recirculation path.  

2. The heavy metal envelope of a large mercury-arc rectifier or other gas tube having a mercury-pool cathode.  

3. See tank circuit.  

ENG] A large container for...
tape recorder

holding, storing, or transporting a liquid. {tank}
tankage [ENG] Contents of a storage tank. {tank-ki}
tank balloon [ENG] An air- and vapor-tight flexible container fitted to the breather pipe of a gasoline storage tank to receive gasoline vapors, as the tank cools, the vapors return to the tank. {tank bó-lún}
tank bottom [CHEM ENG] The liquid material in a tank below the level of the outlet pipe, often a mixture of the stored liquid with rust and other sediments. {tank bó-lún}
tank car [ENG] Railroad car onto which is mounted a cylindrical, horizontal tank designed for the transport of liquids, chemicals, gases, melttable solids, slurries, emulsions, or fluidizable solids. {tank, rár}
tank gage [ENG] A device used to measure the contents of a liquid storage tank, can be manual or automatic. {tank, gág}
tank scale [ENG] A counterweighted suspension or platform weighing mechanism for tanks, hoppers, and similar solids or liquids containers. {tank, skal}
tank truck [ENG] A truck body onto which is mounted a cylindrical, horizontal tank, designed for the transport of liquids, chemicals, gases, melttable solids, slurries, emulsions, or fluidizable solids. {tank, tkár}
tanning [ENG] A process of preserving animal hides by chemical treatment (using vegetable tannins, metallic sulfates, and sulfurized phenol compounds, or syntans) to make them immune to bacterial attack, and subsequent treatment to prevent some point other than the ends of a resistor or coil. [ENG] A small, threaded hole drilled into a pipe or process vessel, used as connection points for sampling devices, instruments, or controls. {tap}
tap bolt [DES ENG] A bolt with a head that can be screwed into a hole and held in place without a nut. Also known as tap screw. {tap, bolt}
tap crystal [ELECTR] Compound semiconductor that stores current when stimulated by light and then gives up energy as flashes of light when it is physically tapped. {tap, kristal}
tap drill [MECH ENG] A drill used to make a hole of a precise size for tapping. {tap, drill}
tape [ENG] A graduated steel ribbon used, instead of a chain, in surveying. {táp}
tape-automated bonding [ELECTR] A semiconductor chip (die) assembly method, where the chips are connected to polymide (tape) carriers, complete with circuitry for attachment to a printed circuit board. The chip-bonded tape carriers typically are supplied on a reel (like a roll of film) for automated circuit assembly processes. {táp, o-md-á-md, bán-dig}
tape cartridge [ENG ACOUS] A cartridge that holds a length of magnetic tape in such a way that the cartridge can be slipped into a tape recorder and played without threading the tape; in stereophonic usage, usually refers to an eight-track continuous-loop cartridge, which is larger than a cassette. Also known as cartridge. {táp, kar-tríj}
tape-controlled machine [MECH ENG] A machine tool whose movements are automatically controlled by means of a magnetic or punched tape. {táp, kéntrol, mánên}
tape correction [ENG] A quantity applied to a taped distance to eliminate or reduce errors due to the physical condition of the tape and the manner in which it is used. {táp, ko, rek-sháñ}
tape deck [ENG ACOUS] A tape-recording mechanism that is mounted on a motor board, including the tape transport, electronics, and controls, but no power amplifier or loudspeaker. {táp, dék}
tape drive [MECH ENG] A device that transmits power from an actuator to a remote mechanism by flexible tapes and pulleys. {táp, drív}
tape-float liquid-level gage [ENG] A liquid-level measurement by a float connected by a flexible tape to a rotating member, in turn connected to an indicator mechanism. {táp, fíót, lik-wód, lev-ół, gág}
tape gage [ENG] A box- or float-type tide gage which consists essentially of a float attached to a tape and counterpoise; the float operates in a vertical box or pipe which dampens out short-period wind waves while admitting the slower tidal movement; for the standard installation, the tape is graduated with numbers increasing toward the float and is arranged with pulleys and counterpoise to pass up and down over a fixed reading mark as the tide rises and falls. {táp, gág}
tape loop [ENG ACOUS] A length of magnetic tape having the ends spliced together to form an endless loop; used in message repeater units and in some types of tape cartridges to eliminate the need for rewinding the tape. {táp, lúp}
tape player [ENG ACOUS] A machine designed only for playback of recorded magnetic tapes. {táp, plá-ár}
taper bit [DES ENG] A long, cone-shaped non-coring bit used in drilling blastholes and in wedging and reaming operations. {táp, bit}
tape recorder [ENG ACOUS] A device that records audio signals and other information on magnetic tape by selective magnetization of iron oxide particles that form a thin film on the tape, a recorder usually also includes provisions for playing back the recorded material. {táp, rí, kör’d-ár}
tape recording

- **tape recording** [ENG ACOUS] The record made on a magnetic tape by a tape recorder. (ˈtāp riˈkord-ˌing)

- **tapered core bit** [DES ENG] A core bit having a conical diamond-inset crown surface tapering from a borehole size at the bit face to the next larger borehole size at its upper, shank, or reaming-shell end. (ˈtāp-rəd ˈkôr ,ˈbît)

- **tapered joint** [DES ENG] A firm, leakproof connection between two pieces of pipe having the thread formed with a slightly tapering diameter. (ˈtāp-rəd ˈjoint)

- **tapered thread** [DES ENG] A screw thread cut on the surface of a tapered part, it may be either a pine or box thread, or a V-, Acme, or square-screw thread. (ˈtāp-rəd ˈthred)

- **tapered wheel** [DES ENG] A flat-face grinding wheel with greater thickness at the hub than at the face. (ˈtāp-rəd ˈwel)

- **taper gage** [ENG] A precision gage that is used to check the accuracy of a standard taper. (ˈtāp-rər, ˈgā)

- **taper key** [DES ENG] A rectangular machine key that is slightly tapered along its length. (ˈtāp-rər, ˈkē)

- **taper pin** [DES ENG] A small, tapered self-holding peg or nail used to connect parts together. (ˈtāp-rər, ˈpin)

- **taper pipe thread** See pipe thread. (ˈtāp-rər ˈpīp ˈthred)

- **taper plug gage** [DES ENG] An internal gage in the shape of a frustum of a cone used to measure internal tapers. (ˈtāp-rər ˈplāg ,ˈgā)

- **taper reamer** [DES ENG] A reamer whose fluted portion tapers toward the front end. (ˈtāp-rərˌrē-mər)

- **taper ring gage** [DES ENG] An external gage having a conical internal contour; used to measure external tapers. (ˈtāp-rərˌriŋ ,ˈgā)

- **taper-rolling bearing** [MECH ENG] A roller bearing capable of sustaining end thrust by means of tapered rollers and coned races. (ˈtāp-rərˌrō-ˈlīŋˌber-ˌing)

- **taper shank** [DES ENG] A cone-shaped part on a tool that fits into a tapered sleeve on a driving member. (ˈtāp-rərˌshank)

- **taper tap** [DES ENG] A threaded cone-shaped tool for cutting internal screw threads. (ˈtāp-rərˌtāp)

- **taper washer** [DES ENG] A type of washer designed to be used underneath nuts with tapered flanges to enable the bolt assembly to fit properly when tightened. (ˈtāp-rərˌwash-ər)

- **tape speed** [ENG ACOUS] The speed at which magnetic tape moves past the recording head in a tape recorder, standard speeds are ⅛, ¹⁄₆, ¹⁄₄, ³⁄₈, 7/₁₂, 15, and 30 inches per second (2.38125, 4.7625, 9.525, 19.05, 38.1, and 76.2 centimeters per second); faster speeds give improved high-frequency response under given conditions. (ˈtāp ˈspēd)

- **tape transport** [ENG ACOUS] The mechanism of a tape recorder that holds the tape reels, drives the tape past the heads, and controls various modes of operation. Also known as tape drive. (ˈtāpˌtranzˌpɔrt)

- **taping** [ENG] The process of measuring distances with a surveyor's tape. (ˈtāp-ing)

- **tappet** [MECH ENG] A lever or oscillating member moved by a cam and intended to tap or touch another part, such as a push rod or valve system. (ˈtāp-ət)

- **tappet rod** [MECH ENG] A rod carrying a tappet or tappets, as one for opening or closing the valves in a steam or an internal combustion engine. (ˈtāp-ətˌrād)

- **tapping** [MECH ENG] Forming an internal screw thread in a hole or other part by means of a tap. (ˈtāp-ing)

- **tapping screw** See self-tapping screw. (ˈtāp-ingˌskrū)

- **tap screw** See tap bolt. (ˈtāpˌskrū)

- **tap wrench** [ENG] A fluid-flow measuring device with a small circular target surface that is scanned by an electron beam to generate an output signal current corresponding to the charge-density pattern stored there. (ˈtāpˌrēnch)

- **tare** [MECH] The weight of an empty vehicle or container, subtracted from gross weight to ascertain net weight. (ˈtār)

- **target** [ELECTR] 1. In an x-ray tube, the anode or anticathode which emits x-rays when bombarded with electrons. 2. In a television camera tube, the storage surface that is scanned by an electron beam to generate an output signal current corresponding to the charge-density pattern stored there. 3. In a cathode-ray tube, one of the electrodes that is coated with a material that fluoresces under electron bombardment. (ˈtār-gāt)

- **target acquisition radar** [ENG] An anti-aircraft artillery radar, normally of lesser range capabilities but of greater inherent accuracy than that of surveillance radar, whose normal function is to acquire aerial targets either by independent search or on direction of the surveillance radar, and to transfer these targets to tracking radars. (ˈtār-gātˌak-ˌwāl-ˌzhish-ənˌtārˌdār)

- **target-type flowmeter** [ENG] A fluid-flow measurement device with a small circular target suspended centrally in the flow conduit, the target transmits force to a force-balance transmitter by means of a pivoted bar. (ˈtār-gātˌtipˌflōˌmēd-ər)

- **tariff** [IND ENG] A government-imposed duty on imported or exported goods. (ˈtār-əf)

- **tarring** [ENG] The coating of piles for permanently underground work with prepared acid-free tar. (ˈtār-ing)

- **task analysis** [IND ENG] A process for determining in detail the specific behaviors required of the personnel involved in a human-machine system. (ˈtāskˌənal-ˌəsəs)

- **task element** [IND ENG] The smallest logically
technical specifications

definable set of perceptions, decisions, and responses required of a human being in the performance of a task. (*task, el-a-mant *)

**taut-band ammeter  [ENG]** A modification of the permanent-magnet movable-coil ammeter in which the jeweled bearings and control springs are replaced by a taut metallic band rigidly held at the ends; the coil is firmly attached to the band, and restoring torque is supplied by twisting of the band. (*'tôt bánd 'tam,ëd-or *)

**taut-line cableway  [MECH ENG]** A cableway whose operation is limited to the distance between two towers, usually 3000 feet (914 meters) apart, has only one carrier, and the traction cable is reeled at the carrier so that loads can be raised and lowered; the towers are mounted on trucks or crawlers, and the machine shifted across a wide area. (*'tôt lín 'kà-bal,wa*)

tawing  [ENG] A tanning process in which alun is used as a partial tannage, supplementing or replacing chrome. (*'tôrë*)

**taxi channel  [CIV ENG]** A defined path, on a water airport, intended for the use of taxiing aircraft. (*'tak-sè, chan-al *)

taxiway  [CIV ENG] A specially prepared or designated path on an airport for taxiing aircraft. (*'tak-sè,wa*)

**T beam  [CIV]** A metal beam or bar with a T-shaped cross section. (*'të, bëm*)

**T bolt  [DES ENG]** A bolt with a T-shaped head, made to fit into a T-shaped slot in a drill swivel head or in the bed of a machine. (*'të, bôlt*)

**tbsp** See tablespoon.

**teach** [CONT SYS] To program a robot by guiding it through its motions, which are then recorded and stored in its computer. (*'tetch *)

**teach box** See teach pendant. (*'tetch, bëks *)

**teach-by-doing** [CONT SYS] A method of programming a robot in which the operator guides the robot through its intended motions by holding it and performing the work. (*'tetch bë 'du-in *)

**teach-by-driving** [CONT SYS] Programming a robot by using a teach pendant. (*'tetch 'bdr 'du-in *)

**teach gun** See teach pendant. (*'tetch, gun *)

**teaching interface** [CONT SYS] The devices and hardware that are used to instruct robots and other machinery how to operate, and to specify their motions. (*'tetch-jë' in-tar-fas *)

**teach mode** [CONT SYS] The mode of operation in which a robot is instructed in its motions, usually by guiding it through these motions using a teach pendant. (*'tetch, môd *)

**teach pendant** [CONT SYS] A hand-held device used to instruct a robot, specifying the character and types of motions it is to undertake. Also known as teach box; teach gun. (*'tetch, pen-dant *)

**tear down** [ENG] 1. To disassemble a drilling rig preparatory to moving it to another drill site. 2. To disassemble a machine or change the jigs and fixtures. (*'ter 'daun *)

**tear-down time** [IND ENG] The downtime of a machine following a given work order which usually involves removing parts such as jigs and fixtures and which must be completely finished before setting up for the next order. (*'ter 'daun, tîm *)

**tear strength** [MECH] The force needed to initiate or to continue tearing a sheet or fabric. (*'ter, streŋkθ *)

**teaspoonful** [MECH] A unit of volume used particularly in cookery and pharmacy, equal to 1/4 fluid drams, or 1/3 tablespoonful, in the United States this is equal to approximately 4.9289 cubic centimeters, in the United Kingdom to approximately 4.7355 cubic centimeters. Abbreviated tsp, tspn. (*'tę, spîn, fül *)

**technical atmosphere** [MECH] A unit of pressure in the metric technical system equal to one kilogram-force per square centimeter. Abbreviated at. (*'tek-na-kal 'at-ma,síf r *)

**technical characteristics** [ENG] Those characteristics of equipment which pertain primarily to the engineering principles involved in producing equipment possessing desired characteristics, for example, for electronic equipment; technical characteristics include such items as circuitry, and types and arrangement of components. (*'tek-na-kal, ka-rïk-tar-ris-tiks *)

**technical evaluation** [ENG] The study and investigation to determine the technical suitability of material, equipment, or a system. (*'tek-na-kal j-val-yat-ta-wa-shan *)

**technical information** [ENG] Information, including scientific information, which relates to research, development, engineering, testing, evaluation, production, operation, use, and maintenance of equipment. (*'tek-na-kal, in-far-ma-shan *)

**technical inspection** [ENG] Inspection of equipment to determine whether it is serviceable for continued use or needs repairs. (*'tek-na-kal in-spek-shan *)

**technical maintenance** [ENG] A category of maintenance that includes the replacement of unserviceable major parts, assemblies, or subassemblies, and the precision adjustment, testing, and alignment of internal components. (*'tek-na-kal 'mânt-an-âns *)

**technical manual** [ENG] A publication containing detailed information on technical procedures, including instructions on the operation, handling, maintenance, and repair of equipment. (*'tek-na-kal, man-yä-wal *)

**technical representative** [IND ENG] A person who represents one or more manufacturers in an area and who gives technical advice on the application, installation, operation, and maintenance of their products, in addition to selling the products. (*'tek-na-kal 'rep-rižent-œd-iv *)

**technical specifications** [ENG] A detailed description of technical requirements stated in terms suitable to form the basis for the actual design, development, and production processes of an item having the qualities specified in the operational characteristics. (*'tek-na-kal, spes-a-fa-kâ-shan *)
tectonics  [CIV ENG] 1. The science and art of construction with regard to use and design. 2. Design relating to crustal deformations of the earth. [tek'tən-iks]
tectonometer  [ENG] An apparatus, including a microammeter, used on the surface to obtain knowledge of the structure of the underlying rocks. [tek'tə-nəm'-ad-ər]
tee  [ENG] Shaped like the letter T. (tē)
tee joint  [ENG] A joint in which members meet at right angles, forming a T. (tē, jōnt)
telechir  [CON SYS] A handlike remote manipulator. (tēl'-ə-kir)
telechirics  [CON SYS] The use of teleoperators or remote manipulators. (tēl'-ə-kir'-iks)
telegraph buoy  [ENG] A buoy used to mark the position of a submarine telegraph cable. (tēl'-əgraf, bōi)
telemeteograph  [ENG] Any meteorological instrument, such as a radiosonde, in which the recording instrument is located at some distance from the measuring apparatus, for example, a meteorological telemeter. (tēl'-ə-méd'-ə-rə-graf)
telemeteography  [ENG] The science of the design, construction, and operation of various types of telemeteographs. (tēl'-ə-méd'-ə-rə-graf{o}
telemeter  [ENG] 1. The complete measuring, transmitting, and receiving apparatus for indicating or recording the value of a quantity at a distance. Also known as telemetering system. 2. To transmit the value of a measured quantity to a remote point. (tēl'-ə-méd-ər)
telemetering  [ENG] Transmitting the readings of instruments to a remote location by means of wires, radio waves, or other means. Also known as remote metering, telemetry. (tēl'-ə-méd-ə-rə)
telemetering wave buoy  [ENG] A buoy assembly that transmits a radio signal that varies in frequency proportional to the vertical acceleration experienced by the buoy, thereby conveying information about the buoy's vertical motion as it rides the waves. (tēl'-ə-méd-ə-rə-wāv, bōi)
telemetry  See telemetering. (tēl'-əmə-trē)
teleoperation  [ENG] 1. The real-time control of remotely located machines that act as the eyes and hands of a person located elsewhere, it has been used in undersea and lunar exploration, mining, and microsurgery. 2. Operation from a remote location. Also known as remote manipulation. (tēl'-ə-pər-ə-rə-shan)
teleoperator  See remote manipulator. (tēl'-ə-pər-ə-rə-shan)
telephone  See telephone set. (tēl'-ə-fōn)
telephone dial  [ENG] A switch operated by a finger wheel, used to make and break a pair of contacts the required number of times for setting up a telephone circuit to the party being called. (tēl'-ə-fōn dial)
telephone receiver  [ENG ACOUS] The portion of a telephone set that converts the audio-frequency current variations of a telephone line into sound waves, by the motion of a diaphragm activated by a magnet whose field is varied by the electrical impulses that come over the telephone wire. (tēl'-ə-fōn ri-se'vər)
telephone set  [ENG ACOUS] An assembly including a telephone transmitter, a telephone receiver, and associated switching and signaling devices. Also known as telephone. (tēl'-ə-fōn set)
telephone transmitter  [ENG ACOUS] The microphone used in a telephone set to convert speech into audio-frequency electric signals. (tēl'-ə-fōn tranz,mid'-ər)
telephotometer  [ENG] A photometer that measures the received intensity of a distant light source. (tēl'-ə-fōt'-əmə-tər)
telepresence  [CON SYS] The quality of sensory feedback from a teleoperator or telerobot to a human operator such that the operator feels present at the remote site. (tēl'-ə-prəz-əns)
telepsychrometer  [ENG] A psychrometer in which the wet- and dry-bulb thermal elements are located at a distance from the indicating elements. (tēl'-ə-sif'krəm'-əd-ər)
telererecording bathythermometer  [ENG] A device which transmits measurements of sea water depth and temperature over a wire to a ship, where a graph of temperature versus depth is recorded. (tēl'-ə-ro'-bät)
telescope  [ENG] Any device that collects radiation, which may be in the form of electromagnetic or particle radiation, from a limited direction in space. (tēl'-ə-skəp)
telescopic alidade  [ENG] An alidade used with a plane table, consisting of a telescope mounted on a straightrule, fitted with a level bubble, scale, and vernier to measure angles, and calibrated to measure distances. (tēl'-ə-skəp ik 'əl'-ə-ri)
telescopic derrick  [ENG] A drill derrick divided into two or more sections, with the uppermost sections nestling successively into the lower sections. (tēl'-ə-skəp ik 'dər-ri)
telescopic tripod  [ENG] A drill or surveyor’s tripod each leg of which is a series of two or more closely fitted nesting tubes, which can be locked rigidly together in an extended position to form a long leg or nested one within the other for easy transport. (tēl'-ə-skəp ik 'trə-pid)
telescoping gage  [DES ENG] An adjustable internal gage with a telescoping plunger that expands under spring tension in the hole to be measured, it is locked into position to allow measurement after being withdrawn from the hole. (tēl'-ə-skəp ik 'gāj)
telescoping valve  [MECH ENG] A valve, with
sliding, telescoping members, to regulate water flow in a pipe line with minimum disturbance to stream lines. \(\text{tel-
ath'-skōp}-\text{iŋ 'valv}\)

telethermometer [ENG] A temperature-measuring system in which the heat-sensitive element is located at a distance from the indicating element. \(\text{tel-
ath'-thār'mām-əd-ər}\)

telethermoscope [ENG] A temperature teleme-
teter, frequently used in a weather station to indi-
cate the temperature at the instrument shelter located outside. \(\text{tel-
ath'-thār-māskōp}\)

telethesis [ENG] A robotic manipulation aid for the physically disabled that may be located remote from the body. There are two forms, operated by voice command, or operated through a body-powered prosthesis or a joystick. \(\text{tel-
ith'-thōsēs}\)

televiewer [ENG] An acoustic camera that pro-
vides an ultrasonic image of the borehole wall during borehole logging. \(\text{tel-
āv-
yûl-ər}\)

television film scanner [ENG] A motion picture projector adapted for use with a television cam-
era tube to televise 24-frame-per-second motion picture film at the 30-frame-per-second rate required for television. \(\text{tel-
āv-
izh-
ān 'film-
skān-ər}\)

television tower [ENG] A tall metal structure used as a television transmitting antenna, or used with another such structure to support a television transmitting antenna wire. \(\text{tel-
āv-
izh-
ān , tāl-
ər}\)

telford pavement [CIV ENG] A road pavement having a firm foundation of large stones and stone fragments, and a smooth hard-rolled surface of small stones. \(\text{tel-
ferd-pāv-
man-
t} \)

Tellerette [CHEM ENG] A type of inert packing with the appearance of a circular-wound spiral, used to create a large surface area to increase contact between falling liquid and rising vapor, used in gas-absorption operations. \(\text{tel-
ə-
arl} \)

telltale [ENG] A marker on the outside of a tank that indicates on an exterior scale the amount of fluid inside the tank. \(\text{tel-
tāl} \)

telltale float [CIV ENG] A water-level indicator in a reservoir. \(\text{tel-
tāl-əlfōt}\)

tellurimeter [ENG] A microwave instrument used in surveying to measure distance; the time for a radio wave to travel from one observation point to the other and return is measured and converted into distance by phase comparison, much as in radar. \(\text{tel-
yā-
ər'əd-
ər}\)

telpher [MECH ENG] An electric hoist hanging from and driven by a wheeled cab rolling on a single overhead rail or a rope. \(\text{tel-
fer} \)

Telsmith breaker [MECH ENG] A type of gyratory crusher, often used for primary crushing, consists of a spindle mounted in a long eccentric sleeve which rotates to impart a gyratory motion to the crushing head, but gives a parallel stroke, that is, the axis of the spindle describes a cylinder rather than a cone, as in the suspended spindle gyratory. \(\text{tel-
smith-brā-kār}\)

TEMA standard [CHEM ENG] Shell-and-tube heat-exchange standard designed to supplement the American Society of Mechanical Engineers code for unfired pressure vessels. \(\text{tē-
ma-
s坦-
dard}\)

temper [ENG] 1. To moisten and mix clay, plas-
ter or mortar to the proper consistency for use.
2. See anneal. \(\text{tem-
pər}\)

temperature [THERMO] A property of an object which determines the direction of heat flow when the object is placed in thermal contact with another object: heat flows from a region of higher temperature to one of lower temperature; it is measured either by an empirical temperature scale, based on some convenient property of a material or instrument, or by a scale of absolute temperature, for example, the Kelvin scale. \(\text{tem-
pər-
char}\)

temperature-actuated pressure relief valve [MECH ENG] A pressure relief valve which operates when subjected to increased external or internal temperature. \(\text{tem-
pr-
ə-
chār , presh-
ər \text{valv}}\)

temperature bath [THERMO] A relatively large volume of a homogeneous substance held at constant temperature, so that an object placed in thermal contact with it is maintained at the same temperature. \(\text{tem-
pə-
chār , bāth}\)

temperature-chlorinity-depth recorder [ENG] An instrument in which an underwater unit suspended from a cable records temperature, chlo-
rinity, and depth sequentially on a single-strip strip recorder, each quantity being recorded for several seconds at a time. \(\text{tem-
pə-
chār-
klō-
rin-
ə-
'depth ri-
kōrd-
ər}\)

temperature color scale [THERMO] The rela-
tion between an incandescent substance's tem-
perature and the color of the light it emits. \(\text{tem-
pə-
chār-
'kəl-
skal}\)

temperature-compensated Zener diode [ELECTR] Positive-temperature-coefficient reversed-bias Zener diode \(\text{pī jən-
kʃən} \) connected in series with one or more negative-temperature forward-
biased diodes within a single package. \(\text{tem-
pə-
chār-
kuh-
pən-
śad-
ə-
'zē-
ə-
'df,əd} \)

temperature compensation [ELECTR] The proc-
ess of making some characteristic of a circuit or device independent of changes in ambient tempera-
ture. \(\text{tem-
pə-
chār-
kəm-
pən-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-
sə-

temperature scale

lakes, in which a thermistor element transmits data over an electrical cable to a recording drum and depth is measured by the amount of wire paid out.

tension bar

tenon saw

[ENG] A precision saw that has a

tenon

tension rod

[MECH] Stress developed by a

tension member

[ENG] A portable machine that is

tension pulley

[MECH] A pulley around which an endless rope passes mounted on a trolley or other movable bearing so that the slack of the rope can be readily taken up by the pull of the weights.

tension rod

tensile modulus [MECH] The tangent or secant modulus of elasticity of a material in tension.

tensile specimen

[ENG] A test in which a specimen is subjected to increasing longitudinal pulling stress until fracture occurs.

tensiometer [ENG] A device for measuring differences in the vapor pressures of two liquids in which the liquids are placed in sealed, evacuated bulbs connected by a differential manometer.

tensile strength [MECH] The maximum stress a material subjected to a stretching load can withstand without tearing. Also known as hot strength.

tensile stress [MECH] Stress developed by a material bearing a tensile load.

tensile test [ENG] A test in which a specimen is subjected to increasing longitudinal pulling stress until fracture occurs.

tension device [ENG] A tension device.

tension member

tension pulley

[MECH] A pulley around which an endless rope passes mounted on a trolley or other movable bearing so that the slack of the rope can be readily taken up by the pull of the weights.

tension rod

tensile modulus

[ENG] The tangent or secant modulus of elasticity of a material in tension.

tensile specimen

[ENG] A test in which a specimen is subjected to increasing longitudinal pulling stress until fracture occurs.

tensiometer [ENG] A device for measuring differences in the vapor pressures of two liquids in which the liquids are placed in sealed, evacuated bulbs connected by a differential manometer.

tensile strength [MECH] The maximum stress a material subjected to a stretching load can withstand without tearing. Also known as hot strength.

tensile stress [MECH] Stress developed by a material bearing a tensile load.

tensile test [ENG] A test in which a specimen is subjected to increasing longitudinal pulling stress until fracture occurs.

tensiometer [ENG] A device for measuring differences in the vapor pressures of two liquids in which the liquids are placed in sealed, evacuated bulbs connected by a differential manometer.

tensile strength [MECH] The maximum stress a material subjected to a stretching load can withstand without tearing. Also known as hot strength.

tensile stress [MECH] Stress developed by a material bearing a tensile load.

tensile test [ENG] A test in which a specimen is subjected to increasing longitudinal pulling stress until fracture occurs.

tensiometer [ENG] A device for measuring differences in the vapor pressures of two liquids in which the liquids are placed in sealed, evacuated bulbs connected by a differential manometer.

tensile strength [MECH] The maximum stress a material subjected to a stretching load can withstand without tearing. Also known as hot strength.

tensile stress [MECH] Stress developed by a material bearing a tensile load.

tensile test [ENG] A test in which a specimen is subjected to increasing longitudinal pulling stress until fracture occurs.

tensiometer [ENG] A device for measuring differences in the vapor pressures of two liquids in which the liquids are placed in sealed, evacuated bulbs connected by a differential manometer.

tensile strength [MECH] The maximum stress a material subjected to a stretching load can withstand without tearing. Also known as hot strength.

tensile stress [MECH] Stress developed by a material bearing a tensile load.

tensile test [ENG] A test in which a specimen is subjected to increasing longitudinal pulling stress until fracture occurs.

[ENG] A test in which a specimen is subjected to increasing longitudinal pulling stress until fracture occurs.

tensiometer [ENG] A device for measuring differences in the vapor pressures of two liquids in which the liquids are placed in sealed, evacuated bulbs connected by a differential manometer.

tensile strength [MECH] The maximum stress a material subjected to a stretching load can withstand without tearing. Also known as hot strength.

tensile stress [MECH] Stress developed by a material bearing a tensile load.

tensile test [ENG] A test in which a specimen is subjected to increasing longitudinal pulling stress until fracture occurs.

tensiometer [ENG] A device for measuring differences in the vapor pressures of two liquids in which the liquids are placed in sealed, evacuated bulbs connected by a differential manometer.

tensile strength [MECH] The maximum stress a material subjected to a stretching load can withstand without tearing. Also known as hot strength.

tensile stress [MECH] Stress developed by a material bearing a tensile load.

tensile test [ENG] A test in which a specimen is subjected to increasing longitudinal pulling stress until fracture occurs.

tensiometer [ENG] A device for measuring differences in the vapor pressures of two liquids in which the liquids are placed in sealed, evacuated bulbs connected by a differential manometer.

tensile strength [MECH] The maximum stress a material subjected to a stretching load can withstand without tearing. Also known as hot strength.

tensile stress [MECH] Stress developed by a material bearing a tensile load.

tensile test [ENG] A test in which a specimen is subjected to increasing longitudinal pulling stress until fracture occurs.
made. Also known as electric terminal. 2. The equipment at the end of a microwave relay system or other communication channel. 3. One of the electric input or output points of a circuit or component.  ['ter-man-al]  

**terminal area** [ELECTR] The enlarged portion of conductor material surrounding a hole for a lead on a printed circuit. Also known as land, pad.  ['tər-man-əl ˈter-e-ə]  

**terminal clearance capacity** [ENG] The amount of cargo or personnel that can be moved through and out of a terminal on a daily basis.  ['tər-man-əl ˈkiər-əns ˈkæ,ˌpas-əd-ər]  

**terminal operations** [ENG] The reception, processing, and staging of passengers; the receipt, transit storage, and marshaling of cargo, the loading and unloading of ships or aircraft, and the manifesting and forwarding of cargo and passengers to destination.  ['tər-man-əl ˌap-ər-təshən]  

**terminal pressure** [ENG] A pressure drop across a unit when the maximum allowable pressure drop is reached, as for a filter press.  ['tər-man-əl ˈpresh-ər]  

**terminal throw velocity** [ENG] The velocity at which a stream of air exiting a diffuser impinges on an object or surface.  ['tər-man-əl ˈθroʊ ˈvə,ˌlæs-əd-ər]  

**terminal unit** [MECH ENG] In an air-conditioning system, a unit at the end of a branch duct through which air is transferred or delivered to the conditioned space.  ['tər-man-əl ˈθər-voʊˌlæs-əd-ər]  

**terminating** [ELEC] Closing of the circuit at either end of a line or transducer by connecting some device thereto; terminating does not imply any special condition such as the elimination of reflection.  ['tər-man-əl ˈθər-voʊˌnət-ər]  

**termite shield** [BUILD] A strip of metal, usually galvanized iron, bent down at the edges and placed between the foundation of a house and a timber floor, around pipes, and other places where termites can pass.  ['tər-mit-ˌshild]  

**terrace** [BUILD] 1. A flat roof. 2. A colonnaded promenade. 3. An open platform extending from a building, usually at ground level.  ['ter-əs]  

**terrace-clearance indicator** See absolute altimeter.  ['tər-rən kər-ənsˌɪn-ˌdə,kəd-or]  

**terrace profile recorder** See airborne profile recorder.  ['tər-rən ˈprəʊˌfɪl riˌkɔrd-ər]  

**terrain sensing** [ENG] The gathering and recording of information about terrain surfaces without actual contact with the object or area being investigated, in particular, the use of photography, radar, and infrared sensing in airplanes and artificial satellites.  ['tər-rən-sən-sing]  

**tertiary air** [MECH ENG] Combustion air added to primary and secondary air.  ['tər-ˌshē-er-iər]  

**tertiary sewage treatment** [CIV ENG] A process for purification of wastewater in which nitrates and phosphates, as well as fine particles, are removed; the process follows removal of raw sludge and biological treatment. Also known as advanced sewage treatment.  ['tər-ˌshē-er-ər-ət]  

**test** [IND ENG] A procedure in which the performance of a product is measured under various conditions.  ['tɛst]  

**testboard** [ELEC] Switchboard equipped with testing apparatus, arranged so that connections can be made from it to telephone lines or central-office equipment for testing purposes.  ['tɛstˌbɔrd]  

**test chamber** [ENG] A place, section, or room having special characteristics where a person or object is subjected to experimental procedures, as an altitude chamber.  ['tɛstˌchɑm-ˌbɔr]  

**test oscillator** See signal generator.  ['tɛstˌ,əs-əl-əˌsən]  

**test pit** [CIV ENG] An open excavation used to obtain soil samples in foundation studies.  ['tɛstˌpɪt]  

**test point** [ELEC] A terminal or plug-in connector provided in a circuit to facilitate monitoring, calibration, or trouble-shooting.  ['tɛstˌpɔint]  

**test specimen** See tensile bar.  ['tɛstˌ,spɛs-əˌmən]  

**tetrode junction transistor** See double-base junction transistor.  ['tɛtˌ,trədˌjoʊnˌtʃʌŋkˌʃənˌtrən-ˌzɪtər]  

**tetrode transistor** [ELECTR] A four-electrode transistor, such as a tetrode point-contact transistor or double-base junction transistor.  ['tɛˈtrədˌtrənˌzɪtər]  

**Texas tower** [ENG] A radar tower built in the sea offshore, to serve as part of an early-warning radar network.  ['tɛks-ˌtasˈtɔr]  

**text-to-speech synthesizer** [ENG ACOUS] A voice response system that provides an automatic means to take a specification of any English text at the input and generate a natural and intelligible acoustic speech signal at the output by using complex sets of rules for predicting the needed phonemic states directly from the input message and dictionary pronunciations.  ['tɛktəˌspɛˏtʃ ˌsɪnˌθəˌsɪz-əˌr]  

**th** See thermie.  

**thaw house** [ENG] A small building that is designed for thawing frozen dynamite and which is capacious enough for a supply of thawed dynamite for a day’s work.  ['θəʊˌhóʊs]  

**thawing** [ENG] Warming dynamite, to reduce risk of premature explosion.  ['θəʊ-ŋ]  

**theoretical air** [ENG] The amount of air that is theoretically required for complete combustion.  ['θəˌrɛ̆d-əˌkɔl]  

**theoretical cutoff frequency** [ELEC] Of an electronic structure, a frequency at which, disregarding the effects of dissipation, the attenuation constant changes from zero to a positive value or vice versa.  ['θəˌrɛ̆d-əˌkɔl ˈkædˌoʊˌfrɛˌkwən-se]
theoretical plate  [CHEM ENG] A distillation column plate or tray that produces perfect distillation (that is, produces the same degree of composition as that existing between a liquid mixture and the vapor in equilibrium with it), the packed-column equivalent of a theoretical plate is the HETP, or height (of packing) equivalent to a theoretical plate. \( \text{thé-ə-red-ə-kal 'plat} \)

theoretical relieving capacity  [MECH ENG] The capacity of a theoretically perfect nozzle calculated in volumetric or gravimetric units. \( \{\text{thé-ə-red-ə-kal r'lév-ənj kə, pəs-əd-ə} \)

Therberg system  [IND ENG] A system of categorizing hand movements that is used in the standard motion-and-time analysis technique. \( \{\text{thər, bərg, səs-təm} \)

therblig  See elemental motion. \( \{\text{thər, blig} \)

therblig chart  [IND ENG] An operation chart with the suboperations divided into basic motions, all designated with appropriate symbols. \( \{\text{thər, blig, chərt} \)

therm  [THERMO] A unit of heat energy, equal to 100,000 international table British thermal units, or approximately 1.055 \( \times 10^6 \) joules. \( \{\text{thərm} \)

thermactuator  See air-injection system. \( \{\text{thər, mək-tər} \)

thermal  [THERMO] Of or concerning heat. \( \{\text{θər-məl} \)

thermal ammeter  See hot-wire ammeter. \( \{\text{θər-məl 'əm-əd-ər} \)

thermal-arrest calorimeter  [ENG] A vacuum device for measurement of heats of fusion; a sample is frozen under vacuum and allowed to melt as the calorimeter warms to room temperature. \( \{\text{θər-məl ər'est, kəl-ə-rim-əd-ər} \)

thermal barrier  See thermal break. \( \{\text{θər-məl 'bær-ər} \)

thermal break  [BUILD] A component that is a poor conductor of heat and is placed in an assembly containing highly conducting materials in order to reduce or prevent the flow of heat. Also known as thermal barrier. \( \{\text{θər-məl břák} \)

thermal bulb  [ENG] A device for measurement of temperature; the liquid in a bulb expands with increasing temperature, pressuring a spiral Bourdon-type tube element and causing it to deform (unwind) in direct relation to the temperature in the bulb. \( \{\text{θər-məl 'bəlb} \)

thermal capacitance  [THERMO] The ratio of the entropy added to a body to the resulting rise in temperature. \( \{\text{θər-məl kə-pas-əd-əns} \)

thermal capacity  See heat capacity. \( \{\text{θər-məl kə-pəs-əd-ə} \)

thermal compressor  [MECH ENG] A steam-jet ejector designed to compress steam at pressures above atmospheric. \( \{\text{θər-məl kəm-prəs-ər} \)

thermal conductance  [THERMO] The amount of heat transmitted by a material divided by the difference in temperature of the surfaces of the material. Also known as conductance. \( \{\text{θər-məl kən-əd-təns} \)

thermal conductimetry  [THERMO] Measurement of thermal conductivities. \( \{\text{θər-məl kən-dək-tə-mē-trə} \)

thermal conductivity  [THERMO] The heat flow across a surface per unit area per unit time, divided by the negative of the rate of change of temperature with distance in a direction perpendicular to the surface. Also known as coefficient of conductivity, heat conductivity. \( \{\text{θər-məl kən-dək-tiv-əd-ə} \)

thermal conductivity cell  See katharometer. \( \{\text{θər-məl kən-dək-tiv-əd-ə, səl} \)

thermal conductivity gage  [ENG] A pressure measurement device for high-vacuum systems; an electrically heated wire is exposed to the gas under pressure, the thermal conductivity of which changes with changes in the system pressure. \( \{\text{θər-məl kən-dək-tiv-əd-ə, ˈgæl} \)

thermal conductor  [THERMO] A substance with a relatively high thermal conductivity. \( \{\text{θər-məl kən-əd-kən-dər} \)

thermal convection  See heat convection. \( \{\text{θər-məl kən-vək-shən} \)

thermal converter  [ELECTR] A device that converts heat energy directly into electric energy by using the Seebeck effect; it is composed of at least two dissimilar materials, one junction of which is in contact with a heat source and the other junction of which is in contact with a heat sink. Also known as thermocouple converter, thermoelectric generator, thermoelectric power generator, thermoelement. [ENG] An instrument used with external resistors for ac current and voltage measurements over wide ranges, consisting of a conductor heated by an electric current, with one or more hot junctions of a thermocouple attached to it, so that the output emf responds to the temperature rise, and hence the current. \( \{\text{θər-məl kən-vərd-ar} \)

thermal coulomb  [THERMO] A unit of entropy equal to 1 joule per kelvin. \( \{\text{θər-məl kəl-əm} \)

thermal cracking  [CHEM ENG] A petroleum refining process that decomposes, rearranges, or combines hydrocarbon molecules by the application of heat, without the aid of catalysts. \( \{\text{θər-məl kər-ək-ən} \)

thermal detector  See bolometer. \( \{\text{θər-məl di-ˈtek-tər} \)

thermal diffusivity  See diffusivity. \( \{\text{θər-məl di-ˈfyə-siv-əd-ə} \)

thermal drift  [ELECTR] Drift caused by internal heating of equipment during normal operation or by changes in external ambient temperature. \( \{\text{θər-məl ˈdrɪt} \)

thermal drilling  [MECH ENG] A machining method in which holes are drilled in a workpiece by heat generated from the friction of a rotating tool. \( \{\text{θər-məl ˈdrl-əl} \)

thermal efficiency  [CHEM ENG] In a tube-and-shell heat-exchange system, the ratio of the actual temperature range of the tube-side fluid (inlet versus outlet temperature) to the maximum possible temperature range. See efficiency. \( \{\text{θər-məl ˈθi-fi-kən-sə} \)
thermal effusion  See thermal transpiration. { 'thər-məl ɛf-ə-'zhan} 
thermal emissivity See emissivity. { 'thər-məl ɛm-i-'siv-i-te} 
thermal environment  [IND ENG] Those aspects of the workplace that include local temperature, humidity, and air velocity as well as the presence of radiating surfaces. { 'thərm-əl in-'vɪr-ən-mant} 
thermal equilibrium  [THERMO] Property of a system all parts of which have attained a uniform temperature which is the same as that of the system’s surroundings. { 'thərm-əl in-'vɪr-ən-ment} 
thermal farad  [THERMO] A unit of thermal capacitance equal to the thermal capacitance of a body for which an increase in entropy of 1 joule per kelvin results in a temperature rise of 1 kelvin. { 'thər-məl ˈfa-rəd} 
thermal flame safeguard  [MECH ENG] A thermocouple located in the pilot flame of a burner, if the pilot flame is extinguished, an extinguishing circuit is interrupted and the fuel supply is shut off. { 'thər-məl ˈflām ˈsaf-gɑrd} 
thermal flux  See heat flux. { 'thər-məl ˈflæks} 
thermal hysteresis  [THERMO] A phenomenon sometimes observed in the behavior of a temperature-dependent property of a body; it is said to occur if the behavior of such a property is different when the body is heated through a given temperature range from when it is cooled through the same temperature range. { 'thər-məl ˈhɪz-tə-ˈrɛs-səz} 
thermal inductance  [THERMO] The product of temperature difference and time divided by entropy flow. { 'thər-məl in-ˈdɑk-təns} 
thermal instrument  [ENG] An instrument that depends on the heating effect of an electric current, such as a thermocouple or hot-wire instrument. { 'thər-məl ˈin-ˈstrə-mənt} 
thermal-liquid system  [CHEM ENG] A system with a special liquid that acts as a heat sink or heat source (for example, steam, hot water, mercury, Dowtherm, molten salts, or mineral oils), used for process heating and cooling. { 'thər-məl ˈlɪk-wəd ˈsɪs-ˈtəm} 
thermal-loss meter  See heat-loss flowmeter. { 'thər-məl ˈlɔs ˈmɛd-ər} 
thermal mapper  See line scanner. { 'thər-məl ˈmæp-ər} 
thermal microphone  [ENG ACOUS] Microphone depending for its action on the variation in the resistance of an electrically heated conductor that is being alternately increased and decreased in temperature by sound waves. { 'thər-məl ˈmi-kra-ˈfɒn} 
thermal neutron analysis  [ENG] A technique for detecting explosives, in which the object under inspection is conveyed through a cloud of thermal neutrons (generated by slowing down fast neutrons in multiple collisions in a moderator surrounding the source), and the characteristic high-energy gamma rays that are then emitted by the objects are used in analysis and imaging. { 'thər-məl ˈni-trən-ə-ˈnal-i-sis} 
thermal ohm  [THERMO] A unit of thermal resistance equal to the thermal resistance for which a temperature difference of 1 kelvin produces a flow of entropy of 1 watt per kelvin. Also known as fourier. { 'θər-məl ˈòm} 
thermal polymerization  [CHEM ENG] A thermal, petroleum refining process used to convert light hydrocarbon gases into liquid fuels; paraffinic hydrocarbons are cracked to produce olefinic material which is concurrently polymerized by heat and pressure to form liquids, the product being known as polymer gasoline. { 'θər-məl ˈpɜr-ə-la-ˈmɛn-da} 
thermal potential difference  [THERMO] The difference between the thermodynamic temperatures of two points. { 'θər-məl ˈpɔt-ənt-əl ˈdɪf-ər-əns} 
thermal power plant  [ENG] A facility to produce electric energy from thermal energy released by combustion of a fuel or consumption of a fissionable material. { 'θər-məl ˈpɜr-ə-ˈplænt} 
thermal probe  [ENG] An instrument which measures the heat flow from ocean bottom sediment. [MECH ENG] A calorimeter in a boiler furnace which measures heat absorption rates. { 'θər-məl ˈprəb} 
thermal process  [CHEM ENG] Any process that utilizes heat, without the aid of a catalyst, to accomplish chemical change; for example, thermal cracking, thermal reforming, or thermal polymerization. { 'θər-məl ˈprəs-əs} 
thermal radiation  See heat radiation. { 'θər-məl ˈræd-ə-ˈʃən} 
thermal reactor  [CHEM ENG] A device, system, or vessel in which chemical reactions take place because of heat (no catalysis); for example, thermal cracking, thermal reforming, or thermal polymerization. { 'θər-məl ˈrɛk-tər} 
thermal reforming  [CHEM ENG] A petroleum refining process using heat (but no catalyst) to effect molecular rearrangement of a low-octane naphtha to form high-octane motor gasoline. { 'θər-məl ˈrɛf-ər-mɪŋ} 
thermal relief  [ENG] A valve or other device that is preset to open when pressure becomes excessive due to increased temperature of the system. { 'θər-məl ˈrɪlf} 
thermal resistance  [ELECTR] See effective thermal resistance. [THERMO] A measure of a body’s ability to prevent heat from flowing through it, equal to the difference between the temperatures of opposite faces of the body divided by the rate of heat flow. Also known as heat resistance. { 'θər-məl ˈrɪz-tənz} 
thermal resistivity  [THERMO] The reciprocal of the thermal conductivity. { 'θər-məl ˈrez-tɪ-tiv-ət-ər} 
thermal shock  [MECH] Stress produced in a body or in a material as a result of undergoing
thermal soakback

a sudden change in temperature. {ðhærmæl 'ʃæk-əl'}

thermal soakback [ENG] A phenomenon whereby, due to the lag in propagation of temperature changes through insulating materials, the maximum temperature of a thermally protected structure may be reached a certain time after the protective coating has reached its maximum temperature. {ðhærmæl 'sök-əl, bæk-

thermal stress [MECH] Mechanical stress induced in a body when some or all of its parts are not free to expand or contract in response to changes in temperature. {ðhærmæl 'strej-

thermal stress cracking [MECH] Crazing or cracking of materials (plastics or metals) by overexposure to elevated temperatures and sudden temperature changes or large temperature differentials. {ðhærmæl 'strej-kræk-ıg-

thermal telephone receiver [ENG ACOUS] A thermophone used as a telephone receiver. {ðhærmæl 'tel-ə fon ri, sə-vɔr-

thermal transducer [ENG] Any device which converts energy from some form other than heat energy into heat energy, an example is the absorbing film used in the thermal pulse method. {ðhærmæl trænzd'ə-

thermal transpiration [THERMO] The formation of a pressure gradient in gas inside a tube when there is a temperature gradient in the gas and when the mean free path of molecules in the gas is a significant fraction of the tube diameter. Also known as thermal effusion. {ðhærmæl ,træn-pə-ə-

thermal value [THERMO] Heat produced by combustion, usually expressed in calories per gram or British thermal units per pound. {ðhærmæl ,val-yə-

thermal valve [MECH ENG] A valve controlled by an element made of material that exhibits a significant change in properties in response to a change in temperature. {ðhærmæl 'valv-

thermic boring [ENG] Boring holes into concrete by means of a high temperature, produced by a steel lance packed with steel wool which is ignited and kept burning by oxyzacetylene or other gas. {ðhærmik 'bɔr-ıg-

thermie [THERMO] A unit of heat energy equal to the heat energy needed to raise 1 tonne of water from 14.5°C to 15.5°C at a constant pressure of 1 standard atmosphere; equal to 10^3 fif-
teen-degrees calories or 14 1855 ± 0.0005) × 10^6 joules. Abbreviated th. {ðhærm-

thermion [ELECTR] A charged particle, either negative or positive, emitted by a heated body, as by the hot cathode of a thermionic tube. {ðhærmI,tən-

thermionic [ELECTR] Pertaining to the emission of electrons as a result of heat. {ðhærm-

thermionic emission [ELECTR] 1. The outflow of electrons into vacuum from a heated electric conductor. Also known as Edison effect; Rich-
ardson effect. 2. More broadly, the liberation of electrons or ions from a substance as a result of heat. {ðhærm-mə-

thermistor [ELECTR] A resistive circuit component, having a high negative temperature coefficient of resistance, so that its resistance decreases as the temperature increases; it is a sta-
bale, compact, and rugged two-terminal ceramiclike semiconductor bead, rod, or disk. Derived from thermal resistor. {ðhærmis-tər-

thermoacoustic engine [ENG] A heat engine that harnesses the combination of the pressure oscillations of a sound wave with the accompanying adiabatic temperature oscillations. {ðhærmə-ək'sjuːstik 'en-

thermoacoustic refrigerator [ENG] A device that uses acoustic power to pump heat from a region of low temperature to a region of ambient temperature. {ðhærmə-ək'sjuːstik 'ri-

thermoacoustic-Stirling engine [ENG] A device in which the thermodynamic cycle of a Stirling engine is accomplished in a traveling-wave acoustic network, and acoustic power is produced from heat. {ðhærmə-

thermoammeter [ENG] An ammeter that is actuated by the voltage generated in a thermocou-
ple through which is sent the current to be measured, used chiefly for measuring radio-frequency currents. Also known as electrothermal ammeter, thermocouple ammeter. {ðhærmə-

thermochemical calorie See calorie. {ðhærmətempts-

thermocombination bonding [ENG] Use of a combination of heat and pressure to make connections, as when attaching beads to integrated-circuit chips; examples include wedge bonding and ball bonding. {ðhærmə-

thermocombustion evaporator [MECH ENG] A system to reduce the energy requirements for evaporation by compressing the vapor from a single-effect evaporator so that the vapor can be used as the heating medium in the same evaporator. {ðhærmə-

thermocouple [ENG] A device consisting basically of two dissimilar conductors joined to-
gether at their ends; the thermoelectric voltage developed between the two junctions is propor-
tional to the temperature difference between the junctions, so the device can be used to measure the temperature of one of the junctions when the other is held at a fixed, known temperature, or to convert radiant energy into electric energy. {ðhærm-

thermocouple ammeter See thermoammeter. {ðhærm-

thermocouple pyrometer See thermoelectric py-
rometer. {ðhærmə-'pɹəm-

thermocouple vacuum gage [ENG] A vacuum
garge that depends for its operation on the thermal conduction of the gas present; pressure is measured as a function of the voltage of a thermocouple, whose measuring junction is in thermal contact with a heater that carries a constant current, ordinarily, used over a pressure range of 10⁻¹ to 10⁻³ millimeter of mercury. { 'thär-ma,kap-əl 'væk-yəm, 'gə]\}

thermodynamic cycle [THERMO] A procedure or arrangement in which some material goes through a cyclic process and one form of energy, such as heat at an elevated temperature from combustion of a fuel, is in part converted to another form, such as mechanical energy of a shaft, the remainder being rejected to a lower temperature sink. Also known as heat cycle. \{'thăr-mō-'dī-nam-ik 'sī-kal\}

thermodynamic efficiency [IND ENG] An index for rating the effort required by a worker performing a task in terms of the ratio of work performed to the energy consumed. \{'thăr-mō-'dī-'nam-ik-l'i 'fish-an-sē\}

thermodynamic equation of state [THERMO] An equation that relates the reversible change in energy of a thermodynamic system to the pressure, volume, and temperature. \{'thăr-mō-'dī-'nam-ik-r'kwa-zhan əv 'stāt\}

thermodynamic equilibrium [THERMO] Property of a system which is in mechanical, chemical, and thermal equilibrium. \{'thăr-mō-'dī-'nam-ik-, ä-'kwə-li-brē-əm\}

thermodynamic function of state [THERMO] Any of the quantities defining the thermodynamic state of a substance in thermodynamic equilibrium, for a perfect gas, the pressure, temperature, and density are the fundamental thermodynamic variables, any two of which are, by the equation of state, sufficient to specify the state. Also known as state parameter; state variable; thermodynamic variable. \{'thăr-mō-'dī-'nam-ik-ə 'jaŋk-šən əv 'stāt\}

thermodynamic potential [THERMO] One of several extensive quantities which are determined by the instantaneous state of a thermodynamic system, independent of its previous history, and which are at a minimum when the system is in thermodynamic equilibrium under specified conditions. \{'thăr-mō-'dī-'nam-ik-pə 'ten-chəl\}

thermodynamic potential at constant volume See free energy. \{'thăr-mō-'dī-'nam-ik-pə 'ten-chəl-at 'kæn-sənt 'vål-yəm\}

thermodynamic principles [THERMO] Laws governing the conversion of energy from one form to another. \{'thăr-mō-'dī-'nam-ik- 'prin-sə-pəl-əz\}

thermodynamic probability [THERMO] Under specified conditions, the number of equally likely states in which a substance may exist; the thermodynamic probability \(\Omega\) is related to the entropy \(S\) by \(S = k \ln \Omega\) where \(k\) is Boltzmann's constant. \{'thăr-mō-'dī-'nam-ik- 'prə-bər-bəl-əd-ə\}

thermodynamic process [THERMO] A change of any property of an aggregation of matter and energy, accompanied by thermal effects. \{'thăr-mō-'dī-'nam-ik- 'prə-səs\}

thermodynamic property [THERMO] A quantity which is either an attribute of an entire system or is a function of position which is continuous and does not vary rapidly over microscopic distances, except possibly for abrupt changes at boundaries between phases of the system; examples are temperature, pressure, volume, concentration, surface tension, and viscosity. Also known as macroscopic property. \{'thăr-mō-'dī-'nam-ik-'prə-ord-i-ə\}

thermodynamic system [THERMO] A part of the physical world as described by its thermodynamic properties. \{'thăr-mō-'dī-'nam-ik-'sī-stəm\}

thermodynamic temperature scale [THERMO] Any temperature scale in which the ratio of the temperatures of two reservoirs is equal to the ratio of the amount of heat absorbed from one of them by a heat engine operating in a Carnot cycle to the amount of heat rejected by this engine to the other reservoir; the Kelvin scale and the Rankine scale are examples of this type. \{'thăr-mō-'dī-'nam-ik-'tem-prə-char-, skal\}

thermodynamic variable See thermodynamic function of state. \{'thăr-mō-'dī-'nam-ik-'ver-ə-bal\}

thermoelectric converter [ELECTR] A converter that changes solar or other heat energy to electric energy, used as a power source on spacecraft. \{'thăr-mō-'i-lek-trik-kan'vərd-ar\}

thermoelectric cooler [ENG] An electronic heat pump based on the Peltier effect, involving the absorption of heat when current is sent through a junction of two dissimilar metals; it can be mounted within the housing of a device to prevent overheating or to maintain a constant temperature. \{'thăr-mō-'i-lek-trik- 'kŭl-ər\}

thermoelectric generator See thermal converter. \{'thăr-mō-'i-lek-trik-'jen-ə, rād-ar\}

thermoelectric heating [ENG] Heating based on the Peltier effect, involving a device which is in principle the same as that used in thermoelectric cooling except that the current is reversed. \{'thăr-mō-'i-lek-trik-'hed-əj\}

thermoelectric junction See thermojunction. \{'thăr-mō-'i-lek-trik- 'jaŋk-shən\}

thermoelectric laws [ENG] Basic relationships used in the design and application of thermocouples for temperature measurement, for example, the law of the homogeneous circuit, the law of intermediate metals, and the law of successive or intermediate temperatures. \{'thăr-mō-'i-lek-trik-'lōz\}

thermoelectric material [ELECTR] A material that can be used to convert thermal energy into electric energy or provide refrigeration directly

thermoelectric material
from electric energy, good thermoelectric materials include lead telluride, germanium telluride, bismuth telluride, and cesium sulfide.

thermoelectric pyrometer [ENG] An instrument which uses one or more thermocouples to measure high temperatures, usually in the range between 800 and 2400°F (425 and 1315°C). Also known as thermocouple pyrometer. [ˈθɛrm-o̱-i̱l̩-ek-trik pɪˈrɛm-əd̪-ər]

thermoelectric refrigeration See thermoelectric cooling. [ˈθɛrm-o̱-i̱l̩-ek-trik rɪˌfrɪk-ər-sən]

thermoelectric thermometer [ENG] A type of electrical thermometer consisting of two thermocouples which are series-connected with a potentiometer and a constant-temperature bath; one couple, called the reference junction, is placed in a constant-temperature bath, while the other is used as the measuring junction. [ˈθɛrm-o̱-i̱l̩-ek-trik θɔrˈmæm-əd̪-ər]

thermoelectric motive force [ELECTR] Voltage developed due to differences in temperature between parts of a circuit containing two or more different metals. [ˈθɛrm-o̱-i̱l̩-ek-trik trəˈmɒd̪-əv ˈfɔːrs]

thermoforming [ENG] Forming of thermoplastic sheet by heating it and then pulling it down onto a mold surface to shape it. [ˈθɛrm-o̱-fɔːrm-ən]

thermogalvanometer [ENG] Instrument for measuring small high-frequency currents by their heating effect, generally consisting of a direct-current galvanometer connected to a thermocouple that is heated by a filament carrying the current to be measured. [ˈθɛrm-o̱-ɡəl-vən-əˌməd̪-ər]

thermograd probe [ENG] An instrument that makes a record of temperature versus depth as it is lowered to the ocean floor, and measures heat flow through the ocean floor. [ˈθɛrm-o̱-ɡræd ˈprəb]

thermogram [ENG] The recording made by a thermograph. [ˈθɛrm-o̱-ɡræm]

thermograph [ENG] An instrument that senses, measures, and records the temperature of the atmosphere. Also known as recording thermometer. [ˈθɛrm-o̱-ɡræf]

thermograph correction card [ENG] A table for quick and accurate correction of the reading of a thermograph to that of the more accurate dry-bulb thermometer at the same time and place. [ˈθɛrm-o̱-græf kərˈrek-ʃən ˈkɑrd]

thermography [ENG] A method of measuring surface temperature by using luminescent materials: the two main types are contact thermography and projection thermography. [ˈθɛrm-o̱-ɡrə-fe]

thermogravitational column [CHEM ENG] A device in which thermal diffusion results from the countercurrent flow of hot and cold materials, thus increasing the separation of materials in a solution by the formation of a concentration gradient (difference). Also known as Clausius-Dickel column. [ˈθɛrm-o̱-ɡræv-ətər-sə-ʃən-əl ˈkæl-əm]

thermointegrator [ENG] An apparatus, used in studying soil temperatures, for measuring the total supply of heat during a given period, it consists of a long nickel coil (inserted into the soil by an attached rod) forming a 100-ohm resistance thermometer and a 6-volt battery, the current used being recorded on a galvanometer; a mercury thermometer can be used. [ˈθɛrm-o̱-ɪntər-əˌgræd̪-ər]

thermojunction [ELECTR] One of the surfaces of contact between the two conductors of a thermocouple. Also known as thermoelectric junction. [ˈθɛrm-o̱-joʊn-kʃən]

thermometer [ENG] An instrument that measures temperature. [θɔrˈmæm-əd̪-ər]

thermometer anemometer [ENG] An anemometer consisting of two thermometers, one with an electric heating element connected to the bulb; the heated bulb cools in an airstream, and the difference in temperature as registered by the heated and unheated thermometers can be translated into air velocity by a conversion chart. [θɔrˈmæm-əd̪-ər ˈæn-əˌmæm-əd̪-ər]

thermometer-bulb liquid-level meter [ENG] Detection of liquid level by temperature measurement changes using an immersed bulb-type thermometer. [θɔrˈmæm-əd̪-ər ˈbʌlb ˈlɪk-wad̪ ˈlev-əl, ˈmɛd̪-əd̪-ər]

thermometer frame [ENG] A frame designed to hold two or more reversible thermometers, such as a frame is often attached directly to a Nansen bottle. [θɔrˈmæm-əd̪-ər, ˈfræm]

thermometer screen See instrument shelter. [θɔrˈmæm-əd̪-ər skrɛn]

thermometer shelter See instrument shelter. [θɔrˈmæm-əd̪-ər, ˈʃɛl-ər]

thermometer support [ENG] A device used to hold liquid-in-glass maximum and minimum thermometers in the proper recording position inside an instrument shelter, and to permit them to be read and reset. [θɔrˈmæm-əd̪-ər, ˈsɔp-ərt]

thermometric conductivity See diffusivity. [θɔrˈmæ̱m-ətɹi̱k ˌkæn, ˈdæk-tɪv-əd̪-ə]

thermometric fluid [THERMO] A fluid that has properties, such as a large and uniform thermal expansion coefficient, good thermal conductivity, and chemical stability, that make it suitable for use in a thermometer. [θɔrˈmæ̱m-ətɹi̱k ˈflu-əd̪]

thermometric property [THERMO] A physical property that changes in a known way with temperature, and can therefore be used to measure temperature. [θɔrˈmæ̱m-ətɹi̱k ˈpræp-əd̪-ə]

thermometry [THERMO] The science and technology of measuring temperature, and the establishment of standards of temperature measurement. [θɔrˈmæ̱m-ətɹi̱r]

thermomigration [ELECTR] A technique for doping semiconductors in which exact amounts of known impurities are made to migrate from the cool side of a wafer of pure semiconductor material to the hotter side when the wafer is heated in an oven. [θɔrˈmæ̱m-əˌmɪdʒ-ər-sə-ʃən]

thermo-pervaporation See membrane distillation. [θɔrˈmæ̱m-əpər, ˈvæp-ər-əsən]
thin-film integrated circuit

thermophone [ENG ACOUS] An electroacoustic transducer in which sound waves having an accurately known strength are produced by the expansion and contraction of the air adjacent to a strip of conducting material, whose temperature varies in response to a current input that is the sum of a steady current and a sinusoidal current, used chiefly for calibrating microphones. {ˈθər-məˌfôn}

thermophoresis [THERMO] The movement of particles in a thermal gradient from high to low temperatures. {ˈθər-məˈfōr-e-sēz}

thermopile [ENG] An array of thermocouples connected either in series to give higher voltage output or in parallel to give higher current output, used for measuring temperature or radiant energy or for converting radiant energy into electric power. {ˈθər-məˈpil}

thermoregulator [ENG] A high-accuracy or high-sensitivity thermostat; one type consists of a mercury-in-glass thermometer with sealed-in electrodes, in which the rising and falling column of mercury makes and breaks an electric circuit. {ˈθər-məˈre-gər-yaˌlæd-ər}

Thermorelay See thermostat. {ˈθər-mōˈre-lā}

thermoscreen [ENG] See instrument shelter. {ˈθər-məˌskrēn}

thermosiphon [MECH ENG] A closed system of tubes connected to a water-cooled engine which permit natural circulation and cooling of the liquid by utilizing the difference in density of the hot and cool portions. {ˈθər-mōˈsif-fən}

thermosiphon reboiler [CHEM ENG] A liquid reheater (as for distillation-column bottoms) in which natural circulation of the boiling liquid is obtained by maintaining a sufficient liquid head. {ˈθər-mōˈsif-fən ˈrēˈboi-lər}

thermostat [ENG] An instrument which measures changes in temperature and directly or indirectly controls sources of heating and cooling to maintain a desired temperature. Also known as thermorelay. {ˈθər-məˈstat}

thermostatic switch [ELEC] A temperature-operated switch that receives its operating energy by thermal conduction or convection from the device being controlled or operated. {ˈθər-məˈstāt-ik ˈswich}

thermoswitch See thermal switch. {ˈθər-məˌswich}

thermovoltmeter [ENG] A voltmeter in which a current from the voltage source is passed through a resistor and a fine vacuum-enclosed platinum heater wire; a thermocouple, attached to the midpoint of the heater, generates a voltage of a few millivolts, and this voltage is measured by a direct-current millivoltimeter. {ˈθər-mōˌvōltˌmēd-ər}

thetagram [THERMO] A thermodynamic diagram with coordinates of pressure and temperature, both on a linear scale. {ˈθēd-əˌgrəm}

thickener [ENG] A nonfilter device for the removal of liquid from a liquid-solids slurry to give a dewatered (thickened) solids product, can be by gravity settling or centrifugation. {ˈθik-əˌnər}

thickening [CHEM ENG] The concentration of the solids in a suspension in order to recover a fraction with a higher concentration of solids than in the original suspension. {ˈθik-əˌninq}

thick-film capacitor [ELEC] A capacitor in a thick-film circuit, made by successive screen-printing and firing processes. {ˈθikˌfil-m ˈkāˈpas-əd-ər}

thick-film circuit [ELECTR] A microcircuit in which passive components, of a ceramic-metal composition, are formed on a ceramic substrate by successive screen-printing and firing processes, and discrete active elements are attached separately. {ˈθikˌfil ˈsär-kat}

thick-film hybrid [ELECTR] An assembly consisting of a thick-film circuit pattern with mounting positions for the insertion of conventional silicon devices. {ˈθikˌfilˌkəmˈjihnd}

thick-film resistor [ELEC] Fixed resistor whose resistance element is a film well over 0.001 inch (25 micrometers) thick. {ˈθikˌfilˌrīˈzīz-tər}

thick-film sensor [ENG] A thick-film circuit that is fabricated from suitable materials to measure a physical quantity such as mechanical stress or temperature or to perform a chemical sensing application such as the measurement of gas or liquid composition, acidity, or humidity. {ˈθikˌfilˌsənˈsər}

thickness gage [ENG] A gage for measuring the thickness of a sheet of material, the thickness of an object, or the thickness of a coating, examples include penetration-type and backscattering radioactive thickness gages and ultrasonic thickness gages. {ˈθikˌnəsˌgāj}

Thiele coordinates [CHEM ENG] A graphical method for calculating the solvent-free composition of two components being separated by solvent extraction. {ˈtēl-əˌkoˌɔrd-ənˌats}

Thiele-Geddes method [CHEM ENG] A method for the prediction of the product distribution from a multicomponent distillation system. {ˈtēl-əˌgəd-əˌmēth-əd}

thin film [ELECTR] A film a few molecules thick deposited on a glass, ceramic, or semiconductor substrate to form a capacitor, resistor, coil, cryostat, or other circuit component. {ˈθinˌfilˌm}

thin-film capacitor [ELEC] A capacitor that can be constructed by evaporation of conductor and dielectric films in sequence on a substrate, silicon monoxide is generally used as the dielectric. {ˈθinˌfilˌkapəˈsəd-ər}

thin-film circuit [ELECTR] A circuit in which the passive components and conductors are produced as films on a substrate by evaporation or sputtering; active components may be similarly produced or mounted separately. {ˈθinˌfilˌsər-kat}

thin-film field-emitter cathode [ELECTR] A sharply pointed microminiature electron field emitter with an integral low-voltage extraction gate. {ˈθinˌfilˌfildˌiˌmid-ərˌkathˌəd}

thin-film integrated circuit [ELECTR] An integrated circuit consisting entirely of thin films deposited in a patterned relationship on a substrate. {ˈθinˌfilˌintˌəˌgrəd-ədˌsär-kat}
thin-film material | ELECTR | A material that can be deposited as a thin film in a desired pattern by a variety of chemical, mechanical, or high-vacuum evaporation techniques. { 'thin-film mater’i-kəl }.

thin-film resistor | [ELEC] A fixed resistor whose resistance element is a metal, alloy, carbon, or other film having a thickness of about 0.000001 inch (25 nanometers). { 'thin film riz”tar’ }.

thin-film semiconductor | [ELECTR] Semiconductor produced by the deposition of an appropriate single-crystal layer on a suitable insulator. { 'thin film 'sem-i-kən,dak-tər’ }.

thin-film transistor | [ELECTR] A field-effect transistor constructed entirely by thin-film techniques, for use in thin-film circuits. Abbreviated TFT. { 'thin film tran”zis-tər’ }.

thin-plate orifice | [ENG] A thin-metal orifice sheet used in fluid-flow measurement in fluid conduits by means of differential pressure drop across the orifice. { 'thin plate’or-a-fas’ }.

third law of motion | See Newton’s third law. { ‘thərd lə̅v”mō-shən’ }.

third law of thermodynamics | [THERMO] The entropy of all perfect crystalline solids is zero at absolute zero temperature. { ‘thərd lə̅v”thər-mō-dən”am-iks’ }.

third rail | [CIV ENG] The electrified metal rail which carries current to the motor of an electric locomotive or other railway car. { ‘thərd rəl’ }.

13.0 temperature | See annealing point. { ‘θaːr,ten”tem-prə-char’ }.

Thoma cavitation coefficient | [MECH ENG] The equation for measuring cavitation in a hydraulic turbine installation, relating vapor pressure, barometric pressure, runner setting, tail water, and head. { ‘təm”sɑn,kəv”tə-shən,kə”fi,"fish-ənt’ }.

Thomas meter | [ENG] An instrument used to determine the rate of flow of gas by measuring the rise in the gas temperature produced by a known amount of heat. { ‘təm”sən ,mɛd”ər’ }.

Thomson bridge | See Kelvin bridge. { ‘təm”sən”briːj’ }.

thoroughfare | [CIV ENG] 1. An important, unobstructed public street or highway. 2. A street going through from one street to another. 3. An inland waterway for passage of ships usually not between two bodies of water. { ‘θər”foʊr-ər’ }.

thou | See mil.

thread | [DES ENG] A continuous helical rib, as on a screw or pipe. { ‘θrɛd” }.

thread contour | [DES ENG] The shape of thread design as observed in a cross section along the major axis, for example, square or round. { ‘θrɛd”kan,tʊr” }.

thread cutter | [MECH ENG] A tool used to cut screw threads on a pipe, screw, or bolt. { ‘θrɛd”kəd”ər” }.

thread gage | [DES ENG] A design gage used to measure screw threads. { ‘θrɛd”ɡæj” }.

threading die | [MECH ENG] A die which may be solid, adjustable, or spring adjustable, or a self-opening die head, used to produce an external thread on a part. { ‘θrɛd”ɪŋ ”di” }.

threading machine | [MECH ENG] A tool used to cut or form threads inside or outside a cylinder or cone. { ‘θrɛd”ɪŋ ma”ʃən” }.

thread plug | [ENG] Mold part which shapes an internal thread onto a molded article; must be unscrewed from the finished piece. { ‘θrɛd”plag” }.

thread plug gage | [DES ENG] A thread gage used to measure female screw threads. { ‘θrɛd”plag”ɡæj” }.

thread protector | [ENG] A short-threaded ring to screw onto a pipe or into a coupling to protect the threads while the pipe is being handled or transported. Also known as pipe-thread protector. { ‘θrɛd”prə,tek”tər’ }.

thread rating | [ENG] The maximum internal working pressure allowable for threaded pipe or tubing joints, important for pressure systems, chemical processes, and oil-well systems. { ‘θrɛd”ræt”ɪŋ” }.

thread ring gage | [DES ENG] A thread gage used to measure male screw threads. { ‘θrɛd”rɪŋ”ɡæj” }.

three-body problem | [MECH] The problem of predicting the motions of three objects obeying Newton’s laws of motion and attracting each other according to Newton’s law of gravitation. { ‘θrɛd” bəd”də, prəb”ləm” }.

three-dimensional braiding | See through-the-thickness braiding. { ‘θrɛd” dɪm”n,chan”əl” brəd”ɪŋ” }.

three-dimensional sound | See virtual acoustics. { ‘θrɛd”də,men”ʃən”ə”sauténd” }.

three-input adder | See full adder. { ‘θrɛd” ln,put” ”æd”ər” }.

three-input subtractor | See full subtractor. { ‘θrɛd” ln,put” sab’tæk”tər” }.

three-jaw chuck | [DES ENG] A drill chuck having three serrated-face movable jaws that can grip and hold fast an inserted drill rod. { ‘θrɛd” jəʊ”chak” }.

three-junction transistor | [ELECTR] A pnp transistor having three junctions and four regions of alternating conductivity; the emitter connection may be made to the p region at the left, the base connection to the adjacent n region, and the collector connection to the n region at the right, while the remaining p region is allowed to float. { ‘θrɛd” jəŋ,shan” tran”zis”tər” }.

three-layer diode | [ELECTR] A junction diode with three conductivity regions. { ‘θrɛd”lər”di”d”oʊ”d” }.

three-phase circuit | [ELECT] A circuit energized by alternating-current voltages that differ in phase by one-third of a cycle or 120°. { ‘θrɛd” fjəz” sər”kət” }.

three-point problem | [ENG] The problem of locating the horizontal position of a point of observation from the two observed horizontal angles subtended by three known sides of a triangle. { ‘θrɛd”poɪnt” prəb”ləm” }.

three-way switch | [ELECT] An electric switch with
threshold  [BUILD]  A piece of stone, wood, or metal that lies under an outside door. [ELECTR] In a modulation system, the smallest value of carrier-to-noise ratio at the input to the demodulator for all values above which a small percentage change in the input carrier-to-noise ratio produces a substantially equal or smaller percentage change in the output signal-to-noise ratio. [ENG] The least value of a current, voltage, or other quantity that produces the minimum detectable response in an instrument or system.  

threshold frequency  [ELECTR] The frequency of incident radiant energy below which there is no photoemissive effect.  

threshold speed  [ENG] The minimum speed of current at which a particular current meter will measure at its rated reliability.  

threshold treatment  [CHEM ENG] The process of stopping a precipitation-type reaction at the threshold of precipitate formation, used in water-treatment reactions.  

threshold value  [CONT SYS] The minimum input that produces a corrective action in an automatic control system.  

threshold voltage  [ELECTR] 1. In general, the voltage at which a particular characteristic of an electronic device first appears. 2. The voltage at which conduction of current begins in a pn junction. 3. The voltage at which channel formation occurs in a metal oxide semiconductor field-effect transistor. 4. The voltage at which a solid-state lamp begins to emit light.  

throat  [DES ENG] The narrowest portion of a constricted duct, as in a diffuser or a venturi tube, specifically, a nozzle throat. [ENG] 1. The smaller end of a horn or tapered waveguide. 2. The area in a fireplace that forms the passageway from the firebox to the smoke chamber.  

throwable  [DES ENG] Of a nozzle, designed to allow a change in the velocity of the exhaust stream by changing the size and shape of the throat of the nozzle.  

throat microphone  [ENG ACOUS] A contact microphone that is strapped to the throat of a speaker and reacts directly to throat vibrations rather than to the sound waves they produce.  

throw  [ENG] The scattering of fragments in a blasting operation. [MECH ENG] The maximum diameter of the circle moved by a rotary part.  

throw-out spiral  See lead-out groove.  

thrust  [MECH] 1. The force exerted in any direction by a fluid jet or by a powered screw. 2. Force applied to an object to move it in a desired direction. [MECH ENG] The weight or pressure applied to a bit to make it cut.  

thrust bearing  [MECH ENG] A bearing which
sustains axial loads and prevents axial movement of a loaded shaft. \{\texttt{thrust\_ber-iŋ}\}

**thrust load** \[\text{MECH ENG}\] A load or pressure parallel to or in the direction of the shaft of a vehicle. \{\texttt{thrust\_lōd}\}

**thrust meter** \[\text{ENG}\] An instrument for measuring static thrust, especially of a jet engine or rocket. \{\texttt{thrust\_med-ąr}\}

**thrust yoke** \[\text{MECH ENG}\] The part connecting the piston rods of the feed mechanism on a hydraulically driven diamond-drill swivel head to the thrust block, which forms the connecting link between the yoke and the drive rod, by means of which link the longitudinal movements of the feed mechanism are transmitted to the swivel-head drive rod. Also known as back end. \{\texttt{thrust\_yōk}\}

**thumbscrew** \[\text{DES ENG}\] A screw with a head flattened in the same axis as the shaft so that it can be gripped and turned by the thumb and forefinger. \{\texttt{tham\_skri}\}

**thump** \[\text{ENG ACOUS}\] Low-frequency transient disturbance in a system or transducer characterized audibly by the vocal imitation of the word. \{\texttt{thomp}\}

**thurm** \[\text{ENG}\] To work wood across the grain with a saw and chisel in order to produce an effect similar to turning the piece on a lathe. \{\texttt{tharm}\}

**tidal lock** See entrance lock. \{\texttt{tīd\_lōk\_lāk}\}

**tidal quay** \[\text{CIV ENG}\] A quay in an open harbor or basin with sufficient depth to enable ships or square iron rod passing through or over a rock in which a naked hole will stand without disturbance in a system or transducer characterized audibly by the vocal imitation of the word. \{\texttt{tīd\_kē}\}

**tide gage** \[\text{ENG}\] A device for measuring the height of a tide; may be observed visually or may consist of an elaborate recording instrument. \{\texttt{tīd\_gā}\}

**tide gate** \[\text{CIV ENG}\] 1. A restricted passage through which water runs with great speed due to tidal action. 2. An opening through which water may flow freely when the tide sets in one direction, but which closes automatically and prevents the water from flowing in the other direction when the direction of flow is reversed. \{\texttt{tīd\_gāt}\}

**tide indicator** \[\text{ENG}\] That part of a tide gage which indicates the height of tide at any time; the indicator may be in the immediate vicinity of the tidal water or at some distance from it. \{\texttt{tīd\_\_\_i\_\_n\_dā\_kā\_dā\_rō}\}

**tide lock** See entrance lock. \{\texttt{tīd\_łāk}\}

**tide machine** \[\text{ENG}\] An instrument that computes, sometimes for years in advance, the times and heights of high and low waters at a reference station by mechanically summing the harmonic constituents of which the tide is composed. \{\texttt{tīd\_mā\_shēn}\}

**tide pole** \[\text{ENG}\] A graduated spar used for measuring the rise and fall of the tide. Also known as tide staff. \{\texttt{tīd\_pōl}\}

**tide staff** See tide pole. \{\texttt{tīd\_staf}\}

**tie** \[\text{CIV ENG}\] One of the transverse supports to which railroad rails are fastened to keep them to line, gage, and grade. \{\texttt{ELEC}\} 1. Electrical connection or strap. 2. See tie wire. \[\text{ENG}\] A beam, post, rod, or angle to hold two pieces together, a tension member in a construction. \{\texttt{tī}\}

**tie bar** \[\text{CIV ENG}\] 1. A bar used as a tie rod. 2. A rod connecting two switch rails on a railway to hold them to gage. \{\texttt{tī\_bār}\}

**tied arch** \[\text{CIV ENG}\] An arch having the horizontal reaction component provided by a tie between the skewbacks of the arch ends. \{\texttt{tīd\_ārch}\}

**tied concrete column** \[\text{CIV ENG}\] A concrete column reinforced with longitudinal bars and horizontal ties. \{\texttt{tīd\_kān\_kret\_kā\_lōm}\}

**tie-down diagram** \[\text{ENG}\] A drawing indicating the prescribed method of securing a particular item of cargo within a specific type of vehicle. \{\texttt{tī\_da\_nū\_\_dā\_a\_gram}\}

**tie-down point** \[\text{ENG}\] An attachment point provided on or within a vehicle. \{\texttt{tī\_da\_nū\_\_dā\_pōnt}\}

**tie-down point pattern** \[\text{ENG}\] The pattern of tie-down points within a vehicle. \{\texttt{tī\_\_dā\_nū\_\_dā\_pōnt\_pā\_nōt}\}

**tiers building** \[\text{CIV ENG}\] A multistory skeleton frame building. \{\texttt{tī\_\_rō\_d\_\_dā\_nū\_\_dā\_lē\_nōt}\}

**tie plate** \[\text{CIV ENG}\] A metal plate between a rail and a tie to hold the rail in place and reduce wear on the tie. \[\text{MECH ENG}\] A plate used in a furnace to connect tie rods. \{\texttt{tī\_pλāt}\}

**tier building** \[\text{CIV ENG}\] A multistory skeleton frame building. \{\texttt{tī\_\_rō\_d\_\_dā\_nū\_\_dā\_lē\_nōt}\}

**TIGA** See truncated icosahedral gravitational-wave antenna. \{\texttt{tī\_gē\_a\_r\_tī\_gā}\}

**tight** \[\text{ENG}\] 1. Unbroken, crack-free, and solid rock in which a naked hole will stand without caving. 2. A borehole made impermeable to water by cementation or casing. \[\text{MECH ENG}\] 1. Inadequate clearance or the barest minimum of clearance between working parts. 2. The absence of leaks in a pressure system. \{\texttt{tīt}\

**tight fit** \[\text{DES ENG}\] A fit between mating parts with slight negative allowance, requiring light to moderate force to assemble. \{\texttt{tīt\_fīt}\}

**tilting dozer** \[\text{MECH ENG}\] A bulldozer whose blade can be pivoted on a horizontal center pin to cut low on either side. \{\texttt{tīl\_tī\_dō\_zār}\}

**tilting idlers** \[\text{MECH ENG}\] An arrangement of idler rollers in which the top set is mounted on vertical arms which pivot on spindles set low down on the frame of the roller stool. \{\texttt{tīl\_tī\_\_dā\_lā\_rō\_zār}\}

**tilting mixer** \[\text{MECH ENG}\] A small-batch mixer consisting of a rotating drum which can be tilted to discharge the contents; used for concrete or mortar. \{\texttt{tīl\_tī\_mī\_kā\_zār}\}

**tilting-type boxcar unloader** \[\text{CIV ENG}\] A mechanism that is used to unload material such as grain from a boxcar, the car, with its door open, is held by end clamps on the specialized piece
of track and tilted 15% from the vertical and then tilted endwise 40% to the horizontal to discharge the material at one end of the car, and 40% in the opposite direction to discharge the material from the opposite end. (ˈtiltˌiŋ) [tip ˈbäks, kär ˌanˈlōd-ər]

tiltmeter  [ENG] An instrument used to measure small changes in the tilt of the earth's surface, usually in relation to a liquid-level surface or to the rest position of a pendulum. (ˈtiltˌmēd-ər)

tilt/rotate code  [ENG] A code that instructs a "golf ball" printing element which angle of tilt and rotation is needed to print a given character. (ˈtiltˌrōˌtātˌkōd)

tilt slab construction  See tilt-up construction. (ˈtiltˌsāb kānˌstrākˌshān)

tilt-up construction  [BUILD] A method for constructing concrete wall panels by casting them horizontally adjacent to their final positions and then tilting them into vertical positions after the concrete has cured. Also known as tilt slab construction. (ˈtiltˌapˌkānˌstrākˌshān)

timber connector  [ENG] A metal fastener that has a series of sharp teeth digging into the wood and is tightened with bolts to join sections of timber in heavy construction. (ˈtīmˌbār ˈkōˌnekˌtrākˌʃān)

time and material contract  [IND ENG] A contract providing for the procurement of supplies or services on the basis of direct labor hours at specified fixed hourly rates (which rates include direct and indirect labor, overhead, and profit), and material at cost. (ˈtīm ˌaˌmaˌtīrˌēˌālˌkānˌtrākt)

time and motion study  [IND ENG] Observation, analysis, and measurement of the steps in the performance of a job to determine a standard time for each performance. Also known as time-motion study. (ˈtīm ˌaˌmoˌshānˌstādˌē)

time break  [ENG] A distinctive mark shown on an exploration seismogram to indicate the exact detonation time of an explosive energy source. (ˈtīmˌbrāk)

time-change component  [ENG] A component which because of design limitations or safety is specified to be rebuilt or overhauled after a specified period of operation (for example, an engine or propeller of an airplane). (ˈtīmˌchānˌkāmˌpōˌnānt)

time-controlled system  See clock control system. (ˈtīmˌkənˌtrōldˌsisˌtām)

time formula  [IND ENG] A formula to determine the standard time of an operation as a function of one or more variables in the operation. (ˈtīmˌfōrˌmēəˈlā)

time fuse  [ENG] A fuse which contains a graduated time element to regulate the time interval after which the fuse will function. (ˈtīmˌféyūs)

time-interval radiosonde  See pulse-time-modulated radiosonde. (ˈtīmˌinˌtārˌvalˈrādˌēˌōˌsānd)

time-invariant system  [CONT SYS] A system in which all quantities governing the system’s behavior remain constant with time, so that the system’s response to a given input does not depend on the time it is applied. (ˈtīmˌinˌvērˌēˌōntˌsisˌtām)

time-motion study  See time and motion study. (ˈtīmˌˈmoˌshānˌstādˌē)

time of flight  [MECH] Elapsed time in seconds from the instant a projectile or other missile leaves a gun or launcher until the instant it strikes or bursts. (ˈtīmˌavˌˈflīt)

time-of-flight spectrometer  [ENG] Any instrument in which the speed of a particle is determined directly by measuring the time it takes to travel a measured distance. (ˈtīmˌavˌˈflītˌspēktˌtrāmˌādˌər)

timeout  [CONT SYS] A test of the reliability of robotic software in which the robot is halted if a portion of software does not function properly until the problem is corrected. (ˈtīmˌāut)

time phasing  [IND ENG] Production scheduling of components for product assembly so that each component is available at the correct time. (ˈtīmˌəˌfaˌzēˌē)

timer  [ELECTR] A circuit used in radar and in electronic navigation systems to start pulse transmission and synchronize it with other actions, such as the start of a cathode-ray sweep. [ENG]. 1. A device for automatically starting or stopping a machine or other device. 2. See interval timer. [MECH ENG] A device that controls timing of the ignition spark of an internal combustion engine at the correct time. (ˈtīmˌər)

time-sharing  [IND ENG] Division of the time required for observation, decision making, and responding by an operator among the activities or tasks that must be performed almost simultaneously. (ˈtīmˌshērˈēj)

time standard  See standard time. (ˈtīmˌstānˌdārd)

time study  [IND ENG] A work measurement technique, generally using a stopwatch or other timing device, to record the actual elapsed time for performance of a task, adjusted for any observed variance from normal effort or pace, unavoidable or machine delays, rest periods, and personal needs. (ˈtīmˌstādˌē)

time switch  [ENG] A clock-controlled switch used to open or close a circuit at one or more predetermined times. (ˈtīmˌswīch)

time system  [CONT SYS] A system of clocks and control devices, with or without a master timepiece, to indicate time at various remote locations. (ˈtīmˌsisˌtām)

time-varying system  [CONT SYS] A system in which certain quantities governing the system's behavior change with time, so that the system will respond differently to the same input at different times. (ˈtīmˌˈvērˌēˌōntˌsisˌtām)

timing  [MECH ENG] Adjustment in the relative position of the valves and crankshaft of an automobile engine in order to produce the largest effective output of power. (ˈtīmˌiŋ)

 timing belt  [DES ENG] A power transmission belt with evenly spaced teeth on the bottom side which mesh with grooves cut on the periphery
of the pulley to produce a positive, no-slip, constant-speed drive. Also known as caged belt, synchronous belt. [MECH ENG] A positive drive belt that has axial cogs molded on the underside of the belt which fit into grooves on the pulley, prevents slip, and makes accurate timing possible; combines the advantages of belt drives with those of chains and gears. Also known as positive drive belt. { 'tim-ing-belt' }

timing-belt pulley [MECH ENG] A pulley that is similar to an uncrowned flat-belt pulley, except that the grooves for the belt's teeth are cut in the pulley's face parallel to the axis. { 'tim-ing-belt-pulley' }

timing gears [MECH ENG] The gear train of reciprocating engine mechanisms for relating camshaft speed to crankshaft speed. { 'tim-ing-gears' }

timing motor [ELEC] A motor which operates from an alternating-current power system synchronously with the alternating-current frequency, used in timing and clock mechanisms. Also known as clock motor. { 'tim-ing-motor' }

Timken film strength [ENG] A test used on a gear lubricant to determine the amount of pressure the film of oil can withstand before rupturing. { 'tim-ken-film-strength' }

Timken wear test [ENG] A test used on a gear lubricant to determine its abrasive effect on gear metals. { 'tim-ken-wear-test' }

tingle [BUILD] A support used in masonry to reduce sagging in a long layer of bricks. [DES ENG] 1. A small nail. 2. A flexible metal clip used to hold a sheet of material such as glass or metal. [ENG] A patch designed to cover a hole in a boat. { 'ti-ngle' }

tinner's rivet [DES ENG] A special-purpose rivet that has a flat head, used in sheet metal work. { 'ti-ngle-rivet' }

tip [DES ENG] A piece of material secured to and differing from a cutter tooth or blade. [ELEC] The contacting part at the end of a phone plug. [ELECTR] A small protuberance on the envelope of an electron tube, resulting from the closing of the envelope after evacuation. { 'ti-p' }

tipped bit [DES ENG] A drill bit in which the cutting edge is made of especially hard material. { 'ti-ped-bit' }

tipped solid cutters [DES ENG] Cutters made of one material and having tips or cutting edges of another material bonded in place. { 'ti-ped-solid-cutters' }

tipping-bucket rain gage [ENG] A type of recording rain gage, the precipitation collected by the receiver empties into one side of a chamber which is partitioned transversely at its center and is balanced bistably upon a horizontal axis; when a predetermined amount of water has been collected, the chamber tips, spilling out the water and placing the other half of the chamber under the receiver, each tip of the bucket is recorded on a chronograph, and the record obtained indicates the amount and rate of rainfall. { 'ti-ping-bucket-rain-gage' }

tire [ENG] A continuous metal ring, or pneumatic rubber and fabric cushion, encircling and fitting the rim of a wheel. { 'ti-re' }

tire iron [DES ENG] A single metal bar having bladelike ends of various shapes to insert between the rim and the bead of a pneumatic tire to remove or replace the tire. { 'ti-re-iron' }

tirrill burner [ENG] A modification of the bun-sen burner which allows greater flexibility in the adjustment of the air-gas mixture. { 'ti-rel-burner' }

T junction [ELECTR] A network of waveguides with three waveguide terminals arranged in the form of a letter T; in a rectangular waveguide a symmetrical T junction is arranged by having either all three broadsides in one plane or two broadsides in one plane and the third in a per-pendicular plane. { 't-junction' }

TML See transistor-transistor logic

TME See metric-technical unit of mass.

to-and-fro ropeway See jib back. [ 'tı-an-fro-rope-way' ]

toe [CIV ENG] The part of a base of a dam or retaining wall on the side opposite to the retained material. { 'tı-e' }

toeborder [BUILD] A board placed around a platform or on a sloping roof to prevent personnel or materials from falling off. [ENG] A support or reinforcement that forms the lowest vertical face of a cabinet or similar installation, at toe level, and is frequently recessed. { 'tı-e-board' }

toe cut [ENG] In underground blasting, the cut obtained by the use of toe holes. { 'tı-e-cut' }

toe hole [ENG] A blasting hole, usually drilled horizontally or at a slight inclination into the base of a bank, bench, or slope of a quarry or open-pit mine. { 'tı-e-hole' }

toe-in [MECH ENG] The degree (usually expressed in fractions of an inch) to which the forward part of the front wheels of an automobile are closer together than the rear part, measured at hub height with the wheels in the normal “straight ahead” position of the steering gear. { 'tı-e-in' }

toenailing [ENG] The technique of driving a nail at an angle to join two pieces of lumber. { 'tı-e-nailing' }

toe-out [MECH ENG] The outward inclination of the wheels of an automobile at the front on turns due to setting the steering arms at an angle. { 'tı-e-out' }

toeplate See kickplate. { 'tı-e-plate' }

toe-to-toe drilling [ENG] The drilling of vertical large-diameter blasting holes in quarries and opencast pits. { 'tı-e-to-toe-drilling' }

toe wall [CIV ENG] A low wall constructed at the bottom of an embankment to prevent slippage or spreading of the soil. { 'tı-e-toe-wall' }

toggle [ELECTR] To switch over to an alternate state, as in a flip-flop. [MECH ENG] A form of jointed mechanism for the amplification of forces. { 'tı-e-toggle' }

toggle bolt [DES ENG] A bolt having a nut with a pair of pivotal wings that close against a spring; wings open after emergence through a hole or
passage in a thin or hollow wall to fasten the unit securely. (ˈtāɡ-əl, bōlt)

toggle press [MECH ENG] A mechanical press in which a toggle mechanism actuates the slide. (ˈtāɡ-əl, pレス)

toggle switch [ELEC] A small switch that is operated by manipulation of a projecting lever that is combined with a spring to provide a snap action for opening or closing a circuit quickly. [ELECTR] An electronically operated circuit that holds either of two states until changed. (ˈtāɡəl, swɪtʃ)

tolerance [DES ENG] The permissible variations in the dimensions of machine parts. [ENG] A permissible deviation from a specified value, expressed in actual values or more often as a percentage of the nominal value. (ˈtɔːlərəns)

tolerance chart [DES ENG] A chart indicating graphically the sequence in which dimensions must be produced on a part so that the finished product will meet the prescribed tolerance limits. (ˈtɔːlərəns, ˈtʃɑːt)

tolerance limits [DES ENG] The extreme values (upper and lower) that are permitted by the tolerance. (ˈtɔːlərəns, ˈlɪməts)

tolerance unit [DES ENG] A unit of length used to express the degree of tolerance allowed in fitting cylinders into cylindrical holes, equal, in micrometers, to 0.45 D^1/3 + 0.001 D, where D is the cylinder diameter in millimeters. (ˈtɔːlərəns, ˈjʊərətəns)

[MECH ENG] A unit of volume of sea freight, equal to 40 cubic feet or approximately 1.1327 cubic meters. Also known as freight ton, measurement ton, shipping ton. [MECH] 1. A unit of weight in common use in the United States, equal to 2000 pounds or 907.18474 kilogram-force. Also known as just ton, net ton, short ton. 2. A unit of mass in common use in the United Kingdom equal to 2240 pounds, or to 1016.0469088 kilogram-force. Also known as gross ton, long ton. 3. A unit of weight in Troy measure, equal to 2000 Troy pounds, or to 787.4834432 kilogram-force. 4. See tonne. [MECH ENG] A unit of refrigerating capacity, that is, of rate of heat flow, equal to the rate of extraction of latent heat when one short ton of ice of specific latent heat 144 international table British thermal units per pound is produced from water at the same temperature in 24 hours, equal to 200 British thermal units per minute, or to approximately 3516.85 watts. Also known as standard ton. (ˈtɔːn)

tonal [MECH] A unit of force equal to the force which will impart an acceleration of 1 foot per second to a mass of 1 long ton; equal to approximately 309.6911 newtons. (ˈtɔːndəl)

tongs [DES ENG] Any of various devices for holding, handling, or lifting materials and consisting of two legs joined eccentrically by a pivot or spring. (ˈtɑŋkə)

tongue and groove [DES ENG] A joint in which a projecting rib on the edge of one board fits into a groove in the edge of another board. (ˈtɑŋkənˈɡruː)
toolmaker’s vise

tools are positioned correctly in advance for any tasks to be carried out. { töl ’léngk, käm-pən’sä-shən }

**toolmaker’s vise** See universal vise. { töl ,mäk-ər-əz, yəz }

**tool offset** [MECH ENG] The adjustment of tool positions in machines to compensate for their wear, finishing, or displacement from an axis. { töl ’öf-set }

**tool post** [MECH ENG] A device to clamp and position a tool holder on a machine tool. { töl ,pōst }

**tooth** [DES ENG] 1. One of the regular projections on the edge or face of a gear wheel. 2. An angular projection on a tool or other implement, such as a rake, saw, or comb. { tüt h }

**tooth point** [DES ENG] The chamfered cutting edge of the blade of a file mill. { tüt h ’pōint }

top [MECH] A rigid body, one point of which is held fixed in an inertial reference frame, and which usually has an axis of symmetry passing through this point; its motion is usually studied when it is spinning rapidly about the axis of symmetry. { tāp }

**top dead center** [MECH ENG] The dead-center position of an engine piston and its crankshaft axis around which topple occurs. Also known as tumble axis. { tāp-al, ak-səs }

**top rail** [BUILD] The uppermost horizontal member of a unit of framing, such as a door or a sash. { tāp ,rāl }

**top steam** [CHEM ENG] Steam admitted near the top of a shell still to purge the still, and to prevent a vacuum from forming when pumping out the liquid contents. { tāp ,stēm }

tor See pascal. { tōr }

torch [BUILD] To apply lime mortar under the top edges of roof tiles or slates. [ENG] A gas burner used for brazing, cutting, or welding. { tōrkch }

**tornado cellar** See cyclone cellar. { tōr’nəd-ō sel-ər }

**toromatic transmission** [MECH ENG] A semiautomatic transmission, it contains a compound planetary gear train with a torque converter. { tōr’ə-mäd-ik tranz’mish-ən }

torpedo [ENG] An encased explosive charge slid, lowered, or dropped into a borehole and exploded to clear the hole of obstructions or to open communications with an oil or water supply. Also known as bullet. { tōr’pēd-ō }

torque [MECH] 1. For a single force, the cross product of a vector from some reference point to the point of application of the force with the force itself. Also known as moment of force. Rotation moment. 2. For several forces, the vector sum of the torques (first definition) associated with each of the forces. { tōrk }

**torque arm** [MECH ENG] In automotive vehicles, an arm to take the torque of the rear axle. { tōrk ,ārm }

**torque-coil magnetometer** [ENG] A magnetometer that depends for its operation on the torque developed by a known current in a coil that can turn in the field to be measured. { tōrk ,kōil ,mág-nə-tām-əd-ər }

**torque converter** [MECH ENG] A device for changing the torque speed or mechanical advantage between an input shaft and an output shaft. { tōrk kan’yərd-ər }

**torque-load characteristic** [ENG] For electric motors, the armature torque developed versus the load on the motor at constant speed. { tōrk ,lōd ,kar-ik-tər-ris-tik }

**torquemeter** [ENG] An instrument to measure torque. { tōrk ,mēd-ər }

**torque reaction** [MECH ENG] On a shaft-driven vehicle, the reaction between the bevel pinion with its shaft (which is supported in the rear axle housing) and the bevel ring gear (which is fastened to the differential housing) that tends to rotate the axle housing around the axle instead of rotating the axle shafts alone. { tōrk re,ək-shən }

**torque ripple** See cog. { tōrk ,rīp-əl }

**torque-tube flowmeter** [ENG] A liquid-flow measurement device in which a flexible torque tube transmits bellows motion (caused by differential pressure from the liquid flow through the
pipe) to the recording pen arm. \( \text{torque} \) to 'flō ,méd-ar.

**torque-type viscometer** [ENG] A device that measures liquid viscosity by the torque needed to rotate a vertical paddle submerged in the liquid; used for both Newtonian and non-Newtonian liquids and for suspensions. \( \text{torque} \) to 'flō viškám-ad-ar.

**torque-winding diagram** [MECH ENG] A diagram showing how the winding load on a winch drum varies and is used to decide the method of balancing needed; made by plotting the turning moment in pounds per foot on the vertical axis against time, or revolutions or depth on the horizontal axis. \( \text{torque} \) to 'flō dí-a\( \text{gram} \).

**torque wrench** [ENG] 1. A hand or power tool used to turn a nut on a bolt that can be adjusted to deliver a predetermined amount of force to the bolt when tightening the nut. 2. A wrench that measures torque while being turned. \( \text{torque} \) to \( \text{rench} \).

**tort** [MECH] A unit of pressure, equal to \( 1/760 \) sh atm; approximately equal to \( 133.3224 \) pascals. \( \text{tort} \).

**Torricellian barometer** See mercury barometer. \( \text{Torr-åc-chë-lē-an} \) bår'am-ad-ar.

**torsel** [BUILD] A section of wood, stone, or steel that supports one end of a beam or joist and distributes the load. \( \text{tòr-sal} \).

**torsimeter** [MECH ENG] An instrument which measures power transmitted by a rotating shaft; consists of angular scales mounted around the shaft from which twist of the loaded shaft is determined. Also known as torsionmeter. \( \text{tɔr-shëa'm-ad-ar} \).

**tortion** [MECH] A twisting deformation of a solid body about an axis in which lines that were initially parallel to the axis become helices. \( \text{tòr-shán} \).

**torsional angle** [MECH] The total relative rotation of the ends of a straight cylindrical bar when subjected to a torque. \( \text{tòr-shàn-al} \) 'ag-gal.'

**torsional compliance** [MECH] The reciprocal of the torsional rigidity. \( \text{tòr-shàn-al} \) kom-pli-'a\( ë \).

**torsional hysteresis** [MECH] Dependence of the torques in a twisted wire or rod not only on the present torsion of the object but on its previous history of torsion. \( \text{tòr-shàn-al} \) histo-rë-sås.

**torsional modulus** [MECH] The ratio of the torsional rigidity of a bar to its length. Also known as modulus of torsion. \( \text{tòr-shàn-al} \) 'máj-i-\( \dot{a} \) -lås.

**torsional pendulum** [MECH] A device consisting of a disk or other body of large moment of inertia mounted on one end of a torsionally flexible elastic rod whose other end is held fixed, if the disk is twisted and released, it will undergo simple harmonic motion, provided the torque in the rod is proportional to the angle of twist. Also known as torsion pendulum. \( \text{tòr-shàn-al} \) 'pen-\( \dot{i} \) å-låm.'

**torsional rigidity** [MECH] The ratio of the torque applied about the centroidal axis of a bar at one end of the bar to the resulting torsional angle, when the other end is held fixed. \( \text{tòr-shàn-al} \) 'lî[j]-då-\( \dot{a} \) ́.

**torsional vibration** [MECH] A periodic motion of a shaft in which the shaft is twisted about its axis first in one direction and then in the other, this motion may be superimposed on rotational or other motion. \( \text{tòr-shàn-al} \) vîl-brå-\( \dot{a} \) ěn.

**torsion balance** [ENG] An instrument, consisting essentially of a straight vertical torsion wire whose upper end is fixed while a horizontal beam is suspended from the lower end; used to measure minute gravitational, electrostatic, or magnetic forces. \( \text{tòr-shàn} \) bal-\( \ddot{a} \)ns.

**torsion bar** [MECH ENG] A spring flexed by twisting about its axis; found in the spring suspension of truck and passenger car wheels, in production machines where space limitations are critical, and in high-speed mechanisms where inertia forces must be minimized. \( \text{tòr-shàn} \) bår.

**torsion damper** [MECH ENG] A damper used on automobile internal combustion engines to reduce torsional vibration. \( \text{tòr-shàn} \) šam-për.

**torsion function** [MECH] A harmonic function, \( \phi(x, y) = w't \), expressing the warping of a cylinder undergoing torsion, where the \( x \), \( y \), and \( z \) coordinates are chosen so that the axis of torsion lies along the \( z \) axis, \( w \) is the \( z \) component of the displacement, and \( r \) is the torsion angle. Also known as warping function. \( \text{tòr-shàn} \) šjôk-shàn.

**torsion galvanometer** [ENG] A galvanometer in which the force between the fixed and moving systems is measured by the angle through which the supporting head of the moving system must be rotated to bring the moving system back to its zero position. \( \text{tòr-shàn} \) šal-vân'am-ad-ar.

**torsion hygrometer** [ENG] A hygrometer in which the rotation of the hygrometric element is a function of the humidity, such hygrometers are constructed by taking a substance whose length is a function of the humidity and twisting or spiraling it under tension in such a manner that a change in length will cause a further rotation of the element. \( \text{tòr-shàn} \) ši-gré'am-ad-ar.

**torsionmeter** See torsimeter. \( \text{tòr-shàn} \) me-d-ar.

**torsion pendulum** See torsional pendulum. \( \text{tòr-shàn} \) šên-jå-låm.

**torsion-string galvanometer** [ENG] A sensitive galvanometer in which the moving system is suspended by two parallel fibers that tend to twist around each other. \( \text{tòr-shàn} \) štîn-gal-vân'am-ad-ar.

**total air** [ENG] The actual quantity of air supplied for combustion of fuel in a boiler, expressed as a percentage of theoretical air. \( \text{tòd} \) 'er.

**total coincidence** [MECH ENG] The condition in which all the joints of a robot become locked in position. \( \text{tòd} \) šon-in-säd-åns.

**total heat** See enthalpy. \( \text{tòd} \) 'hît.
total pressure

**total pressure**  [MECH] The gross load applied on a given surface.  \{tôd-ôl \ˈpresh-ər\}

**total quality management**  [SYS ENG] A philosophy and set of guiding concepts that provides a comprehensive means of improving total organization performance and quality by examining each process through which work is done in a systematic, integrated, consistent, organization-wide manner. Abbreviated TQM.  \{tôd-ôl \ˈkwé-ləd-ə \ˌmän-ij-\ˌmënt\}

**total radiation pyrometer**  [ENG] A pyrometer which focuses heat radiation emitted by a hot object on a detector (usually a thermopile or other thermal type detector), and which responds to a broad band of radiation, limited only by absorption of the focusing lens, or window and mirror.  \{tôd-ôl \ˈrad-ə-\ˌshən plˈträm-

**touch feedback**  [ENG] A type of force feedback in which servos provide the manipulator fingers with a sense of resistance when an object is grasped, so that the operator does not crush the object.  \{təch \ˈfēd,bak\}

**touch sensor**  [CONT SYS] A device such as a small, force-sensitive switch that uses contact to generate feedback in robotic systems.  \{təch \ˈsən-sər\}

**toughness**  [MECH] A property of a material capable of absorbing energy by plastic deformation, intermediate between softness and brittleness.  \{təf-nəs\}

**tow**  [ENG] 1. To haul by a rope or chain, for example, to haul a disabled ship by another vessel or an automotive vehicle by another vehicle.  \{tō\}

2. To propel by pushing, as a tugboat piloting a ship.  \{təp\}

**towbar**  [ENG] An element which connects to a vehicle that is not equipped with an integral drawbar, for the purpose of towing or moving the vehicle.  \{tōˌbär\}

**towed load**  [MECH] The weight of a carriage, trailer, or other equipment towed by a prime mover.  \{tōd \ˈlōd\}

**tower**  [CHEM ENG] A vertical, cylindrical vessel used in chemical and petroleum processing to increase the degree of separation of liquid mixtures by distillation or extraction. Also known as column.  [ENG] A concrete, metal, or timber structure that is relatively high for its length and width, and used for various purposes, including the support of electric power transmission lines, radio and television antennas, and rockets and missiles prior to launching.  \{təʊˌər\}

**tower bolt** See barrel bolt.  \{təʊˌərˌbəlt\}

**tower crane**  [CIV ENG] A crane mounted on top of a tower which is sometimes incorporated in the frame of a building.  \{təʊˌərˌkrän\}

**towing tank** See model basin.  \{tōˌing \ˈtaŋk\}

**Townsend avalanche** See avalanche.  \{təʊnˌnənˌ\ˌəvəlnə \ˈlanch\}

**TPR** See airborne profile recorder

**TQM** See total quality management

**trace**  [ELECTR] The visible path of a moving spot on the screen of a cathode-ray tube. Also known as line.  [ENG] The record made by a recording device, such as a seismometer or electrocardiograph.  \{trás\}

**trace heating**  [ENG] Heating the layer between insulation and pipes in an insulated pipework system to reduce viscosity and thereby facilitate flow of the liquid.  \{trás \ˈhēd-\ˌij\}

**tracer**  [ENG] A thread of contrasting color woven into the insulation of a wire for identification purposes.  \{trásˌər\}

**tracer gas**  [ENG] In vacuum testing for leaks, a gas emitting through a leak in a pressure system and subsequently conducted into the detector.  \{trásˌər \ˌgæs\}

**tracer milling**  [MECH ENG] Cutting a duplicate of a three-dimensional form by using a mastic form to direct the tracer-controlled cutter.  \{trásˌərˌmɪlŋ\}

**tracing distortion**  [ENG ACOUS] The nonlinear distortion introduced in the reproduction of a mechanical recording because the curve traced by the motion of the reproducing stylus is not an exact replica of the modulated groove.  \{trásˌɪŋ \ˌdɪˌstɔr-\ˌʃən\}

**track**  [DES ENG] As applied to a pattern of setting diamonds in a bit crown, an arrangement of diamonds in concentric circular rows in the bit crown, with the diamonds in a specific row following in the track cut by a preceding diamond.  [ELECTR] 1. A path for recording one channel of information on a magnetic tape, drum, or other magnetic recording medium, the location of the track is determined by the recording equipment rather than by the medium.  2. The trace of a moving target on a plan-position-indicator radar screen or an equivalent plot.  [ENG] 1. The groove cut in a rock by a diamond in the crown of a bit.  2. A pair of parallel metal rails for a railway, railroad, tramway, or for any wheeled vehicle.  [MECH ENG] 1. The slide or rack on which a diamond-drill swivel head can be moved to positions above and clear of the collar of a borehole.  2. A crawler mechanism for earth-moving equipment. Also known as crawler track.  \{trak\}

**track cable**  [ENG] Steel wire rope, usually a locked-coil rope which supports the wheels of the carriers of a cableway.  \{trakˌˌkāˌbāl\}

**track gage**  [CIV ENG] The width between the rails of a railroad track. In the United States the standard gage is 4 feet 8½ inches.  \{trakˌˌgā\}

**track hopper**  [ENG] A hopper-shaped receiver mounted beside or below railroad tracks, into which railroad boxcars or bottom-dump cars are discharged, used for solid materials.  \{trakˌˌˌhāpˌər\}

**tracking**  [ELEC] A leakage or fault path created across the surface of an insulating material when a high-voltage current slowly but steadily forms a carbonized path.  [ELECTR] The condition in which all tuned circuits in a receiver accurately follow the frequency indicated by the tuning dial over the entire tuning range.  [ENG] 1. A motion given to the major lobe of a radar or radio antenna such that some preassigned moving target in space is always within the major lobe.
2. The process of following the movements of an object, may be accomplished by keeping the reticle of an optical system or a radar beam on the object, by plotting its bearing and distance at frequent intervals, or by a combination of techniques. [ENG ACOUS] 1. The following of a groove by a phonograph needle. 2. Maintaining the same ratio of loudness in the two channels of a stereophonic sound system at all settings of the ganged volume control. {traccion meter} tracking error [ENG ACOUS] Deviation of the vibration axis of a phonograph pickup from tangency with a groove; true tangency is possible only for one groove when the pickup arm is pivoted; the longer the pickup arm, the less is the tracking error. {traccion error} tracking jitter [ENG] Minor variations in the pointing of an automatic tracking radar. {traccion jitter} tracking network [ENG] A group of tracking stations whose operations are coordinated in tracking objects through the atmosphere or space. {traccion network} tracking problem [CONT SYS] The problem of determining a control law which when applied to a dynamical system causes its output to track a given function; the performance index is in many cases taken to be of the integral square error variety. {traccion problem} tracking radar [ENG] Radar used to monitor the flight and obtain geophysical data from space probes, satellites, and high-altitude rockets. {traccion radar} tracking station [ENG] A radio, radar, or other station set up to track an object moving through the atmosphere or space. {traccion station} tracking system [ENG] Apparatus, such as tracking radar, used in following and recording the position of objects in the sky. {traccion system} trackshifter [ENG] A machine or appliance used to shift a railway track laterally. {traccion shifter} traction [MECH] Pulling friction of a moving body on the surface on which it moves. {traction} traction-control system [MECH ENG] An acceleration sensor-control system which, when a driving tire has no traction, slows the wheel movement by braking or reduces the engine speed and torque if braking alone will not prevent wheel spin. {traccion-shan} traction meter [ENG] A load-sensing device placed between a locomotive and the car immediately behind it to measure pulling force exerted by the locomotive. {traccion shan} traction tube [ENG] A device for measuring the minimum water velocities capable of moving various sizes of sand grains, it consists of a horizontal glass tube half-filled with sand. {traccion shan} tractor [MECH ENG] 1. An automotive vehicle having four wheels or a caterpillar tread used for building construction or construction implements. 2. The front pulling section of a semitrailer. Also known as truck-tractor. {traccion tar} tractor drill [MECH ENG] A drill having a crawler mounting to support the feed-guide bar on an extendable arm. {traccion tar drill} tractor gate [CIV ENG] A type of outlet control gate used to release water from a reservoir, there are two types, roller and wheel. {traccion tar gate} tractor loader [MECH ENG] A tractor equipped with a tipping bucket which can be used to dig and elevate soil and rock fragments to dump at truck height. Also known as shovel dozer, tractor shovel. {traccion tar jod-or} tractor shovel See tractor loader. {traccion tar shav-al} traffic [ENG] The passage or flow of vehicles, pedestrians, ships, or planes along defined routes such as highways, sidewalks, sea lanes, or air lanes. {traffic} trafficability [CIV ENG] Capability of terrain to bear traffic, or the extent to which the terrain will permit continued movement of any or all types of traffic. {traffic-ability} traffic control [ENG] Control of the movement of vehicles, such as airplanes, trains, and automobiles, and the regulatory mechanisms and systems used to exert or enforce control. {traffic control} traffic cop [CONT SYS] The portion of a programmable controller’s executive program concerned with input/output. {traffic cop} traffic density [CIV ENG] The average number of vehicles that occupy 1 mile or 1 kilometer of road space, expressed in vehicles per mile or per kilometer. {traffic density} traffic engineering [CIV ENG] The determination of the required capacity and layout of highway and street facilities that can safely and economically serve vehicular movement between given points. {traffic engineering} traffic flow [CIV ENG] The total number of vehicles passing a given point in a given time, expressed as vehicles per hour. {traffic flow} traffic noise [ENG] The general disturbance in sonar transmissions which is due to ships but is not associated with a specific vessel. {traffic noise} traffic recorder [ENG] A mechanical counter or recorder used to determine traffic movements (hourly variations and total daily volumes of traffic at a point) on an existing route; the air-impulse counter, magnetic detector, photoelectric counter, and radar detector are used. {traffic recorder} traffic signal [CIV ENG] With the exception of traffic signs, any power-operated device for regulating, directing, or warning motorists or pedestrians. {traffic signal} T rail [CIV ENG] A rail shaped like a T in cross section due to a wide head, web, and flanged base. {T rail} trailer [ELECTR] A bright streak at the right of a dark area or dark line in a television picture, or a dark area or streak at the right of a bright part, usually due to insufficient gain at low video frequencies. [MECH ENG] The section of a
trail formation

A caliper having one on another. { 'trä-fər }

trail formation [ENG] Vehicles proceeding one behind the other at designated intervals. Also known as column formation. { 'trål för, mä-shan }

trailing edge [ELECTR] The major portion of the decay of a pulse. { 'trä-liŋ eį̂ } 

train [ENG] To aim or direct a radar antenna in azimuth. { trän }

training aid [ENG] Any item which is developed or procured primarily to assist in training and the process of learning. { 'trä-nil iŋ ,äd } 

training data [CONT SYS] Data entered into a robot’s computer at the beginning of an operation. { 'trak-sə-jek-trē } 

training wall [CIV ENG] A wall built along the bank of a river or estuary parallel to the direction of flow to direct and confine the flow. { 'trak-nil [wol ] }

train shed [CIV ENG] 1. A structure to protect trains from weather. 2. The part of a railroad station that covers the tracks. { 'trak-nil ,shed } 

trajectory [MECH] The curve described by an object moving through space, as of a meteor through the atmosphere, a planet around the sun, a projectile fired from a gun, or a rocket in flight. { 'trak-sə-jek-trē } 

trajectory control [CONT SYS] A type of continuous-path control in which a robot’s path is calculated based on mathematical models of joint acceleration, arm loads, and actuating signals. { 'trak-sə-jek-trē kan ,trak-nil } 

trajectory-measuring system [ENG] A system used to provide information on the spatial position of an object at discrete time intervals throughout a portion of the trajectory or flight path. { 'trak-sə-jek-trē məzeh -ə-rijk ,sī,tam } 

trammel [ENG] A device consisting of a bar, each of whose ends is constrained to move along one of two perpendicular lines, used in drawing ellipses and in the Rowland mounting. { tram-nil } 

tramway [MECH ENG] An overhead rail, rope, or cable on which wheeled cars run to convey a load. { tram-wa } 

transceiver [ELECTR] A radio transmitter and receiver combined in one unit and having switching arrangements such as to permit both transmitting and receiving. Also known as transmitter-receiver. { tram -sē-var } 

transcription [ENG ACOUS] A recording of a complete radio program, made especially for broadcast purposes. Also known as electrical transcription. { tranz'krip-shən } 

transducer [ENG] Any device or element which converts an input signal into an output signal of a different form; examples include the microphone, phonograph pickup, loudspeaker, barometer, photoelectric cell, automobile horn, doorbell, and underwater sound transducer. { tranz 'dī -var } 

transfer caliper [DES ENG] A caliper having one leg which can be opened (or closed) to remove the instrument from the piece being measured; used to measure inside recesses or over projections. { 'trak-fər ,kāl-ə-par } 

transfer case [MECH ENG] In a vehicle with more than one driving axle, a housing fitted with gears that distribute the driving power among the axles. { 'trak-fər ,kās } 

transfer chamber [ENG] In plastics processing, a vessel in which thermosetting plastic is softened by heat and pressure before being placed in a closed mold for final curing. { 'trak-fər ,chám-bar } 

transfer chute [ENG] A chute used at a transfer point in a conveyor system, the chute is designed with a curved base or some other feature so that the load be discharged in a centralized stream and in the same direction as the receiving conveyor. { 'trak-fər ,shüt } 

transfer constant [ENG] A transducer rating, equal to one-half the natural logarithm of the complex ratio of the product of the voltage and current entering a transducer to that leaving the transducer when the latter is terminated in its image impedance, alternatively, the product may be that of force and velocity or pressure and volume velocity; the real part of the transfer constant is the image attenuation constant, and the imaginary part is the image phase constant. Also known as transfer factor. { 'trak-fər ,kän-stant } 

transfer factor See transfer constant. { 'trak-fər ,fak-tər } 

transfer function [CONT SYS] The mathematical relationship between the output of a control system and its input: for a linear system, it is the Laplace transform of the output divided by the Laplace transform of the input under conditions of zero initial-energy storage. { 'trak-fər ,̣lǎk-shən } 

transfer grille [ENG] In an air-conditioning system, a grille that permits air to flow from one space to another, may be one of a pair if installed on opposite sides of a wall or door. { 'trak-fər ,̣gril } 

transfer machine [MECH ENG] 1. Equipment that moves parts from one production location in a factory to another. 2. A device that holds a workpiece and moves it automatically through the stages of a manufacturing process. { 'trak-fər ma-shən } 

transfer matrix [CONT SYS] The generalization of the concept of a transfer function to a multi-variable system; it is the matrix whose product with the vector representing the input variables yields the vector representing the output variables. { tranz-fər ,mə-təriks } 

transfer-matrix method [MECH] A method of analyzing vibrations of complex systems, in which the system is approximated by a finite number of elements connected in a chainlike manner, and matrices are constructed which can be used to determine the configuration and forces acting on one element in terms of those on another. { tranz-fər ,mə-təriks ,meth-əd } 

transfer molding [ENG] Molding of thermosetting materials in which the plastic is softened;
by heat and pressure in a transfer chamber, then forced at high pressure through suitable sprues, runners, and gates into a closed mold for final curing. \( \text{transnz-far, móld-shô} \)

**transfer ratio** [ENG] From one point to another in a transducer at a specified frequency, the complex ratio of the generalized force or velocity at the second point to the generalized force or velocity applied at the first point; the generalized force or velocity includes not only mechanical quantities, but also other analogous quantities such as acoustical and electrical; the electrical quantities are usually electromotive force and current. \( \text{transnz-far, và-shô} \)

**transfer register** [ENG] A transfer grille fitted with a mechanism for controlling the volume of airflow. \( \text{transnz-far, rej-à-star} \)

**transfer robot** [CONT SYS] A fixed-sequence robot that moves parts from one location to another. \( \text{transnz-far, ro-bat} \)

**transfer unit** [CHEM ENG] The relationship between the overall rate coefficient (for whatever transfer operation is being calculated), column volume, and fluid volumetric flow rate in fixed-bed sorption operations. \( \text{transnz-far, yù-nát} \)

**transformation** [ELEC] For two networks which are equivalent as far as conditions at the terminals are concerned, a set of equations giving the admittances or impedances of the branches of one circuit in terms of the admittances or impedances of the other. \( \text{transnz-far, mà-shan} \)

**transformer loss** [ELEC] Ratio of the signal power that an ideal transformer of the same impedance ratio would deliver to the load impedance, to the signal power that the actual transformer delivers to the load impedance, this ratio is usually expressed in decibels. \( \text{transnz-fór-mar, ìn-s} \)

**transformer substation** [ELEC] An electric power substation whose equipment includes transformers. \( \text{transnz-fór-mar, sàb, stà-shan} \)

**transient grating photoacoustics** Ser impulse stimulated thermal scattering. \( \text{transinz-ànt, ín-grád-ìj, fòd-ò-àk’pi-stiks} \)

**transillumination** [ENG] 1. Indirect lighting on a console panel that uses edge and backlighting techniques on clear, fluorescent, or layered plastic materials. 2. Transmission of light through sections of material in order to enhance inspection for deviations in quality. \( \text{transnz-ò, lù-mà-ín-shan} \)

**transist ance** [ELECTR] The characteristic that makes possible the control of voltages or currents so as to accomplish gain or switching action in a circuit; examples of transistance occur in transistors, diodes, and saturable reactors. \( \text{transnz-íns-tans} \)

**transistor** [ELECTR] An active component of an electronic circuit consisting of a small block of semiconducting material to which at least three electrical contacts are made, usually two closely spaced rectifying contacts and one ohmic (non-rectifying) contact, it may be used as an amplifier, detector, or switch. \( \text{transnz-ír-tar} \)

**transistor amplifier** [ELECTR] An amplifier in which one or more transistors provide amplification comparable to that of electron tubes. \( \text{transnz-ír-tar, ám-plà-ft-ar} \)

**transistor biasing** [ELECTR] Maintaining a direct-current voltage between the base and some other element of a transistor. \( \text{transnz-ír-tar, bi-as-ìj} \)

**transistor characteristics** [ELECTR] The values of the impedances and gains of a transistor. \( \text{transnz-ír-tar, kàr-ik-tà, ríz-tiks} \)

**transistor chip** [ELECTR] An unencapsulated transistor of very small size used in microcircuits. \( \text{transnz-ír-tar, chip} \)

**transistor circuit** [ELECTR] An electric circuit in which a transistor is connected. \( \text{transnz-ír-tar, sàr-kàt} \)

**transistor gain** [ELECTR] The increase in signal power produced by a transistor. \( \text{transnz-ír-tar, gàn} \)

**transistor input resistance** [ELECTR] The resistance across the input terminals of a transistor stage. Also known as input resistance. \( \text{transnz-ír-tar, ín-pùt, rí, zìs-tans} \)

**transistor-transistor logic** [ELECTR] A logic circuit containing two transistors, for driving large output capacitances at high speed. Abbreviated TTL. \( \text{transnz-ír-tar, tran-zìr-tar, l’áj-ik} \)

**transit** [ENG] 1. A surveying instrument with the telescope mounted so that it can measure horizontal and vertical angles. Also known as transit theodolite. 2. To reverse the direction of the telescope of a transit by rotating 180° about its horizontal axis. Also known as plunge. \( \text{trans-òt} \)

**transit circle** [ENG] A type of astronomical transit instrument having a micrometer eyepiece that has an extra pair of moving wires perpendicular to the vertical set to measure the zenith distance or declination of the celestial object in conjunction with readings taken from a large, accurately calibrated circle attached to the horizontal axis. Also known as meridian circle; meridian transit. \( \text{trans-òt, sàr-kàl} \)

**transit declinometer** [ENG] A type of declinometer, a surveyor's transit, built to exacting specifications with respect to freedom from traces of magnetic impurities and quality of the compass needle, has a 17-power telescope for sight on a mark and for making solar and stellar observations to determine true directions. \( \text{trans-òt, dek-la’nàm-òd-ar} \)

**transition** [THERMO] A change of a substance from one of the three states of matter to another. \( \text{transÌz-ìsh-an} \)

**transitional fit** [DES ENG] A fit with varying clearances due to specified tolerances on the shaft and sleeve or hole. \( \text{transÌz-ìsh-an-òl, fit} \)

**transit curve** See easement curve. \( \text{transÌz-ìsh-an, karv} \)

**transit factor** See reflection factor. \( \text{transÌz-ìsh-an, fakt-ar-tar} \)

**transition frequency** [ENG ACOUS] The frequency corresponding to the intersection of the asymptotes to the constant-amplitude and
constant-velocity portions of the frequency-response curve for a disk recording, this curve is plotted with output-voltage ratio in decibels as the ordinate, and the logarithm of the frequency as the abscissa. Also known as crossover frequency, turnover frequency. \( \text{trans'zish-ən, trə'kwən-sə} \)

**transition loss**  \[\text{ELEC} \] At a junction between a source and a load, the ratio of the available power to the power delivered to the load. \( \text{trans'zish-ən, lɔs} \)

**transition point**  \[\text{THERMO} \] Either the temperature at which a substance changes from one state of aggregation to another (a first-order transition), or the temperature of culmination of a gradual change, such as the lambda point, or Curie point (a second-order transition). Also known as transition temperature. \( \text{trans'zish-ən, pɔint} \)

**transition temperature**  \[\text{Ser} \] transition point. \( \text{trans'zish-ən, tem-prə-char} \)

**transit survey**  \[\text{ENG} \] A ground surveying method in which a transit instrument is set up at a control point and oriented, and directions and distances to observed points are recorded. \( \text{trans-at, ˈsər, və} \)

**transit theodolite**  \[\text{Ser} \] transit. \( \text{trans-at ˌthé-ad-əl, it} \)

**translocation**  \[\text{MECH} \] The linear movement of a point in space without any rotation. \( \text{trans'la-shən} \)

**translational motion**  \[\text{MECH} \] Motion of a rigid body in such a way that any line which is imagined rigidly attached to the body remains parallel to its original direction. \( \text{trans'la-shən} \)

**transmembrane distillation**  \[\text{Ser} \] membrane distillation. \( \text{trans'məm-brən, dis-tə-lə-ʃən} \)

**transmissibility**  \[\text{MECH} \] A measure of the ability of a system either to amplify or to suppress an input vibration, equal to the ratio of the response amplitude of the system in steady-state forced vibration to the excitation amplitude; the ratio may be in forces, displacements, velocities, or accelerations. \( \text{trans,mis'əbil-əd-ər} \)

**transmission**  \[\text{ELECTR} \] 1. The process of transferring a signal, message, picture, or other form of intelligence from one location to another location by means of wire lines, radio, light beams, infrared beams, or other communication systems. 2. A message, signal, or other form of intelligence that is being transmitted. \[\text{MECH, ENG} \] The gearing system by which power is transmitted from the engine to the live axle in an automobile. Also known as gearbox. \( \text{trans'mish-ən} \)

**transmission access**  \[\text{ELEC} \] The use of electric power lines and other power transmitting facilities by parties other than the owners of the lines. Also known as common carriage. \( \text{trans'mish-ən, ək'ses} \)

**transmission dynamometer**  \[\text{ENG} \] A device for measuring torque and power (without loss) between a propulsion power plant and the driven mechanism, for example, wheels or propellers. \( \text{trans'mish-ən, di'nam-məd-ər} \)

**transmission line**  \[\text{ELEC} \] A system of conductors, such as wires, waveguides, or coaxial cables, suitable for conducting electric power or signals efficiently between two or more terminals. \( \text{trans'mish-ən, lın} \)

**transmission-line admittance**  \[\text{ELEC} \] The complex ratio of the current flowing in a transmission line to the voltage across the line, where the current and voltage are expressed in phasor notation. \( \text{trans'mish-ən, lın, ad,mit-əns} \)

**transmission-line attenuation**  \[\text{ELEC} \] The decrease in power of a transmission-line signal from one point to another, expressed as a ratio or in decibels. \( \text{trans'mish-ən, ən, ən, a, ˈten-ya,ˌwa-shən} \)

**transmission-line cable**  \[\text{ELEC} \] The coaxial cable, waveguide, or microstrip which forms a transmission line, a number of standard types have been designated, specified by size and materials. \( \text{trans'mish-ən, lın, kə-bal} \)

**transmission-line constants**  \[\text{Ser} \] transmission-line parameters. \( \text{trans'mish-ən, lın, kən-stəns} \)

**transmission-line current**  \[\text{ELEC} \] The amount of electrical charge which passes a given point in a transmission line per unit time. \( \text{trans'mish-ən, lın, ə-kənt} \)

**transmission-line efficiency**  \[\text{ELEC} \] The ratio of the power of a transmission-line signal at one end of the line to that at the other end where the signal is generated. \( \text{trans'mish-ən, lın, ɪˈfish-ən-sə} \)

**transmission-line impedance**  \[\text{ELEC} \] The complex ratio of the voltage across a transmission line to the current flowing in the line, where voltage and current are expressed in phasor notation. \( \text{trans'mish-ən, lın, im,pəd-əns} \)

**transmission-line parameters**  \[\text{ELEC} \] The quantities which are necessary to specify the impedance per unit length of a transmission line, and the admittance per unit length between various conductors of the line. Also known as linear electrical parameters, line parameters, transmission line constants. \( \text{trans'mish-ən, lın, ˈpər,əm-əd-ər} \)

**transmission-line power**  \[\text{ELEC} \] The amount of energy carried past a point in a transmission line per unit time. \( \text{trans'mish-ən, lın, pəu-ər} \)

**transmission-line reflection coefficient**  \[\text{ELEC} \] The ratio of the voltage reflected from the load at the end of a transmission line to the direct voltage. \( \text{trans'mish-ən, lın, rɪˈfle-kən-sən, ˈkoʊ-iˌfish-ənt} \)

**transmission-line theory**  \[\text{ELEC} \] The application of electrical and electromagnetic theory to the behavior of transmission lines. \( \text{trans'mish-ən, lın, ˌθi-dərən} \)

**transmission-line transducer loss**  \[\text{ELEC} \] The ratio of the power delivered by a transmission line to a load to that produced at the generator, expressed in decibels, equal to the sum of the attenuation of the line and the mismatch loss. \( \text{trans'mish-ən, lın, ən, ən, ən, ən, ən, ləz} \)

**transmission-line voltage**  \[\text{ELEC} \] The work that
would be required to transport a unit electrical charge between two specified conductors of a transmission line at a given instant. (tranz′mish-on′,vol-taji′)

transmission substation [ELEC] An electric power substation associated with high voltage levels. (tranz′mish-on′,städ-shan′)

transmission tower [ENG] A concrete, metal, or timber structure used to carry a transmission line. (tranz′mish-on′,tāu-ar′)

transmissometer [ENG] An instrument for measuring the extinction coefficient of the atmosphere and for the determination of visual range. Also known as hazemeter, transmittance meter. (tranz-mā′sām-od-ar′)

transmittance meter See transmissometer. (tranz′′mīd-ar′)

transmitter See synchro transmitter. (tranz′mīd-ar′,nōiz′)

transbus [ENG] A free-floating or moored automatic weather station developed for the purpose of providing weather reports from the open oceans; it transmits barometric pressure, air temperature, sea-water temperature, and wind speed and direction. (trān-sā′,bō′)

transom [BUILD] A window above a door. (trān-sōm′)

transonic wind tunnel [ENG] A type of high-speed wind tunnel capable of testing the effects of airflow past an object at speeds near the speed of sound, Mach 0.7 to 1.4; sonic speed occurs where the cross section of the tunnel is at a minimum, that is, where the test object is located. (trān-sām-ik′,wīnd′,tān-əl′)

transosonde [ENG] The flight of a constant-level balloon, whose trajectory is determined by tracking with radio-direction-finding equipment; thus, it is a form of upper-air, quasi-horizontal sounding. (trān-zā′,sānd′)

transponder set [ELECTR] A complete electronic set which is designed to receive an interrogation signal, and which retransmits coded signals that can be interpreted by the interrogating station, it may also utilize the received signal for actuation of additional equipment such as local indicators or servo amplifiers. (trān-pān-där′,set′)

transport [ENG] Conveyance equipment such as vehicular transport, hydraulic transport, and conveyor-belt setups. (trān-port′,verb′,trān′,port′,noun′)

transportation emergency [ENG] A situation which is created by a shortage of normal transportation capability and of a magnitude sufficient to frustrate movement requirements, and which requires extraordinary action by the designated authority to ensure continued movement. (trān-par′tā′-shān′,mār-jaon′-ə-

transportation engineering [ENG] That branch of engineering relating to the movement of goods and people; major types of transportation are highway, water, rail, subway, air, and pipeline. (trān-par′tā′-shān′,en′-ja,nir-ə-

transportation lag See distance/velocity lag. (trān-par′tā′-shān′,lag′)

transportation priorities [ENG] Indicators assigned to eligible traffic which establish its movement precedence; appropriate priority systems apply to the movement of traffic by sea and air. (trān-par′tā′-shān′,prō-əd-ə-

transportation problem [IND ENG] A programming problem that is concerned with the optimal pattern of the distribution of goods from several points of origin to several different destinations, with the specified requirements at each destination. (trān-par′tā′-shān′,prōb-lām′)

transport capacity [ENG] The number of persons or the tonnage (or volume) of equipment which can be carried by a vehicle under given conditions. (trān-port′,kas′)

transporter crane [MECH ENG] A long lattice girder supported by two lattice towers which may be either fixed or moved along rails laid at right angles to the girder; a crab with a hoist suspended from it travels along the girder. (trān-pōrd-ar′,krān′)

transport lag See distance/velocity lag. (trān′,port′,lag′)

transport network [ENG] The complete system of the routes pertaining to all means of transport available in a particular area; made up of the network particular to each means of transport. (trān-port′,net-ərk′)

transport vehicle [MECH ENG] Vehicle primarily intended for personnel and cargo carrying. (trān-port′,vē-ə-kəl′)

transverse baffle See cross-flow baffle. (trān′vārs′,bāf-əl′)

transverse magnetization [ENG ACOUS] Magnetization of a magnetic recording medium in a direction perpendicular to the line of travel and parallel to the greatest cross-sectional dimension. (trān′vārs′,mag-nəd-əzā′-shān′)

transverse stability [ENG] The ability of a ship or aircraft to recover an upright position after waves or wind roll it to one side. (trān′vārs′,sta′bıl-ə-

transverse vibration [MECH] Vibration of a rod in which elements of the rod move at right angles to the axis of the rod. (trān′vārs′,vibrā-shān′)

trap [CIV ENG] A bend or dip in a soil drain which is always full of water, providing a water seal to prevent odors from entering the building. [ELECTR] 1. A tuned circuit used in the radio-frequency or intermediate-frequency section of a receiver to reject undesired frequencies, traps in television receiver video circuits keep the sound signal out of the picture channel. Also known as rejector. 2. See wave trap. [ENG] A sealed passage such as a U-shaped bend in a pipe or pump that prevents the return flow of liquid or gas. [MECH ENG] A device which reduces the effect of the vapor pressure of oil or
mercury on the high-vacuum side of a diffusion pump. { trap }

TRAPATT diode  [ELECTR] A pn junction diode, similar to the IMPATT diode, but characterized by the formation of a trapped space-charge plasma within the junction region; used in the generation and amplification of microwave power. 

trapezoidal excavator  [MECH ENG] A digging machine which removes earth in a trapezoidal cross-section pattern for canals and ditches.

trapped-air process  [ENG] A procedure for the blow-mold forming of closed plastic objects, the bottom pinch is conventional and, after blowing, sliding pinchers close off the top to form a sealed-air, inflated product.

trapped fuel  [ENG] The fuel in an engine or fuel system that is not in the fuel tanks. 

traverse  [ENG] 1. A survey consisting of a set of connecting lines of known length, meeting each other at measured angles. Also known as survey traverse. 2. Movement to right or left on a pivot or mount, as of a gun, launcher, or radar antenna.

traversing mechanism  [ENG] Mechanism by which a gun or other device can be turned in a horizontal plane.

trawl  [ENG] A baglike net whose mouth is kept open by boards or by a leading diving vane or depressor at the foot of the opening and a spreader bar at the top, towed by a ship at specified depths for catching forms of marine life.

tray tower  [CHEM ENG] A vertical process tower between points in a manufacturing facility.

traveller  [MECH ENG] The movable unit, consisting of sheaves, frame, clevis, and hook, connected to, and hoisted or lowered with, the load in a block-and-tackle system. Also known as floating block, running block.

travelling detector  [ENG] Radio-frequency probe which incorporates a detector used to measure the standing-wave ratio in a slotted-line section.

travelling gantry crane  [ENG] A type of hoisting machine with a bridgelike structure spanning the area over which it operates and running along tracks at ground level.

travelling grate stoker  [MECH ENG] A type of furnace stoker, coal feeds by gravity into a hopper located on top of one end of a moving (traveling) grate, as the grate passes under the hopper, it carries a bed of fresh coal toward the furnace.

travelling-screen dryer  [CHEM ENG] A moving screen belt on which damp material is conveyed through a heated drying zone. Also known as screen dryer.

travelling-wave tube  [ELECTR] An electron tube in which a stream of electrons interacts continuously or repeatedly with a guided electromagnetic wave, moving substantially in synchronism with it, in such a way that there is a net transfer of energy from the stream to the wave. The tube is used as an amplifier or oscillator at frequencies in the microwave region.

traverse adjustment  See balancing a survey.

traversing adjustment  See balancing a survey.

tray elevator  [MECH ENG] A device for lifting drums, barrels, or boxes; a parallel pair of vertical-mounted continuous chains turn over upper and lower drive gears, and spaced trays on the chains cradle and lift the objects to be moved.

tray tower  [CHEM ENG] A vertical process tower for liquid-vapor contacting (as in distillation, absorption, stripping, evaporation, spray drying, dehumidification, humidification, flashing, rectification, dephlegmation), along the height of which is a series of trays designed to cause intimate contact between the falling liquid and the rising vapor.

tread  [CIV ENG] 1. The horizontal part of a step in a staircase. 2. The distance between two successive risers in a staircase.

580
trigger bolt

tribelet [CHEM ENG] A vessel or system for the contacting of a process stream with reagent (treating) chemicals, for example, acid treating or caustic treating. { ‘tρɹɹ-ɹɹtɹɹ-

treating [CHEM ENG] Usually, the contacting of a fluid stream (for example, water, sewage, petroleum products, or mixed gases) with chemicals to improve the fluid properties by removing, sequestring, or converting undesirable impurities. { ‘tɹɹdɹɹ-ɹɹnɹɹ-
	tremoloe circuit [ENGACOUS] A device which imparts a simple periodic amplitude modulation on the sound produced by an electronic instrument. { ‘tɹɹmɹɹ-ɹɹlɹɹ’nɹɹ-

tremie [ENG] An apparatus for placing concrete underwater, consisting of a large metal tube with a hopper at the top end and a valve arrangement at the bottom, submerged end. { ‘tɹɹmɹɹ-ɹɹnɹɹ-

trench duct [CIV ENG] A metal-lined trough set into a concrete floor with removable cover plates that are level with the top of the floor, used to house electrical connections. { ‘tɹɹnɹɹ-ɹɹdɹɹkɹɹ-

trencher See trench excavator. { ‘tɹɹnɹɹ-ɹɹkɹɹ-

trench excavator [MECH ENG] A digging machine, usually on crawler tracks, and having either a movable wheel or a continuous chain on which buckets are mounted. Also known as bucket-ladder excavator, ditcher, trencher, trenching machine. { ‘tɹɹnɹɹ-ɹɹ’ek-sɹɹ,ɹɹvɹɹdɹɹ-ɹɹ-

trenching machine See trench excavator. { ‘tɹɹnɹɹ-ɹɹnɹɹ’mɹɹnɹɹ-

trennschaukel apparatus [ENG] An instrument for determining the thermal diffusion factors of gases and gas mixtures, consisting of 20 suitably interconnected tubes whose top ends are maintained at the same temperature and whose bottom ends are maintained at the same temperature, with the temperature of the top ends greater than that of the bottom ends. { ‘tɹɹnɹɹ’sɹɹ-kɹɹ-lɹɹ,ɹɹpɹɹ,ɹɹ-rɹɹdɹɹ-

trepanning tool [MECH ENG] A cutting tool in the form of a circular tube, having teeth on the end, the workpiece or tube, or both, are rotated and the tube is fed axially into the workpiece, leaving behind a narrow grooved surface in the workpiece. { ‘tɹɹpɹɹ-ɹɹnɹɹ’,ɹɹ-tɹɹlɹɹ-

tresca criterion [MECH] The assumption that plastic deformation of a material begins when the difference between the maximum and minimum principal stresses equals twice the yield stress in shear. { ‘tɹɹsɹɹ-ɹɹ-kɹɹ,ɹɹtɹɹ-ɹɹnɹɹ-

trestle [CIV ENG] A series of short bridge spans supported by a braced tower. { ‘ɛɹɹnɹɹ-

trestle bent [CIV ENG] A transverse frame that supports the ends of the stringers in adjoining spans of a trestle. { ‘ɛɹɹsɹɹ-ɹɹ,ɹɹbɹɹtɹɹ-

trial batch [ENG] A batch of concrete mixed to determine the water-cement ratio that will produce the required slump and compressive strength, from a trial batch, one can also compute the yield, cement factor, and required quantities of each material. { ‘tɹɹlɹɹ ‘bɹɹ-

trial shots [ENG] The experimental shots and rounds fired in a sinking pit, tunnel, opencast, or quarry to determine the best drill-hole pattern to use. { ‘tɹɹlɹɹ ,ɹɹʃɹɹtɹɹ-

triangle equation See angle equation. { ‘tɹɹlɹɹ ‘æɹɹ-ɹɹgɹɹlɹɹ ‘ɪɹɹ,ɹɹkɹɹ-ɹɹzɹɹ ‘nɹɹ-

triangle of forces [MECH] A triangle, two of whose sides represent forces acting on a particle, while the third represents the combined effect of these forces. { ‘tɹɹlɹɹ ‘æɹɹ-ɹɹgɹɹlɹɹ ‘æɹɹ ‘ɒɹɹ-ɹɹsɹɹ-

triangular-notch weir [CIV ENG] A measuring weir with a V-shaped notch for measuring small flows. Also known as V-notch weir. { ‘tɹɹlɹɹ ‘æɹɹ-

triangulation [ENG] A surveying method for measuring a large area of land by establishing a base line from which a network of triangles is built up, in a series, each triangle has at least one side common with each adjacent triangle. { ‘tɹɹlɹɹ,ɹɹjɹɹ-gɹɹəɹɹ ‘lɹɹ-ɹɹʃɹɹ-

triangulation mark [ENG] A bronze disk set in the ground to identify a point whose latitude and longitude have been determined by triangulation. { ‘tɹɹlɹɹ,ɹɹjɹɹ-gɹɹəɹɹ ‘lɹɹ-ɹɹʃɹɹ ,ɹɹmɹɹkɹɹ-

tribometer [ENG] A device for measuring coefficients of friction, consisting of a loaded sled subject to a measurable force. { ‘tɹɹbɹɹ-ɹɹmɹɹ-ɹɹ-ɹɹ-

trickle charge [ELEC] A continuous charge of a storage battery at a low rate to maintain the battery in a fully charged condition. { ‘tɹɹkɹɹ-ɹɹlɹɹ-ɹɹ ‘chɹɹɹ-

trickle cooler See cascade cooler. { ‘tɹɹkɹɹ-ɹɹlɹɹ ,ɹɹkɹɹ-

trickle drain [CIV ENG] A drain that is set vertically in water, such as a pond, with its top open and level with the normal water surface in order to carry off excess water. { ‘tɹɹkɹɹ-

trickle hydrodesulfurization [CHEM ENG] A fixed-bed, petroleum refining process for desulfurization of middle distillates and gas oils; catalyst is cobalt molybdenum on alumina. { ‘tɹɹkɹɹ-ɹɹ ‘ɪɹɹ-ɹɹdɹɹ-ɹɹ ‘dɹɹ-sɹɹ-ɹɹfɹɹ-ɹɹzɹɹ-ɹɹ-

trickling filter [CIV ENG] A bed of broken rock or other coarse aggregate onto which sewage or industrial waste is sprayed intermittently and allowed to trickle through, leaving organic matter on the surface of the rocks, where it is oxidized and removed by biological growths. { ‘tɹɹkɹɹ-ɹɹnɹɹ ‘ʃɹɹ-

tricone bit [ENG] A rock bit with three toothed, conical cutters, each of which is mounted on friction-reducing bearings. { ‘tɹɹkɹɹ-ɹɹnɹɹ ‘bɹɹtɹɹ-

trill filter photometer [ENG] An instrument that uses red, green, and blue filters to measure the transparency of the water at three wavelengths. { ‘tɹɹrɹɹ,ɹɹlɹɹ-ɹɹ-tɹɹ ‘rɹɹ-ɹɹfɹɹəɹɹ ‘tɹɹ-ɹɹnɹɹ-

581
trigger pull  [MECH] Resistance offered by the trigger of a rifle or other weapon, force which must be exerted to pull the trigger. {‘trɪɡ-oər pull} {‘trɪɡoər pull} {‘trɪɡoər pull}  

trigonometric leveling  [ENG] A method of determining the difference of elevation between two points, by using the principles of triangulation and trigonometric calculations. {‘trɪŋ-oʊmə-trɪk ‘lev-əl-ɪŋ} {‘trɪŋ-oʊmə-trɪk ‘lev-əl-ɪŋ}  

trilateration  [ENG] The measurement of a series of distances between points on the surface of the earth, for the purpose of establishing relative positions of the points in surveying. {‘trɪ,leɪ-ə-tər-ən} {‘trɪ,leɪ-ə-tər-ən}  

trim  [ELECTR] Fine adjustment of capacitance, inductance, or resistance of a component during manufacture or after installation in a circuit. {‘trɪm} {‘trɪm} {‘trɪm}  

trimmer  [BUILD] One of the single or double joists or rafters that go around an opening in the framing type of construction. {‘trɪm-ər} {‘trɪm-ər} {‘trɪm-ər}  

trimmer conveyor  [MECH ENG] A self-contained, lightweight portable conveyor, usually of the belt type, for use in unloading and delivering bulk materials from trucks to domestic storage places, and for trimming bulk materials in bins or piles. {‘trɪm-ər kan,va-ər} {‘trɪm-ər kan,va-ər} {‘trɪm-ər kan,va-ər}  

triode transistor  [ELECTR] A transistor that has three terminals. {‘trɪd-ə} {‘trɪd-ə} {‘trɪd-ə}  

trip  [ENG] To release a lever or set free a mechanism. {‘trɪp} {‘trɪp} {‘trɪp}  

trip hammer  [MECH ENG] A large power hammer whose head is tripped and falls by cam or lever action. {‘trɪp,ham-ər} {‘trɪp,ham-ər} {‘trɪp,ham-ər}  

triple thread  [DES ENG] A multiple screw thread having three threads or starts equally spaced around the periphery, the lead is three times the pitch. {‘trɪpl-ə} {‘trɪpl-ə} {‘trɪpl-ə}  

triplex chain block  [MECH ENG] A geared hoist using an epicyclic train. {‘trɪpl,lekz ‘chanz,blæk} {‘trɪpl,lekz ‘chanz,blæk} {‘trɪpl,lekz ‘chanz,blæk}  

tripod  [DES ENG] An adjustable, collapsible three-legged support, as for a camera or surveying instrument. {‘trɪp,əd} {‘trɪp,əd} {‘trɪp,əd}  

tripodal grasp  [IND ENG] A basic grasp whereby an object is held by the thumb, index finger, and middle finger, to provide delicate rotational control. Also known as manipulative grasp. {‘trɪp,əd-grasp} {‘trɪp,əd-grasp} {‘trɪp,əd-grasp}  

tripod drill  [MECH ENG] A reciprocating rock drill mounted on three legs and driven by steam or compressed air, the drill steel is removed and a longer drill inserted about every 2 feet (61 centimeters). {‘trɪp,drəl} {‘trɪp,drəl} {‘trɪp,drəl}  

tripper  [CIV ENG] A device activated by a passing train to work a signal or switch or to apply brakes. [MECH ENG] A device that snubs a conveyor belt causing the load to be discharged. {‘trɪp-pər} {‘trɪp-pər} {‘trɪp-pər}  

trip spear  [ENG] A fishing tool intended to recover lost casing; if the casing is found to be immovable, the hole is broken by operating the trip release {‘trɪp,spɛr} {‘trɪp,spɛr} {‘trɪp,spɛr}  

trisistor  [ELECTR] Fast-switching semiconductor consisting of an alloyed junction pnp device in which the collector is capable of electron injection into the base; characteristics resemble those of a thyatron electron tube, and switching time is in the nanosecond range. {‘trɪs-tər} {‘trɪs-tər} {‘trɪs-tər}  

tristate logic  [ELECTR] A form of transistor-transistor logic in which the output stages or input and output stages can assume three states; two are the normal low-impedance 1 and 0 states, and the third is a high-impedance state that allows many tristate devices to time-share bus lines. {‘trɪ,stæt ‘lə-ə-ɪk} {‘trɪ,stæt ‘lə-ə-ɪk} {‘trɪ,stæt ‘lə-ə-ɪk}  

trolley  [MECH ENG] 1. A wheeled car running on an overhead track, rail, or ropeway. 2. An electric streetcar. {‘trɒ-ə} {‘trɒ-ə} {‘trɒ-ə}  

trolley locomotive  [MECH ENG] A locomotive operated by electricity drawn from overhead conductors by means of a trolley pole. {‘trɒ-ə,loʊ-ə-ˈmɒd-əv} {‘trɒ-ə,loʊ-ə-ˈmɒd-əv} {‘trɒ-ə,loʊ-ə-ˈmɒd-əv}  

tropical finish  [ENG] A finish that is applied to electronic equipment to resist the high relative humidity, fungus, and insects encountered in tropical climates. {‘trɪp-rə-kə ‘fɪn-ɪsh} {‘trɪp-rə-kə ‘fɪn-ɪsh} {‘trɪp-rə-kə ‘fɪn-ɪsh}  

tropicalize  [ENG] To prepare electronic equipment for use in a tropical climate by applying a coating that resists moisture and fungi. {‘trɪp-rə-kə,ˈlɪz} {‘trɪp-rə-kə,ˈlɪz} {‘trɪp-rə-kə,ˈlɪz}  

tropometer  [ENG] An instrument for measuring the angle through which one end of a bar is twisted in determining the strength of a material in torsion. {‘trɒp-ə-mər} {‘trɒp-ə-mər} {‘trɒp-ə-mər}  

troughed belt conveyor  [MECH ENG] A belt conveyor with the conveyor belt edges elevated on the carrying run to form a trough by conforming to the shape of the troughed carrying idlers or other supporting surface. {‘trɒft ‘belt kan,va-ər} {‘trɒft ‘belt kan,va-ər} {‘trɒft ‘belt kan,va-ər}  

troughed roller conveyor  [MECH ENG] A roller conveyor having two rows of rolls set at an angle to form a trough over which objects are conveyed. {‘trɒft ‘rəʊ-lər kan,va-ər} {‘trɒft ‘rəʊ-lər kan,va-ər} {‘trɒft ‘rəʊ-lər kan,va-ər}  

troughing idler  [MECH ENG] A belt idler having two or more rolls arranged to turn up the edges of the belt so as to form the belt into a trough. {‘trɒft-ɪŋ ‘ɪd-lər} {‘trɒft-ɪŋ ‘ɪd-lər} {‘trɒft-ɪŋ ‘ɪd-lər}  

troughing rolls  [MECH ENG] The rolls of a troughing idler that are so mounted on an incline as to elevate each edge of the belt into a trough. {‘trɒft-ɪŋ ‘rəʊlz} {‘trɒft-ɪŋ ‘rəʊlz} {‘trɒft-ɪŋ ‘rəʊlz}  

Trouton’s rule  [THERMO] The rule that, for a nonassociated liquid, the latent heat of vaporization in calories is equal to approximately 22 times the normal boiling point on the Kelvin scale. {‘trʌt-ən-siŋ, rʊl} {‘trʌt-ən-siŋ, rʊl} {‘trʌt-ən-siŋ, rʊl}  

trowel  [DES ENG] Any of various hand tools consisting of a wide, flat or curved blade with a short wooden handle, used by gardeners, plasterers, and bricklayers. {‘trɔʊl} {‘trɔʊl} {‘trɔʊl}  

troweling machine  [MECH ENG] A motorized device used to spread concrete by operating orbiting steel trowels on radial arms rotated on a vertical shaft. {‘trɔʊ-lɪŋ ˈmɑːˌʃɛn} {‘trɔʊ-lɪŋ ˈmɑːˌʃɛn} {‘trɔʊ-lɪŋ ˈmɑːˌʃɛn}  

troy ounce  See ounce. {‘trɔɪ ‘oʊns} {‘trɔɪ ‘oʊns} {‘trɔɪ ‘oʊns}  

troy pound  See pound. {‘trɔɪ ‘pʌnd} {‘trɔɪ ‘pʌnd} {‘trɔɪ ‘pʌnd}  

troy system  [MECH] A system of mass units used primarily to measure gold and silver; the
tube seat

ounce is the same as that in the apothecaries' system, being equal to 480 grains or 31.034768 grams. Abbreviated t. Also known as troy weight. ('troy, sis-tam)
troy weight See troy system. ('troy, wät)
tube [MECH ENG] A self-propelled wheeled vehicle, designed primarily to transport goods and heavy equipment; it may be used to tow trailers or other mobile equipment. ('trak)
truck crane [MECH ENG] A crane carried on the bed of a motor truck. ('trak ,krän)
truck-mounted drill rig [MECH ENG] A drilling rig mounted on a lorry or caterpillar tracks. ('trak ,maʊnt-əd 'dril ,rig)
truck-tractor See tractor. ('trak 'trak-tar)
true-boiling-point analysis [CHEM ENG] A standard laboratory technique used to predict the refining qualities of crude petroleum, gives distillation cuts for gasoline, kerosine, distillate (diesel) fuel, cracking, and lube distillate stocks. Also known as true-boiling-point distillation. ('tə 'boil-ing 'pɔint ,nal-ə-səs)
true-boiling-point distillation See true-boiling-point analysis. ('tə 'boil-ing 'pɔint ,dis-to, lə- 'shan)
true rake [MECH ENG] The angle, measured in degrees, between a plane containing a tooth face and the axial plane through the tooth point in the direction of chip flow. ('tə 'ræk)
trueing [MECH ENG] 1. Cutting a grinding wheel to make its surface run concentric with the axis. 2. Aligning a wheel to be concentric and in one plane. ('trə ,iŋ)
truncate [CONT SYS] To stop a robotic process before it has been completed. ('trə ,kæt)
truncated icosahedral gravitational-wave antenna [ENG] A resonant-mass antenna for detecting gravitational radiation in which the shape of the mass is a truncated icosahedron, which is much more efficient for this purpose than a cylinder. Abbreviated TIGA. ('trə ,kəd-əd,ləs-kəd-əd 'grəd-əd-shən-əl 'wəv an ,ten)
truncation error [ENG] The error resulting from the analysis of a partial set of data in place of a complete or infinite set. ('trə ,kəd-əd)
trunk buoy [ENG] A mooring buoy having a pendant extending through an opening in the buoy, with the ship's anchor chain or mooring line being secured to this pendant. ('trak ,bōi)
trunk sewer [CIV ENG] A sewer receiving sewage from many tributaries serving a large territory. ('trak ,sər)
trunnion [DES ENG] 1. Either of two opposite pivots, journals, or gudgeons, usually cylindrical and horizontal, projecting one from each side of a piece of ordnance, the cylinder of an oscillating engine, a molding flask, or a converter, and supported by bearings to provide a means of swivelng or turning. 2. A pin or pivot usually mounted on bearings for rotating or tilting something. [ENG] A tubular section of steel welded to the side of a pipe in order to help support the pipe. ('trən-yən)
truss [CIV ENG] A frame, generally of steel, timber, concrete, or a light alloy, built from members in tension and compression. ('tras)
truss bridge [CIV ENG] A fixed bridge consisting of members vertically arranged in a triangular pattern. ('tras ,bruı)
trussed beam [CIV ENG] A beam stiffened by a steel tie rod to reduce its deflection. ('trast 'bəm)
trussed rafter [BUILD] A triangulated beam in a trussed roof. ('tras ,rər)
truss rod [CIV ENG] A rod attached to the ends of a trussed beam which transmits the strain due to downward pressure. ('tras ,råd)
try square [ENG] An instrument consisting of two straightedges secured at right angles to each other, used for laying off right angles and testing whether work is square. ('trə ,skwer)
Tschudi engine [MECH ENG] A cat-and-mouse engine in which the pistons, which are sections of a torus, travel around a toroidal cylinder, motion of the pistons is controlled by two cams which bear against rollers attached to the rotors. ('chú-di ,e-nən)
Tsi [MECH] A unit of force equal to 1 ton-force per square inch; equal to approximately 1 54444 × 107 pascals. (s l or ,tə,es'ti)
T slot [DES ENG] A recessed slot, in the form of an inverted T, in the table of a machine tool, to receive the square head of a T-slot bolt. ('tə ,slɔt)
tsps See teaspooonful.
tspn See teaspooonful
TTL See transistor-transistor logic.
tube [ELECTR] See electron tube. [ENG] 1. A long cylindrical body with a hollow center used especially to convey fluid. 2. See inner tube. ('təb)
tube bank [MECH ENG] An array of tubes designed to be used as a heat exchanger. ('təb ,bəŋk)
tube bundle [ENG] In a shell-and-tube heat exchanger, an assembly of parallel tubes that is tied together with tie rods. ('təb ,bən-dəl)
tube cleaner [MECH ENG] A device equipped with cutters or brushes used to clean tubes in heat transfer equipment. ('təb ,klən-ər)
tube door [MECH ENG] A door in a boiler furnace wall which facilitates the removal or installation of tubes. ('təb ,dɔr)
tube hole [ENG] A hole in a tube sheet through which a tube is passed prior to sealing. ('təb ,həl)
tubeless tire [ENG] A tire that does not require an inner tube to hold air. ('təb-ləs 'tər)
tube mill [MECH ENG] A revolving cylinder used for fine pulverization of ore, rock, and other such materials; the material, mixed with water, is fed into the chamber from one end, and passes out the other end as slime. ('təb ,mil)
tube plug [ENG] A solid plug inserted into the end of a tube in a tube sheet. ('təb ,pləg)
tube seat [ENG] The surface of the tube hole in a tube sheet which contacts the tube. ('təb ,sət)
tuned-anode oscillator  [ELECTR] A vacuum-tube oscillator whose frequency is determined by a tank circuit in the anode circuit, coupled to the grid to provide the required feedback. Also known as tuned-plate oscillator.  [ˈtʌnˌænˌdɑːsˌplæˌɑːdˌɔːr]

tuned circuit  [ELECTR] A circuit whose components can be adjusted to make the circuit responsive to a particular frequency in a tuning range. Also known as tuning circuit.  [ˈtʌnˌsɑːrˌkɑːt]

tuned filter  [ELECTR] Filter that uses one or more tuned circuits to attenuate or pass signals at the resonant frequency.  [ˈtʌnˌdɪˈfɪlˌtɔːr]

tuned-reed frequency meter  See: vibrating-reed frequency meter.  [ˈtʌnˌtɛd frɛˈkwɒn-sɛˌmɛdˌɔːr]

tuner  [ELECTR] The portion of a receiver that contains circuits which can be tuned to accept the carrier frequency of the alternating current supplied to the primary, thereby causing the secondary voltage to build up to higher values than would otherwise be obtained.  [ˈtʌnˌtɛr]

tuning fork  [ENG] A U-shaped bar for hard steel, fused quartz, or other elastic material that vibrates at a definite natural frequency when struck or when set in motion by electromagnetic means, used as a frequency standard.  [ˈtʌnˌɪŋ fɔːrk]

tunnel  [ENG] A long, narrow, horizontal or nearly horizontal underground passage that is open to the atmosphere at both ends, used for aqueducts and sewers, carrying railroad and vehicular traffic, various underground installations, and mining.  [ˈtʌnˌæl]

tunnel blasting  [ENG] A method of heavy blasting in which a heading is driven into the rock and afterward filled with explosives in large quantities, similar to a borehole, on a large scale, except that the heading is usually divided in two parts on the same level at right angles to the first heading, forming in plan a T, the ends of which are filled with explosives and the intermediate parts filled with inert material like an ordinary borehole.  [ˈtʌnˌæl ˈblaːstˌɪŋ]

tunnel borer  [MECH ENG] Any boring machine for making a tunnel, often a ram armed with cutting faces operated by compressed air.  [ˈtʌnˌæl ˈbɔːrˌər]

tunnel carriage  [MECH ENG] A machine used for rapid tunneling, consisting of a combined drill carriage and manifold for water and air so that immediately the carriage is at the face, drilling may commence with no lost time for connecting up or waiting for drill steels; the air is supplied at pressures of 95 to 100 pounds per square inch (655,000 to 689,000 pascals).  [ˈtʌnˌæl ˈkɑːrˌɪŋ]

tunnel diode  [ELECTR] A heavily doped junction diode that has a negative resistance at very low voltage in the forward bias direction, due to quantum-mechanical tunneling, and a short circuit in the negative bias direction. Also known as Esaki tunnel diode.  [ˈtʌnˌæl ˈdɪˌdɑːd]

tunnel junction  [ELECTR] A two-terminal electronic device having an extremely thin potential barrier to electron flow, so that the transport...
characteristic (the current-voltage curve) is primarily governed by the quantum-mechanical tunneling process which permits electrons to penetrate the barrier. \( \text{tunnel resistor} \) Resistor in which a thin layer of metal is plated across a tunneling junction, to give the combined characteristics of a tunnel diode and an ordinary resistor. \( \text{tunnel diode} \) Transistor-like device in which the emitter-base junction is a tunnel diode and the collector-base junction is a conventional diode. \( \text{turbine} \) A fluid acceleration machine for generating rotary mechanical power from the energy in a stream of fluid. \( \text{turbine pump} \) A pump that is powered by a turbine. \( \text{turboshaft} \) A gas turbine engine that is similar to a turboprop but operates through a transmission system to power a device such as a helicopter rotor or pump. \( \text{turbosupercharger} \) A centrifugal air compressor, gas-turbine driven, usually used to increase induction system pressure in an internal combustion reciprocating engine. \( \text{turbulent burner} \) An atomizing burner which mixes fuel and air to produce agitated flow. \( \text{turbulencer} \) Any of various materials, especially timber, concrete, and cast iron, applied to the inner surface of a vehicular or railroad tunnel.

\[ \text{turnover number} \] An index used in the petroleum industry to indicate the average time that a unit is down in operation, as the length of time between arriving at a point and departing from that point, it is used in this sense for the turnaround of vehicles, ships in ports, and aircraft. \( \text{turnaround cycle} \) A term used in conjunction with vehicles, ships, and aircraft, and comprising the following: loading time at home, time to and from destination, unloading and loading time at destination, unloading time at home, planned maintenance time, and, where applicable, time awaiting facilities. \( \text{turnaround} \) A sleeve with a thread at one end and a swivel at the other, or with threads of opposite hands at each end so that by turning the sleeve connected rods or wire rope will be drawn together and tightened. \( \text{turntable} \) A rotating table or wheel carrying various molds in a mold shop. \( \text{turning} \) Shaping a member on a lathe. \( \text{turnover rate} \) In an industrial catalytic process, a value that indicates the amount of feed or substrate converted per a measured amount of catalyst. \( \text{turnover} \) A conversion of one complete loop of wire. \( \text{turnovers} \) The ratio of the number of turns in a secondary winding of a transformer.
to the number of turns in the primary winding.

**turnstile**  [ENG] A barrier that rotates about a vertical axis and usually is arranged to allow the passage of only one person at a time through an opening.  (ˈtərnˌəl)  

**twin-cable ropeway**  [MECH ENG] An aerial ropeway which has parallel track cables with carriers running in opposite directions; both rows of carriers are pulled by the same traction rope.  (ˈtwinˌkæbəlˈrɔpər)  

**twin-gear drive**  [MECH ENG] A crank press having the drive gears attached to both ends of the crankshaft.  (ˈtwinˌgirəˈdrev)  

**twin **  [DES ENG] In a fiber, rope, yarn, or cord, the turns about its axis per unit length; usually expressed as TPI (turns per inch).  (ˈtwɪn)  

**twin mill**  [MECH ENG] An end-milling cutter having two cutting edges and straight or helical flutes.  (ˈtwinˌmɪl)  

**two-level mold**  [ENG] Placement of one cavity of a plastics mold above another instead of alongside it; reduces clamping force needed.  (ˈtjuːˌleɪvl ˈmɔld)  

**two-lip end mill**  [MECH ENG] An end-milling cutter having two cutting edges and straight or helical flutes.  (ˈtjuːˌlɪpˌendˌmɪl)  

**two-phase alternating-current circuit**  [ELEC] A circuit in which there are two alternating currents on separate wires, the two currents being 90° out of phase.  (ˈtjuːˌfaze ˈɔlˌtɔrˌnædˌɪŋ ˈkərəntˌsərˌkæt)  

**two-phase current**  [ELEC] Current delivered through two pairs of wires or at a phase difference of one-quarter cycle (90°) between the current in the two pairs.  (ˈtjuːˌfaze ˈkərənt)  

**two-point press**  [MECH ENG] A mechanical press in which the slide is actuated at two points.  (ˈtjuːˌpoʊnt ˈpreʃ)  

**two-port system**  [CONT SYS] A system which has only one input or excitation and only one response or output.  (ˈtjuːˌpɔrˌt ˈsaɪtəm)  

**two-sided sampling plan**  [IND ENG] Any sampling plan whereby the acceptability of material is determined against upper and lower limits.  (ˈtjuːˌsɪdˌɔd ˈsamˌpliŋˌplæn)  

**two-step grooving system**  [ENG] A method of spooling a drum in which the wire rope, controlled by grooves, moves parallel to the drum flanges for one-half the circumference and then crosses over to start the next wrap. Also known as counterbalance system.  (ˈtjuːˌstept ˈgrʊvəˌiŋˌsɪsˌtɔmət)  

**two-stroke cycle**  [MECH ENG] An internal combustion engine cycle completed in two strokes of the piston.  (ˈtjuːˌstrɔkˌsɪkəl)  

**two-tone diaphone**  [ENG ACOUS] A diaphone producing blasts of two tones, the second tone being of a lower pitch than the first tone.  (ˈtjuːˌtɔnˌdɪəˈfɒn)  

**two-way slab**  [CIV ENG] A concrete slab supported by beams along all four edges and reinforced with steel bars arranged perpendicularly.  (ˈtjuːˌwɔˈslæb)  

**two-way valve**  [MECH ENG] A mechanical device that controls the flow of fluid by allowing flow in either of two directions.  (ˈtjuːˌwɔˌvæl)  

**two-wire circuit**  [ELEC] A metallic circuit formed by two conductors insulated from each other, in contrast with a four-wire circuit, it uses only one line or channel for transmission of electric waves in both directions.  (ˈtjuːˌwɔˌvɔrˌsərˌkæt)  

**tyfon**  [Swe typhon].  (ˈtɪˌfæn)  

**Tyler screen**  [CHEM ENG] A screen standard for the openings in screen-type mediums based on meshes per linear inch, convertible to the U.S. Sieve Series.  (ˈtɪˌlərˌskrɛn)  

**Tyler Standard screen scale**  [ENG] A scale for classifying particles in which the particle size in micrometers is correlated with the meshes per inch of a screen.  (ˈtɪˌlərˌstænˈdændˈskrɛnˌskəl)
Tyndallization | ENG | Heat sterilization by steaming the food or medium for a few minutes at atmospheric pressure on three or four successive occasions, separated by 12- to 18-hour intervals of incubation at a temperature favorable for bacterial growth. (ˌtɪnd-əl-ə'zə-shən)

type I assembly | ELECTR | An assembly consisting entirely of surface-mounted electronic components, on either one or both sides of a printed board. (ˈtɪp ɪəl ə'sem-bleɪ)

type II assembly | ELECTR | An assembly of both surface-mounted and leaded electronic components, in which the surface-mounted components are on both sides of the printed board. (ˈtɪp ɪəl ə'sem-bleɪ)

type III assembly | ELECTR | An assembly of both surface-mounted and leaded electronic components, in which the surface-mounted components are only on the bottom side of the printed board. (ˈtɪp ɪəl ə'sem-bleɪ)

typhon | ENG ACOUS | A diaphragm horn which operates under the influence of compressed air or steam. Also spelled tyfon. (ˈtɪfən)
This page intentionally left blank.
ultrafiltration  [CHEM ENG] Separation of colloidal or very fine solid materials by filtration through microporous or semipermeable mediums. \{ yu_bend, di \}

U-bend die  [MECH ENG] A die with a square or rectangular cross section which provides two edges over which metal can be drawn. \{ yu_bend, di \}

U blades  [DES ENG] Curved bulldozer blades designed to increase moving capacity of tractor equipment. \{ yu_bladez \}

U bolt  [DES ENG] A U-shaped bolt with threads at the ends of both arms to receive nuts. \{ yu_bolt \}

udometer  See rain gage. \{ yu_dam-ad-ar \}

UJT  See unijunction transistor.

ultracentrifuge  [ENG] A laboratory instrument and gems. \{ yu_plat \}

ultimate-strength design  See ultimate-load design. \{ yu_mat\set \}

ultimate set  [ENG] The ratio of the length of a specimen plate or bar before testing to the length at the moment of fracture, usually expressed as a percentage. \{ yu_mat\set \}

ultimate strength  [MECH] The tensile stress, per unit of the original surface area, at which a body will fracture, or continue to deform under a decreasing load. \{ yu_mat\set \}

ultracentrifuge  [ENG] A laboratory instrument which develops centrifugal fields of more than 100,000 times gravity, used for the quantitative measurement of sedimentation velocity or sedimentation equilibrium, or for the separation of solutes in liquid solutions to study high polymers, particularly proteins, nucleic acids, viruses, and other macromolecules of biological origin. \{ yu_sen-tra_yu \}

ultrafiltration  [CHEM ENG] Separation of colloidal or very fine solid materials by filtration through microporous or semipermeable mediums. \{ yu_tra\fil\tra_san \}

ultramicrobalance  [ENG] A differential weighing device with accuracies better than 1 microgram; used for analytical weightings in microanalysis. \{ yu_tro\mi_\kro_bal_\san \}

ultramicrotome  [ENG] A microtome which uses a glass or diamond knife, allowing sections of cells to be cut 300 nanometers in thickness. \{ yu_tro\mi_\kro_tom \}

ultrasonic atomizer  [MECH ENG] An atomizer in which liquid is fed to, or caused to flow over, a surface which vibrates at an ultrasonic frequency; uniform drops may be produced at low feed rates. \{ yu_san_ad_\miz_\ar \}

ultrasonic cleaning  [ENG] A method used to clean debris and swarf from surfaces by immersion in a solvent in which ultrasonic vibrations are excited. \{ yu_san_ki_kien \}

ultrasonic delay line  [ENG ACOUS] A delay line in which use is made of the propagation time of sound through a medium such as fused quartz, barium titanate, or mercury to obtain a time delay of a signal. Also known as ultrasonic storage cell. \{ yu_san_ki_dila _ln \}

ultrasonic depth finder  [ENG] A direct-reading instrument which employs frequencies above the audible range to determine the depth of water, it measures the time interval between the emission of an ultrasonic signal and the return of its echo from the bottom. \{ yu_san_ki_depth _fn\_dar \}

ultrasonic drill  [MECH ENG] A drill in which a magnetostrictive transducer is attached to a tapered cone serving as a velocity transformer, with an appropriate tool at the end of the transformer, practically any shape of hole can be drilled in hard, brittle materials such as tungsten carbide and gems. \{ yu_san_ki_dril \}

ultrasonic drilling  [MECH ENG] A vibration drilling method in which ultrasonic vibrations are generated by the compression and extension of a core of electrostrictive or magnetostrictive material in a rapidly alternating electric or magnetic field. \{ yu_san_ki_dril_\in \}

ultrasonic flaw detector  [ENG ACOUS] An ultrasonic generator and detector used together, much as in radar, to determine the distance to a wave-reflecting internal crack or other flaw in a solid object. \{ yu_san_ki_fl_\_tek_\_ar \}

ultrasonic generator  [ENG ACOUS] A generator
ultrasonic imaging device

consisting of an oscillator driving an electro-acoustic transducer, used to produce acoustic waves above about 20 kilohertz. [$\alpha$]-trå'sån-ik 'jen-ô,râd-ôr ]

ultrasonic imaging device  [ENG ACOUS] An imaging device in which a wave is generated by a transducer external to the body; the reflected wave is detected by the same transducer. [$\alpha$]-trå'sån-ik 'trån-ôd-ôr ]

ultrasonic leak detector  [ENG] An instrument which detects ultrasonic energy resulting from the transition from laminar to turbulent flow of a gas passing through an orifice. [$\alpha$]-trå'sån-ik 'lek di.tek-tôr ]

ultrasonic machining  [MECH ENG] The removal of material by abrasive bombardment and crushing in which a flat-ended tool of soft alloy steel is made to vibrate at a frequency of about 20,000 hertz and an amplitude of 0.001–0.003 inches while a fine abrasive of silicon carbide, aluminum oxide, or boron carbide is carried by a liquid between tool and work. [$\alpha$]-trå'sån-ik ma'shen-iô ]

ultrasonic sealing  [ENG] A method for sealing plastic film by using localized heat developed by vibratory mechanical pressure at ultrasonic frequencies. [$\alpha$]-trå'sån-ik 'sel-iô ]

ultrasonic storage cell  See ultrasonic delay line. [$\alpha$]-trå'sån-ik 'stôr-iô ]

ultrasonic testing  [ENG] A nondestructive test method that employs high-frequency mechanical vibration energy to detect and locate structural discontinuities or differences and to measure thickness of a variety of materials. [$\alpha$]-trå'sån-ik 'test-iô ]

ultrasonic thickness gage  [ENG] A thickness gage in which the time of travel of an ultrasonic beam through a sheet of material is used as a measure of the thickness of the material. [$\alpha$]-trå'sån-ik 'thîk-nôs.gä ]

ultrasonic transducer  [ENG ACOUS] A transducer that converts alternating-current energy above 20 kilohertz to mechanical vibrations of the same frequency, it is generally either magnetostriuctive or piezoelectric. [$\alpha$]-trå'sån-ik tranz 'dô-sar ]

ultrasonic transmitter  [ENG ACOUS] A device used to track seals, fish, and other aquatic animals; the device is fastened to the outside of the animal or fed to it, and has a loudspeaker which is made to vibrate at an ultrasonic frequency, propagating ultrasonic waves through the water to a special microphone or hydrophone. [$\alpha$]-trå'sån-ik tranz'mid-ôr ]

ultrasonoscope  [ENG] An instrument that displays an echosonogram on an oscilloscope, usually with auxiliary output to a chart-recording instrument. [$\alpha$]-trå'sån-ik 'skôp ]

umbrella roof  See station roof. [$\alpha$]-brêl-ô,rôf ]

unavailable energy  [THERMO] That part of the energy which, when an irreversible process takes place, is initially in a form completely available for work and is converted to a form completely unavailable for work. [$\alpha$]-névl-ô-bal 'en-ôr-jô ]

unavoidable delay  [IND ENG] Any delay in a task, the occurrence of which is outside the control or responsibility of the worker. [$\alpha$]-névl-ô-bal di'ôlô ]

unavoidable-delay allowance  [IND ENG] An adjustment of standard time to allow for unavoidable delays in a task. [$\alpha$]-névl-ô-bal di'ôlô 'lôw-ôns ]

unbonded member  [CIV ENG] A posttensioned member that is made of prestressed concrete and has the tensioning force applied only against the end anchorages. [$\alpha$]-bînd-ed 'mem-bar ]

unbonded strain gage  [ENG] A type of strain gage that consists of a grid of fine wires strung under slight tension between a stationary frame and a movable armature; pressure applied to the bellows or to the diaphragm sensing element moves the armature with respect to the frame, increasing tension in one half of the filaments and decreasing tension in the rest. [$\alpha$]-bînd-dô strôn 'gô ]

uncage  [ENG] To release the caging mechanism of a gyroscope, that is, the mechanism that erects the gyroscope or locks it in position. [$\alpha$]-kôj ]

uncharged demolition target  [ENG] A demolition target which has been prepared to receive the demolition agent, the necessary quantities of which have been calculated, packaged, and stored in a safe place. [$\alpha$]-chårjd dem-a'lish-an 'rôr-gô ]

unconfined explosion  [ENG] Explosion occurring in the open air where the (atmospheric) pressure is constant. [$\alpha$]-kon'find ik'splô-zôn ]

uncouple  [ENG] To unscrew or disengage. [$\alpha$]-kôpôl ]

underbody  [ENG] The lower portion or under-side of the body of a vehicle or airplane. [$\alpha$]-dôr,bôd-iô ]

undercut  [ELECTR] Undesirable lateral etching by chemicals in the fabrication of semiconductor devices. [ENG] Underside recess either cut or molded into an object so as to leave a topside lip or protuberance. [$\alpha$]-dôr,kôt ]

undercutting  [CHEM ENG] In distillation, the technique of taking the products coming off the distillation tower at a temperature below the desired ultimate boiling point range to prevent contaminating the products with the compound that would distill just beyond the ultimate boiling point range. [$\alpha$]-dôr'kôd-iô ]

underdrain  [CIV ENG] A subsurface drain with
holes into which water flows when the water table reaches the drain level. \( \text{an-dar, drän} \)

**underdrive press** [MECH ENG] A mechanical press having the driving mechanism located within or under the bed. \( \text{an-dar, driv 'pres} \)

**underfeed stoker** [ENG] A coal-burning system in which green coal is fed from beneath the burning fuel bed. \( \text{an-dar, fed 'stö-kar} \)

**underfloor raceway** [BUILD] A raceway for electric wires which runs beneath the floor. \( \text{an-dar, flör 'räs, wä} \)

**underground** [ENG] Situated, done, or operating beneath the surface of the ground. \( \text{an-därgräund} \)

**underhung crane** [MECH ENG] An overhead traveling crane in which the end trucks carry the bridge suspended below the rails. \( \text{an-där, hæg 'kran} \)

**underpinning** [CIV ENG] 1. Permanent supports replacing or reinforcing the older supports beneath a wall or a column. 2. Braced props temporarily supporting a structure. \( \text{an-där, pin-'ing} \)

**underplate** [DES ENG] An unfinished plate which forms part of an armored front for a mor- tise lock, and which is fastened to the case. \( \text{an-där, plät} \)

**underream** [ENG] To enlarge a drill hole below the casing. \( \text{an-därjäm} \)

**undershoot** [CONT SYS] The amount by which a system’s response to an abrupt change in input falls short of that desired. \( \text{'an-där, shät} \)

**undershot wheel** [MECH ENG] A water wheel operated by the impact of flowing water against blades attached around the periphery of the wheel, the blades being partly or totally submerged in the moving stream of water. \( \text{'an-där, shät} \)

**undersize** [ENG] That part of a crushed material (for example, ore) which passes through a screen. \( \text{'an-där, siz} \)

**underspin** [MECH] Property of a projectile having insufficient rate of spin to provide proper stabilization. \( \text{an-där, spin} \)

**underwater sound projector** [ENG ACOUS] A transducer used to produce sound waves in water. \( \text{'an-där̩'wó̩d̩-'ar 'sà̩n̩d̩ prä̩-jek-tar} \)

**underwater transducer** [ENG ACOUS] A device used for the generation or reception of underwater sounds. \( \text{'an-där̩'wó̩d̩-'ar tränz̩-dü̩-'sar} \)

**underway bottom sampler** See underway sampler. \( \text{'an-där̩'wa ˈbàd̩-əm,' sam-plar} \)

**underway sampler** [ENG] A device for collecting samples of sediment on the ocean bottom, consisting of a cup in a hollow tube; on striking the bottom, the cup scoops up a small sample which is forced into the tube which is then closed with a lid, and the device is hoisted to the surface. Also known as scoopfish, underway bottom sampler. \( \text{'an-där̩'wa ˈsam-plar} \)

**Underwood chart** [CHEM ENG] A graphical solution of mass balances for a single equilibrium stage in the calculation of a solvent-extraction operation. \( \text{'an-där̩, wúd̩ ˈchart} \)

**Underwood distillation method** [CHEM ENG] A method for calculation of liquid separations from binary distillation systems operated at partial reflux. \( \text{'an-där̩, wúd̩ ,dis-tə̩-lə̩-shan meth-əl} \)

**undisturbed** [ENG] Pertaining to a sample of material, as of soil, subjected to so little disturbance that it is suitable for determinations of strength, consolidation, permeability characteristics, and other properties of the material in place. \( \text{'an-dər-stə̩rd} \)

**unfinished bolt** [DES ENG] One of three degrees of finish in which standard hexagon wrench-head bolts and nuts are available; only the thread is finished. \( \text{'an-fin-išt ˈböl} \)

**unfired pressure vessel** [CHEM ENG] A pressure vessel that is not in direct contact with a heating flame. \( \text{'an-fird ˈpresh-ər, yes-al} \)

**uniaxial stress** [MECH] A state of stress in which two of the three principal stresses are zero. \( \text{ˈyu̯-nə-ne̯-kət-ə̩l ˈstres} \)

**unidirectional hydrophone** [ENG ACOUS] A hydrophone mainly sensitive to sound that is incident from a single solid angle of one hemisphere or less. \( \text{ˈyu̯-nə-da̯ˈrek-shən al ˈhi̯-dra̯-fôn} \)

**unidirectional microphone** [ENG ACOUS] A microphone that is responsive predominantly to sound incident from one hemisphere, without picking up sounds from the sides or rear. \( \text{ˈyu̯-nə-da̯ˈrek-shən al ˈmi̯-kra̯-fôn} \)

**unified screw thread** [DES ENG] Three series of threads: coarse (UNC), fine (UNF), and extra fine (UNEF); a 1/4-inch-diameter (0.006-millimeter) thread in the UNC series has 20 threads per inch, while in the UNF series it has 28. \( \text{ˈyu̯-nəˌfil̩-ər ˈspren-ʃən} \)

**unifilar suspension** [ENG] The suspension of a body from a single thread, wire, or strip. \( \text{ˈyu̯-nə-fil̩-ər ˈspren-ʃən} \)

**uniflow engine** [MECH ENG] A steam engine in which steam enters the cylinder through valves at one end and escapes through openings uncovered by the piston as it completes its stroke. \( \text{ˈyu̯-nəˌflō̩ ˈen-ˈjan} \)

**uniform circular motion** [MECH] Circular motion in which the angular velocity remains constant. \( \text{ˈyu̯-nəˌfôrm ˈsär-ki-ˈvar ˈmô̩-shan} \)

**uniform click track** [ENG ACOUS] A click track with uniformly spaced clicks. \( \text{ˈyu̯-nəˌfôrm ˈklik ˈtræk} \)

**uniform load** [MECH] A load distributed uniformly over a portion or over the entire length of a beam, measured in pounds per foot. \( \text{ˈyu̯-nəˌfôrm ˈlôd} \)

**uniform mat** [CIV ENG] A type of foundation mat, consisting of a reinforced concrete slab of constant thickness, supporting walls, and columns; it is thick, rigid, and strong. \( \text{ˈyu̯-nəˌfôrm ˈmat} \)

**unijunction transistor** [ELECTR] An n-type bar of semiconductor with a p-type alloy region on one side; connections are made to base contacts at either end of the bar and to the p-region. Abbreviated UJT. Formerly known as double-base diode, double-base junction diode. \( \text{ˈyu̯-nəˌjæŋkˌshan tränˈzı̩s-tar} \)
unilateral conductivity

unilateral conductivity [ELECTR] Conductivity in only one direction, as in a perfect rectifier. (yū-na’lad-ə-rəl, kān-dāk’tiv-ad-ə-) unilaterial tolerance method [DES ENG] Method of dimensioning and tolerancing wherein the tolerance is taken as plus or minus from an explicitly stated dimension, the dimension represents the size of an actual location which is nearest the critical condition (that is maximum material condition), and the tolerance is applied either in a plus or minus direction, but not in both directions, in such a way that the permissible variation in size or location is away from the critical condition. (yū-na’lad-ə-rəl ’tāl-tə-rəns ,meth-ə-də-)
union [DES ENG] A screwed or flanged pipe coupling usually in the form of a ring fitting around the outside of the joint. (yūn-yən)
union joint [DES ENG] A threaded assembly used for the joining of ends of lengths of installed pipe or tubing where rotation of neither length is feasible. (yūn-yən ,joint)
union shop [IND ENG] An establishment in which union membership is not a requirement for original employment but becomes mandatory after a specified period of time. (yūn-yən ’shəp)
unipolar [ELEC] Having but one pole, polarity, or direction; when applied to amplifiers or power supplies, it means that the output can vary in only one polarity from zero and, therefore, must always contain a direct-current component. (yū-na’pō-lər)
unipolar transistor [ELECTR] A transistor that utilizes charge carriers of only one polarity, such as a field-effect transistor. (yū-na’pō-lər tran’zis-tər)
unit [ENG] An assembly or device capable of independent operation, such as a radio receiver, cathode-ray oscilloscope, or computer subassembly that performs some inclusive operation or function. (yū-nət)
unitary air conditioner [MECH ENG] A small self-contained electrical unit enclosing a motor-driven refrigeration compressor, evaporative cooling coil, air-cooled condenser, filters, fans, and controls. (yū-na’ter-ə-rər ka’n,dish-ən-ər)
unit assembly [IND ENG] Assemblage of machine parts which constitutes a complete auxiliary part of an end item, and which performs a specific functional function, and which may be removed from the parent item without itself being disassembled. (yū-nət əsem-ble)
unit charge See statocoulomb. (yū-nət ’chərə)
unit construction [BUILD] An assembly comprising two or more walls, plus floor and ceiling construction, ready for shipping to a building site. (yū-nət kan’strək-shən)
unit cost [IND ENG] Cost allocated to a specified unit of a product, computed as the cost over a period of time divided by the number of units produced. (yū-nət ’kəst)

United States standard dry seal thread [DES ENG] A modified pipe thread used for pressure-tight connections that are to be assembled without lubricant or sealer in refrigeration pipes, automotive and aircraft fuel-line fittings, and gas and chemical shells. (yə’dəd ’stāts ’stəndərd ’drī ’zu-el ’thrəd)
unit heater [MECH ENG] A heater consisting of a fan for circulating air over a heat-exchange surface, all enclosed in a common casing. (yū-nət ’hēd-iə)
unitized body [ENG] An automotive body that has the body and frame in one unit; side members are designed on the principle of a bridge truss to gain stiffness, and sheet metal of the body is stressed so that it carries some of the load. (yū-na,tiiz ’bād-iə)
unitized cargo [IND ENG] Grouped cargo carried aboard a ship in pallets, containers, wheeled vehicles, and barges or lighters. (yū-na,tiiz ’kār-gō)
unitized load [IND ENG] A single item or a number of items packaged, packed, or arranged in a specified manner and capable of being handled as a unit; unitization may be accomplished by placing the item or items in a container or by banding them securely together. Also known as unit load. (yū-na,tiiz ’ləd)
unitized tooling [DES ENG] A die having its upper and lower members incorporated into a self-contained unit arranged to maintain the die members in alignment. (yū-na,tiiz ’tu-il-iŋ)
unit load See unitized load. (yū-nət ’ləd)
unit mold [ENG] A simple plastics mold composed of a simple cavity without further mold devices; used to produce sample containers having shapes difficult to blow-mold. (yū-nət ’mōld)
unit of issue [IND ENG] In reference to special storage, the quantity of an item, such as each number, dozen, gallon, pair, pound, ream, set, or yard. (yū-nət əv ’lish-ə) ununit operations [CHEM ENG] The basic physical operations of chemical engineering in a chemical process plant, that is, distillation, fluid transport, heat and mass transfer, evaporation, extraction, drying, crystallization, filtration, mixing, size separation, crushing and grinding, and conveying. (yū-nət ’ap-ə-rə-′shən)
unit process [CHEM ENG] In chemical manufacturing, a process that involves chemical conversion. (yū-nət prə ’kvar-mənt ,kəst)
unit procurement cost [IND ENG] The net basic cost paid or estimated to be paid for a unit of a particular item including, where applicable, the cost of government-furnished property and the cost of manufacturing operations performed at government-owned facilities. (yū-nət prə ’kvar-mənt ,kəst)
unit strain [MECH] 1. For tensile strain, the elongation per unit length. 2. For compressive strain, the shortening per unit length. 3. For shear strain, the change in angle between two lines originally perpendicular to each other. (yū-nət ’strən)
unloading

A power device for re- than the frequency of the reverberations received

unloaded Q

The Q of a system when unloaded

universal chuck

A self-centering chuck whose jaws move in unison when a scroll plate is rotated.

universal dividing head

An accessory fixture on a milling machine that rotates the workpiece to specified angles between machining steps.

universal gas constant

See gas constant.

universal motor

A motor that may be operated at approximately the same speed and output on either direct current or single-phase alternating current. Also known as ac/dc motor.

universal output transformer

An output transformer having a number of taps on its winding, to permit its use between the audio-frequency output stage and the loudspeaker of practically any radio receiver by proper choice of connections.

universal robot

A robot whose end effector would be flexible enough to perform any desired task.

universal vise

A vise which has two or three swivel settings so that the workpiece can be set at a compound angle. Also known as toolmaker’s vise.

unloaded Q

The Q of a system when there is no external coupling to it.

unloader

A power device for removing bulk materials from railway freight cars or highway trucks, in the case of railway cars, the car structure may aid the unloader, a transitional device between interplant transportation means and intraplant handling equipment.

unloading

1. The release downstream of a trapped contaminant. 2. A filter medium failure and release of system pressure.

updraft furnace

A furnace in which volumes of air are supplied from below the fuel bed or supply.
uplift pressure

uplift pressure [CIV ENG] Pressure in an upward direction against the bottom of a structure, as a dam, a road slab, or a basement floor. {'ap, lif't presh-ər}

upmilling [MECH ENG] Milling a workpiece by rotating the cutter against the direction of feed of the workpiece. {'ap, mil-ən}

upper consolute temperature See consolute temperature. {'ap-ər 'kān-səl, šət 'tem-pra-char}

upper control limit [IND ENG] A horizontal line on a control chart at a specified distance above the central line; if all the plotted points fall between the upper and lower control lines, the process is said to be in control. {'ap-ər kan'trōl 'lim-ət}

upper critical solution temperature See consolute temperature. {'ap-ər 'krit-əl səl-ən səl-ən 'tem-pra-char}

upright [CIV ENG] A vertical structural member, post, or stake. {'ap, rıt}

upstand [BUILD] That section of a roof covering that turns up against a vertical surface. Also known as upturn. {'ap, stənd}

upstream [CHEM ENG] That portion of a process stream that has not yet entered the system or unit under consideration; for example, upstream to a refinery or to a distillation column. {'ap, strəm}

upstream face [CIV ENG] The side of a dam nearer the source of water. {'ap, strəm 'fəs}

uptake [ENG] A large pipe for exhaust gases from a boiler furnace that runs upward to a chimney or smokestack. {'ap, tāk}

up time [IND ENG] A period during which value is being added to a product by a machine or a process. {'ap, tīm}

upturn See upstand. {'ap, tərn}

urbanization [CIV ENG] The state of being or becoming a community with urban characteristics. {'ər-bən ri'nəl-ən}

urban renewal [CIV ENG] Redevelopment and revitalization of a deteriorated urban community. {'ər-bən ri'nəl-ən}

urea dewaxing [CHEM ENG] A continuous, petroleum refining process used to produce low-pour-point oils; urea forms a filterable solid complex (adduct) with the straight-chain wax paraffins in the stock. {'yu're-ə de'waks-ın}

usability [IND ENG] The characteristics which enter into a product’s design and are related to its quality and reliability that enable users to perform tasks quickly and error free, as well as reduce the time and mental effort to learn or operate the product. Also known as ease of use; user friendliness. {'yu-zə b'il-əd-ən līf}

usable life See pot life. {'yu-zə b'il līf}

user friendliness See usability. {'yu-zər 'frend-əlnəs}

U-shaped abutment [CIV ENG] A bridge abutment with wings perpendicular to the face which act as counterforts; a very stable abutment, often used for architectural effect. {'yu-zə ʃaıpə bət-mənt}

utilidor [CIV ENG] An insulated, heated conduit built below the ground surface or supported above the ground surface to protect the contained water, steam, sewage, and fire lines from freezing. {'yu-ti-lədər}

utility [ENG] One of the nonprocess (support) facilities for a manufacturing plant; usually considered as facilities for steam, cooling water, de-ionized water, electric power, refrigeration, compressed and instrument air, and effluent treatment. {'yu-ti-li-əl-əd-ə}

U-tube heat exchanger [CHEM ENG] A heat exchanger system consisting of a bundle of U tubes (hairpin tubes) surrounded by a shell (outer vessel); one fluid flows through the tubes, and the other fluid flows through the shell, around the tubes. {'yu 'tub 'hēt iks, chān-ər}

U-tube manometer [ENG] A manometer consisting of a U-shaped glass tube partly filled with a liquid of known specific gravity, when the legs of the manometer are connected to separate sources of pressure, the liquid rises in one leg and drops in the other; the difference between the levels is proportional to the difference in pressures and inversely proportional to the liquid’s specific gravity. Also known as liquid-column gage. {'yu 'tub mənəm-ən-əd-ər}

U-value [ENG] A measure of heat transmission through a building part or a given thickness of insulating material, expressed as the number of British thermal units that will flow in 1 hour through 1 square foot of the structure or material from air to air with a temperature differential of 1°F. {'yu', val-ən}
V See electric potential, volt.
VA See volt-amper.

vac See millibar.
vacuum brake [MECH ENG] A form of air brake which operates by maintaining low pressure in the actuating cylinder; braking action is produced by opening one side of the cylinder to the atmosphere so that atmospheric pressure, aided in some designs by gravity, applies the brake. ('vak-yam ,bråk )
vacuum breaker [ENG] A device used to relieve a vacuum formed in a water supply line to prevent backflow. Also known as backflow preventer. ('vak-yam ,bråk-ôr )
vacuum cleaner [ENG] An electrically powered mechanical appliance for the dry removal of dust and loose dirt from rugs, fabrics, and other surfaces. ('vak-yam ,klé-nar )
vacuum concrete [CIV ENG] Concrete poured into a framework that is fitted with a vacuum mat to remove water not required for setting of the cement; in this framework, concrete attains its 28-day strength in 10 days and has a 25% higher crushing strength. ('vak-yam 'kän,krö-tô )
vacuum crystallizer [CHEM ENG] Crystallizer in which a warm saturated solution is fed to a lagged, closed vessel maintained under vacuum; the solution evaporates and cools adiabatically, resulting in crystallization. ('vak-yam 'krist-ôl,tz-ôr )
vacuum distillation [CHEM ENG] Liquid distillation under reduced (less than atmospheric) pressure; used to lower boiling temperatures and lessen the risk of thermal degradation during distillation. Also known as reduced-pressure distillation. ('vak-yam ,dis-tô'lâ-shân )
vacuum drying [ENG] The removal of liquid from a solid material in a vacuum system; used to lower temperatures needed for evaporation to avoid heat damage to sensitive material. ('vak-yam 'drît-ôn )
vacuum evaporation [ENG] Deposition of thin films of metal or other materials on a substrate, usually through openings in a mask, by evaporation from a boiling source in a hard vacuum. ('vak-yam i,vap-ô'râ-shân )
vacuum evaporator [ENG] A vacuum device used to evaporate metals and spectrographic carbon to coat (replicate) a specimen for electron spectroscopic analysis or for electron microscopy. ('vak-yam i'vap-ô,râd-ôr )
vacuum filter [ENG] A filter device into which a liquid-solid slurry is fed to the high-pressure side of a filter medium, with liquid pulled through to the low-pressure side of the medium and a cake of solids forming on the outside of the medium. ('vak-yam fil-tôr )
vacuum filtration [ENG] The separation of solids from liquids by passing the mixture through a vacuum filter. ('vak-yam fil'tra-shân )
vacuum flashing [CHEM ENG] The heating of a liquid that, upon release to a lower pressure (vacuum), undergoes considerable vaporization (flash). Also known as flash vaporization. ('vak-yam 'flash-ôn )
vacuum forming [ENG] Plastic-sheet forming in which the sheet is clamped to a stationary frame, then heated and drawn down into a mold by vacuum. ('vak-yam 'form-ôn )
vacuum freeze dryer [ENG] A type of indirect batch dryer used to dry materials that would be destroyed by the loss of volatile ingredients or by drying temperatures above the freezing point. ('vak-yam 'frezôrô-drît-ôn )
vacuum gage [ENG] A device that indicates the absolute gas pressure in a vacuum system. ('vak-yam 'gâ )
vacuum gripper [CONT SYS] A robot component that uses a suction cup connected to a vacuum source to lift and handle objects. ('vak-yam 'grîp-ôr )
vacuum heating [MECH ENG] A two-pipe steam heating system in which a vacuum pump is used to maintain a suction in the return piping, thus creating a positive return flow of air and condensate. ('vak-yam 'hêd-ôn )
vacuum mat [CIV ENG] A rigid flat metal screen faced by a linen filter, the back of which is kept under partial vacuum, used to suck out surplus air and water from poured concrete to produce a dense, well-shrunken concrete. ('vak-yam ,mat )
vacuum measurement [ENG] The determination of a fluid pressure less in magnitude than the pressure of the atmosphere. ('vak-yam 'mezh-ôr-månt )
vacuum pan salt [CHEM ENG] A salt made from salt brine boiled at reduced pressure in a triple-effect evaporator. ('vak-yam 'pan ,sôlt )
vacuum pencil  
**ENG** A pencillike length of tubing connected to a small vacuum pump, for picking up semiconductor slices or chips during fabrication of solid-state devices. [ˈvak-ɪmˈpensəl-ə]]

**MECH ENG** A compressor for exhausting air and noncondensable gases from a space that is to be maintained at subatmospheric pressure. [ˈvak-ɪmˌpomp]}

**ENG** A pressure relief device which is designed to allow fluid to enter a vacuum vessel which is designed to allow fluid to enter a seat. [ˈvak-ɪmˌfɜːr(k)l,drɪt-ə]}

**MECH ENG** The rod by means of which the disk resulting from vacuum or rapid pressure change. [ˈvak-ɪmˌsɛlf,dfrt-ə]}

**ENG** A part of the roof frame that extends diagonally from an inside corner position the cups are pulled outside the cylinder in large ducts; consists of a number of vanes which the disk or plug is moved to open and close a valve. [ˈvak-ɪmˌsɛlf]}

**MECH ENG** The rod of a piston-cylinder machine, for example, steam, diesel, or gasoline engine. [ˈvak-ɪmˌsɛlm]}

**DES ENG** The circular metal ring on which the valve head of a poppet valve rests when closed. [ˈvak-ɪmˌsɛlt]}

**MECH ENG** The valves and valve-operating mechanism for the control of fluid flow to and from a piston-cylinder machine, for example, steam, diesel, or gasoline engine. [ˈvak-ɪmˌsɛlm]}

**THERMO** An empirical formula for the dependence of the surface tension on temperature. \( \gamma = Kp^{1/3}T^{1/2} (1 - T/T_c)^n \) where \( \gamma \) is the surface tension, \( T \) is the temperature, \( T_c \) and \( p \) are the critical temperature and pressure, \( K \) is a constant, and \( n \) is a constant equal to approximately 1.23. \( \{\,\text{van} \,\text{dør}, \text{wɔlz} \,\text{zər-fəs} \,\text{ten-ʃən} \,\text{for-mə-ly-a} \,\text{la}\} \)

**ENG** A Sediment sampler that consists of a Plexiglas cylinder closed at both ends by rubber force cups, in the armed position the cups are pulled outside the cylinder and restrained by a releasing mechanism, and after the sample is taken, a length of surgical rubber tubing connecting the cups is sufficiently prestressed to permit the force cups to retain the sample in the cylinder. \( \{\,\text{van} \,\text{dørn} \,\text{sam-plər}\} \)

**MECH ENG** A flat or curved surface exposed to a flow of fluid so as to be forced to move or to rotate about an axis, to rechannel the flow, or to act as the impeller, for example, in a steam turbine, propeller fan, or hydraulic turbine. \( \{\,\text{vən}\} \)

**ENG** A portable instrument used to measure low wind speeds and airspeeds in large ducts; consists of a number of vanes radiating from a common shaft and set to rotate when facing the wind. \( \{\,\text{vən} \,\text{ən-əm-ən-əd-ər}\} \)

**MECH ENG** A type of rotary motor actuator which consists of a rotor with several spring-loaded sliding vanes in an elliptical chamber; hydraulic fluid enters the
chamber and forces the vanes before it as it moves to the outlets. {vàn 'tʃmʊd-ər 'trod-ə-rē the warm}

vane-type instrument [ENG] A measuring instrument utilizing the force of repulsion between fixed and movable magnetized iron vanes, or the force existing between a coil and a pivoted vane-shaped piece of soft iron, to move the indicating pointer. {vàn 'tʃp, 'in-strə-man-tət}

vapor [THERMO] A gas at a temperature below the critical temperature, so that it can be liquefied by compression, without lowering the temperature. {ˈvæ-pər}

vapor barrier [CIV ENG] A layer of material applied to the inner (warm) surface of a concrete wall or floor to prevent absorption and condensation of moisture. {ˈvæ-pər, 'bær-ər}

vapor-compression cycle [MECH ENG] A refrigeration cycle in which refrigerant is circulated through a machine which allows for successive boiling (or vaporization) of liquid refrigerant as it passes through an expansion valve, thereby producing a cooling effect in its surroundings, followed by compression of vapor to liquid. {ˈvæ-pər kæm-ˈpresh-ən sɪ-kəl}

vapor cycle [THERMO] A thermodynamic cycle, operating as a heat engine or a heat pump, during which the working substance is in, or passes through, the vapor state. {ˈvæ-pər sɪ-kəl}

vapor degreasing [ENG] A type of cleaning procedure for metals to remove grease, oils, and for low-temperature measurements. {ˈvæ-pər ˈdɛ-grə-səz}

vaporimeter [ENG] An instrument utilized to measure a substance’s vapor pressure, especially that of an alcoholic liquid, in order to determine its alcohol content. {ˌvæ-pər-ɪˈmɛtər}

evaporization See volatilization. {ˌvæ-pər-ə-ˈzə-lə-ˈzeɪʃən}

vaporization coefficient [THERMO] The ratio of the rate of vaporization of a solid or liquid at a given temperature and corresponding vapor pressure to the rate of vaporization that would be necessary to produce the same vapor pressure at this temperature if every vapor molecule striking the solid or liquid were absorbed there. {ˌvæ-pər-ə-ˈzə-ʃən, kə-ə-fish-ənt}

vaporization cooling [ENG] Cooling by volatilization of a nonflammable liquid having a low boiling point and high dielectric strength; the liquid is flowed or sprayed on hot electronic equipment in an enclosure where it vaporizes, carrying the heat to the enclosure walls, radiators, or heat exchanger. Also known as evaporative cooling. {ˌvæ-pər-ə-ˈzə-ʃən, kə-ə-lə-lə-

vaporizer [CHEM ENG] A process vessel in which a liquid is heated until it vaporizes; heat can be indirect (steam or heat-transfer fluid) or direct (hot gases or submerged combustion). {ˈvæ-pər-ɪzar}

vapor-liquid separation [CHEM ENG] The removal of liquid droplets from a flowing stream of gas or vapor, accomplished by impingement, cyclonic action, and absorption or adsorption operations. {ˈvæ-ˌpər ˈliːk-wəd, ˌsep-əˈrə-ʃən}

vapor-phase axial deposition [ENG] A method of fabricating graded-index optical fibers in which fine glass particles of silicon dioxide and germanium dioxide are synthesized and deposited on a rotating seed rod, and the synthesized porous preform is then pulled up and passes through a hot zone, undergoing dehydration and sintering, to become a porous preform. Abbreviated VAD. {ˈvæ-ˌpər ˈləz ək-ˈsē-əl ˌdep-əˈzish-ən}

vapor-phase reactor [CHEM ENG] A heavy steel vessel for carrying out chemical reactions on an industrial scale where efficient control over a vapor phase is needed, for example, in an oxidation process. {ˈvæ-ˌpər ˈləz ˌək-ˈstər-a-ˈrə-

vapor-pressure thermometer [ENG] A thermometer in which the vapor pressure of a homogeneous substance is measured and from which the temperature can be determined, used mostly for low-temperature measurements. {ˈvæ-ˌpər ˈprɛʃər thərˌmə-ˈpresh-ər}

vapor rate [CHEM ENG] In distillation, the upward flow rate of vapor through a distillation column. {ˈvæ-ˌpər, ˈræt}

vapor-recovery unit [ENG] 1. A device or system to catch vaporized materials (usually fuels or solvents) as they are vented. 2. In petroleum refining, a process unit to which gases and vaporized gasoline from various processing operations are charged, separated, and recovered for further use. {ˈvæ-ˌpər ˈriˈkæv-ə-ˈrē, ˌvɑr-ə-

vara [CIV ENG] A surveyors’ unit of length equal to 33½ inches (84.7 centimeters). {ˈvaɾə}

varactor [ELECTR] A semiconductor device characterized by a voltage-sensitive capacitance that resides in the space-charge region at the surface of a semiconductor bounded by an insulating layer. Also known as varactor diode; variable-capacitance diode; varicap; voltage-variable capacitor. {ˈvərəkər-

varactor diode See varactor. {ˈvərəkər ˈdɪˌdəd}

varactor tuning [ELECTR] A method of tuning in which varactor diodes are used to vary the capacitance of a tuned circuit. {ˈvərəkər ˈtuːn-

var hour meter [ENG] An instrument that measures and registers the integral of reactive power over time in the circuit to which it is connected. {ˈvɑr ˈhauər, ˈmɛd-ər}

variable-area meter [ENG] A flowmeter that works on the principle of a variable restrictor in the flowing stream being forced by the fluid to a position to allow the required flow-through. {ˌvər-ə-ˈbəl ˈvɛr-ə-ˈmɛd-ər}
variable-area track

variable-area track  [ENG ACOUS] A sound track divided laterally into opaque and transparent areas; a sharp line of demarcation between these areas corresponds to the waveform of the recorded signal. ['ver-é-a-bal 'trak]

variable attenuator  [ELECTR] An attenuator for reducing the strength of an alternating-current signal either continuously or in steps, without causing appreciable signal distortion, by maintaining a substantially constant impedance match. ['ver-é-a-bal 'aten-yá,wärd-ôr]

variable-capacitance diode  [ENG] A varactor. ['ver-é-a-bal 'kápas-âd-ôn 'di,ôd]

variable capacitor  [ELEC] A capacitor whose capacitance can be varied continuously by moving one set of metal plates with respect to another. ['ver-é-a-bal 'kápas-ôd-ôr]

variable click track  [ENG ACOUS] A click track with irregularly spaced clicks. ['ver-é-a-bal 'klik 'trak]

variable costs  [IND ENG] Costs which vary directly with the number of units produced, direct labor and material are examples. ['ver-é-a-bal 'kôstôs]

variable-density sound track  [ENG ACOUS] A constant-width sound track in which the average light transmission varies along the longitudinal axis in proportion to some characteristic of the applied signal. ['ver-é-a-bal 'klen-sôd-ô 'sauñ 'trak]

variable-depth sonar  [ENG] Sonar in which the projector and receiving transducer are mounted in a watertight pod that can be lowered below a vessel to an optimum depth for minimizing thermal effects when detecting underwater targets. ['ver-é-a-bal 'dên-sôd-ô 'sô'nôr 'trak]

variable element  [IND ENG] 1. An element with a time that varies significantly from cycle to cycle as a function of one or more variables occurring within the job. 2. An element that is common to two different jobs but whose time varies because of differences between the two jobs. ['var-ô-a-bal 'el-a-mont]

variable force  [MECH] A force whose direction or magnitude or both change with time. ['ver-é-a-bal 'förôs]

variable-inductance accelerometer  [ENG] An accelerometer consisting of a differential transformer with three coils and a mass which passes through the coils and is suspended from springs; the center coil is excited from an external alternating-current power source, and two end coils connected in series opposition are used to produce an ac output which is proportional to the displacement of the mass. ['ver-é-a-bal in'dák-tôns ik,sôl-ô-rëm-ôd-ôr]

variable-pitch propeller  [ENG] A controllable-pitch propeller whose blade angle may be adjusted to any angle between the low and high pitch limits. ['ver-é-a-bal 'pich prê-pôlôr]

variable radio-frequency radiosonde  [ENG] A radiosonde whose carrier frequency is modulated by the magnitude of the meteorological variables being sensed. ['ver-é-a-bal 'råd-ô-ô fré-kwan-sô 'råd-ô-ô,stånd]

variable-reluctance microphione  [ENG] Any microphone which operates on the principle that electrical resistance of any conductor is a function of its dimensions; when the dimensions of the conductor are varied mechanically, as constant current flows through it, the voltage across it varies as a function of this mechanical excitation; examples include the strain-gage accelerometer, and an accelerometer making use of a wire-line potentiometer. ['ver-é-a-bal rîzis-tôns ik,sôl-ô-rëm-ôd-ôr]

variable-resistance accelerometer  [ENG] Any accelerometer which operates on the principle that electrical resistance of any conductor is a function of its dimensions; when the dimensions of the conductor are varied mechanically, as constant current flows through it, the voltage across it varies as a function of this mechanical excitation; examples include the strain-gage accelerometer, and an accelerometer making use of a wire-line potentiometer. ['ver-é-a-bal rîzis-tôns ik,sôl-ô-rëm-ôd-ôr]

variable resistor  [SER] A rheostat. ['ver-é-a-bal 'rîzis-tôr]

variable-sequence robot  [CONT SYS] A robot controlled by instructions that can be modified. ['ver-é-a-bal 'sê-kwôns 'rô,baît]

variable-speed drive  [MECH ENG] A mechanism transmitting motion from one shaft to another that allows the velocity ratio of the shafts to be varied continuously. ['ver-é-a-bal 'spôd 'dri:v]

variable-volume air system  [MECH ENG] An air-conditioning system in which the volume of air delivered to each controlled zone is varied automatically from a preset minimum to a maximum value, depending on the load in each zone. ['ver-é-a-bal 'vål-ôm 'ôr,sis-tôm]

varicap  See varactor. ['var-ô-ôr]

variety  [SYS ENG] The logarithm (usually to base 2) of the number of discriminations that an observer or a sensing system can make relative to a system. ['va-ri-a-ô]

Varignon’s theorem  [MECH] The theorem that the moment of a force is the algebraic sum of the moments of its vector components acting at a common point on the line of action of the force. ['va-ri-ôn-ôn ,tir-a-ôm]

variograph  [ENG] A recording variometer. ['ver-é-a-graf]

variometer  [ENG] A geomagnetic device for detecting and indicating changes in one of the components of the terrestrial magnetic field vector, usually magnetic declination, the horizontal intensity component, or the vertical intensity component. ['ver-é-a-nôm-ôd-ôr]

varistor  [ELECTR] A two-electrode semiconductor device having a voltage-dependent nonlinear resistance; its resistance drops as the applied voltage is increased. Also known as voltage-dependent resistor. ['va-rô-stôr]

varmeter  [ENG] An instrument for measuring reactive power in vars. Also known as reactive volt-amperes meter. ['va-rô,ô-dôm-ô]

V belt  [DES ENG] An endless power-transmission belt with a trapezoidal cross section which
runs in a pulley with a V-shaped groove; it transmits higher torque at less width and tension than a flat belt. [MECH ENG] A belt, usually endless, with a trapezoidal cross section which runs in a pulley with a V-shaped groove, with the top surface of the belt approximately flush with the top of the pulley. {vēˈəˌka:l}

V-bend die [MECH ENG] A die with a triangular cross-sectional opening to provide two edges over which bending is accomplished. {vēˈbendˈdī}

V block [ENG] A square or rectangular steel block having a 90° V groove through the center, and sometimes provided with clamps to secure round workpieces. {vēˈblāk}

V-bucket carrier [MECH ENG] A conveyor consisting of two strands of roller chain separated by V-shaped steel buckets, used for elevating and conveying nonabrasive materials, such as coal. {vēˈbākˈərˌkarˌeər}

V cut [ENG] In mining and tunneling, a cut which the material blasted out in plan is like the letter V, usually consists of six or eight holes drilled into the face, half of which form an acute angle with the other half. {vēˈkət}

vectopluviometer [ENG] A rain gage or array of rain gages designed to measure the inclination and direction of falling rain; vectopluviometers may be constructed in the fashion of a wind vane so that the receiver always faces the wind, or they may consist of four or more receivers arranged to point in cardinal directions. {vēkˈtōˌpluˌvēˈəmˌədˈər}

vector impedance meter [ENG] An instrument that not only determines the ratio between voltage and current, to give the magnitude of impedance, but also determines the phase difference between these quantities, to give the phase angle of impedance. {vēkˈtôr imˈpêdənsˌmədˈər}

vector momentum See momentum. {vēkˈtôr məˈmenˌtəm}

vector power [ELEC] Vector quantity equal in magnitude to the square root of the sum of the squares of the active power and the reactive power. {vēkˈtôr pəˈwaˌər}

vector-power factor [ELEC] Ratio of the active power to the vector power, it is the same as power factor in the case of simple sinusoidal quantities. {vēkˈtôr pəˈwaˌərˌfəˈkər}

vector voltmeter [ENG] A two-channel high-frequency sampling voltmeter that measures phase as well as voltage of two input signals of the same frequency. {vēkˈtôr vəlˈtôrˌmədˈər}

vee path [ENG] In ultrasonic testing, the path of an angle beam from an ultrasonic search unit in which the waves are reflected off the opposite surface of the test piece and returned to the examination surface in a manner which has the appearance of the letter V. {vēˈpāth}

vegetable tanning [ENG] Leather tanning using plant extracts, such as tannic acid. {vēˈjētəˌbalˈtanˌtān}

vehicle [MECH ENG] A self-propelled wheeled machine that transports people or goods on or off roads; automobiles and trucks are examples. {ˌveəˌka:l}

velocimeter [ENG] An instrument for measuring the speed of sound in water; two transducers transmit acoustic pulses back and forth over a path of fixed length, each transducer immediately initiating a pulse upon receiving the previous one; the number of pulses occurring in a unit time is measured. {ˌveləˈsĭmˌədər}

velocity [MECH] 1. The rate of change of position of a body; it is a vector quantity having direction as well as magnitude. Also known as linear velocity. 2. The speed at which the detonating wave passes through a column of explosives, expressed in meters or feet per second. {vəˈlāsˌadˈər}

velocity analysis [MECH] A graphical technique for the determination of the velocities of the parts of a mechanical device, especially those of a plane mechanism with rigid component links. {vəˈlāsˌadˈərˌnakˌədəsˌsōs}

velocity constant [CONT SYS] The ratio of the rate of change of the input command signal to the steady-state error, in a control system where these two quantities are proportional. {vəˈlāsˌadˈərˌkāˌstənt}

velocity control See rate control. {vəˈlāsˌadˈərˌkənˌtrōl}

velocity error [CONT SYS] The difference between the rate of change of the actual position of a control system component and the rate of change of the desired position. {vəˈlāsˌadˈərˌərər}

velocity-head tachometer [ENG] A type of tachometer in which the device whose speed is to be measured drives a pump or blower, producing a fluid flow, which is converted to a pressure. {vəˈlāsˌadˈərˌhēdˈteɪkəˌkāˌədər}

velocity hydrophone [ENG ACOUS] A hydrophone in which the electric output essentially matches the instantaneous particle velocity in the impressed sound wave. {vəˈlāsˌadˈərˌhīdˈdrəˌfən}

velocity microphone [ENG ACOUS] A microphone whose electric output depends on the velocity of the air particles that form a sound wave; examples are a hot-wire microphone and a ribbon microphone. {vəˈlāsˌadˈərˌmīˈtəkəˌfənˌfən}

velocity pressure See wind pressure. {vəˈlāsˌadˈərˌpreshərˌfən}

velocity ratio [MECH ENG] The ratio of the velocity given to the effort or input of a machine to the velocity acquired by the load or output. {vəˈlāsˌadˈərˌrāˈshō}

velocity servomechanism [CONT SYS] A servomechanism in which the feedback-measuring device generates a signal representing a measured value of the velocity of the output shaft. Also known as rate servomechanism. {vəˈlāsˌadˈərˌsärˈvoˌmekəˌnizˌəm}

velocity-type flowmeter [ENG] A turbine-type fluid-flow measurement device in which the fluid
flow actuates the movement of a wheel or turbine-type impeller, giving a volume-time reading. Also known as current meter, rotating meter, venturi tube, venturi meter.

veneer

A type of construction in which the framework is faced with a thin external layer of material, such as marble.

veneer construction

[BUILD] The period of time during which expenditures and reimbursements involve the vertical plane.

ventilation

See glaze.

ventilator

[ENG] A device with an adjustable aperture for regulating the flow of fresh or stagnant air.

vent stack

[BUILD] The portion of a soil stack above the highest fixture.

venture life

[IND ENG] The period of time during which expenditures and reimbursements involving a given venture occur. Also known as financial life.

venturi flume

[ENG] An open flume with a constricted flow which causes a drop in the hydraulic grade line, used in flow measurement.

venturi meter

[ENG] An instrument for efficiently measuring fluid flow rate in a piping system; a nozzle section increases velocity and is followed by an expanding section for recovery of kinetic energy.

venturi scrubber

[CHEM ENG] A gas-cleaning device in which liquid injected at the throat of a venturi is used to scrub dust and mist from the gas flowing through the venturi.

venturi tube

[ENG] A constriction that is placed in a pipe and causes a drop in pressure as fluid flows through it, consisting essentially of a short straight pipe section or throat between two tapered sections; it can be used to measure fluid flow rate (a venturi meter), or to draw fuel into the main flow stream, as in a carburetor.

verbal information verification

[ENG ACOUS] A method of talker authentication that involves checking the content of a spoken password or pass-phrase, such as a personal identification number, a social security number, or a mother’s maiden name. Abbreviated VIV.

verge

[BUILD] The edge of a sloping roof which projects over a gable.

vergeboard

[BUILD] One of the boards utilized as the finish of the eaves on the gable end of a structure. Also known as bargeboard, gableboard.

verglas

See glazed.

vernier

[ENG] A short, auxiliary scale which slides along the main instrument scale to permit accurate fractional reading of the least main division of the main scale.

vernier caliper

[ENG] A caliper rule with an attached vernier scale.

vernier dial

[ENG] A tuning dial in which each complete rotation of the control knob causes only a fraction of a revolution of the main shaft, permitting fine and accurate adjustment.

vertical band saw

[MECH ENG] A band saw whose blade operates in the vertical plane, ideal for contour cutting.

vertical boiler

[MECH ENG] A Fire-tube boiler having vertical tubes between top head and tube sheet, connected to the top of an internal furnace.

vertical boring mill

[MECH ENG] A large type of boring machine in which a rotating workpiece is fastened to a horizontal table, which resembles a four-jaw independent chuck with extra radial T slots, and the tool has a traverse motion.

vertical broaching machine

[MECH ENG] A broaching machine having the broach mounted in the vertical plane.

vertical compliance

[ENG ACOUS] The ability of a stylus to move freely in a vertical direction while in the groove of a phonograph record.

vertical conveyor

[MECH ENG] A materials-handling machine designed to move or transport bulk materials or packages upward or downward.

vertical-current recorder

[ENG] An instrument which records the vertical electric current in the atmosphere.

vertical drop

[MECH] The drop of an object in trajectory or along a plumb line, measured vertically from its line of departure to the object.

vertical-face breakwater

[CIV ENG] A breakwater whose mound of rubble does not rise above the water, but is surmounted by a vertical-face superstructure of masonry or concrete, may be built without mound rubble, provided sea bed is firm.

vertical field balance

[ENG] An instrument that
measures the vertical component of the magnetic field by means of the torque that the field component exerts on a horizontal permanent magnet. ['vərd-ə-kəl ˈfild ˌhæl-ənzs]

**vertical firing** [MECH ENG] The discharge of fuel and air perpendicular to the burner in a furnace. ['vərd-ə-kəl ˈfɪr-ən]

**vertical force instrument** See heeling adjuster. ['vərd-ə-kəl ˈfɔːr ˈin-ˌstrə-ˌmɑnt]

**vertical guide idlers** [MECH ENG] Idler rollers about 3 inches (8 centimeters) in diameter so placed as to make contact with the edge of the belt conveyer should it run too much to one side. ['vərd-ə-kəl ˈɡɪd ˈɪd-ˌlərz]

**vertical intensity variometer** [ENG] A variometer employing a large permanent magnet and equipped with very fine steel knife-edges or pivots resting on agate planes or saddles and balanced so that its magnetic axis is horizontal. Also known as Z variometer. ['vərd-ə-kəl ɪnˈtɛn-səd-ə ˈvər-ə-ˈɛm-ˌəd-ər]

**vertical-lift bridge** [CIV ENG] A movable bridge with a span that rises on towers, lifted by steel ropes. ['vərd-ə-kəl ˈlɪft ˈbrɪj]

**vertical-lift gate** [CIV ENG] A dam spillway gate of which the movable parts are raised and lowered vertically to regulate water flow. ['vərd-ə-kəl ˈlɪft ˈɡɑt]

**vertical metal oxide semiconductor technology** [ELECTR] For semiconductor devices, a technology that involves essentially the formation of four diffused layers in silicon and etching of a V-shaped groove to a precisely controlled depth in the layers, followed by deposition of metal over silicon dioxide in the groove to form the gate electrode. Abbreviated VMOS technology. ['vərd-ə-kəl ˈmed-əl ˈjækstəd ˈsɛm-ə-ˌkanˌdæktər tekˈnɛl-ə-ʃə]

**vertical obstacle sonar** [ENG] An active sonar used to determine heights of objects in the path of a submersible vehicle, its beam sweeps along a vertical plane, about 30° above and below the direction of the vehicle’s motion. Abbreviated VOS. ['vərd-ə-kəl ˈæb-ə-ˌkəl ˈsɔʊˌnər]

**vertical recording** [ELECTR] Magnetic recording in which bits are magnetized in directions perpendicular to the surface of the recording medium, allowing the bits to be smaller. Also known as perpendicular recording. [ENG ACOUS] A type of disk recording in which the groove modulation is perpendicular to the surface of the recording medium, so the cutting stylus moves up and down rather than from side to side during recording. Also known as hill-and-dale recording. ['vərd-ə-kəl ˈrɪkərd-ən]

**vertical scale** [DES ENG] The ratio of the vertical dimensions of a laboratory model to those of the natural prototype; usually exaggerated in relation to the horizontal scale. ['vərd-ə-kəl ˈskeɪl]

**vertical seismograph** [ENG] An instrument that records the vertical component of the ground motion during an earthquake. ['vərd-ə-kəl ˈsɪzməˌɡrɑf]

**vertical traverse** [MECH ENG] The angle through which a robot's arm can swing up and down, typically 30°. ['vərd-ə-kəl ˈtrævnər]

**vertical turbine pump** See deep-well pump. ['vərd-ə-kəl ˈtɜrn-bən]

**vertical turret lathe** [DES ENG] Similar to the horizontal turret lathe but capable of handling heavier, bulkier workpieces; it is constructed with a rotary, horizontal worktable whose diameter (30–74 inches, or 76–188 centimeters) normally designates the capacity of the machine; a crossrail mounted above the worktable carries a turret, which indexes in a vertical plane with tools that may be fed either across or downward. ['vərd-ə-kəl ˈtɔr-ət ˌlæt]
vibrating conveyor

without stopping. Also known as way point.

vibrating conveyor [ENG] An oscillating conveyor.

vibrating core tube [MECH ENG] A sediment corer made to vibrate in order to eliminate the resistance of compacted ocean floor sediments, sands, and gravel.

vibrating feeder [MECH ENG] A feeder for bulk materials (pulverized or granulated solids), which are moved by the vibration of a slightly slanted, flat vibrating surface.

vibrating grizzlies [MECH ENG] Bar grizzlies mounted on eccentrics so that the entire assembly is given a forward and backward movement at a speed of some 100 strokes a minute.

vibrating needle [ENG] A magnetic needle used in compass adjustment to find the relative intensity of the horizontal components of the earth's magnetic field and the magnetic field at the compass location.

vibrating pebble mill [MECH ENG] A size-reduction device in which feed is ground by the action of vibrating, moving pebbles.

vibrating-reed electrometer [ENG] An instrument using a vibrating capacitor to measure a small charge, often in combination with an ionization chamber.

vibrating-reed frequency meter [ENG] A frequency meter consisting of steel reeds having different and known natural frequencies, all excited by an electromagnet carrying the alternating current whose frequency is to be measured. Also known as Frahm frequency meter; reed frequency meter.

vibrating-reed magnetometer [ENG] An instrument that measures magnetic fields by noting their effect on the vibration of reeds excited by an alternating magnetic field.

vibrating-reed tachometer [ENG] A tachometer consisting of a group of reeds of different lengths, each having a specific natural frequency of vibration; observation of the vibrating reed when in contact with a moving mechanical device indicates the frequency of vibration for the device.

vibrating screen [MECH ENG] A sizing screen which is vibrated by solenoid or magnetostriction, or mechanically by eccentrics or unbalanced spinning weights.

vibrating screen classifier [MECH ENG] A classifier whose screening surface is hung by rods and springs, and moves by means of electric vibrators.

vibrating wire transducer [ENG] A device for measuring ocean depth, consisting of a very fine tungsten wire stretched in a magnetic field so that it vibrates at a frequency that depends on the tension in the wire, and thereby on pressure and depth.

vibration [MECH] A continuing periodic change in a displacement with respect to a fixed reference.

vibration damping [MECH ENG] The processes and techniques used for converting the mechanical vibrational energy of solids into heat energy.

vibration drilling [MECH ENG] Drilling in which a frequency of vibration in the range of 100 to 20,000 hertz is used to fracture rock.

vibration galvanometer [ENG] An alternating-current galvanometer in which the natural oscillation frequency of the moving element is equal to the frequency of the current being measured.

vibration isolation [ENG] The isolation, in structures, of those vibrations or motions that are classified as mechanical vibration, involves the control of the supporting structure, the placement and arrangement of isolators, and control of the internal construction of the equipment to be protected.

vibration limit [CIV ENG] The amount of time during which fresh concrete remains mobile when subjected to vibration.

vibration machine [MECH ENG] A device for subjecting a system to controlled and reproducible mechanical vibration. Also known as shake table.

vibration magnetometer [ENG] An instrument that measures the period of vibration of a magnetic needle to determine the horizontal magnetic field strength at the needle.

vibration meter [ENG] See vibrometer.

vibration pudding [CIV ENG] A technique used to achieve proper consolidation of concrete; vibrating machines may be drawn vertically through the cement, or used on the surface, or placed against the form holding the concrete in place. Also known as mechanical puddling.

vibration separation [MECH ENG] Classification or separation of grains of solids in which separation through a screen is expedited by vibration or oscillatory movement of the screening mediums.

vibration suppression [MECH ENG] The prevention of undesirable vibration, either through passive means such as damping or through active techniques involving feedback control.

vibrator [ELEC] An electromechanical device used primarily to convert direct current to alternating current but also used as a synchronous rectifier. It contains a vibrating reed which has a set of contacts that alternate hit stationary contacts attached to the frame, reversing the direction of current flow; the reed is activated
when a soft iron slug at its tip is attracted to the pole piece of a driving coil. [MECH ENG] An instrument which produces mechanical oscillations.\(\{'v\text{-}r\text{-}t\text{-}r\text{-}k\text{-}w\text{-}p\text{-}m\text{-}t\}\)

vibratory centrifuge [MECH ENG] A high-speed rotating device to remove moisture from pulverized coal or other solids. \(\{'v\text{-}t\text{-}r\text{-}t\text{-}r\text{-}k\text{-}s\text{-}t\text{-}j\text{-}f\text{-}j\}\)

vibratory equipment [MECH ENG] Reciprocating or oscillating devices which move, shake, dump, compact, settle, tamp, pack, screen, or feed solids or slurries in process. \(\{'v\text{-}t\text{-}r\text{-}t\text{-}r\text{-}k\text{-}s\text{-}t\text{-}j\text{-}f\text{-}j\}\)

vibratory hammer [MECH ENG] A type of pile hammer which uses electrically activated eccentric cams to vibrate piles into place. \(\{'v\text{-}t\text{-}r\text{-}t\text{-}r\text{-}k\text{-}s\text{-}t\text{-}j\text{-}f\text{-}j\}\)

vibroenergy separator [MECH ENG] A screen-type device for classification or separation of grains of solids by a combination of gyratory motion and auxiliary vibration caused by balls bouncing against the lower surface of the screen cloth. \(\{'v\text{-}r\text{-}t\text{-}r\text{-}k\text{-}o\text{-}r\text{-}k\text{-}s\text{-}p\text{-}j\text{-}r\text{-}d\text{-}j\}\)

vibrograph [ENG] An instrument that provides a complete oscillographic record of a mechanical vibration; in one form a moving stylus records the motion being measured on a moving paper or film. \(\{'v\text{-}t\text{-}r\text{-}t\text{-}r\text{-}k\text{-}s\text{-}t\text{-}j\text{-}f\text{-}j\}\)

vibrometer [ENG] An instrument designed to measure the amplitude of a vibration. Also known as vibration meter. \(\{'v\text{-}t\text{-}r\text{-}t\text{-}r\text{-}k\text{-}s\text{-}t\text{-}j\text{-}f\text{-}j\}\)

Vicat needle [ENG] An apparatus used to determine the setting time of cement by measuring the pressure of a special needle against the cement surface. \(\{'v\text{-}k\text{-}l\text{-}k\text{-}n\text{-}d\text{-}j\}\)

Victaulic coupling [DES ENG] A development in which a groove is cut around each end of pipe instead of the usual threads; two ends of pipe are then lined up and a rubber ring is fitted around the joint; two semicircular bands, forming a sleeve, are placed around the ring and are drawn together with two bolts, which have a ridge on both edges to fit into the groove of the pipe; as the bolts are tightened, the rubber ring is compressed, making a watertight joint, while the ridges fitting in the grooves make it strong mechanically. \(\{'v\text{-}k\text{-}l\text{-}l\text{-}j\text{-}k\text{-}l\text{-}p\text{-}l\text{-}j\}\)

videomagnetograph [ENG] A sensitive and accurate device for measuring the strength and sign of solar magnetic fields, using the signal that results when successive images in right- and left-circularly polarized light are subtracted; the images are taken in the wing of a spectral line, using a birefringent filter. \(\{'v\text{-}d\text{-}m\text{-}g\text{-}n\text{-}d\text{-}j\}\)

virgin See straight-run. \(\{'v\text{-}r\text{-}j\text{-}n\}\)

viral coefficients [THERMO] For a given temperature \(T\), one of the coefficients in the expansion of \(\frac{\Delta H}{RT}\) in inverse powers of the molar volume, where \(P\) is the pressure and \(R\) is the gas constant. \(\{'v\text{-}r\text{-}j\text{-}n\text{-}k\text{-}v\text{-}l\text{-}j\text{-}f\text{-}h\text{-}j\}\)

Virmel engine [MECH ENG] A cat-and-mouse engine that employs vanelike pistons whose motion is controlled by a gear-and-crank system; each set of pistons stops and restarts when a chamber reaches the spark plug. \(\{'v\text{-}r\text{-}m\text{-}l\text{-}n\text{-}j\text{-}n\}\)

**virtual acoustics** [ENG ACOUS] Digitally processing sounds so that they appear to come from particular locations in three-dimensional space, with the goal of simulating the complex acoustic field experienced by a listener within a natural environment. Also known as auralization, three-dimensional sound. \(\{'v\text{-}r\text{-}c\text{-}w\text{-}l\text{-}a\text{-}l\text{-}o\text{-}k\text{-}s\text{-}t\text{-}k\}\)

**virtual displacement** [MECH] 1. Any change in the positions of the particles forming a mechanical system. 2. An infinitesimal change in the positions of the particles forming a mechanical system, which is consistent with the geometrical constraints on the system. \(\{'v\text{-}r\text{-}c\text{-}w\text{-}l\text{-}a\text{-}l\text{-}d\text{-}j\text{-}s\text{-}p\text{-}l\text{-}m\text{-}n\text{-}j\}\)

**virtual entropy** [THERMO] The entropy of a system, excluding that due to nuclear spin. Also known as practical entropy. \(\{'v\text{-}r\text{-}c\text{-}w\text{-}l\text{-}a\text{-}l\text{-}n\text{-}t\text{-}r\text{-}p\text{-}j\text{-}s\}\)

**virtual leak** [ENG] The semblance of the vacuum system leak caused by a gradual desorptive release of gas at a rate which cannot be accurately predicted. \(\{'v\text{-}r\text{-}c\text{-}w\text{-}l\text{-}a\text{-}l\text{-}l\text{ek}\}\)

**virtual manufacturing** [IND ENG] The modeling of manufacturing systems using audiovisual or other sensory features to simulate or design an actual manufacturing environment, or the prototyping and manufacture of a proposed product mainly through effective use of computers, used to predict potential problems and inefficiencies in product functionality and manufacturability before real manufacturing occurs. \(\{'v\text{-}r\text{-}c\text{-}w\text{-}l\text{-}a\text{-}l\text{-}m\text{-}a\text{-}n\text{-}t\text{-}f\text{-}k\text{-}c\text{-}h\text{-}j\text{-}i\text{j}\}\)

**virtual PPI reflectoscope** [ENG] A device for superimposing a virtual image of a chart on a plan position indicator (PPI) pattern; the chart is usually prepared with white lines on a black background to the scale of the plan position indicator range scale. \(\{'v\text{-}r\text{-}c\text{-}w\text{-}l\text{-}a\text{-}l\text{-}p\text{-}j\text{-}l\text{e}\text{-}l\text{e}\text{-}k\text{-}t\text{-}a\text{-}s\text{-}k\}\)

**virtual work** [MECH] The work done on a system during any displacement which is consistent with the constraints on the system. \(\{'v\text{-}r\text{-}c\text{-}w\text{-}l\text{-}a\text{-}l\text{-}w\text{-}r\text{-}k\}\)

**virtual work principle** See principle of virtual work. \(\{'v\text{-}r\text{-}c\text{-}w\text{-}l\text{-}a\text{-}l\text{-}w\text{-}r\text{-}k\text{-}p\text{-}r\text{-}n\text{-}n\text{-}s\text{-}s\text{-}p\text{-}j\}\)

**visbreaking** See viscosity breaking. \(\{'v\text{-}s\text{-}b\text{-}r\text{-}k\text{-}i\text{j}\}\)

**viscoelasticity** [MECH] Property of a material which is viscous but which also exhibits certain elastic properties such as the ability to store energy of deformation, and in which the application of a stress gives rise to a strain that approaches its equilibrium value slowly. \(\{'v\text{-}s\text{-}k\text{-}l\text{-}i\text{j}\text{-}l\text{-}s\text{-}t\text{-}i\text{s\text{-}d\text{-}j\}\)

**viscoelastic theory** [MECH] The theory which attempts to specify the relationship between stress and strain in a material displaying viscoelasticity. \(\{'v\text{-}s\text{-}k\text{-}l\text{-}i\text{j}\text{-}l\text{-}s\text{-}t\text{-}i\text{k\text{-}h\text{-}n\text{-}l\text{-}n\text{-}k\text{-}j\text{-}e\}\)

**viscometer gage** [ENG] A vacuum gage in
viscosity

which the gas pressure is determined from the viscosity of the gas. \( \text{viskamin-dár, gā} \)

viscometry \[ \text{ENG} \] A branch of rheology, the study of the behavior of fluids under conditions of internal shear, the technology of measuring viscosities of fluids. \( \text{viskamin-ô-trē} \)

viscous process \[ \text{CHEM ENG} \] A process for the manufacture of rayon by treating cellulose with caustic soda, and with carbon disulfide to form cellulose xanthate, which is then dissolved in a weak caustic solution to form the viscose, fibers are used as silk substitutes. \( \text{viskōs, prä-sās} \)

viscosity blending chart \[ \text{CHEM ENG} \] A graphical means for estimating the viscosity at a given temperature of a blend of petroleum products. \( \text{viskiskás-ôd-ē 'brak-iñ} \)

viscosity breaking \[ \text{CHEM ENG} \] A petroleum refinery process used to lower or break the viscosity of high-viscosity residuum by thermal cracking of molecules at relatively low temperatures. Also known as visbreaking. \( \text{viskiskás-ôd-ē 'kan/var-ôh,nåb-bal} \)

viscosity gage \[ \text{CHEM ENG} \] See molecular gage. \( \text{viskiskás-ôd-ē, gā} \)

viscosity-gravity constant \[ \text{CHEM ENG} \] An index of the chemical composition of crude oil, defined as the general relation between specific gravity and Saybolt Universal viscosity; the constant is low for paraffinic crude oils, high for naphthenic crude oils. Abbreviated VGC. \( \text{viskiskás-ôd-ē 'grav-ôd-ē, kan-stant} \)

viscosity index \[ \text{CHEM ENG} \] An arbitrary scale used to show the magnitude of viscosity changes in lubricating oils with changes in temperature. Abbreviated VI. \( \text{viskiskás-ôd-ē 'in,in,deks} \)

viscosity manometer \[ \text{CHEM ENG} \] See molecular gage. \( \text{viskiskás-ôd-ē 'man/am-ôd-ê} \)

viscosity-temperature chart \[ \text{CHEM ENG} \] A chart with which the kinematic or Saybolt viscosity of a petroleum oil at any temperature within a limited range may be ascertained, provided viscosities at two temperatures are known. \( \text{viskiskás-ôd-ē 'tem-pra-char, char} \)

viscous damping \[ \text{MECH ENG} \] A method of converting mechanical vibrational energy of a body into heat energy, in which a piston is moved through liquid or air in a cylinder or bellows that is attached to a support. \( \text{viskōs 'damp-iñ} \)

viscous-drag gas-density meter \[ \text{ENG} \] A device to measure gas-mixture densities, driven impellers in sample and standard chambers create measurable turbulences (drags) against respective nonrotating impellers. \( \text{viskōs 'drag gās d'en-sad-ôd-ē, mèd-ô-ar} \)

viscous fillers \[ \text{MECH ENG} \] A packaging machine that fills viscous product into cartons; there are two basic types, straight-line and rotary plunger; the former operates intermittently on a given number of containers, while the latter fills and discharges containers continuously. \( \text{viskōs 'fil-ar} \)

viscous filter \[ \text{ENG} \] An air-cleaning filter having a surface coated with a viscous liquid to trap particulates in the airstream. \( \text{viskōs 'fil-tôr} \)

viscous impingement filter \[ \text{ENG} \] A filter made up of a relatively loosely arranged medium, such that the airstream is forced to change direction frequently as it passes through the filter medium; the medium usually consists of spun-glass fibers, metal screens, or layers of crimped expanded metal whose surfaces are coated with a tacky oil. \( \text{viskōs im'pîn-pin, 'mant 'fil-tôr} \)

viscous lubrication \[ \text{CHEM ENG} \] See complete lubrication. \( \text{viskōs 'li-brak-kā-shôn} \)

Vise \[ \text{DES ENG} \] A tool consisting of two jaws for holding a workpiece, opened and closed by a screw, lever, or cam mechanism. \( \text{vis} \)

visibility meter \[ \text{ENG} \] An instrument for making direct measurements of visual range in the atmosphere or of the physical characteristics of the atmosphere which determine the visual range. \( \text{visi-sb'il-ôd-ê, mèd-ô-ar} \)

vision light \[ \text{BUILD} \] A viewing window set in a fire door, usually glazed with wire glass. \( \text{vîshn, 'lit} \)

visual comparator \[ \text{OPTICAL} \] See optical comparator. \( \text{vîzh-wål kam/'par-ôd-ô-ar} \)

visual servoing \[ \text{CONT SYS} \] The use of a solid-state camera on the end effector of a robot to provide feedback. \( \text{vîzh-wål 'sar-wô-in} \)

vitrification \[ \text{ENG} \] Heat treatment of a material such as a ceramic to produce a glazed surface. \( \text{vi-tra-fâka-shôn} \)

vitrified wheel \[ \text{DES ENG} \] A grinding wheel with a glassy or porcelainic bond. \( \text{vi-tra-fôd 'wel} \)

VIV See verbal information verification.

vixen file \[ \text{DES ENG} \] A flat file with curved teeth, used for filing soft metals. \( \text{visan, 'fil} \)

V jewels \[ \text{DES ENG} \] Jewel bearings used in conjunction with a conical pivot, the bearing surface being a small radius located at the apex of a conical recess; found primarily in electric measuring instruments. \( \text{vē, 'jûl} \)

VLSI circuit \[ \text{DES ENG} \] See very large scale integrated circuit.

VME technology \[ \text{DES ENG} \] Vertical metal oxide semiconductor technology. \( \text{vē, mōs tek,nål-ô-jē} \)

V-notch weir \[ \text{DES ENG} \] See triangular-notch weir. \( \text{vē, 'nack 'wer} \)

VOC See volatile organic compounds.

voice coil \[ \text{ENG ACOUS} \] The coil that is attached to the diaphragm of a moving-coil loudspeaker and moves through the air gap between the pole pieces due to interaction of the fixed magnetic field with that associated with the audio-frequency current flowing through the voice coil. Also known as loudspeaker voice coil; speech coil (British usage). \( \text{vōis 'kōi} \)

voice print \[ \text{ENG ACOUS} \] A voice spectrograph that has individually distinctive patterns of voice characteristics that can be used to identify one person's voice from other voice patterns. \( \text{vōis, 'prînt} \)

voice response \[ \text{ENG ACOUS} \] The process of
generating an acoustic speech signal that communicates an intended message, such that a machine can respond to a request for information by talking to a human user. Also known as speech synthesis. \{`vois ri,spåns\}

**void channels** \[ENG\] The open passages of a porous or packed medium through which liquid or gas can flow. \{`voið ,chan-ːal\}

**Voigt body** \[SER\] Kelvin body. \{`foil ,bād-ː\}

**Voigt notation** \[MECH\] A notation employed in the theory of elasticity in which elastic constants and elastic moduli are labeled by replacing the pairs of letters \(xx, yy, zz, \gamma \gamma, x\gamma, \) and \(xy\) by the number 1, 2, 3, 4, 5, and 6 respectively. \{`foil nɔ,tā-shən\}

**volatile organic compounds** \[ENG\] Organic chemicals that produce vapors readily at room temperature and normal atmospheric pressure, including gasoline and solvents such as toluene, xylene, and tetrachloroethylene. They form photochemical oxidants (including ground-level ozone) that affect health, damage materials, and cause crop and forest losses. Many are also hazardous air pollutants. Abbreviated VOC.

**voltage** \[ELEC\] The unit of potential difference or of the alternating-current input voltage; useful for high-voltage, low-current supplies. \{`vōlt\}

**voltage amplification** \[ELECTR\] The ratio of the magnitude of the voltage across a specified load impedance to the magnitude of the input voltage of the amplifier or other transducer feeding that load, often expressed in decibels by multiplying the common logarithm of the ratio by 20. \{`vōlt- tij ,am-plə-ˈlakə-shən\}

**voltage amplifier** \[ELECTR\] An amplifier designed primarily to build up the voltage of a signal, without supplying appreciable power. \{`vōlt- tij ,am-pləˌfi-ər\}

**voltage coefficient** \[ELEC\] For a resistor whose resistance varies with voltage, the ratio of the fractional change in resistance to the change in voltage. \{`vōlt- tij ,kō-lˌfish-ənt\}

**voltage-current dual** \[ELEC\] A pair of circuits in which the elements of one circuit are replaced by their dual elements in the other circuit according to the duality principle, for example, currents are replaced by voltages, capacitances by resistances. \{`vōltˌtij ˈkə-ˌrant ˈdul\}

**voltage-dependent resistor** \[SER\] Varistor. \{`vōltˌtij dilˈpən-dənt riˌzis-tər\}

**voltage drop** \[ELEC\] The voltage developed across a component or conductor by the flow of current through the resistance or impedance of that component or conductor. \{`vōltˌtij ,dräp\}

**voltage gain** \[ELECTR\] The difference between the output signal voltage level in decibels and the input signal voltage level in decibels; this value is equal to 20 times the common logarithm of the ratio of the output voltage to the input voltage. \{`vōltˌtij ,ɡān\}

**voltage generator** \[ELECTR\] A two-terminal circuit element in which the terminal voltage is independent of the current through the element. \{`vōltˌtij ˈjen-əˌrād-ər\}

**voltage gradient** \[ELEC\] The voltage per unit length along a resistor or other conductive path. \{`vōltˌtij ,ɡrād-ə-nt\}

**voltage level** \[ELEC\] At any point in a transmission system, the ratio of the voltage existing at that point to an arbitrary value of voltage used as a reference. \{`vōltˌtij ,levəl\}

**voltage measurement** \[ELEC\] Determination of the voltage that is two or more times the peak value or magnitude of the voltage across a specified load impedance to the magnitude of the input voltage of the amplifier or other transducer feeding that load, often expressed in decibels by multiplying the common logarithm of the ratio by 20. \{`vōltˌtijˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌˌ昶①①
voltage regulator

voltage regulator  [ELECTR] A device that maintains the terminal voltage of a generator or other voltage source within required limits despite variations in input voltage or load. Also known as automatic voltage regulator, voltage stabilizer. { 'völ-tijˌreg-yəˌläd-ar}

voltage-regulator diode  [ELECTR] A diode that maintains an essentially constant direct voltage in a circuit despite changes in line voltage or load. { 'völ-tijˌreg-yəˌläd-arˌdīˌēd}

voltage stabilizer  See voltage regulator. { 'völ-tijˌstaˌbāˌlīz-ar}

voltage transformer  [ELECTR] An instrument transformer whose primary winding is connected in parallel with a circuit in which the voltage is to be measured or controlled. Also known as potential transformer. { 'völ-tijˌtranzˌfôrˌmər}

voltage-variable capacitor  See varactor. { 'völ-tijˌvərˌakˌtōr}

voltaic cell  [ELEC] A primary cell consisting of two dissimilar metal electrodes in a solution that acts chemically on one or both of them to produce a voltage. { 'vōltəˌtīkˌsēl}

voltammeter  [ELEC] An instrument that may be used either as a voltmeter or ammeter. { 'vōltˌämˌpirˌeərˌrēˌakˌtīv}

volt-ampere  [ELEC] The unit of apparent power in the International System; it is equal to the apparent power in a circuit when the product of the root-mean-square value of the voltage, expressed in volts, and the root-mean-square value of the current, expressed in amperes, equals 1. Abbreviated VA. { 'vōltˌəmˌpir}

volt-ampere hour  [ELEC] A unit for expressing the integral of apparent power over time, equal to the product of 1 volt-ampere and 1 hour, or to 3600 joules. { 'vōltˌəmˌpirˌeərˌfürˌrēˌakˌtīv}

volt-ampere-hour reactive  See var hour. { 'vōltˌəmˌpirˌeərˌrēˌakˌtīv}

volt-ampere reactive  [ELEC] The unit of reactive power in the International System; it is equal to the reactive power in a circuit carrying a sinusoidal current when the product of the root-mean-square value of the voltage, expressed in volts, by the root-mean-square value of the current, expressed in amperes, and by the sine of the phase angle between the voltage and the current, equals 1. Abbreviated VAR. Also known as reactive volt-ampere. { 'vōltˌəmˌpirˌeərˌrēˌakˌtīv}

voltmeter  [ENG] An instrument for the measurement of potential difference between two points, in volts or in related smaller or larger units. { 'vōltˌmēdˌər}

voltmeter-ammeter  [ENG] A voltmeter and an ammeter combined in a single case but having separate terminals. { 'vōltˌmēdˌərˌəmˌēdˌər}

volt-ohm-milliammeter  [ENG] A test instrument having a number of different ranges for measuring voltage, current, and resistance. Also known as circuit analyzer, multimeter; multiple-purpose tester. { 'vōltˌōmˌmilˌēˌamˌēdˌər}

volume  [ENG ACOUS] The magnitude of a complex audio-frequency current as measured in volume units on a standard volume indicator. { 'vōlˌyəmˌkəmˌprüsˌərˌlōrˌsēˌtōmˌsēˌrēˌrēˌakˌtīvˌtīvˌdīˌēd}

volume compressor  [ENG ACOUS] An audio-frequency circuit that limits the volume range of a radio program at the transmitter, to permit using a higher average percent modulation without risk of overmodulation; also used when making disk recordings, to permit a closer groove spacing without overcutting. Also known as automatic volume compressor. { 'vōlˌyəmˌkəmˌprüsˌərˌlōrˌsēˌtōmˌsēˌrēˌrēˌakˌtīvˌtīvˌdīˌēd}

volume control  [ENG ACOUS] A potentiometer used to vary the loudness of a reproduced sound by varying the audio-frequency signal voltage at the input of the audio amplifier. { 'vōlˌyəmˌkəmˌprüsˌərˌlōrˌsēˌtōmˌsēˌrēˌrēˌakˌtīvˌtīvˌdīˌēd}

volume control system  [ENG ACOUS] An electronic system that regulates the signal amplification or limits the output of a circuit, such as a volume compressor or a volume expander. { 'vōlˌyəmˌkəmˌtōˌlōrˌsēˌtōmˌsēˌrēˌrēˌakˌtīvˌtīvˌdīˌēd}

volume expander  [ENG ACOUS] An audio-frequency control circuit sometimes used to increase the volume range of a radio program or recording by making weak sounds weaker and loud sounds louder; the expander counteracts volume compression at the transmitter or recording studio. Also known as automatic volume expander. { 'vōlˌyəmˌkəˌlōrˌsēˌtōmˌsēˌrēˌrēˌakˌtīvˌtīvˌdīˌēd}

volume indicator  [ENG ACOUS] A standardized instrument for indicating the volume of a complex electric wave such as that corresponding to speech or music; the reading in volume units is the terminal voltage of a generator or other voltage source within required limits despite variations in input voltage or load. Also known as automatic volume regulator; voltage stabilizer. { 'vōlˌyəmˌkəmˌprüsˌərˌlōrˌsēˌtōmˌsēˌrēˌrēˌakˌtīvˌtīvˌdīˌēd}

volume meter  [ENG] Any flowmeter in which the actual flow is determined by the measurement of a phenomenon associated with the flow. { 'vōlˌyəmˌmēdˌərˌlōrˌsēˌtōmˌsēˌrēˌrēˌakˌtīvˌtīvˌdīˌēd}

volumenometer  [ENG] An instrument for determining the volume of a body by measuring the pressure in a closed air space when the specimen is present and when it is absent. { 'vōlˌyēˌməˈnämˌədˌərˌlōrˌsēˌtōmˌsēˌrēˌrēˌakˌtīvˌtīvˌdīˌēd}

volume range  [ELEC] In a transmission system, the difference, expressed in decibels, between the maximum and minimum volumes that can be satisfactorily handled by the system. [ENG ACOUS] The difference, expressed in decibels, between the maximum and minimum volumes of a complex audio-frequency signal occurring over a specified period of time. { 'vōlˌyəmˌˌran̩ˌlōrˌsēˌtōmˌsēˌrēˌrēˌakˌtīvˌtīvˌdīˌēd}

volume resistivity  [ELEC] Electrical resistance between opposite faces of a 1-centimeter cube of insulating material, commonly expressed in ohm-centimeters. Also known as specific insulation resistance. { 'vōlˌyəmˌˌran̩ˌˌzisˌtīvˌdīˌēdˌərˌlōrˌsēˌtōmˌsēˌrēˌrēˌakˌtīvˌtīvˌdīˌēd}

volumeter  [ENG] Any instrument for measuring
volumes of gases, liquids, or solids. \(\text{\{vál-yá,méd-ər\}}\)

volumetric efficiency [MECH ENG] In describing an engine or gas compressor, the ratio of volume of working substance actually admitted, measured at a specified temperature and pressure, to the full piston displacement volume, for a liquid-fuel engine, such as a diesel engine, volumetric efficiency is the ratio of the volume of air drawn into a cylinder to the piston displacement. \(\text{\{vál-yáme-trik \{fish-an-sé\}}\)

volumetric radar [ENG] Radar capable of producing three-dimensional position data on a multiplicity of targets. \(\text{\{vál-yáme-trik \{rā,dār\}}\)

volumetric strain [MECH] One measure of deformation, the change of volume per unit of volume. \(\text{\{vál-yáme-trik \{strán\}}\)

volume unit [ENG ACOUS] A unit for expressing the audio-frequency power level of a complex electric wave, such as that corresponding to speech or music; the power level in volume units is equal to the number of decibels above a reference level of 1 milliwatt as measured with a standard volume indicator. Abbreviated VU. \(\text{\{vál-yám ,yu-nät\}}\)

volume unit meter See volume indicator. \(\text{\{vál-yám ,yu-nät ,méd-ər\}}\)

volute [DES ENG] A spiral casing for a centrifugal pump or a fan designed so that speed will be converted to pressure without shock. \(\text{\{va'lut\}}\)

volute pump [MECH ENG] A centrifugal pump housed in a spiral casing. \(\text{\{va'lut 'pamp\}}\)

von Arx current meter [ENG] A type of current-measuring device using electromagnetic induction to determine speed and, in some models, direction of deep-sea currents. \(\text{\{fon 'ärks 'kär-ant ,méd-ər\}}\)

von Mises yield criterion [MECH] The assumption that plastic deformation of a material begins when the sum of the squares of the principal components of the deviatoric stress reaches a certain critical value. \(\text{\{fon 'mēz-ər 'yeld ,kr,tir-ě-an\}}\)

Vorse diaphragm cell [CHEM ENG] A cylindrical cell with graphite anodes and asbestos-covered cathode, used in the electrolytic process for the manufacture of chlorine. \(\text{\{vörs 'dfr-ə,frəm \{sel\}}\)

vortex amplifier [ENG] A fluidic device in which the supply flow is introduced at the circumference of a shallow cylindrical chamber, the vortex field developed can substantially reduce or throttle flow, used in fluidic diodes, throttles, pressure amplifiers, and a rate sensor. \(\text{\{vör,teks \{am-plə,fi-ər\}}\)

vortex burner [ENG] Combustion device in which the combustion air is fed tangentially into the burner, creating a spin (vortex) to mix it with the fuel as it is injected. \(\text{\{vör,teks \{bār-nər\}}\)

vortex cage meter [ENG] In flow measurement, a type of quantity meter which exerts only a slight retardation on the flowing fluid, the elements rotate at a speed that is linear with fluid velocity, revolutions are counted either by coupling to a local mounted counter or by a proximity detector for remote transmission. \(\text{\{vör,teks \{kāj ,méd-ər\}}\)

vortex precession flowmeter [ENG] An instrument for measuring gas flows from the rate of precession of vortices generated by a fixed set of radial vanes placed in the flow. Also known as swirl flowmeter. \(\text{\{vör,teks prē'sesh-an \{flō ,méd-ər\}}\)

vortex-shedding meter [ENG] A flowmeter in which fluid velocity is determined from the frequency at which vortices are generated by an obstruction in the flow. \(\text{\{vör,teks \{shed-ing ,méd-ər\}}\)

vortex thermometer [ENG] A thermometer, used in aircraft, which automatically corrects for adiabatic and frictional temperature rises by imparting a rotary motion to the air passing the thermal sensing element. \(\text{\{vör,teks that'mām-ad-ər\}}\)

VOS See vertical obstacle sonar.

V-tool See parting tool. \(\text{\{vē,tül\}}\)

VTVM See vacuum-tube voltmeter.

v-type engine [MECH ENG] An engine in which the cylinders are arranged in two rows set at an angle to each other, with the crankshaft running through the point of a V. \(\text{\{vē ,tīp ,en-jən\}}\)

vulcanization [CHEM ENG] A chemical reaction of sulfur (or other vulcanizing agent) with rubber or plastic to cause cross-linking of the polymer chains; it increases strength and resiliency of the polymer. Also known as cure. \(\text{\{vul-ka-nə 'zā-shən\}}\)

volumetric efficiency
volumetric radar
volumetric strain
volume unit
volume unit meter
volute
volute pump
von Arx current meter
von Mises yield criterion
Vorse diaphragm cell
vortex amplifier
vortex burner
vortex cage meter
vortex precession flowmeter
vortex-shedding meter
vortex thermometer
VOS
V-tool
VTVM
v-type engine
vulcanization
This page intentionally left blank.
Wacker process  [CHEM ENG] A process for the oxidation of ethylene to acetaldehyde by oxygen in the presence of palladium chloride and cupric chloride. ['wak-ər,præ-səs]

daughter  [ELECTR] A thin semiconductor slice on which microcircuits can be fabricated, or which can be cut into individual dice for fabricating single transistors and diodes. [ENG] A flat element for a process unit, as in a series of stacked filter elements. ('wa-fər)

dragline  [MECH ENG] A large-capacity material applied to the surface of a wall (especially along a corridor) several feet off the floor to prevent damage by vehicles used within a building. ('wok-ən 'drag-lin)

dragline built with moving feet; disks 20 feet (6 meters) in diameter support the excavator while working. ('wok-ən 'drag-lin)

wafer  [ELECTR] A thin semiconductor slice on which microcircuits can be fabricated, or which can be cut into individual dice for fabricating single transistors and diodes. [ENG] A flat element for a process unit, as in a series of stacked filter elements. ('wa-fər)

waiting line  [IND ENG] A line formed by units waiting for service. Also known as queue. ('waɪn-əng, 'līn)

waive See waler. ('wāl)

waler  [CIV ENG] A horizontal reinforcement utilized to keep newly poured concrete forms from bulging outward. Also spelled whaler. Also known as wale. ('wā-lər)

wafting beam  [MECH ENG] A lever that oscillates on a pivot and transmits power in a manner producing a reciprocating or reversible motion, used in rock drilling and oil well pumping. ('wok-ən 'bæm)

walking beam  [MECH ENG] A lever that oscillates on a pivot and transmits power in a manner producing a reciprocating or reversible motion, used in rock drilling and oil well pumping. ('wok-ən 'bæm)

wall  [ENG] A vertical structure or member forming an enclosure or defining a space. ('wāl)

wall anchor  [BUILD] A steel strap fastened to the end of every second or third common joist and built into the brickwork of a wall to provide lateral support. Also known as joist anchor. ('wol, 'eŋ-kər)

wall box  [BUILD] 1. A frame or box set into a wall to receive a beam or joist. Also known as beam box, wall frame. 2. A frame set into a wall to provide a sealed space for pipework to pass through. [ELEC] A metal box set into a wall to hold switches, receptacles, or similar electrical wiring components. ('wol, 'baɪks)

wall coping  [CIV ENG] The covering course on top of a brick or stone wall. ('wol, 'kəp-iŋ)

wall crane  [MECH ENG] A jib crane mounted on a wall. ('wol, 'kran)

Walley engine  [MECH ENG] A multirotor engine employing four approximately elliptical rotors that turn in the same clockwise sense, leading to excessively high rubbing velocities. ('wol-e, 'eŋ-jən)

wall frame  See wall box. ('wol, 'frəm)

wall furnace  [MECH ENG] A self-contained vented furnace that is permanently attached to a wall and provides heated air directly to the surrounding space. ('wol, 'fa-rənas)

wall grille  [BUILD] A perforated plate or a framed structure composed of rods or bars that is used to cover a wall opening to restrict vision but allow movement of air. ('wol, 'gril)

wall guard  [BUILD] A protective strip of resilient material applied to the surface of a wall (especially along a corridor) several feet off the floor to prevent damage by vehicles used within a building. ('wol, 'gård)
wall hanger  [BUILD] A bracket installed in a masonry wall to support the end of a horizontal member.  {ˈwɔːlˌhæŋər}

wall off  [ENG] To seal cracks or crevices in the wall of a borehole with cement, mud cake, compacted cuttings, or casing.  {ˈwɔːlˌɔf}

wall plate  [BUILD] A piece of timber laid flat along the tip of the wall; it supports the rafters. Also known as raising plate.  {ˈwɔːlˌplæt}

wall ratio  [DES ENG] Ratio of the outside radius of a gun, a tube, or jacket to the inside radius, or ratio of the corresponding diameters.  {ˈwɔːlˌrɑːʃoʊ}

wall spacer  [CIV ENG] A metal tie that holds a form for poured concrete in position until the concrete has set.  {ˈwɔːlˌspærər}

wall superheat  [THERMO] The difference between the temperature of a surface and the saturation temperature (boiling point at the ambient pressure) of an adjacent liquid that is heated by the surface.  {ˈwɔːl səˈpɔːrˌhɛt}

wash  [BUILD] A rigid, corrosion-resistant metal tie fitted into the bed joints across the cavity of a cavity wall.  {ˈwɔːlˌtɔːl}

Walter engine  [MECH ENG] A multirotor rotary engine that uses two different-sized elliptical rotors.  {ˈwɔːlˌtɔrˌenˌjæn}

Wankel engine  [MECH ENG] An eccentric-rotor type internal combustion engine with only two primary moving parts, the rotor and the eccentric shaft, the rotor moves in one direction around the trochoidal chamber containing peripheral intake and exhaust ports. Also known as rotary-combustion engine.  {ˈvæŋˈkɔlˌenˌjæn}

Wanner optical pyrometer  [ENG] A type of polarizing pyrometer in which beams from the source under investigation and a comparison lamp are polarized at right angles and then passed through a Nicol prism and a red filter, the source temperature is determined from the angle through which the Nicol prism must be rotated in order to equalize the intensities of the resulting patches of light.  {ˈwænˈɔrˌəpˌtɔrˌkæl prəˈtəmˌədˌɔr}

Ward-Leonard speed-control system  [CONT SYS] A system for controlling the speed of a direct-current motor in which the armature voltage of a separately excited direct-current motor is controlled by a motor-generator set.  {ˈwɔːrdˈlɛnˌɔrd ˈspɛdˈkɑntərˌsɪsˌtæm}

warehouse  [IND ENG] A building used for storing merchandise and commodities.  {ˈwerˌhɔʊs}

warm-air heating  [MECH ENG] Heating by circulating warm air, system contains a direct-fired furnace surrounded by a bonnet through which air circulates to be heated.  {ˈwɔːrmˌərˈhɛdˌɪŋ}

warm-up time  [ENG] A span of time between the first application of power to a system and the moment when the system can function fully.  {ˈwɔːrmˌʌpˌtɪm}

warning pipe  [ENG] An overflow pipe with a conspicuous outlet permitting prompt observation of discharge.  {ˈwɔːrnˌɪŋˌpɪp}

warpage  [MECH] The action, process, or result of twisting or turning out of shape.  {ˈwɔːrˌpiːj}

warping function  See torsion function.  {ˈwɔːrpˌɪŋˈtɔrʃənˌfʌŋkʃən}

Warren truss  [CIV ENG] A truss having only sloping members between the top and bottom horizontal members.  {ˈwɔːrnˌɑnˌtrʌs}

wash  [BUILD] Any member that serves to carry water away from a section of a structure.  {ˈwɔːshr.ˈtrʌs}

washboard course  [ENG] A test course for vehicles consisting of a series of waves or convolutions having arbitrary amplitude and frequency; a common type is the so-called sine-wave course.  {ˈwɔːshˌbɔrdˌkɔrs}

wash boring  See jet drilling.  {ˈwɔːʃˌbɔrˌɪŋ}

wash coat  [ENG] A sealer consisting of a very thin, semitransparent coat of paint.  {ˈwɔːʃˌkɔt}

washer  [DES ENG] A flattened, ring-shaped device used to improve the tightness of a screw fastener.  {ˈwɔːshr.ˈɑrn}

washing  [CHEM ENG] In a process operation, cleaning of a solids bed (settler) or cake (filter) with a liquid in which the solid is not soluble.  {ˈwɔːʃˌɪŋ}

washing machine  See washer.  {ˈwɔːʃˌɪŋˌmɔːʃənˌʃen}

washout  [ENG] 1. An overlarge well bore caused by the solvent and erosional action of drilling fluid.  2. A fluid-cut opening resulting from leaking fluid.  {ˈwɔːʃˌaʊt}

wash water  [CHEM ENG] Water contacted with process streams (liquid or gas), packed beds, or filter cakes to flush or dissolve out impurities.  {ˈwɔːʃˌwɔdˌɑrn}

waste  [ENG] 1. Rubbish from a building.  2. Dirty water from mining, industrial, and domestic use.  3. The amount of excavated material exceeding fill.  {ˈwæst}

waste heat  [ENG] Sensible heat in gases not subject to combustion and used for processes downstream in a system.  {ˈwæstˌhɛt}

waste-heat boiler  [CHEM ENG] A heat-retrieval unit using hot by-product gas or oil from chemical processes; used to produce steam in a boiler-type system. Also known as gas-tube boiler.  {ˈwæstˌhɛtˌboʊˈlɑr}

waste lubrication  [ENG] A method in which a lubricant is delivered to a bearing surface by the wicking action of cloth waste or yarn.  {ˈwæstˌljuˈbrəkˌʃən}

610
water jacket [ENG] A casing for circulation of cooling water. {\textsuperscript{611}}

water-jet cutting [ENG] A machining method that uses a jet of pressurized water containing abrasive powder for cutting steel and other dense materials. {\textsuperscript{611}}

water joint [CIV ENG] A joint in a stone pavement containing stones that are set slightly higher to prevent water from settling in the joint. {\textsuperscript{611}}

water leg [ENG] The vertical area of a vessel or accessory to a vessel for the collection of water. Also known as sump. {\textsuperscript{611}}

water meter [ENG] An instrument for measuring the amount of water passing a specified point in a piping system. {\textsuperscript{611}}

water path [ENG] In ultrasonic testing, distance from an ultrasonic search unit to the test piece. Energy is absorbed. {\textsuperscript{611}}

waterpower [MECH] Power, usually electric, generated from an elevated water supply by the use of hydraulic turbines. {\textsuperscript{611}}

waterproof [ENG] Impervious to water. {\textsuperscript{611}}

water purification [CIV ENG] Any of several processes in which undesirable impurities in water are removed or neutralized, for example, chlorination, filtration, primary treatment, ion exchange, and distillation. {\textsuperscript{611}}

water right [ENG] The right to use water for mining, agricultural, or other purposes. {\textsuperscript{611}}

water sample [ENG] A portion of water brought up from a depth to determine its composition. {\textsuperscript{611}}

water scrubber [CHEM ENG] A device or system in which gases are contacted with water (either by spray or bubbling through) to wash out traces of water-soluble components of the gas stream. {\textsuperscript{611}}

water seal [ENG] A seal formed by water to prevent the passage of gas. {\textsuperscript{611}}

water-sealed holder [ENG] A low-pressure gas holder which consists of cylindrical sections or lifts telescoping into a pit or tank filled with water, the inside section is closed in on top. {\textsuperscript{611}}

waterspout [ENG] A pipe or orifice through which water is discharged or by which it is conveyed. {\textsuperscript{611}}

water-supply engineering [CIV ENG] A branch of civil engineering concerned with the development of sources of supply, transmission, distribution, and treatment of water. {\textsuperscript{611}}

water swivel [DES ENG] A device connecting the water hose to the drill-rod string and designed to permit the drill string to be rotated in the borehole while water is pumped into it to create
water table

the circulation needed to cool the bit and remove the cuttings produced. Also known as goose-neck, swivel neck. ['wɔːtər,swɪv-əl]

water table [BUILD] A ledge or slight projection of the masonry or wood construction on the exterior of a foundation wall, or just above it, to protect the foundation by directing rainwater away from the wall. Also known as canting strip. ['wɔːtər,ɔr,tɔːnt-ər]

water tower [CIV ENG] A tower or standpipe for storing water in areas where ordinary water pressure is inadequate for distribution to consumers. ['wɔːtər,ɔr,tɔːnt-ər]

water treatment [CIV ENG] Purification of water to make it suitable for drinking or for any other use. ['wɔːtər,tret-mənt]

water-tube boiler [MECH ENG] A steam boiler in which water circulates within tubes and heat is applied from outside the tubes to generate steam. ['wɔːtər-ər,tənb-əl]

waterway [CIV ENG] A channel for the escape of water. ['wɔːtər-ər,waɪ]

water well [CIV ENG] A well sunk to extract water from a zone of saturation. ['wɔːtər-ər,wel]

waterworks [CIV ENG] The whole system of supply and treatment utilized in acquisition and distribution of water to consumers. ['wɔːtər-ər,wrəks]

Watson factor See characteristic factor. ['wɔːtən,fn-ət-ər]

watt-hour [ELEC] A unit of energy used in electrical measurements, equal to the energy converted or consumed at a rate of 1 watt during a period of 1 hour, or to 3600 joules. Abbreviated Wh. ['wɔːt-ər,waɪ]

watt-hour meter [ENG] A meter that measures and registers the integral, with respect to time, of the active power of the circuit in which it is connected; the unit of measurement is usually the kilowatt-hour. ['wɔːt-ər,ər,med-ər]

wattmeter [ENG] An instrument that measures electric power in watts ordinarily. ['wɔːtər,med-ər]

Watt’s law [THERMO] A law which states that the sum of the latent heat of steam at any temperature of generation and the heat required to raise water from 0°C to that temperature is constant; it has been shown to be substantially in error. ['wɔːts,loʊ]

wave filter [ELEC] A transducer for separating waves on the basis of their frequency; it introduces relatively small insertion loss to waves of other frequencies. ['wɔːv,fɪl-ər]

wave gage [ENG] A device for measuring the height and period of waves. ['wɔːv,ɡæj]

wave gait [MECH ENG] A mode of motion of a mobile robot with several legs in which its components have a wavy motion. ('wɔːv,ɡæt)

waveguide junction See junction. ['wɔːv,ɡid ʃən-ən]

waveguide synthesis [ENG ACOUS] A method of synthesizing the sounds of a string or wind instrument that simulates traveling waves on a string or inside a bore or horn using digital delay lines. ('wɔːv,ɡid ˈsɪnθ-θə-səz)

wavemeter [ENG] A device for measuring the geometrical spacing between successive surfaces of equal phase in an electromagnetic wave. ('wɔːvˌmed-ər)

wave microphone [ENG ACOUS] Any microphone whose directivity depends upon some type of wave interference, such as a line microphone or a reflector microphone. ('wɔːvˌmɪˈkraʊn]

wave motor [MECH ENG] A motor that depends on the lifting power of sea waves to develop its usable energy. ('wɔːvˌmʊd-ər)

wave noise [ELECTR] Noise in the electric current of a detector that results from fluctuations in the intensity of electromagnetic radiation falling on the detector. ('wɔːvˌnɔɪz]

wave polarization See polarization. ('wɔːvˌpəʊ-lər-əz-ən]

wave shaper [ENG] Of explosives, an insert or core of inert material or of explosives having different detonation rates, used for changing the shape of the detonation wave. ('wɔːvˌʃeɪpər]

wave-shaping circuit [ELECTR] An electronic circuit used to create or modify a specified time-varying electrical quantity, usually voltage or current, using combinations of electronic devices, such as vacuum tubes or transistors, and circuit elements, including resistors, capacitors, and inductors. ['wɔːvˌʃeɪp-ɪŋˌsær-kæt]

wave soldering See flow soldering. ('wɔːvˌsəd-lərɪŋ]

wave tail [ELECTR] Part of a signal-wave envelope (in time or distance) between the steady-state value (or crest) and the end of the envelope. ['wɔːvˌtæl]

wave trap [CIV ENG] A device used to reduce the size of waves from sea or swell entering a harbor before they penetrate as far as the quayage; usually in the form of diverging breakwaters, or small projecting breakwaters situated close within the entrance. [ˈɛlktrɪk] A resonant circuit connected to the antenna system of a receiver to suppress signals at a particular frequency, such as that of a powerful local station that is interfering with reception of other stations. Also known as trap. ['wɔːvˌtræp]

wax fractionation [CHEM ENG] A continuous solvent-recovery/crystallization petroleum-refinery process for the production of waxes with low oil content from wax concentrates; for example,
MEK (methyl ethyl ketone) deoiling. ['waks frak-sha'nə-shan]

wax manufacturing [CHEM ENG] A petroleum refinery process similar to wax fractionation for the manufacture of oil-free waxes by chilling and crystallization from a solvent. ['waks man-ə-fæk-sha-nə]

wax master See wax original. ['waks 'mas-tər]

wax original [ENG ACOUS] An original recording made on a wax surface and used to make a master. Also known as wax master. ['waks ə-riːj-ən-əl]

way point See via point. ['waˌpɔɪnt]

ways [CIV ENG] 1. The tracks and sliding timbers used in launching a vessel. 2. The building slip or space upon which the sliding timbers or ways, supporting a vessel to be launched, travel. [MECH ENG] Bearing surfaces used to guide and support moving parts of machine tools; may be flat, V-shaped, or dovetailed. ['wàzk]

wear [ENG] Deterioration of a surface due to material removal caused by relative motion between it and another part. ['wer]

wearing course [CIV ENG] The top layer of surfacing on a road. ['wer-ɪŋ 'kɔrəs]

weather bar See water bar. ['weθər 'bær]

weathered joint See weather-struck joint. ['weθər-əd ʃərkt 'dʒɔint]

weather observation radar See weather radar. ['weθər 'ɔrˌdər 'rædər]

weatherometer [ENG] A device used to subject articles and finishes to accelerated weathering conditions; for example, a rich ultraviolet source, water spray, or salt water. ['weθərəm-əd-ər]

weatherproof [ENG] Able to withstand exposure to weather without damage. ['weθərˌprʊf]

weather radar [ENG] Generally, any radar which is suitable or can be used for the detection of precipitation or clouds. Also known as weather observation radar. ['weθərˌrædər]

weather resistance [ENG] The ability of a material, paint, film, or the like to withstand the effects of wind, rain, or sun and to retain its appearance and integrity. ['weθərˌriːzəns]

weather strip [BUILD] A piece of material, such as wood or rubber, applied to the joints of a window or door to stop drafts. ['weθərˌstrɪp]

weather-struck joint [CIV ENG] A horizontal joint in a course of masonry in which the mortar at the upper edge has been pressed in, forming a convex surface that sheds water. Also known as weathered joint. ['weθərˌstrak ʃərkt 'dʒɔint]

web [CIV ENG] The vertical strip connecting the upper and lower flanges of a rail or girder. [MECH ENG] For twist drills and reamers, the central portion of the tool body that joins the loads. [web]

web angle See chisel-edge angle. ['web əpəɡəl]

Weber number 3 [CHEM ENG] A dimensionless number used in interfacial area determination in distillation equipment, equal to the surface tension divided by the product of the liquid density, the acceleration of gravity, and the depth of liquid on the tray under consideration. Symbolized $N_{\text{web}}$. ['vər-bər ˌnæm-ˌbær ˈθrɛər]

web plate [ENG] A steel plate that forms the web of a beam, girder, or truss. ['web ˈplæt]

wedge [DES ENG] A piece of resistant material whose two major surfaces make an acute angle. [ENG] In ultrasonic testing, a device which directs waves of ultrasonic energy into the test piece at an angle. ['wej]

wedge bit [DES ENG] A tapered-nose noncoring bit, used to ream out the borehole alongside the steel deflecting wedge in hole-deflection operations. Also known as bull-nose bit; wedge reaming bit; wedging bit. ['wejˌbiːt]

wedge bonding [ENG] A type of thermocompression bonding in which a wedge-shaped tool is used to press a small section of the lead wire onto the bonding pad of an integrated circuit. ['wejˌbænd-ɪŋ]

wedge core lifter [MECH ENG] A core-gripping device consisting of a series of three or more serrated-face, tapered wedges contained in slots and tapered recesses cut into the inner surface of a lifter case or sleeve. The case is threaded to the inner tube of a core barrel, and as the core enters the inner tube, it lifts the wedges up along the case taper; when the barrel is raised, the wedges are pulled tight, gripping the core. ['wejˌkɔrˌlɪftə]

wedge photometer [ENG] A photometer in which the luminous flux density of light from two sources is made equal by pushing into the beam from the brighter source a wedge of absorbing material; the wedge has a scale indicating how much it reduces the flux density, so that the luminous intensities of the sources may be compared. ['wejˌfəʊtəˌməʊtər]

wedge reaming bit See wedge bit. ['wejˌrɛm-ɪŋˌbiːt]

wedging [ENG] 1. A method used in quarrying to obtain large, regular blocks of building stones; a row of holes is drilled, either by hand or by pneumatic drills, close to each other so that a longitudinal crevice is formed into which a gently sloping steel wedge is driven, and the block of stone can be detached without shattering. 2. The act of changing the course of a borehole by using a deflecting wedge. 3. The lodging of two or more wedge-shaped pieces of core inside a core barrel, and therefore blocking it. 4. The material, moss, or wood used to render the shaft lining tight. ['wejˌɪŋ]

wedging bit See wedge bit. ['wejˌɪŋˌbiːt]

weep hole [CIV ENG] A hole in a wood sill, retaining wall, or other structure to allow accumulated water to escape. ['wɛpˌhɔl]

weighing rain gage [ENG] A type of recording rain gage, consisting of a receiver in the shape of a funnel which empties into a bucket mounted upon a weighing mechanism; the weight of the catch is recorded, on a clock-driven chart, as inches of precipitation, used at climatological stations. ['weɪŋˌræŋ̆ ˈɡeɪg]
weight barometer

which the earth attracts a body. 2. By extension, the gravitational force with which a star, planet, or satellite attracts a nearby body. { `wel \( \text{bæ} \text{rə} \text{mə} \text{rə} \text{tə} \)\}

weight barometer  [ENG] A mercury barometer which measures atmospheric pressure by weighing the mercury in the column or the cistern. { `wæt \( \text{bə} \text{rə} \text{mə} \text{rə} \text{tə} \)\}

weighting  [ENG] The artificial adjustment of measurements to account for factors that, in the normal use of the device, would otherwise be different from conditions during the measurements. { `wæt \( \text{dɪŋ} \)\}

weighting network  [ENG ACOUS] One of three or more circuits in a sound-level meter designed to adjust its response; the A and B weighting networks provide responses approximating the 40- and 70-phon equal loudness contours, respectively, and the C weighting network provides a flat response up to 8000 hertz. { `wæt \( \text{wɜ} \text{tɪŋ} \)\}

weightlessness  [MECH] A condition in which no acceleration, whether of gravity or other force, can be detected by an observer within the system in question. Also known as zero gravity. { `wæt \( \text{lə} \text{sə} \text{nəs} \)\}

weight-loaded regulator  [ENG] A pressure-regulator valve for pressure vessels or flow systems; the regulator is preloaded by counterbalancing weights to open (or close) at the upper (or lower) limit of a preset pressure range. { `wæt \( \text{ləd} \text{ɪd} \)\}

weir  [CIV ENG] A dam in a waterway over which water flows, serving to regulate water level or measure flow. { `wɛr \)\}

weld gage  [ENG] A device used to check the shape and size of welds. { `wɛld \( \text{geɪ} \)\}

welding tip  [ENG] A replaceable nozzle for a gas torch used in welding. { `wɛld \( \text{ɪŋ} \)\}

welding torch  [ENG] A gas-mixing and burning tool for the welding of metal. { `wɛld \( \text{ɪŋ} \text{tɔrch} \)\}

weld-interval timer  [ENG] A device used to control weld interval. { `wɛld \( \text{ɪn} \text{tər} \text{val} \text{tɪm} \text{ər} \)\}

weld line  See flow line. { `wɛld \( \text{lɪn} \)\}

weld mark  See flow line. { `wɛld \( \text{mɑrk} \)\}

weldment  [ENG] An assembly or structure whose component parts are joined by welding. { `wɛld \( \text{mənt} \)\}

well  [BUILD] An open shaft in a building, extending vertically through floors to accommodate stairs or an elevator.  [ENG] A hole dug into the earth to reach a supply of water, oil, brine, or gas. { `wel \)\}

well core  [ENG] A sample of rock penetrated in a well or other borehole obtained by use of a hollow bit that cuts a circular channel around a central column or core. { `wel \( \text{kɔr} \)\}

well drill  [MECH ENG] A drill, usually a churn drill, used to drill water wells. { `wel \( \text{drɪl} \)\}

wellhead  [CIV ENG] The top of a well. { `wel \( \text{hed} \)\}

well logging  [ENG] The technique of analyzing and recording the character of a formation penetrated by a drill hole in petroleum exploration and exploitation work. { `wel \( \text{lætɪŋ} \)\}

wellpoint  [CIV ENG] A component of a wellpoint system consisting of a perforated pipe about 4 feet (1.2 meters) long and about 2 inches (5 centimeters) in diameter, equipped with a ball valve, a screen, and a jetting tip. { `wel \( \text{pɔɪnt} \)\}

wellpoint system  [CIV ENG] A method of keeping an excavated area dry by intercepting the flow of groundwater with pipe wells located around the excavation area. { `wel \( \text{pɔɪnt \text{tɪŋ}} \)\}

well-regulated system  [CONT SYS] A system with a regulator whose action, together with that of the environment, prevents any disturbance from permanently driving the system from a state in which it is stable, that is, a state in which it retains its structure and survives. { `wel \( \text{rɛdʒəd} \text{ɪd} \text{bætəmərun} \)\}

well-type manometer  [ENG] A type of double-leg, glass-tube manometer, one leg has a relatively small diameter, and the second leg is a reservoir; the level of the liquid in the reservoir does not change appreciably with change of pressure, a mercury barometer is a common example. { `wel \( \text{tɪp \text{mənəmətər} \)\}

welt  [BUILD] 1. In sheet-metal roofing, a seam consisting of two joined sheets of metal whose edges have been folded over each other and fastened down flat. 2. A strip of wood fastened over a flush seam or joint for added strength.  [ENG] A strip that has been fastened to the edges of plates that form a butt joint in a steam boiler.  [welt \)\}

Wentworth quick-return motion  See turning-block linkage. { `wɛntwɔrθ \( \text{kwi} \text{kət} \text{rɪtəŋ} \text{lɪŋkɪdʒ} \)\}

Weston standard cell  [ELEC] A standard cell used as a highly accurate voltage source for calibrating purposes; the positive electrode is mercury, the negative electrode is cadmium, and the electrolyte is a saturated cadmium sulfate solution; the Weston standard cell has a voltage of 1.018636 volts at 20°C. { `wɛstən \( \text{stan} \text{dərd} \text{sel} \)\}

Westphal balance  [ENG] A direct-reading instrument for determining the densities of solids and liquids; a plummet of known mass and volume is immersed in the liquid whose density is to be measured or, alternatively, a sample of the solid whose density is to be measured is immersed in a liquid of known density, and the loss in weight is measured, using a balance with movable weights. { `westfəl \( \text{bælənz} \)\}

wet and dry bulb thermometer  See psychrometer. { `wel \( \text{ænd} \)\}

wet blasting  [ENG] Shot firing in wet holes. { `wel \( \text{bʌstɪŋ} \)\}
wide-flange beam
Wiese formula

Wiese formula [ENG] An empirical relationship for motor fuel antiknock values above 100 in relation to performance numbers, basis for the American Society for Testing and Materials scale, in which octane numbers above 100 are related to increments of tetraethyllead added to isoctane. {vēz-e̱r̬-fōr-mēn-ə-lo}.

Wild fence [ENG] A wooden enclosure about 16 feet (4.8 meters) square and 8 feet (2.4 meters) high with a precipitation gage in its center, the function of the fence is to minimize eddies around the gage, and thus ensure a catch which will be representative of the actual rainfall or snowfall. {wīld, fenz}.

Willans line [MECH ENG] The line (nearly straight) on a graph showing steam consumption (pounds per hour) versus power output (kilowatt or horsepower) for a steam engine or turbine, frequently extended to show total fuel consumed (pounds per hour) for gas turbines, internal combustion engines, and complete power plants. {wil-anz, Ijn}.

winch [MECH ENG] A machine having a drum on which to coil a rope, cable, or chain for hauling, pulling, or hoisting. {winch}.

winch operator See hoistman. {winch, âp-ə, râd-ər}.

windage [MECH] 1. The deflection of a bullet or other projectile due to wind. 2. The correction made for such deflection. {wind-di}.

windage loss [ENG] In a ventilating or air-conditioning system, the decrease in the water content of the circulating air due to the loss of entrained droplets of water, expressed as a percentage of the rate of circulation. {wind-di, lōs}.

wind box [ENG] A plenum chamber that supplies air for combustion to a stoker, gas burner, or oil burner. {wind, bāks}.

windbreak [ENG] Any device designed to obstruct wind flow and intended for protection against any ill effects of wind. {win-brak}.

wind cone [ENG] A tapered fabric sleeve, shaped like a truncated cone and pivoted at its larger end on a standard, for the purpose of indicating wind direction; since the air enters the fixed end, the small end of the cone points away from the wind. Also known as wind sleeve, wind sock. {wind, kōn}.

wind correction [ENG] Any adjustment which must be made to allow for the effect of wind, especially, the adjustments to correct for the effect on a projectile in flight, on sound received by sound ranging instruments, and on an aircraft flown by dead reckoning navigation. {wind kārek-shan}.

wind deflection [MECH] Deflection caused by the influence of wind on the course of a projectile in flight. {wind dī, flek-shan}.

wind-direction indicator [ENG] A device to indicate the direction from which the wind blows; an example is a weather vane. {wind dīfleks-shan, in-dā, kād-ər}.

winder [BUILD] A step, generally wedge-shaped, with a tread that is wider at one end than the other, often used in spiral staircases. {win-dər}.

wind guard [CIV ENG] A building component that protects the building or some part of it against the wind, for example, a chimney cap. {wind-gärd}.

winding [ELEC] 1. One or more turns of wire forming a continuous coil for a transformer, relay, rotating machine, or other electric device. 2. A conductive path, usually of wire, that is indistinguishably coupled to a magnetic storage core or cell. {wind-in}.

winding engine See hoist. {wind-in, en-jon}.

windmill [MECH ENG] Any of various mechanisms, such as a mill, pump, or electric generator, operated by the force of wind against vanes or sails radiating about a horizontal shaft. {wind, mil}.

windmill anemometer [ENG] A rotation anemometer in which the axis of rotation is horizontal; the instrument has either flat vanes (as in the air meter) or helicoidal vanes (as in the propeller anemometer); the relation between wind speed and angular rotation is almost linear. {wind, mil, an-əm-mäm-ad-ər}.

windmilling [MECH ENG] The rotation of a propeller from the force of the air when the engine is not operating. {wind, mil-in}.

window [BUILD] An opening in the wall of a building or the body of a vehicle to admit light and vision; one of the numerous similar openings in the fuselage or hull of an aircraft, generally equipped with a flap and blind for protection against the wind, for example, a chimney cap. {win-dō}.

window bar [BUILD] 1. A bar for securing a case-ment window or window shutters. 2. A bar that prevents ingress or egress through a window. 3. See sash bar. {win-dō, bār}.

wind power [MECH ENG] The extraction of kinetic energy from the wind and conversion of it into a useful type of energy: thermal, mechanical, or electrical. {wind pōwr}.

wind pressure [MECH] The total force exerted upon a structure by wind. Also known as velocity pressure. {wind, presh-ər}.

windshield [ENG] A transparent glass screen that protects the passengers and compartment of a vehicle from wind and rain. {wind-shild}.

wind shield See rain-gage shield. {wind, shield}.

wind sleeve See wind cone. {wind, slev}.

wind sock See wind cone. {wind, sæk}.

wind tee [ENG] A weather vane shaped like the letter T or like an airplane, situated on an airport or landing field to indicate the wind direction. Also known as landing tee. {wind tē}.

wind tunnel [ENG] A duct in which the effects of airflow past objects can be determined. {wind tun-nal}.

wind-tunnel instrumentation [ENG] Measuring devices used in wind-tunnel tests; in addition to conventional laboratory instruments for fluid.
flow, thermometry, and mechanical measurements, there are sensing devices capable of precision measurement in the small-scale environment of the test setup. ('win \_tan-al \_in-stram\_tä-shan )

windup [MECH ENG] The twisting of a shaft under a torsional load, usually resulting in vibration and other undesirable effects as the shaft relaxes. ('win\_dap )

wind vane [ENG] An instrument used to indicate wind direction, consisting basically of an asymmetrically shaped object mounted at its center of gravity about a vertical axis; the end which offers the greater resistance to the motion of air moves to the downwind position; the direction of the wind is determined by reference to an attached oriented compass rose. ('win \_vän )

wing dam See groin. ('win \_dam )

wingless abutment [CIV ENG] A straight-sided bridge abutment designed to resist pressure in back and provide a bridge seat. ('wiŋ-ləs ə\_bat-mon )

wing nut [DES ENG] An internally threaded fastener with wings to permit it to be tightened or loosened by finger pressure only. Also known as butterfly nut. ('wiŋ \_nɔt )

wing screw [DES ENG] A screw with a wing-shaped head that can be turned manually. ('wiŋ \_skrǔ )

winterization [ENG] The preparation of equipment for operation in conditions of winter weather; this applies to preparation not only for cold temperatures, but also for snow, ice, and strong winds. ('wiŋ\_tə\_rə\_zə\_shan )

wire [ELEC] A single bare or insulated metallic conductor having solid, stranded, or tinsel construction, designed to carry current in an electric circuit. Also known as electric wire. ('wit )

wire bonding [ELEC] Lead-covered tie used to connect two cable sheaths until a splice is permanently closed and covered. [ELECTR] 1. A method of connecting integrated-circuit chips to their substrate, using ultrasonic energy to weld very fine wires mechanically from metallized terminal pads along the periphery of the chip to corresponding bonding pads on the substrate. 2. The attachment of very fine aluminum or gold wire (by thermal compression or ultrasonic welding) from metallized terminal pads along the periphery of an integrated circuit chip to corresponding bonding pads on the surface of the package leads. ('wit \_bænd\_iŋ )

wire cloth [DES ENG] Screen composed of wire cramped or woven into a pattern of squares or rectangles. ('wit \_kloth )

wire comb [ENG] A tool for roughening a base coat of plaster in order to improve bonding of the next coat. Also known as wire scratcher. ('wit \_kəm )

wire drag [ENG] An apparatus for surveying rocky underwater areas where normal sounding methods are insufficient to ensure the discovery of all existing submerged obstructions, small shoals, or rocks above a given depth or for determining the least depth of an area; it consists essentially of a buoyed wire towed at the desired depth by two launches. ('wit \_dræg )

wire-fabric reinforcing [CIV ENG] Reinforcing concrete or masonry with a welded wire fabric. ('wit \_ˈfæb\_nik \_ˈre\_ən\_ˈfɔ\_rs-iŋ )

wire flame spray gun [ENG] A device which utilizes the heat from a gas flame and material in the form of wire or rod to perform a flame-spraying operation. ('wit \_fləm \_ˈspɹə\_gɔn )

wire fusing current [ELEC] The electric current which will cause a wire to melt. ('wit \_ˈfju\_zə-iŋ \_ˈkə\_rənt )

wire gage [DES ENG] 1. A gage for measuring the diameter of wire or thickness of sheet metal. 2. A standard series of sizes arbitrarily indicated by numbers, to which the diameter of wire or the thickness of sheet metal is usually made, and which is used in describing the size or thickness. ('wit \_gæj )

wire lap [ENG] A netting formed of welded wire, usually with a paper backing, and used as a base for plaster. ('wit \_ˈlæth )

wire line [DES ENG] 1. Any cable or rope made of steel wires twisted together to form the strands. 2. A steel wire rope 5/16 inch (7.94 millimeters) or less in diameter [ELECTR] One or more current-conducting wires or cables, used for communication, control, or telemetry. ('wit \_ˈlɪn )

wire nail [DES ENG] A nail made of wire and having a circular cross section. ('wit \_nɔl )

wire recorder [ENG ACOUS] A magnetic recorder that utilizes a round stainless steel wire about 0.004 inch (0.01 centimeter) in diameter instead of magnetic tape. ('wit ri\_ˈkɔrd\_ər )

wire recording [ENG ACOUS] Magnetic recording by use of a magnetized wire. ('wit ri\_ˈkɔrd\_iŋ )

wire rope [ENG] A rope formed of twisted strands of wire. ('wit \_rɔp )

wire saw [MECH ENG] A machine employing one- or three-strand wire cable, up to 16,000 feet (4990 meters) long, running over a pulley as a belt, used in quarries to cut rock by abrasion. ('wit \_ˈsoʊ )

wire scratcher See wire comb. ('wit \_ˈskrætʃər )

wiresonde [ENG] An atmospheric sounding instrument which is supported by a captive balloon and used to obtain temperature and humidity data from the ground level to a height of a few kilometers, height is determined by means of a sensitive altimeter, or from the amount of cable released and the angle which the cable makes with the ground, and the information is telemetered to the ground through a wire cable. ('wit \_ˈsænd )

wire stripper [ENG] A hand-operated tool or special machine designed to cut and remove the insulation for a predetermined distance from the end of an insulated wire, without damaging the solid or stranded wire inside. ('wit \_ˈstrip\_ər )

wire tack [DES ENG] A tack made from wire methods are insufficient to ensure the discovery of all existing submerged obstructions, small shoals, or rocks above a given depth or for determining the least depth of an area; it consists of an extruder, a crosshead and die, a
means of cooling, and feed and take-up spools for the wire, used to coat wire with resin. {'wir', 'trän'}

wireway [ENG] A trough which is lined with sheet metal and has hinged covers, designed to house electrical conductors or cables. {'wir', 'wä'}

wire weight gage [ENG] A river gage in which a weight suspended on a wire is lowered to the water surface from a bridge or other overhead structure to measure the distance from a point of known elevation on the bridge to the water surface, the distance is usually measured by counting the number of revolutions of a drum required to lower the weight, and a counter is provided which reads the water stage directly. {'wir', 'wät', 'gål'}

wiring [ELEC] The installation and utilization of a system of wire for conduction of electricity. Also known as electric wiring. [ENG] A forming process in which the edge of a sheet-metal part is rolled over a wire to produce a tubular rim containing the wire. {'wir', 'jg'}

wiring diagram See circuit diagram. {'wir', 'jg', 'di', 'agram'}

wiring harness [ELEC] An array of insulated conductors bound together by lacing cord, metal bands, or other binding, in an arrangement suitable for use only in specific equipment for which the harness was designed, it may include terminations. {'wir', 'jg', 'här', 'nas'}

Wobbe index [THERMO] A measure of the amount of heat released by a gas burner with a constant orifice, equal to the gross calorific value of the gas in British thermal units per cubic foot at standard temperature and pressure divided by the square root of the specific gravity of the gas. {'wä-bä', 'in', 'deks'}

wobble friction [ENG] A force that occurs in prestressed concrete when the prestressing tendon deviates from its specified profile. {'wâb-əl', 'frik-shän'}

wobble wheel roller [MECH ENG] A roller with freely suspended pneumatic tires used in soil stabilization. {'wâb-əl', 'wäl', 'rå-lor'}

Wollaston wire [ENG] An extremely fine platinum wire, produced by enclosing a platinum wire in a silver sheath, drawing them together, and using acid to dissolve away the silver, used in electroscopes, microfuses, and hot-wire instruments. {'wül', 'stän', 'wir'}

wood-carving tools [DES ENG] The tools normally used in wood carving; they consist of adzes, chisels, gouges, files, and rasps, all of which vary in size and shape. {'wūd', 'kær-v-ing', 'tülz'}

Woodruff key [DES ENG] A self-aligning machine key made by a side-milling cutter in the form of a segment of a disk. {'wū-dra-f, kë'}

wood screw [DES ENG] A threaded fastener with a pointed shank, a slotted or recessed head, and a sharp tapered thread of relatively coarse pitch for use only in wood. {'wūd', 'skru'}

woodstave pipe [DES ENG] A pipe made of narrow strips of wood placed side by side and banded with wire, metal collars, and inserted joints, used largely for municipal water supply, outfall sewers, and mining irrigation. {'wūd', 'stāv', 'pîp'}

woofer [ENG ACOUS] A large loudspeaker designed to reproduce low audio frequencies at relatively high power levels, usually used in combination with a crossover network and a high-frequency loudspeaker called a tweeter. {'wuf-ər'}

word concatenation system [ENG ACOUS] The simplest form of voice response system, which retrieves previously spoken versions of words or phrases and carefully forms them into a sequence without pauses, to approximate normally spoken word sequences. {'wörd', 'kän', 'kat-an', 'ə-shan', 'sis-tam'}

work [ELEC] See load. [IND ENG] The physical or mental effort expended in the performance of a task. [MECH] The transference of energy that occurs when a force is applied to a body that is moving in such a way that the force has a component in the direction of the body's motion; it is equal to the line integral of the force over the path taken by the body. {'werk'}

work breakdown structure [IND ENG] A hierarchy designed to organize, define, and display all the work that must be performed in order to accomplish the objectives of a project. {'werk', 'brāk, dain', 'strak-char'}

work cycle [IND ENG] A sequence of tasks, operations, or processes, or a pattern of manual motions, elements, and activities that is repeated for each unit of work. {'werk', 'sfr-kæl'}

work design See job design. {'werk', 'di', 'zn'}

worked penetration [ENG] Penetration of a sample of lubricating grease immediately after it has been brought to a specified temperature and subjected to strokes in a standard grease worker. {'werk', 'pen', 'trâ-shan'}

work element [IND ENG] In planning a manufacturing process, a single task that cannot be subdivided. {'werk', 'el-a-mant'}

work function See free energy. {'werk', 'fri-jæk-shan'}

workhead See headstock. {'werk', 'hed'}

working area [IND ENG] A portion of the workplace in which a worker moves about while fulfilling work tasks. {'werk', 'er-a'}

working envelope [MECH ENG] The surface bounding the maximum extent and reach of a robot's wrist, excluding the tool tip. Also known as working profile. {'werk', 'en-va-lop'}

working life See work life. {'werk', 'li-f'}

working load [ENG] The maximum load that any structural member is designed to support. {'werk', 'lôd'}

working pressure [ENG] The allowable operating pressure in a pressurized vessel or conduit, usually calculated by ASME (American Society of Mechanical Engineers) or API (American Petroleum Institute) codes. {'werk', 'presh-ər'}
work station independence | IND ENG | Property of a numerical control or robot program which does not depend on the nature of the work station.  

work station | IND ENG | A workplace that is integrated into a production system or on a piece of form.  

work Q | IND ENG | The required amount of work set of responsibilities, or occupation assigned to an individual or to a group.  

work measurement | IND ENG | 1. Determination of the difficulty of a given task by using both physiologic and biomechanical parameters to evaluate compatibility of available motions with motions required to perform the task.  

work piece | IND ENG | An object that is being manufactured.  

work package | IND ENG | The amount of work required to complete a given job that falls within the responsibility of a single unit of the organization handling the project.  

work physiology | IND ENG | An aspect of industrial engineering that takes into account metabolic cost, measurement and prevention of work strain, and other ergonomic factors in the design of tasks and workplaces.  

work profile | IND ENG | Any external force that acts on the body of a worker during the performance of a task.  

work task | IND ENG | A specified amount of work, set of responsibilities, or occupation assigned to an individual or to a group.  

work tolerance | IND ENG | A time period during which a worker can effectively perform a task without a rest period while maintaining acceptable levels of physiological and emotional well-being.  

work unit | IND ENG | An amount of work or the result of an amount of work that is treated as an integer (a single piece of information) when work is being characterized quantitatively.  

work volume | MECH ENG | The volume enclosed by a robot’s working envelope.  

working Q | IND ENG | The required amount of work set of responsibilities, or occupation assigned to an individual or to a group.  

working voltage | IND ENG | Voltage rating.  

working energy theorem | MECH | The theorem that the change in the kinetic energy of a particle during a displacement is equal to the work done by the resultant force on the particle during this displacement.  

working Q | IND ENG | Required to complete a given job that falls within the responsibility of a single unit of the organization handling the project.  

workshop | MECH ENG | A time period during which a worker can effectively perform a task without a rest period while maintaining acceptable levels of physiological and emotional well-being.  

working Q | IND ENG | Required to complete a given job that falls within the responsibility of a single unit of the organization handling the project.  

working voltage | IND ENG | Voltage rating.  

working volume | CHEM ENG | The period of time a resin or an adhesive will remain usable after it is mixed with a catalyst and other ingredients. Also known as pot life, working life.  

work to tolerance | IND ENG | A time period during which a worker can effectively perform a task without a rest period while maintaining acceptable levels of physiological and emotional well-being.  

work unit | IND ENG | An amount of work or the result of an amount of work that is treated as an integer (a single piece of information) when work is being characterized quantitatively.  

workpiece | IND ENG | An object that is being manufactured.  

workpiece program | CONT SYS | A program that directs the machining of a component under numerical or computer control.  

wrench | ENG | A manual or power tool with adapted or adjustable jaws or sockets either at the end or between the ends of a lever for holding or turning a bolt, pipe, or other object.  

wrenching ball | ENG | See skull cracker.  

wrenching bar | ENG | See ripping bar.  

wrenching strip | ENG | A basic grasp whereby an object is held against the palm by the fingers wrapped around it, with the thumb opposing the index finger.  

wrench forming | ENG | See stretch forming.  

wrench packet | ENG | The outer plate enclosing the firebox in a fire-tube boiler.  

wrenching ball | ENG | See skull cracker.  

wrenching bar | ENG | See ripping bar.  

wrenching strip | ENG | A basic grasp whereby an object is held against the palm by the fingers wrapped around it, with the thumb opposing the index finger.  

wrench form | ENG | See stretch forming.  

wrench sheet | ENG | The outer plate enclosing the firebox in a fire-tube boiler.  

wrecker ball | ENG | See skull cracker.  

wrecker ball | ENG | See skull cracker.  

wrecker bar | ENG | See ripping bar.  

wrecker strip | ENG | A small section that is fitted into a form for poured concrete and is easily removed before the main panels to facilitate disassembly of the main components of the form.  

wrench form | ENG | See stretch forming.  

wrench forming | ENG | See stretch forming.  

wrenching ball | ENG | See skull cracker.  

wrenching bar | ENG | See ripping bar.  

wrenching strip | ENG | A small section that is fitted into a form for poured concrete and is easily removed before the main panels to facilitate disassembly of the main components of the form.  

wrench | ENG | A manual or power tool with adapted or adjustable jaws or sockets either at the end or between the ends of a lever for holding or turning a bolt, pipe, or other object.  

wrench packet | ENG | The outer plate enclosing the firebox in a fire-tube boiler.  

wrenching ball | ENG | See skull cracker.  

wrenching bar | ENG | See ripping bar.  

wrenching strip | ENG | A small section that is fitted into a form for poured concrete and is easily removed before the main panels to facilitate disassembly of the main components of the form.  

wrench form | ENG | See stretch forming.  

wrenching ball | ENG | See skull cracker.  

wrenching bar | ENG | See ripping bar.  

wrenching strip | ENG | A small section that is fitted into a form for poured concrete and is easily removed before the main panels to facilitate disassembly of the main components of the form.  

wrench | ENG | A manual or power tool with adapted or adjustable jaws or sockets either at the end or between the ends of a lever for holding or turning a bolt, pipe, or other object.
wrench-head bolt

wrench-head bolt [DES ENG] A bolt with a square or hexagonal head designed to be gripped between the jaws of a wrench. {rench hed 'bolt}
wringing fit [DES ENG] A fit of zero-to-negative allowance. { rid-'ing fit}
wrist [MECH ENG] A set of rotary joints to which the end effector of a robot is attached. Also known as wrist socket. {rist}
wrist pin See piston pin. {ris 'pin}
write head [ELECTR] Device that stores digital information as coded electrical pulses on a magnetic drum, disk, or tape. {rit hed}
W-truss [CIV ENG] A truss having upper and lower chords joined by web members that form a shape resembling the letter W. {dab-' travellers}

Wulf electrometer [ENG] 1. A variant of the string electrometer in which charged metal plates are replaced by charged knife-edges. 2. An electrometer in which two conducting fibers are placed side by side, and their separation upon charging is measured. {wulf i,lek'tram-ad-ar}

Wulf process [CHEM ENG] A chemical process to make acetylene and ethylene by cracking a hydrocarbon gas (for example, butane) with high-temperature steam in a regenerative furnace. {wulf prasas}

Wurster process See air-suspension encapsulation. {war 'star,prasas}
wye [ELEC] Polyphase circuit whose phase differences are 120° and which when drawn resembles the letter Y. [ENG] A pipe branching off a straight main run at an angle of 45°. Also known as Y; yoke. {wı́ branch}
wye branch See Y branch. {wi branch}
wye fitting See Y fitting. {wi 'fitting}
wye level See Y level. {wr lev'al}

W-truss [CIV ENG] A truss having upper and lower chords joined by web members that form a shape resembling the letter W. {dab-' travellers}

Wulf electrometer [ENG] 1. A variant of the string electrometer in which charged metal plates are replaced by charged knife-edges. 2. An electrometer in which two conducting fibers are placed side by side, and their separation upon charging is measured. {wulf i,lek'tram-ad-ar}

Wulf process [CHEM ENG] A chemical process to make acetylene and ethylene by cracking a hydrocarbon gas (for example, butane) with high-temperature steam in a regenerative furnace. {wulf prasas}

Wurster process See air-suspension encapsulation. {war 'star,prasas}
wye [ELEC] Polyphase circuit whose phase differences are 120° and which when drawn resembles the letter Y. [ENG] A pipe branching off a straight main run at an angle of 45°. Also known as Y; yoke. {wı́ branch}
wye branch See Y branch. {wi branch}
wye fitting See Y fitting. {wi 'fitting}
wye level See Y level. {wr lev'al}
**X engine**  [MECH ENG] An in-line engine with the cylinder banks so arranged around the crankshaft that they resemble the letter X when the engine is viewed from the end. ('eksˌen-ˈjan)

**X frame**  [DES ENG] An automotive frame which either has side rails bent in at the center of the vehicle, making the overall form that of an X, or has an X-shaped member which joins the side rails with diagonals for added strength and resistance to torsional stresses. ('eksˌfram)

**x-ray diffractometer**  [ENG] An instrument used in x-ray analysis to measure the intensities of the diffracted beams at different angles. ('eksˌrāˈdiˈfræktəmərtər)

**x-ray goniometer**  [ENG] A scale designed to measure the angle between the incident and diffracted beams in x-ray diffraction analysis. ('eksˌrāˈgōˈnëməntər)

**x-ray machine**  [ENG] The x-ray tube, power supply, and associated equipment required for producing x-ray photographs. ('eksˌrāˈmātʃənˌgā́tər)

**x-ray microscope**  [ENG] 1. A device in which an ultra-fine-focus x-ray tube or electron gun produces an electron beam focused to an extremely small image on a transmission-type x-ray target that serves as a vacuum seal; the magnification is by projection; specimens being examined can thus be in air, as also can the photographic film that records the magnified image. 2. Any of several instruments which utilize x-radiation for chemical analysis and for magnification of 100–1000 diameters; it is based on contact or projection microradiography, reflection x-ray microscopy, or x-ray image spectrography. ('eksˌrāˈmiˈkraˌskōp)

**x-ray monochromator**  [ENG] An instrument in which x-rays are diffracted from a crystal to produce a beam having a narrow range of wavelengths. ('eksˌrāˌmānˌəˈkrōˌmādˌər)

**x-ray telescope**  [ENG] An instrument designed to detect x-rays emanating from a source outside the earth’s atmosphere and to resolve the x-rays into an image; they are carried to high altitudes by balloons, rockets, or space vehicles; although several types of x-ray detector, involving gas counters, scintillation counters, and collimators, have been used, only one, making use of the phenomenon of total external reflection of x-rays from a surface at grazing incidence, is strictly an x-ray telescope. ('eksˌrāˌtel-əˌskōp)

**x-ray thickness gage**  [ENG] A thickness gage used for measuring and indicating the thickness of moving cold-rolled sheet steel during the rolling process without making contact with the sheet; an x-ray beam directed through the sheet is absorbed in proportion to the thickness of the material and its atomic number. ('eksˌrāˌथिक-ˌnāsˌgā́)

**XY recorder**  [ENG] A recorder that traces on a chart the relation of two variables, neither of which is time. ('eksˌwiˈriˌriˈkôrdər)
This page intentionally left blank.
yard [CIV ENG] A facility for building and repairing ships. [MECH] A unit of length in common use in the United States and United Kingdom, equal to 0.9144 meter, or 3 feet. Abbreviated yd. { ‘yərd } yardage [MECH] An amount expressed in yards. { ‘yərd-ıj } yard crane [CIV ENG] See crane truck. { ‘yərd ,kræn } yard drain [CIV ENG] A drain for clearing an open area of surface water. { ‘yərd ,dræn } yard lumber [BUILD] A category of lumber up to 5 inches (12.5 centimeters) thick. { ‘yərd ,ləm-bər } yard maintenance [ENG] A category of maintenance that includes the complete rebuilding of parts, subassemblies, or components. { ‘yərd ,məint-ən-əns } yaw [MECH] 1. The rotational or oscillatory movement of a ship, aircraft, rocket, or the like about a vertical axis. Also known as yawing. 2. The amount of this movement, that is, the angle of yaw. 3. To rotate or oscillate about a vertical axis. { yo } yaw acceleration [MECH] The angular acceleration of an aircraft or missile about its normal or Z axis. { ‘yō ak,səl-ər-əs hən } yaw axis [MECH] A vertical axis through an aircraft, rocket, or similar body, about which the body yaws; it may be a body, wind, or stability axis. Also known as yawing axis. { ‘yəǝ ,ak-səs } yawing [SER yaw] { ‘yō-ˌiŋ } yawing axis See yaw axis. { ‘yō-ˌiŋ ,ak ˈsəs } yaw simulator [CONT SYS] A test instrument used to derive and thereby permit study of probable aerodynamic behavior in controlled flight under specific initial conditions, certain components of the missile guidance system, such as the receiver or servo loop, are connected into the simulator circuitry; also, certain aerodynamic parameters of the specific missile must be known and set into the simulator, applicable to the yaw plane. { ‘yōˌsım-yəˌləd-ər } Y branch [ENG] A Y-shaped branch in a piping system. Also known as wye branch. { ‘wīˌbranch } yd See yard. Y fitting [CIV ENG] A pipe fitting with one end subdivided to form two openings, usually at a 45° angle to the run of the pipe. Also known as wye fitting. { ‘wīˌfīt-ing } yield [ENG] Product of a reaction or process as in chemical reactions or food processing. [MECH] That stress in a material at which plastic deformation occurs. { ‘yeld } yield factor [IND ENG] The ratio of the amount of material that results from an industrial process to the amount of material that went into it. { ‘yeld ,fæk-tər } yield point [MECH] The lowest stress at which strain increases without increase in stress. { ‘yeldˌpɔint } yield rate [IND ENG] The amount of satisfactory material available after the completion of a given manufacturing process expressed as a percentage of the total amount produced. { ‘yeldˌræt } yield strength [MECH] The stress at which a material exhibits a specified deviation from proportionality of stress and strain. { ‘yeldˌstrɛŋktθ } yield stress [MECH] The lowest stress at which extension of the tensile test piece increases without increase in load. { ‘yeldˌstres } yield temperature [ENG] The temperature at which a fusible plug device melts and is dislodged by its holder and thus relieves pressure in a pressure vessel; it is caused by the melting of the fusible material, which is then forced from its holder. { ‘yeldˌtem-prə ĭr } yig device [ELECTR] A filter, oscillator, parametric amplifier, or other device that uses an yttrium-iron-garnet crystal in combination with a variable magnetic field to achieve wide-band tuning in microwave circuits. Derived from yttrium-iron-garnet device. { ‘yig diˌvı̃s } Y level [ENG] A surveyor’s level with Y-shaped rests to support the telescope. Also known as wye level. { ‘wīˌlɛv-əl } yoke [DES ENG] A clamp or similar device to embrace and hold two other parts. [ELECTR] See deflection yoke. [ENG] 1. A bar of wood used to join the necks of draft animals for working together. 2. See wye. [MECH ENG] A slotted crosshead used instead of a connecting rod in some steam engines. { yŏk } York-Scheibel column See Scheibel extractor. { ‘yorkˌʃeɪ-balˌkələm } Young-Helmholtz laws [MECH] Two laws de-
Young’s modulus

scribing the motion of bowed strings; the first states that no overtone with a node at the point of excitation can be present; the second states that when the string is bowed at a distance of \(1/n\) times the string’s length from one of the ends, where \(n\) is an integer, the string moves back and forth with two constant velocities, one of which has the same direction as that of the bow and is equal to it, while the other has the opposite direction and is \(n - 1\) times as large.

\[\text{Young’s modulus} \quad \text{[MECH]} \quad \text{The ratio of a simple tension stress applied to a material to the resulting strain parallel to the tension. Also known as modulus of elasticity} \quad \{\text{ˈyaŋ} \quad \text{ˈmə́ːlə́s}\}\]

\text{Young’s modulus} \quad \text{[ELECTR]} \quad \text{One of a set of four transistor equivalent-circuit parameters, used especially with field-effect transistors, that conveniently specify performance for small voltage and current in an equivalent circuit; the equivalent circuit is a current source with shunt impedance at both input and output.} \quad \{\text{ˈwi̞ pəˈram·əd·ə́r}\}

\text{yttrium-iron-garnet device} \quad \text{See yig device.} \quad \{\text{ˈi̞ˈtrē·ən ˈɡər·nət \text{ˈdiˌvəs}}\}
zeek [CIV ENG] A metal member whose cross section has a modified Z shape, the internal angles are slightly more than 90°. (zēk)

Zener breakdown [ELECTR] Nondestructive breakdown in a semiconductor, occurring when the electric field across the barrier region becomes high enough to produce a form of field emission that suddenly increases the number of carriers in this region. Also known as Zener effect. (’zē-nar’brak,daun)

Zener diode [ELECTR] A semiconductor breakdown diode, usually constructed of silicon, in which reverse-voltage breakdown is based on the Zener effect. (’zē-nar’dī’dē,ād)

Zener diode voltage regulator See diode voltage regulator. (’zē-nar’dī’dī’drē,ō’dē)

Zener effect See Zener breakdown.

zero adjuster [ENG] A device for adjusting the pointer position of an instrument or meter to read zero when the measured quantity is zero. (’zir-ōj’tū,ōr)

zero bevel gear [DES ENG] A special form of bevel gear having curved teeth with a zero-degree spiral angle. (’zir-ō’bēv-ōl’gīr)

zero bias [ELECTR] The condition in which the control grid and cathode of an electron tube are at the same direct-current voltage. (’zir-ō’bi-tās)

zero defects [IND ENG] A program for improving product quality to the point of perfection, so there will be no failures due to defects in construction. (’zir-ō’dyekst)

zero gravity See weightlessness. (’zir-ō’grā-věldē)

zero level [ENG ACOUS] Reference level used for comparing sound or signal intensities; in audio-frequency work, a power of 0.006 watt is generally used as zero level, in sound, the threshold of hearing is generally assumed as the zero level. (’zir-ō’lev-ōl)

zero method See null method. (’zir-ō’meth-ōd)

zero-order hold [CONT SYS] A device which converts a sampled output into an output which is constant between samples at the last sampled value. (’zir-ō’ōrd-ōr’hōld)

zeroth law of thermodynamics [THERMO] A law that if two systems are separately found to be in thermal equilibrium with a third system, the first two systems are in thermal equilibrium with each other, that is, all three systems are at the same temperature. (’zir-ōth’ōr’thār-mōdl’nam-āks)

Ziegler process [CHEM ENG] A process for the low-pressure linear polymerization of ethylene and stereospecific polymerization of propylene, the product is a high-density polymer or elastomer. (’zē-glār’prā-sōs)

zigzag rule [ENG] A folding ruler having pivoted sections that lock when the ruler is opened. (’zig-zag’rūl)

zipper [ENG] A generic name for slide fasteners in which two sets of interlocking teeth of the same design provide sturdy and continuous closure for adjacent pieces of textile, leather, and other materials. (’zip-ōr)

zirconium oxide-based oxygen transducer [ENG] A device in which the concentration of oxygen in a mixture of gases is determined from the diffusion voltage across a heated, suitably doped zirconium oxide material placed between this mixture and a reference gas. (’zir-kōn-ōdēr-eom’lēk,sōd,bāst,jāks-eōr-tranz’dūs-ōr)

zone [MECH ENG] 1. In a heating or air-conditioning system, one or more spaces whose temperature is regulated by a single control. 2. A subdivision of a sprinkler, water-supply, or standpipe system. (’zōn)

zone control [ENG] The zoning of a process or building, and the independent heating or temperature controls for each zone. (’zōn kon’trōl)

zone heat [CIV ENG] A central heating system arranged to allow different temperatures to be maintained at the same time in two or more areas of a building. (’zōn’hēt)

zone melting crystallization [CHEM ENG] A method for purification of crystalline solids; the sample, packed in a narrow column, is heated so that a molten zone passes down through the sample, carrying impurities with it. (’zōn’mel’tīn’krist-ōl’shān)

zone-position indicator [ENG] Auxiliary radar set for indicating the general position of an object to another radar set with a narrower field. (’zōn po’dizh-ōn’in’ō-da,kād-ōr)
zoning  [CIV ENG] Designation and reservation under a master plan of land use for light and heavy industry, dwellings, offices, and other buildings; use is enforced by restrictions on types of buildings in each zone.  (ˈzōn-iŋ)

zoom  [ENG] To enlarge or reduce the size of an image in an optical system or electronic display.  (ˈzōm)

Z parameter  [ELECTR] One of a set of four transistor equivalent-circuit parameters, they are the inverse of the Y parameters.  (ˈzē pəˌram·əd·ər)

z-transfer function  See pulsed transfer function.  (ˈzē ˈtranz-fərˌfəŋk·shən)

Z variometer  See vertical intensity variometer.  (ˈzē ˌver·əˈtī·əm·əd·ər)

Zyglo method  [ENG] A procedure for visualizing incipient cracks caused by fatigue failure, in which the part is immersed in a special activated penetrating oil and viewed under black light.  (ˈzī·gloˌ ,meth·əd)
This page intentionally left blank.
### Equivalents of commonly used units for the U.S. Customary System and the metric system

<table>
<thead>
<tr>
<th>Unit Conversion</th>
<th>Unit Conversion</th>
<th>Unit Conversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch = 2.5 centimeters (25 millimeters)</td>
<td>1 centimeter = 0.4 inch</td>
<td>1 inch = 0.083 foot</td>
</tr>
<tr>
<td>1 foot = 0.3 meter (30 centimeters)</td>
<td>1 meter = 3.3 feet</td>
<td>1 foot = 0.33 yard (12 inches)</td>
</tr>
<tr>
<td>1 yard = 0.9 meter</td>
<td>1 meter = 1.1 yards</td>
<td>1 yard = 3 feet (36 inches)</td>
</tr>
<tr>
<td>1 mile = 1.6 kilometers</td>
<td>1 kilometer = 0.62 mile</td>
<td>1 mile = 5280 feet (1760 yards)</td>
</tr>
<tr>
<td>1 acre = 0.4 hectare</td>
<td>1 hectare = 2.47 acres</td>
<td>1 square meter = 0.00025 acre</td>
</tr>
<tr>
<td>1 acre = 4047 square meters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 gallon = 3.8 liters</td>
<td>1 liter = 1.06 quarts = 0.26 gallon</td>
<td>1 quart = 0.25 gallon (32 ounces; 2 pints)</td>
</tr>
<tr>
<td>1 fluid ounce = 29.6 milliliters</td>
<td>1 milliliter = 0.034 fluid ounce</td>
<td>1 pint = 0.125 gallon (16 ounces)</td>
</tr>
<tr>
<td>32 fluid ounces = 946.4 milliliters</td>
<td></td>
<td>1 gallon = 4 quarts (8 pints)</td>
</tr>
<tr>
<td>1 quart = 0.95 liter</td>
<td>1 gram = 0.035 ounce</td>
<td>1 ounce = 0.0625 pound</td>
</tr>
<tr>
<td>1 ounce = 28.35 grams</td>
<td>1 kilogram = 2.2 pounds</td>
<td>1 pound = 16 ounces</td>
</tr>
<tr>
<td>1 pound = 0.45 kilogram</td>
<td>1 kilogram = 1.1 × 10⁻³ ton</td>
<td>1 ton = 2000 pounds</td>
</tr>
<tr>
<td>1 ton = 907.18 kilograms</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

°F = (1.8 × °C) + 32  
°C = (°F − 32) ÷ 1.8
### Conversion factors for the U.S. Customary System, metric system, and International System

#### A. Units of length

<table>
<thead>
<tr>
<th>Units</th>
<th>cm</th>
<th>m</th>
<th>in.</th>
<th>ft</th>
<th>yd</th>
<th>mi</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cm</td>
<td>= 1</td>
<td>0.01</td>
<td>0.3937008</td>
<td>0.03280840</td>
<td>0.01093613</td>
<td>6.213712 × 10⁻⁶</td>
</tr>
<tr>
<td>1 m</td>
<td>= 100.</td>
<td>1</td>
<td>39.37008</td>
<td>3.280840</td>
<td>1.093613</td>
<td>6.213712 × 10⁻⁴</td>
</tr>
<tr>
<td>1 in.</td>
<td>= 2.54</td>
<td>0.0254</td>
<td>1</td>
<td>0.08333333...</td>
<td>0.02777777...</td>
<td>1.578283 × 10⁻⁵</td>
</tr>
<tr>
<td>1 ft</td>
<td>= 30.48</td>
<td>0.3048</td>
<td>12.</td>
<td>1</td>
<td>0.3333333...</td>
<td>1.893939... × 10⁻⁴</td>
</tr>
<tr>
<td>1 yd</td>
<td>= 91.44</td>
<td>0.9144</td>
<td>36.</td>
<td>3.</td>
<td>1</td>
<td>5.681818... × 10⁻⁴</td>
</tr>
<tr>
<td>1 mi</td>
<td>= 1.609344 × 10⁵</td>
<td>1.609344 × 10³</td>
<td>6.336 × 10⁴</td>
<td>5280.</td>
<td>1760.</td>
<td>1</td>
</tr>
</tbody>
</table>

#### B. Units of area

<table>
<thead>
<tr>
<th>Units</th>
<th>cm²</th>
<th>m²</th>
<th>in.²</th>
<th>ft²</th>
<th>yd²</th>
<th>mi²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cm²</td>
<td>= 1</td>
<td>10⁻⁴</td>
<td>0.1550003</td>
<td>1.076391 × 10⁻³</td>
<td>1.195990 × 10⁻⁴</td>
<td>3.861022 × 10⁻¹¹</td>
</tr>
<tr>
<td>1 m²</td>
<td>= 10⁴</td>
<td>1</td>
<td>1550.003</td>
<td>10.76391</td>
<td>1.195990</td>
<td>3.861022 × 10⁻⁷</td>
</tr>
<tr>
<td>1 in.²</td>
<td>= 6.4516</td>
<td>6.4516 × 10⁻⁴</td>
<td>1</td>
<td>6.944444... × 10⁻³</td>
<td>7.16049 × 10⁻⁴</td>
<td>2.490977 × 10⁻¹⁰</td>
</tr>
<tr>
<td>1 ft²</td>
<td>= 929.0304</td>
<td>0.09290304</td>
<td>144.</td>
<td>1</td>
<td>0.11111111...</td>
<td>3.587007 × 10⁻⁸</td>
</tr>
<tr>
<td>1 yd²</td>
<td>= 8361.273</td>
<td>0.8361273</td>
<td>1296.</td>
<td>9.</td>
<td>1</td>
<td>3.228306 × 10⁻⁷</td>
</tr>
<tr>
<td>1 mi²</td>
<td>= 2.589988 × 10¹⁰</td>
<td>2.589988 × 10⁶</td>
<td>4.014490 × 10⁹</td>
<td>2.78784 × 10⁷</td>
<td>3.0976 × 10⁶</td>
<td>1</td>
</tr>
</tbody>
</table>
### C. Units of volume

<table>
<thead>
<tr>
<th>Units</th>
<th>$m^3$</th>
<th>$cm^3$</th>
<th>liter</th>
<th>$in^3$</th>
<th>$ft^3$</th>
<th>qt</th>
<th>gal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 m³</td>
<td>= 1</td>
<td>$10^6$</td>
<td>$10^3$</td>
<td>$6.102374 \times 10^4$</td>
<td>$35.31467 \times 10^{-3}$</td>
<td>1.056688</td>
<td>264.1721</td>
</tr>
<tr>
<td>1 cm³</td>
<td>= $10^{-6}$</td>
<td>1</td>
<td>$10^{-3}$</td>
<td>$0.06102374$</td>
<td>$3.531467 \times 10^{-6}$</td>
<td>$1.056688 \times 10^{-3}$</td>
<td>2.641721 \times $10^{-4}$</td>
</tr>
<tr>
<td>1 liter</td>
<td>= $10^{-3}$</td>
<td>$1000$</td>
<td>1</td>
<td>$61.02374$</td>
<td>$0.03531467$</td>
<td>1.056688</td>
<td>0.2641721</td>
</tr>
<tr>
<td>1 in.³</td>
<td>= $1.638706 \times 10^{-3}$</td>
<td>$16.38706$</td>
<td>$0.01638706$</td>
<td>1</td>
<td>$5.787037 \times 10^{-4}$</td>
<td>$0.01731602$</td>
<td>4.329004 \times $10^{-3}$</td>
</tr>
<tr>
<td>1 ft³</td>
<td>= $2.831685 \times 10^{-2}$</td>
<td>$2831.685$</td>
<td>$28.31685$</td>
<td>1728.</td>
<td>1</td>
<td>2.992208</td>
<td>7.480520</td>
</tr>
<tr>
<td>1 qt</td>
<td>= $9.463529 \times 10^{-4}$</td>
<td>$946.3529$</td>
<td>$0.9463529$</td>
<td>$57.75$</td>
<td>$0.03342014$</td>
<td>1</td>
<td>0.25</td>
</tr>
<tr>
<td>1 gal (U.S.)</td>
<td>= $3.785412 \times 10^{-1}$</td>
<td>$3785.412$</td>
<td>$3.785412$</td>
<td>$231.$</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### D. Units of mass

<table>
<thead>
<tr>
<th>Units</th>
<th>$g$</th>
<th>$kg$</th>
<th>oz</th>
<th>lb</th>
<th>metric ton</th>
<th>ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 g</td>
<td>= 1</td>
<td>$10^{-3}$</td>
<td>0.03527396</td>
<td>$2.04623 \times 10^{-3}$</td>
<td>$10^{-6}$</td>
<td>$1.102311 \times 10^{-6}$</td>
</tr>
<tr>
<td>1 kg</td>
<td>= 1000</td>
<td>1</td>
<td>$35.27396$</td>
<td>$2.04623$</td>
<td>$10^{-3}$</td>
<td>$1.102311 \times 10^{-3}$</td>
</tr>
<tr>
<td>1 oz (avdp)</td>
<td>= 28.34952</td>
<td>0.02834952</td>
<td>1</td>
<td>0.0625</td>
<td>$2.834952 \times 10^{-5}$</td>
<td>$3.125 \times 10^{-5}$</td>
</tr>
<tr>
<td>1 lb (avdp)</td>
<td>= 453.5924</td>
<td>0.4535924</td>
<td>16</td>
<td>1</td>
<td>$4.535924 \times 10^{-4}$</td>
<td>$5. \times 10^{-4}$</td>
</tr>
<tr>
<td>1 metric ton</td>
<td>= $10^6$</td>
<td>1000</td>
<td>$3527.396$</td>
<td>$2204.623$</td>
<td>1</td>
<td>$1.102311$</td>
</tr>
<tr>
<td>1 ton</td>
<td>= 907184.7</td>
<td>907.1847</td>
<td>3200</td>
<td>2000</td>
<td>$0.9071847$</td>
<td>1</td>
</tr>
</tbody>
</table>
### Conversion factors for the U.S. Customary System, metric system, and International System (cont.)

#### E. Units of density

<table>
<thead>
<tr>
<th>Units</th>
<th>g · cm⁻³</th>
<th>g · L⁻¹ · kg · m⁻³</th>
<th>oz · in⁻³</th>
<th>lb · in⁻³</th>
<th>lb · ft⁻³</th>
<th>lb · gal⁻¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 g · cm⁻³</td>
<td>1</td>
<td>1000</td>
<td>0.5780365</td>
<td>0.03612728</td>
<td>62.42795</td>
<td>8.345403</td>
</tr>
<tr>
<td>1 g · L⁻¹ · kg · m⁻³</td>
<td>10⁻³</td>
<td>1</td>
<td>5.780365×10⁻⁴</td>
<td>3.612728×10⁻⁵</td>
<td>0.06242795</td>
<td>8.345403×10⁻³</td>
</tr>
<tr>
<td>1 oz · in⁻³</td>
<td>1.729994</td>
<td>1729.994</td>
<td>1</td>
<td>0.0625</td>
<td>108.</td>
<td>14.4375</td>
</tr>
<tr>
<td>1 lb · in⁻³</td>
<td>27.67991</td>
<td>2767.91</td>
<td>16</td>
<td>1</td>
<td>1728.</td>
<td>231.</td>
</tr>
<tr>
<td>1 lb · ft⁻³</td>
<td>0.01601847</td>
<td>1601.847</td>
<td>9.259259×10⁻³</td>
<td>5.787037×10⁻⁴</td>
<td>1</td>
<td>0.1336806</td>
</tr>
<tr>
<td>1 lb · gal⁻¹</td>
<td>0.1198264</td>
<td>119.8264</td>
<td>4.749536×10⁻³</td>
<td>4.329004×10⁻³</td>
<td>7.480519</td>
<td>1</td>
</tr>
</tbody>
</table>

#### F. Units of pressure

<table>
<thead>
<tr>
<th>Units</th>
<th>Pa, N · m⁻²</th>
<th>dyn · cm⁻²</th>
<th>bar</th>
<th>atm</th>
<th>kgf · cm⁻²</th>
<th>mmHg (torr)</th>
<th>in. Hg</th>
<th>lbf · in⁻²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Pa, 1 N · m⁻²</td>
<td>1</td>
<td>10</td>
<td>10⁻⁵</td>
<td>9.869233×10⁻⁶</td>
<td>1.019716×10⁻⁵</td>
<td>7.500617×10⁻³</td>
<td>2.952999×10⁻⁴</td>
<td>1.450377×10⁻⁴</td>
</tr>
<tr>
<td>1 dyn · cm⁻²</td>
<td>0.1</td>
<td>1</td>
<td>10⁻⁶</td>
<td>9.869233×10⁻⁷</td>
<td>1.019716×10⁻⁶</td>
<td>7.500617×10⁻⁴</td>
<td>2.952999×10⁻⁵</td>
<td>1.450377×10⁻⁵</td>
</tr>
<tr>
<td>1 bar</td>
<td>10³</td>
<td>10⁶</td>
<td>1</td>
<td>0.9869233</td>
<td>1.019716</td>
<td>750.0617</td>
<td>29.52999</td>
<td>14.50377</td>
</tr>
<tr>
<td>1 atm</td>
<td>101325</td>
<td>1013250</td>
<td>1.01325</td>
<td>1</td>
<td>1.033227</td>
<td>760.</td>
<td>29.92126</td>
<td>14.69595</td>
</tr>
<tr>
<td>1 kgf · cm⁻²</td>
<td>98066.5</td>
<td>980665</td>
<td>0.980665</td>
<td>0.9678411</td>
<td>1</td>
<td>735.592</td>
<td>28.95903</td>
<td>14.22334</td>
</tr>
<tr>
<td>1 mmHg (torr)</td>
<td>133.3224</td>
<td>1333.224</td>
<td>1.333224×10³</td>
<td>1.315789×10³</td>
<td>1.359510×10⁻³</td>
<td>1</td>
<td>0.03937008</td>
<td>0.01933678</td>
</tr>
<tr>
<td>1 in. Hg</td>
<td>3386.388</td>
<td>33863.88</td>
<td>0.03386388</td>
<td>0.03342105</td>
<td>0.03453155</td>
<td>25.4</td>
<td>1</td>
<td>0.4911541</td>
</tr>
<tr>
<td>1 lbf · in⁻²</td>
<td>6894.757</td>
<td>68947.57</td>
<td>0.06894757</td>
<td>0.06804596</td>
<td>0.07030696</td>
<td>51.71493</td>
<td>2.036021</td>
<td>1</td>
</tr>
</tbody>
</table>
### Units of Energy

<table>
<thead>
<tr>
<th>Units</th>
<th>g mass (energy equiv)</th>
<th>l</th>
<th>eV</th>
<th>cal</th>
<th>cal(_{IT})</th>
<th>Btu(_{IT})</th>
<th>kWh</th>
<th>hp-h</th>
<th>ft-lbf</th>
<th>ft(^3) lbf \cdot in.(^{-2})</th>
<th>liter-atm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 g mass</td>
<td>= 1 (\times 10^{13})</td>
<td>8.987552</td>
<td>5.609589</td>
<td>2.148076</td>
<td>2.146640</td>
<td>8.518555</td>
<td>2.496542</td>
<td>3.347918</td>
<td>6.628878</td>
<td>4.603388</td>
<td>8.870024</td>
</tr>
<tr>
<td>1 l</td>
<td>= 1.112650 (\times 10^{-14})</td>
<td>1</td>
<td>6.241510</td>
<td>0.2390057</td>
<td>0.2388459</td>
<td>9.478172</td>
<td>2.777777...</td>
<td>3.725062</td>
<td>0.7375622</td>
<td>5.121960</td>
<td>9.869233</td>
</tr>
<tr>
<td>1 eV</td>
<td>= 1.782662 (\times 10^{-19})</td>
<td>1.602176</td>
<td>1</td>
<td>3.829293</td>
<td>3.826733</td>
<td>1.518570</td>
<td>4.450490</td>
<td>5.968206</td>
<td>1.181705</td>
<td>8.206283</td>
<td>1.581225</td>
</tr>
<tr>
<td>1 cal</td>
<td>= 4.655328 (\times 10^{-14})</td>
<td>4.184</td>
<td>2.611448</td>
<td>1</td>
<td>0.9993312</td>
<td>3.965667</td>
<td>1.162222...</td>
<td>1.558562</td>
<td>3.085960</td>
<td>2.143028</td>
<td>0.04129287</td>
</tr>
<tr>
<td>1 cal(_{IT})</td>
<td>= 4.658443 (\times 10^{-14})</td>
<td>4.186</td>
<td>2.613195</td>
<td>1</td>
<td>1.000669</td>
<td>3.968321</td>
<td>1.163</td>
<td>1.559609</td>
<td>3.088025</td>
<td>2.144462</td>
<td>0.04132050</td>
</tr>
<tr>
<td>1 Btu(_{IT})</td>
<td>= 1.173908 (\times 10^{-11})</td>
<td>1055.056</td>
<td>6.585141</td>
<td>0.2388459</td>
<td>0.2390057</td>
<td>9.478172</td>
<td>2.777777...</td>
<td>3.725062</td>
<td>0.7375622</td>
<td>5.121960</td>
<td>9.869233</td>
</tr>
<tr>
<td>1 kWh</td>
<td>= 4.005540 (\times 10^{-8})</td>
<td>360000.</td>
<td>2.246944</td>
<td>860420.7</td>
<td>859845.2</td>
<td>3412.142</td>
<td>1</td>
<td>1.341022</td>
<td>2655224.</td>
<td>18349.06</td>
<td>35529.24</td>
</tr>
<tr>
<td>1 hp-h</td>
<td>= 2.986931 (\times 10^{-8})</td>
<td>238451.</td>
<td>1.675545</td>
<td>641615.6</td>
<td>641186.5</td>
<td>2544.33</td>
<td>0.7456998</td>
<td>1</td>
<td>198000.</td>
<td>13750.</td>
<td>26494.15</td>
</tr>
<tr>
<td>1 ft-lbf</td>
<td>= 1.508551 (\times 10^{-14})</td>
<td>1.355818</td>
<td>8.462351</td>
<td>0.3240483</td>
<td>0.3238315</td>
<td>1.285067</td>
<td>3.766161</td>
<td>5.050505...</td>
<td>1</td>
<td>6.944444...</td>
<td>0.01338088</td>
</tr>
<tr>
<td>1 ft(^3) lbf \cdot in.(^{-2})</td>
<td>= 2.172313 (\times 10^{-12})</td>
<td>195.2378</td>
<td>1.218579</td>
<td>46.66295.</td>
<td>46.63174</td>
<td>0.1850497</td>
<td>5.423272</td>
<td>7.272727...</td>
<td>144.</td>
<td>1</td>
<td>1.926847</td>
</tr>
<tr>
<td>1 liter-atm</td>
<td>= 1.127393 (\times 10^{-12})</td>
<td>101.325</td>
<td>6.324210</td>
<td>24.21726</td>
<td>24.20106</td>
<td>0.09603757</td>
<td>2.814583</td>
<td>3.774419</td>
<td>74.73349</td>
<td>0.5189825</td>
<td>1</td>
</tr>
</tbody>
</table>
Appendix

## Special constants

\[ \pi = 3.141592653589793238462643 \ldots \]

\[ e = 2.718281828459045535360287 \ldots = \lim_{n \to \infty} \left(1 + \frac{1}{n}\right)^n \]

- natural base of logarithms

\[ \sqrt{2} = 1.4142135623730950488 \ldots \]

\[ \sqrt{3} = 1.7320508075688772935 \ldots \]

\[ \sqrt{5} = 2.2360679774997896964 \ldots \]

\[ \sqrt{2} = 1.259921050 \ldots \]

\[ \sqrt{3} = 1.442249570 \ldots \]

\[ \sqrt{5} = 1.18698355 \ldots \]

\[ \sqrt{7} = 1.247390940 \ldots \]

\[ e^\pi = 23.140692632779269006 \ldots \]

\[ \pi^e = 22.45915771836104547342715 \ldots \]

\[ e^\pi = 15.15426224147926410 \ldots \]

\[ \log_{10} 2 = 0.301029995663981952137389 \ldots \]

\[ \log_{10} 3 = 0.4771212547196624372950279 \ldots \]

\[ \log_{10} e = 0.43429448190325182765 \ldots \]

\[ \log_{10} \pi = 0.4971498726941338543512683 \ldots \]

\[ \log_e 10 = \ln 10 = 2.30258509298078 \ldots \]

\[ \log_e 3 = \ln 3 = 1.098612288668109691395245 \ldots \]

\[ \gamma = 0.577215664901532860606512 \ldots = \text{Euler's constant} \]

\[ \gamma = \lim_{n \to \infty} \left(1 + \frac{1}{2} + \frac{1}{3} + \cdots + \frac{1}{n} - \ln n\right) \]

\[ e^\gamma = 1.7810724179901979852 \ldots \]

\[ \sqrt{e} = 1.6487212707001281468 \ldots \]

\[ \sqrt{\pi} = \Gamma(\frac{1}{2}) = 1.772453850905516027298167 \ldots \]

where \( \Gamma \) is the gamma function

\[ \Gamma(\frac{1}{2}) = 2.678938534707748 \ldots \]

\[ \Gamma(\frac{3}{4}) = 3.62560990821908 \ldots \]

1 radian = \( 180^\circ/\pi = 57.29577951308232 \ldots ^\circ \)

1° = \( \pi/180 \) radians = 0.0174532925199432957692 radians

---

### Appendix

#### Electrical and magnetic units

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit and symbol</th>
<th>Derivation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SI base units</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td>kilogram, kg</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>second, s</td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>meter, m</td>
<td></td>
</tr>
<tr>
<td>Electric current</td>
<td>ampere, A</td>
<td></td>
</tr>
<tr>
<td>Thermodynamic temperature</td>
<td>kelvin, K</td>
<td></td>
</tr>
<tr>
<td>Luminous intensity</td>
<td>candela, cd</td>
<td></td>
</tr>
<tr>
<td>Amount of substance</td>
<td>mole, mol</td>
<td></td>
</tr>
<tr>
<td><strong>Derived units</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential difference, emf</td>
<td>vol, V</td>
<td>( W \cdot A^{-1} = m^2 \cdot kg \cdot s^{-3} \cdot A^{-1} )</td>
</tr>
<tr>
<td>Resistance</td>
<td>ohm, ( \Omega )</td>
<td>( V \cdot A^{-1} = m^2 \cdot kg \cdot s^{-3} \cdot A^{-2} )</td>
</tr>
<tr>
<td>Electric charge</td>
<td>coulomb, C</td>
<td>( s \cdot A )</td>
</tr>
<tr>
<td>Capacitance</td>
<td>farad, F</td>
<td>( C \cdot V^{-1} = m^{-2} \cdot kg^{-1} \cdot s^4 \cdot A^2 )</td>
</tr>
<tr>
<td>Conductance</td>
<td>siemens, S</td>
<td>( A \cdot V^{-1} = m^{-2} \cdot kg^{-1} \cdot s^4 \cdot A^2 )</td>
</tr>
<tr>
<td>Magnetic flux</td>
<td>weber, Wb</td>
<td>( V \cdot s = m^2 \cdot kg \cdot s^{-2} \cdot A^{-1} )</td>
</tr>
<tr>
<td>Inductance</td>
<td>henry, H</td>
<td>( Wb \cdot A^{-1} = m^2 \cdot kg \cdot s^{-2} \cdot A^{-2} )</td>
</tr>
<tr>
<td>Magnetic flux density</td>
<td>tesla, T</td>
<td>( Wb \cdot m^{-2} = kg \cdot s^{-2} \cdot A^{-1} )</td>
</tr>
<tr>
<td>Magnetic field strength</td>
<td>ampere per meter</td>
<td>( m^{-1} \cdot A )</td>
</tr>
<tr>
<td>Current density</td>
<td>ampere per square meter</td>
<td>( m^{-2} \cdot A )</td>
</tr>
<tr>
<td>Electric field strength</td>
<td>volt per meter</td>
<td>( V \cdot m^{-1} = m \cdot kg \cdot s^{-3} \cdot A^{-1} )</td>
</tr>
<tr>
<td>Permittivity</td>
<td>farad per meter</td>
<td>( F \cdot m^{-1} = m^{-3} \cdot kg^{-1} \cdot s^4 \cdot A^2 )</td>
</tr>
<tr>
<td>Permeability</td>
<td>henry per meter</td>
<td>( H \cdot m^{-1} = m \cdot kg \cdot s^{-2} \cdot A^{-2} )</td>
</tr>
</tbody>
</table>

#### Dimensional formulas of common quantities

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Definition</th>
<th>Dimensional formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass</td>
<td>Fundamental</td>
<td>( M )</td>
</tr>
<tr>
<td>Length</td>
<td>Fundamental</td>
<td>( L )</td>
</tr>
<tr>
<td>Time</td>
<td>Fundamental</td>
<td>( T )</td>
</tr>
<tr>
<td>Velocity</td>
<td>Distance/time</td>
<td>( LT^{-1} )</td>
</tr>
<tr>
<td>Acceleration</td>
<td>Velocity/time</td>
<td>( LT^{-2} )</td>
</tr>
<tr>
<td>Force</td>
<td>Mass \times acceleration</td>
<td>( MLT^{-2} )</td>
</tr>
<tr>
<td>Momentum</td>
<td>Mass \times velocity</td>
<td>( ML^{-1} )</td>
</tr>
<tr>
<td>Energy</td>
<td>Force \times distance</td>
<td>( ML^2T^{-2} )</td>
</tr>
<tr>
<td>Angle</td>
<td>Arc/radius</td>
<td>( 1 )</td>
</tr>
<tr>
<td>Angular velocity</td>
<td>Angle/time</td>
<td>( T^{-1} )</td>
</tr>
<tr>
<td>Angular acceleration</td>
<td>Angular velocity/time</td>
<td>( T^{-2} )</td>
</tr>
<tr>
<td>Torque</td>
<td>Force \times lever arm</td>
<td>( ML^2T^{-2} )</td>
</tr>
<tr>
<td>Angular momentum</td>
<td>Momentum \times lever arm</td>
<td>( ML^2T^{-1} )</td>
</tr>
<tr>
<td>Moment of inertia</td>
<td>Mass \times radius squared</td>
<td>( ML^2 )</td>
</tr>
<tr>
<td>Area</td>
<td>Length squared</td>
<td>( L^2 )</td>
</tr>
<tr>
<td>Volume</td>
<td>Length cubed</td>
<td>( L^3 )</td>
</tr>
<tr>
<td>Density</td>
<td>Mass/volume</td>
<td>( ML^{-3} )</td>
</tr>
<tr>
<td>Pressure</td>
<td>Force/area</td>
<td>( ML^{-1}T^{-2} )</td>
</tr>
<tr>
<td>Action</td>
<td>Energy \times time</td>
<td>( ML^2T^{-1} )</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Force per unit area per unit velocity gradient</td>
<td>( ML^{-1}T^{-1} )</td>
</tr>
</tbody>
</table>
### Internal energy and generalized work

<table>
<thead>
<tr>
<th>Type of energy</th>
<th>Intensive factor</th>
<th>Extensive factor</th>
<th>Element of work</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mechanical</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expansion</td>
<td>Pressure (P)</td>
<td>Volume (V)</td>
<td>$-PdV$</td>
</tr>
<tr>
<td>Stretching</td>
<td>Surface tension ($\gamma$)</td>
<td>Area (A)</td>
<td>$\gamma dA$</td>
</tr>
<tr>
<td>Extension</td>
<td>Tensile stretch (F)</td>
<td>Length (l)</td>
<td>$FdI$</td>
</tr>
<tr>
<td>Thermal</td>
<td>Temperature (T)</td>
<td>Entropy (S)</td>
<td>$TdS$</td>
</tr>
<tr>
<td>Chemical</td>
<td>Chemical potential ($\mu m$)</td>
<td>Moles (n)</td>
<td>$\mu d n$</td>
</tr>
<tr>
<td>Electrical</td>
<td>Electric potential (E)</td>
<td>Charge (Q)</td>
<td>$EdQ$</td>
</tr>
<tr>
<td>Gravitational</td>
<td>Gravitational field strength ($mg$)</td>
<td>Height (h)</td>
<td>$mgdh$</td>
</tr>
<tr>
<td>Polarization</td>
<td>Electric field strength (E)</td>
<td>Total electric polarization (P)</td>
<td>$EdP$</td>
</tr>
<tr>
<td>Electrostatic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnetic</td>
<td>Magnetic field strength (H)</td>
<td>Total magnetic polarization (M)</td>
<td>$HdM$</td>
</tr>
</tbody>
</table>
### General rules of integration*

<table>
<thead>
<tr>
<th>Integral</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\int a , dx$</td>
<td>$ax$</td>
</tr>
<tr>
<td>$\int af(x) , dx$</td>
<td>$a \int f(x) , dx$</td>
</tr>
<tr>
<td>$\int (u \pm v \pm w \pm \cdots) , dx$</td>
<td>$\int u , dx \pm \int v , dx \pm \int w , dx \pm \cdots$</td>
</tr>
<tr>
<td>$\int u , dv$</td>
<td>$uv - \int v , du$ (integration by parts)</td>
</tr>
<tr>
<td>$\int f(ax) , dx$</td>
<td>$\frac{1}{a} \int f(u) , du$</td>
</tr>
<tr>
<td>$\int F(f(x)) , dx$</td>
<td>$\int F(u) , \frac{dx}{du} , du = \int F(u) , f'(x) , du$ where $u = f(x)$</td>
</tr>
<tr>
<td>$u^n , du$</td>
<td>$\frac{u^{n+1}}{n+1}$, $n \neq -1$ [for $n = -1$]</td>
</tr>
<tr>
<td>$\int \frac{du}{u}$</td>
<td>$\ln</td>
</tr>
<tr>
<td>$\int e^x , du$</td>
<td>$e^x$</td>
</tr>
<tr>
<td>$\int a^x , du$</td>
<td>$\frac{a^x}{\ln a}$, $a &gt; 0$, $a \neq 1$</td>
</tr>
<tr>
<td>$\int \sin u , du$</td>
<td>$-\cos u$</td>
</tr>
<tr>
<td>$\int \cos u , du$</td>
<td>$\sin u$</td>
</tr>
</tbody>
</table>

### Additional Formulas

<table>
<thead>
<tr>
<th>Integral</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\int \tan u , du$</td>
<td>$\ln \sec u = -\ln \cos u$</td>
</tr>
<tr>
<td>$\int \cot u , du$</td>
<td>$\ln \sin u$</td>
</tr>
<tr>
<td>$\int \sec u , du$</td>
<td>$\ln (\sec u + \tan u) = \ln \tan \left(\frac{u}{2} + \frac{\pi}{4}\right)$</td>
</tr>
<tr>
<td>$\int \csc u , du$</td>
<td>$\ln (\csc u - \cot u) = \ln \tan \frac{u}{2}$</td>
</tr>
<tr>
<td>$\int \sec^2 u , du$</td>
<td>$\tan u$</td>
</tr>
<tr>
<td>$\int \csc^2 u , du$</td>
<td>$-\cot u$</td>
</tr>
<tr>
<td>$\int \tan^2 u , du$</td>
<td>$\tan u - u \int \cot^2 u , du = -\cot u - u$</td>
</tr>
<tr>
<td>$\int \sin^2 u , du$</td>
<td>$\frac{u}{2} - \frac{\sin 2u}{4} = \frac{1}{2} (u - \sin u \cos u)$</td>
</tr>
<tr>
<td>$\int \cos^2 u , du$</td>
<td>$\frac{u}{2} + \frac{\sin 2u}{4} = \frac{1}{2} (u + \sin u \cos u)$</td>
</tr>
<tr>
<td>$\int \sec u \tan u , du$</td>
<td>$\sec u$</td>
</tr>
<tr>
<td>$\int \csc u \cot u , du$</td>
<td>$-\csc u$</td>
</tr>
<tr>
<td>$\int \sinh u , du$</td>
<td>$\cosh u$</td>
</tr>
<tr>
<td>$\int \cosh u , du$</td>
<td>$\sinh u$</td>
</tr>
<tr>
<td>$\int \tanh u , du$</td>
<td>$\ln \cosh u$</td>
</tr>
<tr>
<td>$\int \coth u , du$</td>
<td>$\ln \sinh u$</td>
</tr>
</tbody>
</table>
\[
\begin{align*}
\int \text{sech } u \, du &= \sinh^{-1}(\tanh u) \quad \text{or} \quad 2 \tan^{-1} e^u \\
\int \text{csch } u \, du &= \ln \tanh \frac{u}{2} \quad \text{or} \quad -\coth^{-1} e^u \\
\int \text{sech}^2 u \, du &= \tanh u \\
\int \text{csch}^2 u \, du &= -\coth u \\
\int \tanh^2 u \, du &= u - \tanh u \\
\int \coth^2 u \, du &= u - \coth u \\
\int \sinh^2 u \, du &= \frac{\sinh 2u}{4} - \frac{u}{2} - \frac{1}{2} (\sinh u \cosh u - u) \\
\int \cosh^2 u \, du &= \frac{\sinh 2u}{4} + \frac{u}{2} + \frac{1}{2} (\sinh u \cosh u + u) \\
\int \text{sech } u \, \tanh u \, du &= -\text{sech } u \\
\int \text{csch } u \, \coth u \, du &= -\text{csch } u \\
\int \frac{du}{u^2 + a^2} &= \frac{1}{a} \tan^{-1} \frac{u}{a}
\end{align*}
\]

This is called generalized integration by parts.

\[
\begin{align*}
\int \frac{du}{u^2 - a^2} &= \frac{1}{2a} \ln \left( \frac{u-a}{u+a} \right) = \frac{1}{a} \coth^{-1} \frac{u}{a} \quad u^2 > a^2 \\
\int \frac{du}{a^2 - u^2} &= \frac{1}{2a} \ln \left( \frac{a+u}{a-u} \right) = \frac{1}{a} \tanh^{-1} \frac{u}{a} \quad u^2 < a^2 \\
\int \frac{du}{\sqrt{a^2 - u^2}} &= \sin^{-1} \frac{u}{a} \\
\int \frac{du}{\sqrt{u^2 + a^2}} &= \ln(u + \sqrt{u^2 + a^2}) \quad \text{or} \quad \sinh^{-1} \frac{u}{a} \\
\int \frac{du}{u^2 - a^2} &= \ln(u + \sqrt{u^2 - a^2}) \\
\int \frac{du}{\sqrt{u^2 - a^2}} &= \frac{1}{a} \sec^{-1} \frac{|u|}{a} \\
\int \frac{du}{u \sqrt{u^2 + a^2}} &= \frac{1}{a} \ln \left( \frac{a + \sqrt{u^2 + a^2}}{u} \right) \\
\int \frac{du}{u \sqrt{a^2 - u^2}} &= -\frac{1}{a} \ln \left( \frac{a + \sqrt{a^2 - u^2}}{u} \right) \\
\int f^{(n)} g \, dx &= f^{(n-1)} g - f^{(n-2)} g' + f^{(n-3)} g'' + \cdots + (-1)^{n} \int f^{(n)} g' \, dx
\end{align*}
\]

*Here, \( u, v, w \) are functions of \( x; a, b, p, q, \pi \) any constants, restricted if indicated; \( e = 2.71828 \ldots \) is the natural base of logarithms; \( \ln u \) denotes the natural logarithm of \( u \) where it is assumed that \( u > 0 \) in general, to extend formulas to cases where \( u < 0 \) as well, replace \( \ln u \) by \( \ln |u| \); all angles are in radians; all constants of integration are omitted but implied.

Schematic electronic symbols*
