

## McGraw-Hill Dictionary of Scientific and Technical Terms Fifth Edition

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On the cover: Photomicrograph of crystals of vitamin B1. (Dennis Kunkel, University of Hawaii)

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## McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS, Fifth Edition

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## INTERNATIONAL EDITION

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aspiration [MED] The removal of fluids from a cavity by suction. [MICROBIO] The use of suction to draw up a sample in a pipette. [SCI TECH] Act or the result of removing, carrying along, or drawing by suction. [, as:pə'rā:shən ] aspiration condenser [NUCLEO] An ion-counter collecting

aspiration condenser [NUCLEO] An ion-counter collecting element consisting of a cylindrical condenser which when charged produces a radial field that collects ions from the aspirated air. ( as pə'rā·shən kən,den·sər )

aspiration meteorograph [ENG] An instrument for the continuous recording of two or more meteorological parameters, with the ventilation being provided by a suction fan. { ,as pə'rā·shən ,mēd·ē'ór·ə,graf }

aspiration psychrometer [ENG] A psychrometer in which the ventilation is provided by a suction fan. { ,as·pə'rā·shən ,si'kräm·əd·ər }

aspiration thermograph [ENG] A thermograph in which ventilation is provided by a suction fan. { ,as·pə'rā·shən 'thərmə,graf }

aspirator [ENG] Any instrument or apparatus that utilizes a vacuum to draw up gases or granular materials. [MIN ENG] A device made of wire gauze, of cloth, or of a fibrous mass held between pieces of meshed material and used to cover the mouth and nose to keep dusts from entering the lungs. { 'as·pə,rād·or }

aspirin See acetylsalicylic acid. [ 'as pron ]

aspite [GEOL] A cratered volcano with the base wide in relation to the height; for example, Mauna Loa. [ 'as,  $p\bar{n}t$  ]

asporogenic mutant [MICROBIO] A bacillus that is unable to form spores due to alterations at any of several gene loci. { \alpha, spore \genty environt }

asporogenous [BOT] Not producing spores, especially of certain yeasts. { 'ā·spə'räj·ə·nəs }

Aspredinidae [VERT ZOO] A family of salt-water catfishes in the order Siluriformes found off the coast of South America. {,a·sprə'din·ə·dē}

ASROC See antisubmarine rocket. { 'as räk }

ass [VERT ZOO] Any of several perissodactyl mammals in the family Equidae belonging to the genus *Equus*, especially *E. hemionus* and *E. asinus*. (as) assault [ORD] 1. Final phase of an attack; closing with the

assault [ORD] 1. Final phase of an attack; closing with the enemy in hand-to-hand fighting. 2. The landing of troops for attack on the enemy's beach defenses. 3. The landing of parachute and glider elements on unsecured and unprepared drop zones and landing zones to attack and seize an airhead. 4. A short, violent, but well-ordered attack against a local objective, such as a gun emplacement, fort, or machine gun nest. { <code>o'solt }</code>

assault aircraft [AERO ENG] Powered aircraft, including helicopters, which move assault troops and cargo into an objective area and which provide for their resupply. { o'sôlt 'er,kraft } assault boat [NAV ARCH] A small boat that can easily be transported on land; used for amphibious military attacks or to cross lakes and rivers in land warfare. { o'sôlt ,bôt } assault fire [ORD] 1. Fire delivered by attacking troops as

assault fire [ORD] 1. Fire delivered by attacking troops as they close with an enemy to engage him at close range or in hand-to-hand fighting, usually delivered from the hip or the standing position at a sustained rate. Also known as advancing fire. 2. In artillery, extremely accurate, short-range destruction fire at point targets. { o'sôlt, fir } assault gun [ORD] Any of various sizes and types of guns

dsSault gun [ORD] Any of various sizes and types of guns that are self-propelled or mounted on tanks and are used for direct fire from close range against point targets. { ə'sôlt .gən }

assault-landing model [ORD] A special form of assault model designed specifically for planning amphibious landings. Also known as amphibious-assault landing model. { <code>o'solt landing.mäd.ol }</code>

assault model [ORD] Vehicle designed to provide direct fire in combat. ( ə'sölt ,mäd-əl )

assay [ANALY CHEM] Qualitative or quantitative determination of the components of a material, as an ore or a drug. ['a,sā]

assay balance [ENG] A sensitive balance used in the assaying of gold, silver, and other precious metals. { 'a,sā, bal-ons } assay bar [MET] A bar of pure or nearly pure gold and silver; <sup>Used</sup> by a government as a standard. { 'a,sā, bär }

assay plan [MIN ENG] A mine map showing the assay, stope, width, and so forth of samples taken from positions marked. ['a,sā,plan] assay pound [MIN ENG] A weight which varies from time to time but is sometimes 0.5 gram, and is used by assayers to proportionately represent a pound. { 'a,sā, paùnd }

assay ton [MIN ENG] A unit of weight of ore equal to 29,167 milligrams; the number of milligrams of precious metal in this measure equals the number of troy ounces in a short ton. ['a,sā ,ton]

assay value [MIN ENG] The amount of gold or silver as shown by assay of any given sample and represented by ounces per ton of ore. { 'a,sā,val·yü }

assay walls [MIN ENG] The planes to which an ore body can be profitably mined, the limiting factor being the metal content of the country rock as determined from assays. { 'a,sā, wolz } assemblage [ARCHEO] All related cultural traits and artifacts associated with one archeological manifestation. [ECOL] A group of organisms sharing a common habitat by chance. [ORD] A collection of items designed to accomplish one general function and identified and issued as a single item. [PALEON] A group of fossils occurring together at one stratigraphic level. { o'sem-blij }

assembled stone [MATER] A stone made of two or more gem materials, whether genuine or imitation. { o'sem-bold 'stôn } assembler [COMPUT sCI] A program designed to convert symbolic instruction into a form suitable for execution on a computer. Also known as assembly program; assembly routine. { o'sem-blor }

assembler directive [COMPUT SCI] A statement in an assembly-language program that gives instructions to the assembler and does not generate machine language. { ə'sem·blər di,rek· tiv }

assembler language See assembly language. { o'semblor , langwij }

assembler program [COMPUT SCI] A program that is written in assembly language. { o'sem·blor, pro-grom }

assembling bolt [CIV ENG] A threaded bolt for holding together temporarily the several parts of a structure during riveting. { o'sem blin, bolt }

assembly [COMPUT SCI] The automatic translation into machine language of a computer program written in symbolic language. [MECH ENG] A unit containing the component parts of a mechanism, machine, or similar device. { <code>ə'sem·blē</code> }

assembly drawing [GRAPHICS] A working-type engineering drawing depicting a complete unit, usually included with detail drawings of all parts in a set of working drawings. { <code>o'sem·blē</code> ,drò-iŋ }

assembly language [COMPUT SCI] A low-level computer language one step above the binary machine language. Also known as assembler language. { <code>o'sem·blē\_laŋ·gwij</code>}

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. { o'sem·blē, līn }

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. { <code>ə'sem·blē,līn 'bal·əns·iŋ }</code>

assembly list [COMPUT SCI] A printed list which is the byproduct of an assembly procedure; it lists in logical instruction sequence all details of a routine, showing the coded and symbolic notation next to the actual notations established by the assembly procedure; this listing is highly useful in the debugging of a routine. { <code>o'semble.list}</code>

assembly machine [MECH ENG] A machine in a manufacturing facility that produces a configuration of some practical value from discrete components. { <code>o'sem blē mə,shēn }</code> assemblymethod [IND ENG] The technique used to assemble

assembly method [INDENG] The technique used to assemble a manufactured product, such as hand assembly, progressive line assembly, and automatic assembly. { <code>o'sem·blē.meth·od</code> } assembly program See assembler. { <code>o'sem·blē.tpro·gram</code> }

fits, and assembles components or parts and adjusts the finished product to function as intended. { ə'sem·blē ,rō,bät }

assembly routine See assembler. | ə'sem blē rü'tēn }

assembly system [COMPUT SCI] An automatic programming software system with a programming language and machinelanguage programs that aid the programmer by performing dif424

compo board See composition hoard. [ 'käm,pö ,bórd ] compole See commutating pole. [ 'käm,põl ]

**component** [CHEM] 1. A part of a mixture. 2. The smallest number of chemical substances which are able to form all the constituents of a system in whatever proportion they may be present. [RLEC] 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. [MATH] 1. In a graph system, a connected subgraph which is not a subgraph of any other connected subgraph. 2. For a set S, a connected subset of S that is not a subset of any other connected subset of S. [SCITECH] A constituent part of a system; examples are a vector term which when added to others gives a vector sum, an ingredient of a chemical system, or the mineral portion of a rock. [ kom'pôr pant ]

component bar chart [STAT] A bar chart which shows within each bar the components that make up the bar; each component is represented by a section proportional in size to its representation in the total of each bar. [kam',pömant 'blir, chiirt]

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. | kəm'pönənt distə'lärshən ]

component-failure-impactanalysis [SYSENG] A study that attempts to predict the consequences of failures of the major components of a system. Abbreviated CFIA. | kom'ponant 'failwar 'im.pakt e.nal-e.sos ]

component name See metavariable. [kom'pönant ,näm] component-substances law [CHEM] The law that each sub-

stance, singly or in mixture, composing a material exhibits specific properties that are independent of the other substances in that material. [kom'pônant'sub-stansas ,lo] component symbol [BLEC] A graphical design used to rep-

component symbol [ELEC] A graphical design used to represent a component in a circuit diagram. { kom'pô-nont simbol }

component vectors [MATH] Vectors parallel to specified (usually perpendicular) axes whose sum equals a given vector. { kam'ponant,vektorz }

composing rule See composing stick. [ kom'pozin, rul ]

COMPOSING STICK [GRAPHICS] A tool designed for holding type which is being assembled and justified. { kom'pöz-iŋ ,stik }

Compositae [nor] The single family of the order Asterales; perhaps the largest family of flowering plants, it contains about 19,000 species. { kom'päz-a,të }

composite [ENG ACOUS] A re-recording consisting of at least two elements. [MATER] A material that results when two or more materials, each having its own, usually different characteristics, are combined, giving useful properties for specific applications. Also known as composite material. [ kəm'päzot ]

composite balance [ELEC] An electric balance made by modifying the Kelvin balance to measure amperage, voltage, or wattage. [kom<sup>1</sup>päz<sup>2</sup>ot 'bal<sup>2</sup>ons]

composite beam [CIV ENG] Beam action of two materials joined to act as a unit, especially that developed by a concrete slab resting on a steel beam and joined by shear connectors. { kom'piz:et 'bêm }

composite cable [ELEC] Cable in which conductors of different gages or types are combined under one sheath. [ kəm'päz-ət 'kā·bəl ]

composite circuit [ELECTR] A circuit used simultaneously for voice communication and telegraphy, with frequencydiscriminating networks serving to separate the two types of signals. { kom'päz:ot 'sorkat ]

composite color signal [соммим] The color television picture signal plus all blanking and synchronizing signals. Also known as composite picture signal. [kəm'päzət 'kələr signəl]

the synchronization signals necessary for proper operation of a color television receiver. [ kom'päz-ət 'kəl-ər ,sigk ]

composite column [CIV ENG] A concrete column having a structural-steel or cast-iron core with a maximum core area of 20. [kom/päz-at/käl-om]

composite compact [MET] A powder compact composed of

more than one layer of different components with each layer retaining its identity. [kom'pfized 'kl(m,pakt]

composite cone [GEOL] A large volcanic cone constructed of lava and pyroclastic material in alternating layers. [ kom'päz:ot 'kön ]

composite defense [ORD] In antiaircraft artillery, a defense that employs two or more types of fire units which are integrated into a single defense. { kam'plized da'fens }

composite dialing [COMMUN] Method of dialing between distant offices over one leg of a composite set. [ kam'päz:at 'drlin ]

composite dlke [GEOL] A dike consisting of several intrusions differing in chemical and mineralogical composition, { kəm'püz-ət 'dīk }

composite electrode [MET] A filler-metal electrode composed of more than one metal. { kom'piz-ot i'lek,tröd }

Composite explosive [MATER] A mixture of substances which consume and give off oxygen, together with one or several simple explosives; dynamite is an example. [kəm'päzət ik'splö'siv]

composite filter [ELECTR] A filter constructed by linking filters of different kinds in series. { kam'päz-et 'fil-tor ] composite flash [GEOPHYS] A lightning discharge which is

composite flash [GEOPHYS] A lightning discharge which is made up of a series of distinct lightning strokes with all strokes following the same or nearly the same channel, and with successive strokes occurring at intervals of about 0.05 second. Also known as multiple discharge. | kam'näz=t' flash |

Also known as multiple discharge. | kəm'päz-ət 'flash ] composite fold [GEOL] A fold having smaller folds on its limbs. | kəm'piz-ət 'föld ]

composite/uel [MATER] A broad class of solid chemical fuels composed of a fuel and oxidizer and used as propellants in rockets; an example of a fuel is phenol formaldehyde, and an oxidizer is annonium perchlorate. Also known as composite propellant, { kam'päz-at 'fyül }

Composite function [MATH] A function of one or more independent variables that are themselves functions of one or more other independent variables. [kom/piz/ot/fojk/shon]

composite gene [GEN] Any gene arising by recombination between two nonallelic genes, located on two nonhomologous chromosomes, and containing portions of both genes. [kom/pit/rot 'jen ]

composite gnelss [PETR] A banded rock formed by intimate penetration of magma into country rocks. [kam'päz-at 'nīs] composite grain [GEOL] A sedimentary clast formed of two or more original particles. [kam'päz-at 'gran]

composite group [MATH] A group that contains normal subgroups other than the identity element and the whole group. [kam'päz-at 'grüp ]

composite hypothesis [STAT] A hypothesis that specifies a range of values for the distribution of the observed random variables. [kom'päz:ot hi'päth-a-sos]

composite l-beam bridge [CUV NNG] A beam bridge in which the concrete roadway is mechanically bonded to the I beams by means of shear connectors. [kam'päz-at T, bem, brij]

composite joint [MET] A joint connected by welding in conjunction with one or more mechanical means. ( kom'päz:ol 'joint ]

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. [ kom/piiz/st/imak/roms/kamiks ]

composite map [MIN ENG] A map in which several levels of a mine are shown on a single sheet. [kom'päz-at 'map]

composite material See composite. [kom/päz-ot mo/tire-of] composite micromechanics [kmg] 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. [kom/päzot /mikro/ma/kaniks]

composite nerve [PHYSIO] A nerve containing both sensory and motor fibers. [kəm'päz:ət 'norv ]

composite number [MATH] Any positive integer which is not prime. Also known as composite quantity. [kom'päz:ot 'nom/bor]

composite photograph [GRAPHICS] An assembly of separate photographs, made by several lenses of a multiple-lens camera

COMPOSITE COLUMN



Cross section and elevation of a composite column,

pod crustaceans of the group Anomura which resemble true crabs but are distinguished by the reduced, chelate fifth perciopods and the well-developed tail fan. [ ,por-sə'lan-o,de ]

porcellanite [PETR] A hard, dense siliceous rock, such as impure chert or indurated clay or shale. { por'sel-a,nu } porcupine [VERT ZOO] Any of about 26 species of rodents in

two families (Hystricidae and Erethizontidae) which have spines or quills in addition to regular hair. [ 'pörkyə,pīn ] porcupine boller [MECHENG] A boiler having dead end tubes projecting from a vertical shell. [ 'pörkyə,pīn 'böil-ər ]

pore [ASTRON] A very small, dark area on the sun formed by the separation of adjacent flocculi. [BIOL] Any minute opening by which matter passes through a wall or membrane. [GEOL] An opening or channelway in rock or soil. [MET] A minute cavity in a powder compact, metal casting, or electroplated coating. [ por ]

pore compressibility [GROL] The fractional change in reservoir-rock pore volume with a unit change in pressure upon that rock. ( 'por kom, pres-o'bil-od-ē )

pore diameter [DES BNG] The average or effective diameter of the openings in a membrane, screen, or other porous material. [ 'por dī,am·əd·ər ]

pore diffusion [FL MECH] The movement of fluids (gas or liquid) into the interstices of porous solids or membranes; occurs in membrane separation, zeolite adsorption, dialysis, and reverse osmosis. [ 'pór di, fyü-zhon ]

pore fungus [MYCOL] The common name for members of the families Boletaceae and Polyporaceae in the group Hymenomycetes; sporebearing surfaces are characteristically within tubes or pores. [ 'por ,faugos ]

pore Ice [HYD] Ice which fills or partially fills pore spaces in permafrost; forms by freezing soil water in place, with no addition of water. ('por is) porencephaly [MED] A condition in which the cavity of a

lateral ventricle extends to the surface of the cerebral hemisphere; may result from brain tissue destruction or maldevelopment. [ por on'sef ole ]

pore pressure See neutral stress. ( 'por ,presh or ) pore-size distribution [GB01.] Variations in pore sizes in reservoir formations; each type of rock has its own typical pore size and related permeability. [ 'por'sīz ,dis tra 'byū shan ] pore space [GEOL] The pores in a rock or soil considered

collectively. Also known as pore volume. [ 'por ,spas ] pore volume See pore space. [ 'por ,väl·yəm ]

pore-water pressure See neutral stress. [ 'por 'wod-or presh-

poriaz [METEOROL] Violent northeast winds on the Black Sca

near the Bosporus. [ 'pôrē,iz ] Porifera [INV ZOO] The sponges, a phylum of the animal kingdom characterized by the presence of canal systems and chambers through which water is drawn in and released; tissues and organs are absent. | pə'rif.ə.rə ]

Porlezzina [METEOROL] An east wind on Lake Lugano (Italy and Switzerland), blowing from the Gulf of Porlezza. , por let'sē-na ]

porocyte [INV ZOO] One of the perforated, tubular cells which constitute the wall of the incurrent canals in certain Porifera. ( 'por a,sīt )

porogamy [BOT] Passage of the pollen tube through the micropyle of an ovule in a seed plant. [ po'räg-omē ]

poromeric material [TEXT] A fabric made of polyurethane strengthened by polyester. [ poroimetrik matireal ]

porosimeter [ENG] Laboratory compressed-gas device used for measurement of the porosity of reservoir rocks. [ ,pora'simeadear

porosis [MED] Condition characterized by increased porosity,

as of bone. [pa'rösss ] **Porosity** [PHYS] 1. Property of a solid which contains many minute channels or open spaces. 2. The fraction as a percent of the total volume occupied by these channels or spaces; for example, in petroleum engineering the ratio (expressed in percent) of the void space in a rock to the bulk volume of that rock. | pa'riis ad e |

Porosity feet [PETRO ENG] Reservoir porosity fraction multiplied by net pay in feet, where porosity fraction is the portion of the reservoir that is porous, and net pay is the depth and areal extent of the hydrocarbons-containing reservoir. [ pə'rlis-ad-c fet 1

Porosity trap See stratigraphic trap. ( pə'räs od ē ,trap )

porous [MATER] 1. Filled with pores. 2. Capable of absorbing liquids. [ 'por əs ] porous alum See aluminum sodium sulfate. ( 'por əs 'al-əm )

porous bearing [DES ENG] A bearing made from sintered metal powder impregnated with oil by a vacuum treatment. ( 'por-as 'ber-in )

porous carbon [MATER] Plates, tubes, or disks of uniform carbon particles pressed together without a binder; used for the filtration of corrosive liquids and gases. [ 'por as 'kar ban ] porous graphite [MATER] Plates, tubes, or disks of uniform graphite particles pressed together without a binder; more resistant to oxidation but lower in strength than porous carbon. ( 'por əs 'gra, fit )

porous metals [MET] Metals, made by powder metallurgy, having uniformly distributed controlled pore sizes, in the form of sheets, tubes, and shapes; used for filtering liquids and gases at elevated temperatures. [ 'por as 'med alz ]

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. [ 'por-as 'mõld ]

porous reservoir model [PETRO ENG] Scaled laboratory model of porous reservoir used for the study of reservoir areal waterflood efficiencies. [ 'por as 'rez-av, war, mad-al ] porous wheel [DES ENG] A grinding wheel having a porous

structure and a vitrified or resinoid bond. [ 'por os 'wel ] Poroxylaceae [PALHOROT] A monogeneric family of extinct

plants included in the Cordaitales. [ pa,rdk-sa'las-e,e ] porpezite [MINERAL] A mineral consisting of a native alloy of palladium (5-10%) and gold. Also known as palladium

gold. [ 'porpa,zīt ]

porphin [INIOCHEM] A heterocyclic ring consisting of four pyrrole rings linked by methine (---CH-----) bridges; the basic structure of chlorophyll, hemoglobin, the cytochromes, and certain other related substances. { 'por fan } porphobilinogen [BIOCHEM] C<sub>10</sub>H<sub>14</sub>O<sub>4</sub>N<sub>2</sub>

Dicarboxylic acid derived from pyrrole; a product of hemoglobin breakdown that gives the urine a Burgundy-red color. [ 'por fo bo'lin or jan

porphrite See porphyry. [ 'por, frit ]

porphyria [MED] A usually hereditary, pathologic disorder of porphyrin metabolism characterized by porphyrinuria and photosensitivity. ( pór'fir-ē-ə )

porphyrin [BIOCHEM] A class of red-pigmented compounds with a cyclic tetrapyrrolic structure in which the four pyrrole rings are joined through their a-carbon atoms by four methene bridges (==C--); the porphyrins form the active nucleus of chlorophylls and hemoglobin. ( 'porfarran )

porphyrinuria [MED] The excretion of large quantities of porphyrin in the urine. [,porfere/nyuree ] porphyritic [PETR] Pertaining to or resembling porphyry.

[ 'pór fə'rid ik ]

porphyroblast [PETR] A relatively large crystal formed in a

metamorphic rock. [por'fir-a,blast] porphyroblastic [PETR] Pertaining to the texture of recrystallized metamorphic rock having large idioblasts of minerals possessing high form energy in a finer-grained crystalloblastic matrix. ( por;fir-ə;blas-tik )

porphyrocrystallic See porphyrotopic. [ por fir ö kri'stal-ik ] porphyroclastic structure See mortar structure. { por;firö/klas-tik 'strək-chər |

porphyrogranulitic [PETR] Referring to ophitic texture characterized by large phenocrysts of feldspar and augite or olivine in a groundmass of smaller lath-shaped feldspar crystals and irregular augite grains; a combination of porphyritic and intergranular textures, [ por fir-o,gran-yə'lid-ik ] porphyrold [PETR] 1. A blastoporphyritic, or sometimes por-

phyroblastic, metamorphic rock of igneous origin. 2. A feldspathic metasedimentary rock having the appearance of a porphyry. [ 'por fa, roid ]

porphyroskelle [GEOL] Pertaining to an arrangement in a soil fabric whereby the plasma occurs as a dense matrix in which skeleton grains are set like phenocrysts in a porphyritic rock. | pór!fir-o!skel-ik |

porphyrotope [GEOL] A large crystal enclosed in a finergrained matrix in a sedimentary rock showing porphyrotopic fabric. ( pór'fir-a,töp |

porphyrotopic [GEOI.] Referring to the fabric of a crystalline

PORCUPINE



The Canadian porcupine (Erethizon dorsatum), about 3½ feet (1 meter) long.

PORIFERA



Diagram of the canal system of a young fresh-water sponge.