

# TERMS

## Sixth Edition

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Valve Exhibit 1029  
Valve v. Immersion

On the cover: Representation of a fullerene molecule with a noble gas atom trapped inside. At the Permian-Triassic sedimentary boundary the noble gases helium and argon have been found trapped inside fullerenes. They exhibit isotope ratios quite similar to those found in meteorites, suggesting that a fireball meteorite or asteroid exploded when it hit the Earth, causing major changes in the environment. (Image copyright © Dr. Luann Becker. Reproduced with permission.)

Over the six editions of the Dictionary, material has been drawn from the following references: G. M. Garrity et al., *Taxonomic Outline of the Prokaryotes*, Release 2, Springer-Verlag, January 2002; D. W. Linzey, *Vertebrate Biology*, McGraw-Hill, 2001; J. A. Pechenik, *Biology of the Invertebrates*, 4th ed., McGraw-Hill, 2000; *U.S. Air Force Glossary of Standardized Terms*, AF Manual 11-1, vol. 1, 1972; F. Casey, ed., *Compilation of Terms in Information Sciences Technology*, Federal Council for Science and Technology, 1970; *Communications-Electronics Terminology*, AF Manual 11-1, vol. 3, 1970; P. W. Thrush, comp. and ed., *A Dictionary of Mining, Mineral, and Related Terms*, Bureau of Mines, 1968; *A DOD Glossary of Mapping, Charting and Geodetic Terms*, Department of Defense, 1967; J. M. Gilliland, *Solar-Terrestrial Physics: A Glossary of Terms and Abbreviations*, Royal Aircraft Establishment Technical Report 67158, 1967; W. H. Allen, ed., *Dictionary of Technical Terms for Aerospace Use*, National Aeronautics and Space Administration, 1965; *Glossary of Stinfo Terminology*, Office of Aerospace Research, U.S. Air Force, 1963; *Naval Dictionary of Electronic, Technical, and Imperative Terms*, Bureau of Naval Personnel, 1962; R. E. Huschke, *Glossary of Meteorology*, American Meteorological Society, 1959; *ADP Glossary*, Department of the Navy, NAVSO P-3097; *Glossary of Air Traffic Control Terms*, Federal Aviation Agency; *A Glossary of Range Terminology*, White Sands Missile Range, New Mexico, National Bureau of Standards, AD 467-424; *Nuclear Terms: A Glossary*, 2d ed., Atomic Energy Commission.

**McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS,  
Sixth Edition**

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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 in either case. Also known as delta-sigma converter. { 'sig-mə, 'del-tə kən'vərd-ər }

**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. { 'sig-mə, 'del-tə, dij-əd-əl tū, 'an-ə, lāg kən'vərd-ər }

**sigma-delta modulator** [ELECTR] The circuit used to generate a pulse stream in a sigma-delta converter. Also known as delta-sigma modulator. { 'sig-mə, 'del-tə 'māj-ə, lād-ər }

**sigma factor** [MOL BIO] A regulatory protein in prokaryotes that combines with the ribonucleic acid (RNA) polymerase enzyme to facilitate the initiation of RNA synthesis. { 'sig-mə, 'fak-tər }

**sigma field** See sigma algebra. { 'sig-mə, 'fēld }

**sigma finite** [MATH] A measure is sigma finite on a space  $X$  if  $X$  is a countable disjoint union of sets each of which is measurable and has finite measure. { 'sig-mə, 'fī-nīt }

**sigma function** [THERMO] A property of a mixture of air and water vapor, equal to the difference between the enthalpy and the product of the specific humidity and the enthalpy of water (liquid) at the thermodynamic wet-bulb temperature; it is constant for constant barometric pressure and thermodynamic wet-bulb temperature. { 'sig-mə, 'fəŋk-shən }

**sigma hyperon** [PART PHYS] 1. The collective name for three semistable baryons with charges of +1, 0, and -1 times the proton charge, designated  $\Sigma^+$ ,  $\Sigma^0$ , and  $\Sigma^-$ , all having masses of approximately 1193 megaelectronvolts, spin of  $1/2$ , and positive parity; they form an isotopic spin multiplet with a total isotopic spin of 1 and a hypercharge of 0. 2. Any baryon belonging to an isotopic spin multiplet having a total isotopic spin of 1 and a hypercharge of 0; designated  $\Sigma_f^P(m)$ , where  $m$  is the mass of the baryon in megaelectronvolts, and  $J$  and  $P$  are its spin and parity; the  $\Sigma_{3/2}^+(1385)$  is sometimes designated  $\Sigma^*$ . { 'sig-mə, 'hī-pə, 'ræn }

**sigma-minus hyperonic atom** [ATOM PHYS] An atom consisting of a negatively charged sigma hyperon orbiting around an ordinary nucleus. Designated  $\Sigma^-$  hyperonic atom. { 'sig-mə, 'mī-nəs, 'hī-pə, 'ræn-ik 'ad-əm }

**sigma phase** [MET] A brittle, nonmagnetic phase of tetragonal structure occurring in many transition-metal alloys; frequently encountered in high chromium stainless steels. { 'sig-mə, 'fāz }

**sigma pile** [NUCLEO] An assembly of moderating material containing a neutron source, used to study the absorption cross sections and other neutron properties of the material. { 'sig-mə, 'pīl }

**sigma ring** [MATH] A ring of sets where any countable union of its members is also a member. { 'sig-mə, 'rīŋ }

**sigmaspire** [INV ZOO] An S-shaped sponge spicule. { 'sig-mə, 'spīr }

**sigma-T** [OCEANOGR] An abbreviated value of the density of a sea-water sample of temperature  $T$  and salinity  $S$ :  $\sigma_T = [\rho(S, T) - 1] \times 10^3$ , where  $\rho(S, T)$  is the value of the sea-water density in centimeter-gram-second units at standard atmospheric pressure. { 'sig-mə, 'tē }

**sigmatron** [NUCLEO] A cyclotron and betatron operating in tandem to produce billion-volt x-rays. { 'sig-mə, 'træn }

**sigmatropic shift** [ORG CHEM] A rearrangement reaction that consists of the migration of a sigma bond (that is, the sigma electrons) and the group of atoms that are attached to it from one position in a chain or ring into a new position. { 'sig-mə, 'trāp-ik 'shift }

**sigmoid** [BIOL] S-shaped. { 'sig, 'mōid }

**sigmoidal dune** [GEOL] A dune with an S-shaped ridge crest formed by the merger of crescentic dunes. { 'sig, 'mōid-əl 'dūn }

**sigmoidal fold** [GEOL] A recumbent fold having an axial surface which resembles the Greek letter sigma. { 'sig, 'mōid-əl 'fōld }

**sigmoid colon** [ANAT] The S-shaped portion of the colon between the descending colon and the rectum. { 'sig, 'mōid 'kō-lən }

**sigmoid distortion** [OPTICS] A distortion present in line-scan imagery, causing straight lines cut obliquely to appear as sigmoid curves. { 'sig, 'mōid di'stōr-shən }

**sigmoiditis** [MED] Inflammation of the sigmoid flexure of the colon. { 'sig, 'mōi, 'dīd-əs }

**sigmoidoscope** [MED] An appliance for the inspection, by artificial light, of the sigmoid colon; it differs from the proctoscope in its greater length and diameter. { 'sig, 'mōid-ə, 'skōp }

**sign** [COMMUN] In semiotics, an entity that signifies some other thing, and may be interpreted. [MATH] 1. A symbol which indicates whether a quantity is greater than zero or less than zero; the signs are often the marks + and - respectively, but other arbitrarily selected symbols are used, especially in automatic data processing. 2. A unit of plane angle, equal to  $30^\circ$  or  $\pi/6$  radians. { 'sīn }

**signage** [GRAPHICS] Environmental graphic communications whose functions include direction, identification, information or orientation, regulation, warning, or restriction. { 'sīn-ij }

**signal** [COMMUN] 1. A visual, aural, or other indication used to convey information. 2. The intelligence, message, or effect to be conveyed over a communication system. 3. See signal wave. { 'sig-nəl }

**signal area** [NAV] That part of an airport used for the display of visual ground signals for the benefit of aircraft in flight. { 'sig-nəl, 'er-ē-ə }

**signal bias** [COMMUN] Form of teletypewriter signal distortion brought about by the lengthening or shortening of pulses during transmission; when marking pulses are all lengthened, a marking signal bias results; when marking pulses are all shortened, a spacing signal bias results. { 'sig-nəl, 'bī-əs }

**signal carrier** See carrier. { 'sig-nəl, 'kar-ē-ər }

**signal center** [COMMUN] A combination of signal communication facilities operated by the U.S. Army in the field and consisting of a communications center, telephone switching central, and appropriate means of signal communications. { 'sig-nəl, 'sen-tər }

**signal channel** [COMMUN] A signal path for transmitting electric signals; such paths may be separated by frequency division or time division. { 'sig-nəl, 'chan-əl }

**signal conditioning** [COMMUN] Processing the form or mode of a signal so as to make it intelligible to or compatible with a given device, such as a data transmission line, including such manipulation as pulse shaping, pulse clipping, digitizing, and linearizing. { 'sig-nəl kən, 'dīsh-ən-īŋ }

**signal correction** [ENG] In seismic analysis, a correction to eliminate the time differences between reflection times, resulting from changes in the outgoing signal from shot to shot. { 'sig-nəl kə, 'rek-shən }

**signal detection theory** [PSYCH] A theory which characterizes not only the acuity of an individual's discrimination but also the psychological factors that bias his judgment. { 'sig-nəl di'tek-shən, 'thē-ə-rē }

**signal distance** [COMPUT SCI] The number of bits that are not the same in two binary words of equal length. Also known as hamming distance. { 'sig-nəl, 'dis-təns }

**signal distortion generator** [ELECTR] Instrument designed to apply known amounts of distortion on a signal for the purpose of testing and adjusting communications equipment such as teletypewriters. { 'sig-nəl di'stōr-shən jen-ə, 'rād-ər }

**signal effect** [ENG] In seismology, variation in arrival times of reflections recorded with identical filter settings, as a result of changes in the outgoing signal. { 'sig-nəl i, 'fekt }

**signal flare** [ENG] A pyrotechnic flare of distinct color and character used as a signal. { 'sig-nəl, 'fler }

**signal-flow graph** [SYS ENG] An abbreviated block diagram in which small circles, called nodes, represent variables of the system, and the nodes are connected by lines, called branches, which represent one-way signal multipliers; an arrow on the line indicates direction of signal flow, and a letter near the arrow indicates the multiplication factor. Also known as flow graph. { 'sig-nəl 'flō 'graf }

**signal generator** [ENG] An electronic test instrument that delivers a sinusoidal output at an accurately calibrated frequency that may be anywhere from the audio to the microwave range; the frequency and amplitude are adjustable over a wide range, and the output usually may be amplitude- or frequency-modulated. Also known as test oscillator. { 'sig-nəl jen-ə, 'rād-ər }

**signal in band** [COMMUN] To send control signals at frequencies within the frequency range of the data signal. { 'sig-nəl in 'band }