

Glossary

Adb Air-dried basis.

Adhesive An adhesive is an inorganic or organic substance capable of bonding other substances together by surface attachment.

Agglomeration Agglomeration techniques include sintering, briquetting and pelletizing.

Albedo Albedo is a measure of the reflecting power i.e. the ratio of reflected light to the incident light. It is indicated in a scale of 0–1.

Alkylation Alkylation is the coupling of an olefin and a butane (or isobutane) over a catalyst.

Alloy An alloy is a metallic material consisting of atoms of two or more metals, or two or more elements of which most of the atoms are metal atoms. Thus, even a non-metal can be an element in an alloy. In an alloy, the elements are admixed at the atomic level, and most of the properties are those usually associated with metals. An alloy differs from a chemical compound inasmuch as there is no fixed formula in the former, and the contents of the elements can be varied and manipulated depending on the desirable properties to be achieved.

Amalgamation Amalgam is a kind of plastic alloy of mercury with gold, silver, tin etc. and the process of such alloying is called amalgamation.

Atomization Atomization is the process of dispersion of a molten metal into small particles by a rapidly moving stream of gas or liquid.

Base exchange saturation Base exchange saturation of soil is the ratio $[\text{Exchangeable (Ca + Mg)}]/[(\text{Ca + Mg + Al + H}) \text{ extracted from soil}]$.

Base exchanging power It means the quantity of positively charged ions (cations) that a clay mineral can accommodate on its negatively charged surface, and it is expressed as milli-equivalents per 100 g. This is also called cation exchange capacity.

Baumé scale Named after its inventor Antoine Baumé, Baumé scale is a quick technique for measuring specific gravity of liquids with the help of a hydrometer (a hollow sealed calibrated glass tube). It comprises two independent mutually exclusive scales—one for liquids with specific gravity less than 1 (i.e., lighter than

water) and the other for those with specific gravity greater than 1 (i.e., heavier than water). On this scale, the specific gravity denoted by the unit ‘°Bé’, and the reference liquid for comparison is a solution of NaCl. The principle consists in measurement of the depth to which the hydrometer sinks when immersed in a liquid. The two scales are calibrated and they can be converted to specific gravity as follows:

(a) For liquids heavier than water: 0 °Bé = distance the hydrometer sinks in pure water, and 15 °Bé = distance the hydrometer sinks in a solution of 15 % NaCl by mass. Its conversion factor to specific gravity at 15 °C is

$$\text{Specific gravity} = 145/(145 - \text{°Bé})$$

(b) For liquids lighter than water: 0 °Bé = distance the hydrometer sinks in solution of 10 % NaCl by mass, and 10 °Bé = distance the hydrometer sinks in pure water. Its conversion factor to specific gravity at 15 °C is

$$\text{Specific gravity} = 140/(130 + \text{°Bé})$$

The Baumé scale is popular for measuring and expressing specific gravity of wine and brine.

Becquerel Becquerel is a measure of the rate (not energy) of radiation emission from a source per second. 1 Becquerel = 27 pico-curie.

Biscuit firing In ceramics, the fired product before glazing is called biscuit and the firing is called biscuit firing.

Brightness Brightness is measured in terms of the reflectance of blue wave of light (wave length 457 μ).

Briquette Briquettes are made by pressing the fines with or without bonding material.

Bursting expansion When the molten metal oxide in a furnace enters into the grains of the refractory bricks through the micro-fractures and tends to crystallize, the tremendous force of crystallization results in bursting of the bricks, and this phenomenon is known as bursting expansion.

Capacitors Capacitors store electricity for a short period of time and ensure that the current supplied remains within narrow range of parameters – particularly in low voltage applications.

Carbon credit A carbon credit is a unit that measures a specific amount of reduction of green house gases (GHG). These credits are generally represented as a GHG reduction equivalent to a tonne of carbon dioxide or carbon or methane.

Catalyst A catalyst increases the rate of chemical reactions without itself undergoing permanent change.

Cation exchange capacity It means the quantity of positively charged ions (cations) that a clay mineral can accommodate on its negatively charged surface, and it is expressed as milli-equivalents per 100 g. This is also called *Base exchanging power*.

Cenosphere Cenosphere is a silicate glass filled with nitrogen and CO₂, and it is produced due to conversion of a portion of the fly ash during the combustion process.

- Chelating agent** It surrounds and holds the unwanted ions of the water-hardening substances calcium and magnesium, thus softening the water.
- Chrome** It is a component of colour. It indicates the degree of departure of a particular hue from neutral grey of the same value. In other words, it indicates the degree of saturation of the hue with reference to neutral grey. Thus, the familiar terms like 'weakly red', 'strong red', 'deep red' etc. are expressions of chrome.
- Clay ironstone** Clay ironstone is a general term given to a ferruginous mineral occurring in the form of concretionary structures embedded in beds of clay or shale. The ferruginous mineral may be either siderite or hematite or limonite.
- Coefficient of friction** It is the ratio of the friction force to the applied force. It acts perpendicular to the applied force. Higher the coefficient more is the energy loss due to friction.
- Coercive force** Coercive force is the demagnetizing force required to reduce magnetic flux density of a magnet to zero.
- Compressive strength** It is the load per unit area under which a block fails by shear or splitting. It is resistance to volume stress that tends to produce change in volume. It is expressed in terms of pounds per square inch (psi) or kg/cm².
- Corrosion** Corrosion is the degradation of a material by the environment, most people associate with rust.
- Cracking** In 'cracking', molecules are broken down under high temperature (with or without a catalyst) into smaller units, and a new type of hydrocarbon namely olefin is produced. By cracking, light gases, petroleum coke, fuel oil etc. can also be produced.
- Creep** Creep is a time-dependent deformation, and it is the result of constant stress conditions over a long period of time. Ordinarily, the term is restricted to deformation resulting from stresses below the elastic limit.
- Critical mass** It means a size, number or amount large enough to generate self-sustaining social momentum to create further growth.
- Curie** It is a unit of radioactivity equal to the amount of a radioactive isotope that decays at the rate of 37 billion disintegrations per second.
- Curie temperature** Curie temperature is the temperature above which a substance loses its magnetism.
- Darcy** See 'Permeability'.
- Decarburization** Decarburization is the process of removal of carbon by heating in an atmosphere in which the concentration of decarburizing gases exceeds a certain value.
- Diamagnetic materials** These cause the magnetic flux to move further apart, resulting in decrease in magnetic flux density compared to vacuum, the magnetic permeability of which is taken as the unit value.
- Dielectric constant** It is the ratio of the capacitance of a specific sample of the material between two plates and a vacuum between the same plates. Stronger the electrical conductivity, higher is the dielectric constant. The value for air, one of the poor conductors of electricity, is 1.
- Dielectric strength** Dielectric strength is a measure of the electrical insulation, and is the voltage that an insulating material can withstand before break-down. It is expressed in terms of specific resistance. The unit of measurement is volts/mm.

Dispersion Dispersion is the rate of change of refractive index with change in wavelength of the incident light, and is expressed with reference to some wavelength.

Dyne The word has been derived from the Greek word “dynamics”. It is smaller unit for force than Newton. One dyne is the force required to produce an acceleration of one centimetre per second per second to a mass of one gram. It is 100000th of a Newton.

Electric energy It refers to the total storage capacity of a system or amount of power supplied or used in a length time. Its units of measurement are megawatt-hour (MWh), kilowatt-hour (KWh) etc.

Electric power It is the amount of electricity a storage capacity can absorb or supply at any given instant i.e. rate of energy supplied or used. Its units of measurement are megawatt (MW), kilowatt (KW) etc.

Electrolysis If a strong electric current is passed through a chemical compound, its decomposition into elements or parts takes place. This is called electrolysis.

Electronegative element Atoms of some elements collect in the positive pole or anode, and those elements are called electronegative.

Electron emission Electrons present in the crystal lattices on the surface of a metal can be liberated by the addition of energy, in different forms such as light rays (photoelectric emission), heat (thermionic emission) or electric current (field emission) etc. The external energy agitates the atoms of the metal; as a result high-energy electrons overcome the intra-atomic forces, break out from the surface of the metal and escape. This is the principle of electron emission.

Electrophoresis Electrophoresis is the movement of an electrically charged substance under the influence of an electric field. *Gel electrophoresis* is a technique used for the separation of DNA, RNA or protein molecules through an electric charge and is used for analytical purpose and as a preparation technique to partially purify molecules prior to use of other methods such as mass spectrometry, DNA sequencing etc.

Electroplating Electroplating is the process of precipitating a metal in an anodizing bath through electrolysis.

Electropositive element Atoms of some elements collect in the negative pole or cathode, and those elements are called electropositive.

Emery Emery is a natural mineral comprising an intimate mixture of magnetite and corundum used in powder form for polishing, smoothing and grinding purposes. On an average, emery contains Al_2O_3 65 % (min), magnetite 22 % (max) and SiO_2 10 % (max).

Emissivity Emissivity is a measure of the energy (heat or some other form) appearing within a substance due to absorption of incident light. A perfectly black substance absorbs all the incident light, converts it into some radiation energy and may emit the same and its emissivity is reckoned as ‘1’. This serves as the reference standard. Since all the non-black objects absorb less light than a black one, their emissivity is always less than ‘1’.

Emulsion An emulsion is a dispersion of liquid in another immiscible liquid.

Equivalent weight It is the molecular weight of an element divided by its valency.

- Eutectics** The constant proportion in which two constituents of a binary magma or a binary melt simultaneously crystallize, is called the eutectic.
- Fatigue limit** Also called endurance limit, it is defined as the limiting stress below which a specimen can withstand hundreds of millions of repetitions of stress without fracture.
- Ferrite** Ferrites are mixed oxide ceramics, which show magnetic properties similar to those of iron.
- Ferrocene** First prepared in 1951, it is an organo-metallic compound of iron i.e. dicyclo-pentadienyl iron $[\text{Fe}(\text{C}_5\text{H}_5)_2]$.
- Ferromagnetic materials** These are either naturally magnetic or attracted to a magnetic field, and may be easily magnetized.
- Fission** The ability of an atom to split due to collision with a free neutron is called 'fission'.
- Fluorescence** Atoms of some luminescent materials emit light only during their exposure to exciting energy and they are called fluorescent.
- Gauss** Named after a German mathematician, it is a unit of magnetic flux density equal to 1 Maxwell per square centimetre.
- Gems and gemstones** According to Webster's Second Edition Unabridged Dictionary, gem means any jewel having value and beauty that is intrinsic and not derived from its setting; and gemstones or gem materials are stones or materials from which a gem may be cut. By popular perception, a gem is a rarely encountered hard, durable, brilliantly shining and beautiful natural mineral which has high intrinsic value.
- Glazing** The purpose of glazing is to provide a uniform firmly adhering coating on the surface of the ceramic body concealing defects such as pinholes, bubbles etc. Glaze may be *raw glaze* or *fritted glaze*. Raw glaze consists of insoluble material applied as such (soluble components crystallize in the mixture and cause blemishes on the treated surface), while fritted glaze is heated beforehand to cause chemical change in the components. Glaze should not only melt but also spread uniformly.
- Gloss/reflectivity** Gloss is the percentage of the incident light beam that is reflected from a surface.
- Glost firing** Firing of a glazed product which has previously been fired at a higher temperature is called glost firing.
- Gravel** According to the definition of the American Society of Testing Materials (ASTM), gravel is naturally occurring unconsolidated or poorly consolidated rock particles ranging in size from 4.75 to 76.2 mm. But according to many sedimentary petrologists, granular gravels are of 2–4 mm size and gravels, more than 4 mm.
- Gross calorific value** Gross calorific value is the total amount of heat obtainable by the combustion of a given coal. Its units are kilocalorie and British Thermal Unit or BTU. Kilocalorie denotes the number of kilograms of water which may be heated through 1 °C, in the neighbourhood of 15 °C, by the complete combustion of 1 kg of coal. BTU denotes the number of pounds of water which may be heated through 1 °F, in the neighbourhood of 60 °F, by the complete combustion of 1 lb. of coal. In either of these cases, the conditions are: (i) coal

is dried at 105 °C until its weight becomes constant, (ii) whole of heat is transferred without loss to the water, and (iii) the products leave the system at the atmospheric temperature and pressure.

Half life The period in which the number of atoms of a radioactive substance decreases to one half its original value (with proportional increase in the mass of lead produced) is called 'half-life'.

Hardenability Hardenability is different from hardness, and it relates to the ease with which steel or any other metal or alloy will harden and the depth of hardening obtainable. Its unit is the same as that of length.

Hard magnets Once magnetized, these magnets retain their magnetic field indefinitely even after the magnetizing field is withdrawn. These are also called *permanent magnets*.

Heat transfer coefficient It is the amount of heat transferred per unit time per unit area per unit temperature difference.

Heterotrophic Plate Count (HPC) Heterotrophs are bacteria that thrive on carbon and nitrogen of organic compounds. HPC is a microbial contaminant indicator and is a measure of the total number of bacteria that will form colonies during a period of incubation in a nutrient. Its unit is cfu/ml i.e., colony-forming units per millilitre.

Hue It is a component of colour. The much familiar terms like red, blue, orange etc. denote hue (or the type of colour).

Hydroponics It is a technique of growing plants without soil, in water containing dissolved nutrients.

Hyporheic zone It refers to the transition zone in which close interactions between ground water and surface water take place (e.g. wetland).

International Annealed Copper Standard or IACS This is the international standard for electrical conductivity with value of conductivity $2.8 \mu\Omega/\text{cm}^3$ at 20 °C.

Iron carbide Iron carbide (Fe_3C) is reduced iron oxide with 5–6 % chemically fixed carbon. It is a direct feed for steel-making.

Isomerization Isomerization is the process of producing a similar but new substance by rearrangement of atoms within the hydrocarbon molecules of the original substance.

LAB parameters The three letters 'l', 'a' and 'b' are used as parameters for denoting colours—'l' value stands for whiteness; 'a+' value, for red colour; 'a-' value, for green colour; 'b+' value, for yellow; and 'b-' value stands for blue colour.

Langelier Saturation (or Stability) Index (LSI) Langelier Saturation (or Stability) Index or LSI values are calculated for a precise quantification of the hardness of water which is caused by the presence of the insoluble carbonates and sulphates of calcium and magnesium, which tend to precipitate in the form of scales when the water is boiled. With the help of LSI value of a water, it can be predicted whether it will precipitate or dissolve or be in equilibrium with CaCO_3 which is then converted to a scale of hardness. In this, the pH of a sample of water saturated with CaCO_3 is pre-calculated as a reference (pH_s) and then the pH of the test sample of water (pH_w). LSI is the difference ($\text{pH}_w - \text{pH}_s$). LSI value of '0' means equilibrium, a negative value means no scaling potential (soft water) and a positive value means high scaling potential (hard water).

Levigation Levigation is the operation involving pulverization of clay to very fine size for liberating the clay particles from the impurities.

Lixiviation Lixiviation (also called leaching) is the process of separating a soluble substance from one that is insoluble, by washing with water or some solvent.

Luminescence Many substances easily gain energy and emit light without being heated very much. They do this through a process called luminescence.

Magnetic flux These are the lines of force conceived as a flow from one pole of the magnet to another (counterpart of current in electricity). Its unit of measurement is gauss (or Maxwell per cm^2) which is the magnetic flux perpendicularly intersecting an area of one square centimetre.

Magnetic permeability It is the ability to acquire magnetism in a magnetic field. Magnetic permeability of vacuum is taken as the unit value.

Mesh size It represents number of holes per square inch of area on a sieve. Approximately, 1250 mesh is equivalent to $10\ \mu\text{m}$ and 125 mesh to $100\ \mu\text{m}$.

Metallization Metallization is the reciprocal of reducibility and is expressed in terms of percentage of ore reduced to metal. Metallization also signifies the process in which very small globules of a liquid metal are blown by a spray gun and sprayed on other metal surfaces, so that the molten globules of the sprayed metal immediately solidify and interlock by flattening.

Metal matrix composites A composite material is a materials system composed of a mixture of two or more materials deliberately combined to form heterogeneous structures with desired or intended properties. In composites, at least one of the constituents serves principally to strengthen or reinforce the composite, while another constituent, called the applications matrix, serves to confine the reinforcing constituent(s) and provides a means to distribute any applied stress. In metal matrix composites (MMCs), a metal serves as the matrix, while the reinforcing constituent can be a metal, a non-metal, an alloy or a compound.

Mineral wool Mineral wool is a general term meaning fibres made from inorganic substances that may include minerals, rocks and metal oxides—synthetic or natural. Glass wool, lime wool, rock wool or stone wool, slag wool are all different types of mineral wool.

Modulus of elasticity The maximum stress to which a body can be subjected without permanent deformation is called its *elastic limit*. According to *Hooke's Law*, within the elastic limit, stress is directly proportional to strain, and the constant ratio stress/strain is called *modulus of elasticity*. It is usually expressed in units of psi or kg/cm^2 . Corresponding to the three kinds of force—tensile, compressive and shearing—there are three kinds of stress and strain and three kinds of modulus of elasticity. These three elastic moduli are:

- (i) Young's modulus
- (ii) Bulk modulus and
- (iii) Modulus of rigidity

Net calorific value Net calorific value is the gross calorific value minus the heat liberated by the condensation of the steam produced on combustion and

the subsequent cooling of this condensed steam to water down to atmospheric temperature (15 °C or 60 °F).

Newton Newton or 'N' is a unit of force. One Newton is the force required to produce an acceleration of one metre per second per second to a mass of one kilogram. Compressive strength is expressed as N/mm².

Nitrided steel Nitrided steel or *alloy nitride steel* or *nitralloy* is a steel which is processed so that nitrogen is absorbed by the surface which becomes intensely surface hardened, yet machinable.

Non-stoichiometric compound It is a compound in which a fraction of given atom is either missing or in excess.

Octane number Octane number is a measure of 'anti-knock' value of a motor fuel i.e. the ability to resist the knock or sound produced due to its sudden and violent combustion in a spark ignition engine. For this measurement, a standard scale has been devised by assigning the value zero to heptane (C₇H₁₆) which has very poor knock resistance, and 100 to octane (C₈H₁₈) having a very high knock resistance. Octane number is the percentage of this isomer of octane in its mixture with heptane.

Paramagnetic materials These concentrate the magnetic flux by a factor of more than 1 but less than or equal to 10 compared to vacuum, the magnetic permeability of which is taken as the unit value.

Pascal Pascal or 'Pa' is a unit for denoting compressive strength, and is equal to N/m². One mega-Pa is 10⁶ Pa.

Pellets When very fine particles (size in microns) are formed into spherical objects called 'pellets', the process is called pelletization.

Permanent magnets Once magnetized, these magnets retain their magnetic field indefinitely even after the magnetizing field is withdrawn. These are also called *hard magnets*.

Permeability, coefficient of The common method for measuring it is by Darcy's Law. According to it the coefficient of permeability is measured by the following formula:

$$K = VI$$

where 'K' is the coefficient of permeability in gallons per day per square foot, 'V' is the velocity of flow of water in feet per day and 'I' is the hydraulic gradient of the medium in feet per foot length.

Phosphorescence Atoms of some luminescent materials stay excited for some time before they de-excite and consequently, they glow in the dark long after they have received extra energy. They are called phosphorescent.

Photoconductivity It denotes the change in the electrical conductivity of a substance as a result of absorbing electromagnetic radiation.

Photoelectric emission When electrons present in the crystal lattices on the surface of a metal are liberated by the addition of energy in the form of light rays, the phenomenon is called photoelectric emission.

Photoemission It is the ability of emitting electrons when subjected to electromagnetic radiation such as X-rays, light etc.

pH value It is the short form of 'potential of hydrogen'. It is the negative logarithm of the effective hydrogen-ion concentration or hydrogen ion activity in gram equivalent per litre. It is used in expressing both acidity and alkalinity on a scale whose values run from 0 to 14 with 7 representing neutrality. Numbers less than 7 indicate increasing acidity and those greater than 7 increasing alkalinity.

Piezoelectricity or electrostriction Piezoelectric crystals can change mechanical strains into electrical impulses and vice versa. The efficiency of transfer of energy back and forth between strain and motion is expressed by 'Q' factor which is defined as the ratio of energy stored to energy dissipated. The higher the Q, the lower will be the energy losses.

Pigment Pigments serve various functions such as acting as fillers, stabilizing binders, protecting against ultraviolet light, reinforcing, controlling thermal expansion, controlling thixotropy, controlling shrinkage, colouring and beautification. There are four types of pigments: (i) pigment extenders, (ii) white hiding, (iii) inorganic and organic colours, and (iv) carbon black.

Poisson's ratio This is closely related to both compressive and tensile strengths. When a bar is pulled or compressed, not only its length alters but also the transverse dimension. Now, for a given material, the ratio between transverse and longitudinal strains has been found to be more or less constant and this ratio is called *Poisson's ratio*.

Polarization Polarization is the process by which hydrogen gas liberated in a chemical reaction goes towards carbon anode and accumulates around it.

Polymerization Polymerization is spontaneous alteration of substances.

Positive temperature coefficient of resistivity or PTC It is the increase in resistivity with increase in temperature.

Powder metallurgy Powder metallurgy is the process whereby many small components are produced by fabricating metal powders or metal and ceramic powders together.

Proppant Proppants are materials which are used for filling up the fracture cavities to prevent closure of oil wells, but without reducing the permeability of the reservoir rock, so that flow of oil or gas can be sustained.

Pyroelectricity and thermoelectricity Pyroelectricity is the ability of certain materials to generate temporary voltage when they are heated or cooled. It is different from thermoelectricity inasmuch as in the former case the whole crystal is changed from one temperature to another whereas in the latter case, one side of the crystal is kept at a temperature different from the other side and the voltage across the crystal is permanent.

Radioactivity Radioactivity is the spontaneous disintegration of certain heavy elements accompanied by the emission of high energy radiation, which consists of three kinds of rays: 'alpha particles', 'beta particles' and 'gamma rays'.

Reducibility Reducibility is a measure of acceleration in the reduction process with increase in temperature in a scale of 0–1.

Reforming Reforming is a special type of cracking in which heavy low-octane naphtha is processed for octane improvement rather than for volatility change.

Refractory Refractory materials are defined as those resistant to heat and having a melting temperature of not less than 1,580 °C. The function of refractory lining is not only to withstand high temperature, but also to resist temperature fluctuation, slag and metal penetration, abrasion, and erosion by hot gases and molten slag and metal.

Rheology It is the study of deformation and flow of matter under the influence of applied stress.

Rupture modulus This is the resistance of a rock slab to bending or flexure. The stress may first cause elastic deformation, then plastic deformation, and finally rupture. In case of brittle objects, there will be no plastic deformation and the object will break as soon as the elastic limit is crossed. Modulus of rupture is expressed in terms of psi or kg/cm² of the bending stress under which an object breaks.

Sand According to the definition of the American Society of Testing Materials (ASTM), sand is naturally occurring unconsolidated or poorly consolidated rock particles ranging in size from 0.074 to 4.75 mm, and gravel is similar rock ranging in size from 4.75 to 76.2 mm. But according to many sedimentary petrologists, sand is an unconsolidated granular material coarser than 1/16th of a millimetre and finer than 2 mm (cf. granular gravels are of 2–4 mm size and gravels, more than 4 mm).

Sealant A sealant is an organic substance soft enough to pour or extrude into an opening in an object, and capable of subsequent hardening to form a permanent bond with the object.

Semiconductor These are materials with resistivity intermediate between metals (resistivity $<10^{-4}$ Ω-m) and insulators (resistivity $>10^3$ Ω-m).

Shearing strength This is the resistance to tangential force. It is also called *rigidity*. In other words, a body is said to be in shear when it is subjected to a pair of equal forces which are opposite in direction and which act along parallel planes. Shearing strength is expressed in psi or kg/cm².

Sialon ceramics It is an advance material comprising a mixture of silicon, aluminium, oxygen, and nitrogen (i.e. Si-Al-O-N). Sialon is suitable for applications requiring high mechanical strength at elevated temperatures, high specific strength (for weight saving without sacrificing strength), high hardness and toughness values, low coefficient of friction and good thermal shock resistance.

Sinter By application of just enough heat to fuse the corners of ore particles, they are made to join together to form a lumpy mass. This product is called 'sinter'.

Soft magnets These can be magnetized easily, for example by electric current travelling in an electric coil wrapped around a soft magnetic core, but they lose their magnetism once the current is turned off.

- Soldering** It is the process of joining two metal pieces by welding with an alloy of tin and lead called solder.
- Spallation** It is the process in which detachment of a large number of neutrons from the nuclides of some high-atomic number element is caused by its collision with protons which are accelerated to high energy in an accelerator.
- Specific heat** Specific heat of a substance is the ratio of the amount of heat required to raise the temperature of 1 g of it by 1 °C to that required to raise the temperature of 1 g of water by 1 °C.
- Surfactant** It is the acronym of 'surface active agent', and it removes dirt from a soiled surface by attracting the dirt particle to its surface by ion exchange.
- Taconite** Taconite is the name given to fine-grained compact siliceous iron formations—ferruginous chert or ferruginous slate containing very finely disseminated oxides of iron, less than 20 mesh in size.
- Tensile strength** It is also called resistance to longitudinal stress, because this kind of stress tends to produce unidirectional change in a body. Tensile strength of rocks is expressed as pounds per square inch (psi) or kg/cm².
- Thermionic emission** When electrons present in the crystal lattices on the surface of a metal are liberated by the addition of energy, in the form of heat, the phenomenon is called thermionic emission.
- Thermoelectricity** See 'Pyroelectricity'.
- Thixotropy** It is the property of pseudoplastic fluids showing time-dependent change in viscosity. Longer the shear stress, lower is the viscosity (e.g., ketchup, some clays, gels).
- Toughness** Also called impact toughness, it is the resistance to sudden impact and is expressed in inches (height of the fall) per square inches.
- Transducer** It is a device by means of which energy can flow from one transmission system to another.
- Value of colour** The value indicates degree of lightness or darkness of a colour and it is related to both the percentage of light reflectance and the degree of lustre. Obviously, pure black has the lowest value and pure white has the highest value.
- Viscosity** Viscosity is that property of a liquid which is a measure of its internal resistance to motion and which is manifested by its resistance to flow.
- Water footprint** Water footprint of the people of an area is an index for indicating the consumption of water. It is the total amount of water consumed by the people of an area that is used to produce goods and services consumed by the inhabitants of that area.
- Welding** Welding is a metal-joining process wherein coalescence is produced by heating to suitable temperature with or without pressure and with or without the use of filler metal.
- Yield point** It is the point where a stressed material no longer deforms elastically, but begins to deform permanently. Its unit of measurement is lb/in² or kg/cm².

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