Unit: 4. STATES OF MATTER

VOCABULARY

absolute zero	the lowest possible temperature, equal to -273°C or 0 K
adhesion	the attraction between unlike substances.
amorphous	a non-crystalline solid having no orderly arrangement of molecules
atomic core	the nucleus of an atom plus its non-valence electrons
barometer	a device for measuring atmospheric pressure
Boyle's law	the inverse relationship between pressure and volume of gases such that as pressure increases, volume decreases by the same fraction of change; temperature and number of molecules remain constant
brittle	a substance with little elasticity which fails (ruptures) quickly once a crack develops
buoyant force	the difference between the upward force acting on the lower surface and the downward force acting on the upper surface of a submerged object
capillary action	the movement of liquids through the spaces of materials
ceramic	a hard, brittle, heat- and corrosion-resistant material made by subjecting a nonmetallic mineral mixture to intense heat
Charles's law	relationship in which the volume of a given amount of gas is directly proportional to its absolute temperature at constant pressure
cleavage	a clean break parallel to planes of weakness in a crystal
cohesion	attraction of one particle in a material for another
composite	a carbon fiber embedded in a polymer resin matrix
crystal	a solid form resulting from the arrangement of atoms, ions, or molecules in definite geometric patterns

diatomic molecule	two atoms chemically bonded together
diffusion	the overall movement of suspended or dissolved particles resulting from the random movements of individual particles
ductile	capable of being pulled into wires
elastic deformation	reversible alteration of the form or dimensions of a solid body under stress
electrical conduction	the transfer of electrical current through a solid (or liquid)
evaporation	vaporization of a liquid below its boiling point; occurs mostly at the surface of the liquid
fluid	any material that flows and offers little resistance to change in shape when under pressure
fluid pressure	the force that fluids exert on the surface of objects
force	an effect that changes the motion (velocity or direction) of an object with mass
fractional distillation	the separation of solution components (fractions) based on boiling points
fracture	a break that does not follow a flat surface, but rather is rough and uneven
hardness	resistance to being scratched
hydraulic lift	a large and a small chamber connected by a tube, filled with fluid, and used to produce large forces
hydrogen bond	a type of intermolecular bond that forms between different polar molecules or between polar parts of the same molecule
ideal gas	an imaginary gas that perfectly obeys the gas laws

insulator	material that either does not conduct electricity at all or has a very low conductivity
Kelvin scale	temperature scale that starts with absolute zero
kinetic energy	the energy of motion
kinetic molecular theory	the theory that attempts to explain gas behavior at the molecular level
liquid	materials that have fixed volume but whose shape depends on the container
liquid crystal	a material that shows some properties of solids and some properties of liquids
malleable	ability to be hammered into shapes
manometer	a device used to measure the pressure of an enclosed gas
mineral	a single chemical compound or element that is found in nature
miscible	ability of certain liquids to dissolve in each other
molecular weight	the sum of the masses of each atom in the formula of a gas measured in atomic mass units
plastic deformation	deformation that remains after the load causing it is removed; permanent deformation
plastics	man-made materials derived from carbon compounds, mostly oil and petroleum products
polymer	a long, chainlike molecule made up of repeating units joined end-to-end
semiconductors	substances that are intermediate in their ability to conduct electricity
strain	the quantity that characterizes how a solid is deformed due to a stress

strength	the resistance of a material to failure (rupture or breaking in two)
stress	the force required to deform an object
superconductors	solids with abnormally high electrical conductivity
surface tension	attraction between molecules at the surface of a liquid column
tensile strength	ability to which a material can withstand a stretching stress without breaking
thermal expansion	the change in volume in relation to change in temperature
thermoplastics	plastics that have high elongations and can be recycled
thermosets	plastics that have low elongations and cannot be recycled
toughness	the amount of kinetic energy that a material can absorb without breaking
van der Waals forces	weak intermolecular bonds that form between polar parts of neighboring particles
viscosity	a measure of the resistance of a liquid to flow
weight	a force equal to mass x acceleration due to gravity

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