

Chemistry Chapter 13

1. **Amorphous Solid:** a solid in which particles are not arranged in a regular, repeating pattern that often is formed when molten material cools quickly to form crystals.
2. **Atmosphere:** the unit that is often used to report air pressure.
3. **Barometer:** an instrument that is used to measure atmospheric pressure.
4. **Boiling Point:** the temperature at which a liquid's vapor pressure is equal to the external or atmospheric temperature.
5. **Condensation:** the energy-releasing process by which a gas or vapor becomes a liquid.
6. **Crystalline Solid:** a solid whose atoms, ions, or molecules, are arranged in an orderly, geometric, three-dimensional structure; can be classified by shape and by classification.
7. **Dalton's Law of Partial Pressures:** states that the total pressure of a mixture of gases is equal to the sum of the pressures of all the gases in the mixture.
8. **Deposition:** the energy-releasing process by which a substance changes from a gas or vapor to a solid without first becoming a liquid.
9. **Diffusion:** the movement of one on material through another from an area of higher concentration to an area of lower concentration.
10. **Dipole-Dipole Forces:** the attraction between oppositely charged regions of polar molecules.
11. **Dispersion Forces:** the weak forces resulting from temporary shifts in the density of electrons in electron clouds.
12. **Elastic Collision:** describes a collision in which kinetic energy may be transferred between the colliding particles but the total kinetic energy of the two particles remains the same.
13. **Evaporation:** the process in which vaporization occurs only at the surface of a liquid.
14. **Freezing Point:** the temperature at which a liquid is converted into a crystalline solid.
15. **Graham's Law of Effusion:** states that the rate of effusion for a gas is inversely proportional to the square root of its molar mass.
16. **Hydrogen Bond:** a strong dipole-dipole attraction between molecules that contain a hydrogen atom bonded to a small, highly electronegative atom with at least one lone electron pair.
17. **Kinetic-Molecular Theory:** explains the properties of gases in terms of the energy, size, and motion of their particles.
18. **Melting Point:** for a crystalline solid, the temperature at which the forces holding a crystal lattice together are broken and it becomes a liquid.
19. **Pascal:** the SI unit of pressure; one Pascal (Pa) is equal to a force of one Newton per square meter.
20. **Phase Diagram:** a graph of pressure versus temperature that shows which phase a substance exists in under different conditions of temperature and pressure.
21. **Pressure:** force applied per unit area.

- 22. Sublimation:** the energy-requiring process by which a solid changes directly to a gas without first becoming a liquid.
- 23. Surface tension:** the energy required to increase the surface area of a liquid by a given amount; results from an uneven distribution of attractive forces.
- 24. Surfactant:** a compound, such as soap, that lowers the surface tension of water by distributing hydrogen bonds between water molecules; also called a surface active agent.
- 25. Temperature:** a measure of the average kinetic energy of the particles in a sample of energy.
- 26. Triple Point:** the point on a phase diagram representing the temperature and pressure at which the three phases of a substance (solid, liquid, and gas) can coexist.
- 27. Unit Cell:** the smallest arrangement of connected points that can be repeated in three directions to form a crystal lattice.
- 28. Vaporization:** the energy-requiring process by which a liquid changes to a gas or vapor.
- 29. Vapor Pressure:** the pressure exerted by a vapor over a liquid.
- 30. Viscosity:** a measure of the resistance of a liquid to flow, which is affected by the size and shape of particles, and generally increases as the temperature decreases and as intermolecular forces increase.

Key Equations

Kinetic Energy: $KE = \frac{1}{2} mv^2$ pg. 386

Dalton's law of partial pressure: $P_{\text{total}} = P_1 + P_2 + P_3 + \dots P_n$ pg. 391

Graham's Law of Effusion: $\frac{\text{Rate}_A}{\text{Rate}_B} = \sqrt{\frac{\text{molar mass}_B}{\text{molar mass}_A}}$ pg. 387