

## 17.8: End of Chapter Key Terms

### Phases and Classification of Matter Key Terms

1. **Matter:** Anything that has mass and occupies space.
2. **Element:** A pure substance that consists of only one type of atom, defined by its number of protons.
3. **Compound:** A substance formed from two or more elements chemically bonded together in a fixed ratio.
4. **Mixture:** A combination of two or more substances in which each substance retains its individual chemical properties.
5. **Homogeneous Mixture:** A mixture that has a uniform composition throughout, also known as a solution.
6. **Heterogeneous Mixture:** A mixture that does not have a uniform composition throughout, with distinct phases or parts.
7. **Pure Substance:** A material with a constant composition and distinct chemical properties, such as elements and compounds.
8. **Phase:** A distinct form of matter with uniform physical and chemical properties, such as solid, liquid, or gas.
9. **Solid:** A state of matter characterized by a definite shape and volume, with particles closely packed in a fixed arrangement.
10. **Liquid:** A state of matter characterized by a definite volume but no definite shape, with particles close together but able to move past one another.
11. **Gas:** A state of matter characterized by no definite shape or volume, with particles far apart and moving freely.
12. **Plasma:** A high-energy state of matter where atoms are ionized, found in stars and fluorescent lights.
13. **Bose-Einstein Condensate (BEC):** A state of matter formed at temperatures close to absolute zero, where particles occupy the same space and quantum state.
14. **Phase Transition:** The transformation of matter from one phase to another, such as melting, freezing, boiling, or condensing.
15. **Melting:** The process of changing from a solid to a liquid by adding heat.
16. **Freezing:** The process of changing from a liquid to a solid by removing heat.
17. **Vaporization:** The process of changing from a liquid to a gas, including both evaporation and boiling.
18. **Condensation:** The process of changing from a gas to a liquid by removing heat.
19. **Sublimation:** The process of changing from a solid directly to a gas without passing through the liquid phase.
20. **Deposition:** The process of changing from a gas directly to a solid without passing through the liquid phase.
21. **Boiling Point:** The temperature at which a liquid changes to a gas throughout the liquid, occurring at a specific temperature and pressure.
22. **Melting Point:** The temperature at which a solid changes to a liquid.
23. **Freezing Point:** The temperature at which a liquid changes to a solid.
24. **Critical Point:** The temperature and pressure at which the liquid and gas phases of a substance become indistinguishable.
25. **Triple Point:** The temperature and pressure at which all three phases (solid, liquid, gas) of a substance coexist in equilibrium.
26. **Phase Diagram:** A graph showing the conditions of temperature and pressure under which a substance exists in different phases.
27. **Viscosity:** A measure of a liquid's resistance to flow.
28. **Density:** The mass of a substance per unit volume, often measured in grams per cubic centimeter ( $\text{g/cm}^3$ ).
29. **Pressure:** The force exerted per unit area, often measured in pascals (Pa) or atmospheres (atm).
30. **Intermolecular Forces:** Forces of attraction or repulsion between molecules, affecting the physical properties of substances.
31. **Van der Waals Forces:** Weak intermolecular forces, including dispersion forces and dipole-dipole interactions.
32. **Hydrogen Bonding:** A strong type of dipole-dipole interaction between molecules containing hydrogen bonded to a highly electronegative atom (such as oxygen, nitrogen, or fluorine).
33. **Ionic Solid:** A solid consisting of ions held together by electrostatic forces (ionic bonds), typically with high melting points and electrical conductivity when molten.
34. **Molecular Solid:** A solid consisting of molecules held together by intermolecular forces, typically with lower melting points.
35. **Metallic Solid:** A solid consisting of metal atoms held together by a "sea" of shared electrons, characterized by electrical conductivity and malleability.
36. **Covalent Network Solid:** A solid consisting of atoms held together in large networks or chains by covalent bonds, typically with very high melting points.
37. **Amorphous Solid:** A solid in which atoms or molecules are not arranged in a regular, repeating pattern.
38. **Crystalline Solid:** A solid in which atoms or molecules are arranged in a regular, repeating pattern.
39. **Alloy:** A mixture of metals or a mixture of a metal and another element, designed to have specific properties.
40. **Solution:** A homogeneous mixture of two or more substances.
41. **Solvent:** The substance in which the solute is dissolved to form a solution.

42. **Solute:** The substance that is dissolved in a solvent to form a solution.

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