Year 7: The Particle Model

- Properties of solids, liquids and gases can be described in terms of particles in motion but with differences in the arrangement and movement of these same particles: closely spaced and vibrating (solid); in random motion but in contact (liquid); or in random motion and widely spaced (gas).
- Observations where substances change temperature or state can be described in terms of particles gaining or losing energy.
- A substance is a solid below its melting point, a liquid above it, and a gas above its boiling point.

Keywords

Boil: change from liquid to a gas of all the liquid when the temperature reaches boiling point. **Condense:** change of state from gas to liquid when the temperature drops to the boiling point. **Density:** how much matter there is in a particular volume, or how close the particles are.

Diffusion: the process by which particles in liquids or gases spread out through random movement from a region where there are many particles to one where there are fewer.



Evaporate: change from liquid to gas at the surface of a liquid, at any temperature.Freeze: change from liquid to a solid when the temperature drops to the melting point.Gas pressure: caused by collisions of particles with the walls of a container.



Melt: change from solid to liquid when the temperature rises to the melting point. **Particle model:** a way to think about how substances behave in terms of small, moving particles.



Particle: a very tiny object such as an atom or molecule, too small to be seen with a microscope. **Sublime:** change from a solid directly into a gas.

Year 7: Solutions

- A pure substance consists of only one type of element or compound and has a fixed melting and boiling point.
- Mixtures may be separated due to differences in their physical properties. The method chosen to separate a mixture depends on which physical properties of the individual substances are different.

Keywords

Chromatography: used to separate different coloured substances.

Dissolve: when a solute mixes completely with a solvent.

Distillation: separating substances by boiling and condensing liquids:



Evaporation: a way to separate a solid dissolved in a liquid by the liquid turning into a gas.

Solid and liquid

ilter pape

ilter funne

Filtration: separating substances using a filter to produce a filtrate (solution) and residue; used to separate a mixture of an insoluble solid from a liquid.

Insoluble: property of a substance that will not dissolve in a liquid.

Mixture: two or more pure substances mixed together, whose properties are different to the individual substances.

Pure substance: single type of material with nothing mixed in.

Solubility: maximum mass of solute that dissolves in a certain volume of solvent.

Soluble: property of a substance that will dissolve in a liquid.

Solute: a substance that can dissolve in a liquid.

Solution: mixture formed when a solvent dissolves a solute.

Solvent: a substance, normally a liquid, that dissolves another substance.