

Matter

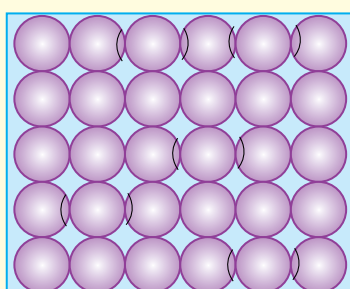
Definition of matter

Anything that has mass and occupies space.

Kinetic theory of matter

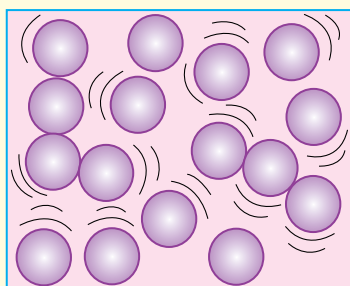
Matter is made up of many tiny and discrete particles. The particles are always moving.

Three states of matter



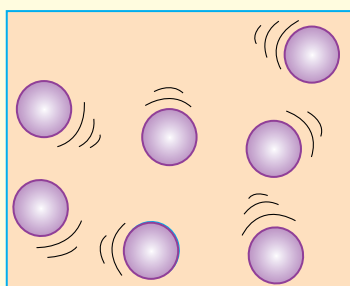
Solid

- Has a definite shape and volume.
- The particles are very close together and **arranged in a regular pattern**. They vibrate about their **fixed positions**.



Liquid

- Has no definite shape.
- Has a definite volume.
- The particles are **not arranged** but are close together. They move freely and collide with each other.



Gas

- Has no definite shape and volume.
- The particles are **very far apart** from each other. They move randomly and collide with each other at high speeds.

BOILING

- When liquids are heated, heat energy is absorbed by particles.
- The particles of liquid receive kinetic energy and vibrate stronger.
- At the boiling point, the particles of liquids receive enough energy to overcome the attraction between particles and move freely.
- Therefore, liquids turn into gas.



FREEZING

- When liquids are cooled, the particles lose energy and the attraction between particles increase.
- The particles of liquids cannot move freely and vibrate in a fixed position.
- Therefore, liquids freeze and become solid.



EVAPORATION

- Evaporation is a process by which a substance changes from liquid to gas.
- Evaporation occurs at any temperature below its boiling point.
- The particles at the surface of the liquid gain enough energy to escape as a gas.



MELTING

- When solids are heated, heat energy is absorbed by particles.
- Particles receive kinetic energy and vibrate stronger.
- At the melting point, the particles of solids receive enough energy to overcome the attraction between particles and move freely.
- Therefore, solids melt and turn into liquid.



CONDENSATION

- When gas is cooled, the particles lose energy and the attraction between particles increase.
- Gas particles move slowly and begin to get closer to each other.
- Therefore, gas turn into liquid.



SUBLIMATION

- Sublimation is a process of change of matter from solid to gas or gas to solid directly without going through the liquid phase.
- Example: Dry ice

