Chapter - 1 Matter in Our Surrounding

Matter

Everything in this universe is made up of material which scientists have named "matter". The air we breathe, the food we eat, stones, clouds, stars, plants and animals, even a small drop of water or a particle of sand – everything is matter. In other words, they have both mass and volume.

Physical Nature of Particles:

Matter is made up of particles. The particles of matter are very-very small.

Characteristics of Particles:

i. Particles of matter are continuously moving

ii. Particles of matter have space between them.

States of Matter

Matter around us exists in three different states – solid, liquid and gas.

The solid state

Solid have a tendency to maintain their shape when subjected to outside force. Solid may break under force but it is difficult to change their shape, so they are rigid.

The liquid state

Liquids have no fixed shape but have a fixed volume. They take up the shape of the container in which they are kept. Liquids flow and change shape, so they are not rigid but can be called fluid.

The gases from the atmosphere diffuse and dissolve in water.

All living creatures need to breathe for survival. The aquatic animals can breathe under water due to the presence of dissolved oxygen in water.

The gaseous state

Gases are highly compressible as compared to solids and liquids. Example liquefied petroleum gas (LPG), oxygen cylinders, compressed natural gas (CNG).

Due to high speed of particles and large apace between them, gases show the property of diffusing very fast into other gases.

Change of State of Matter:

we can change one state of matter to another state by changing temperature.

Melting point

The temperature at which a solid melt to become a liquid at the atmospheric pressure is called its melting point.

- The melting point of ice is 273.16 K.
- Change of solid state into liquid state is also known as **fusion**.

Kelvin is the SI unit of temperature, 0^{o} C = 273.16 K for convenience, we take 0^{o} C = 273 K after rounding off the decimal.

Latent heat

Heat absorbed or released by a substance during a change in its physical state that occurs without changing its temperature.

- **Latent Heat of Fusion:** The amount of heat required to change 1 kg solid to its liquid state (at its melting point) at atmospheric pressure.