

Matter In Our Surroundings

Key Points

Anything which occupies space (or have volume) and has mass is called matter. Examples -water, air, metals, etc.

PHYSICAL NATURE OF MATTER

Continuous nature, like a block of wood or a sheet of glass. Particulate nature, that matter is made up of particles like sand etc.

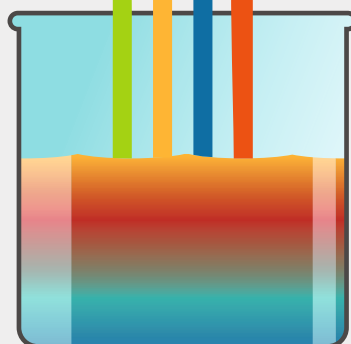
MATTER

CHARACTERISTICS OF PARTICLES OF MATTER

1. have spaces between them.
2. are continuously moving.
3. attract each other.
4. are very small.

STATES OF MATTER

1. Solid
2. Liquid
3. Gas
4. Plasma
5. Bose-einstein Condensate



1

Solid

Negligible kinetic energy
Cannot be compressed
Definite volume
Fixed shape
Rigid



2

Liquid

More kinetic energy than solid
Do not have fixed shape
Can easily diffuse
Definite volume
Fluids



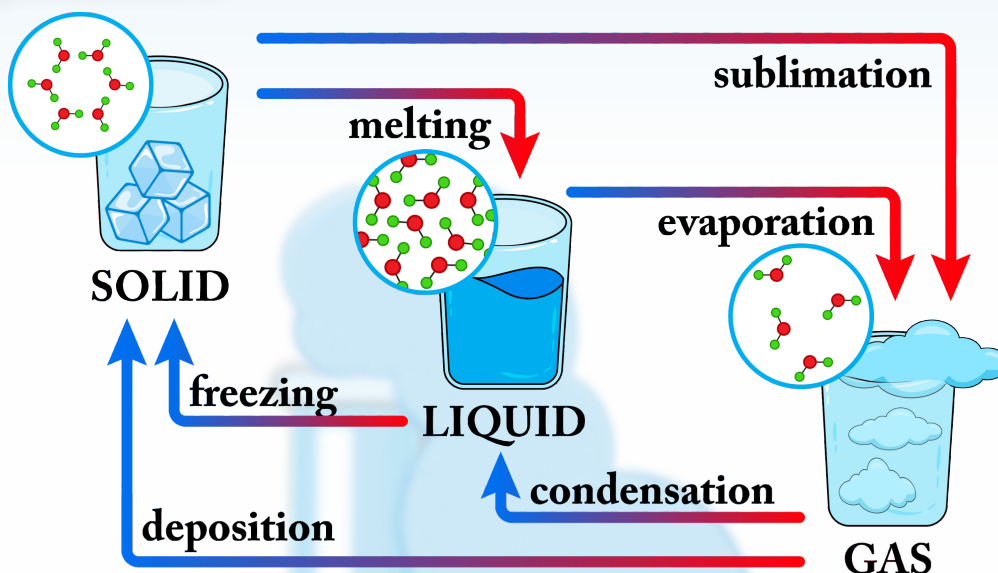
3

Gas

Do not have fixed shape
Do not have fixed volume
Maximum kinetic energy
Maximum compressibility
Maximum fluidity

Interconversion of states of matter

By changing the temperature



Latent heat of fusion

The amount of heat energy required to change 1 kg of a solid into a liquid at atmospheric pressure without any change in temperature at its melting point.

Latent heat of vaporization

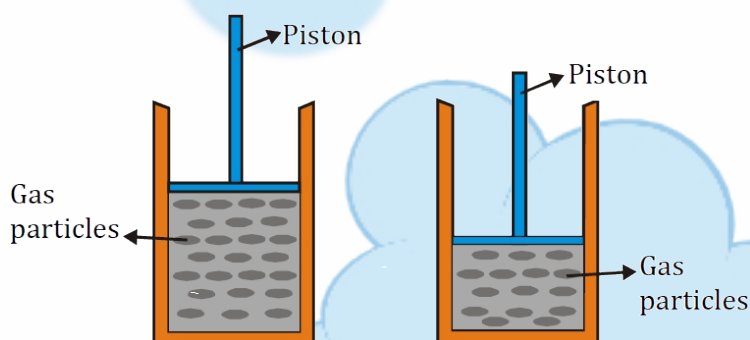
The quantity of heat in joules required to convert 1 kilogram of the liquid (at its boiling point) to vapour or gas, without any change in temperature.

By changing the pressure

To convert a gas into a liquid or to convert a liquid into a solid, the interparticle distances must be decreased and the interparticle forces of attraction must be made stronger. This can be done in the following ways.

By lowering the temperature.

By applying the pressure.

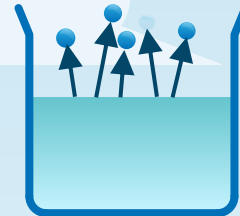


Evaporation

The process of a liquid changing into vapour (or gas) at any temperature below its boiling point is called evaporation. "For example, Drying of clothes."

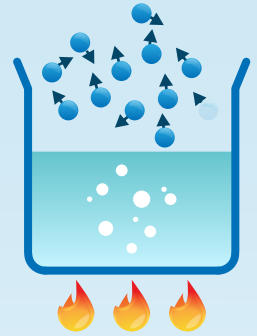
Difference between evaporation & boiling

Evaporation



Surface Phenomenon

Boiling



Bulk Phenomenon

Factors affecting evaporation

Temperature



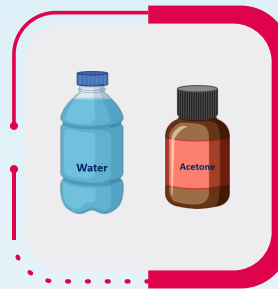
Humidity



Surface area



Nature of liquid

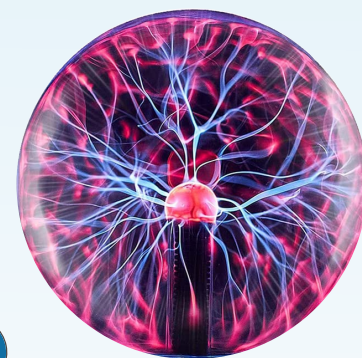


Wind speed



Plasma

Plasma is a fourth phase of matter, apart from the traditional solids, liquids, and gases. Plasma may be formed by heating and ionizing a gas. For example, Flame, lightning stars.



Bose-Einstein Condensate

BEC (5th state of matter) A Bose-Einstein condensate is a gaseous superfluid phase formed by atoms cooled to temperature very near to absolute zero.

