

STATES OF MATTER

On the basis of physical state, all the matter can be classified into three groups: Solids, Liquids and Gases.

Properties of Solids, Liquids and Gases:

S.No.	Solids	Liquids	Gases
1.	Solids have a fixed shape and fixed volume	Liquids have fixed volume but they have no fixed shape	Gases have neither a fixed shape nor a fixed volume
2.	Solids cannot be compressed much	Liquids cannot be compressed much	Gases can be compressed easily
3.	Solids have high densities	Liquids have moderate to high densities	Gases have very low densities
4.	Solids do not fill their container completely	Liquids do not fill their container completely	Gases fill their container completely
5.	Solids do not flow	Liquids generally flow easily	Gases flow easily
6.	For example: Ice, coal, wood, stone, iron, etc.	Water, milk, fruit juice, ink, petrol, etc.	Air, oxygen, hydrogen, nitrogen, steam, etc.

Why Solids, Liquids and Gases have different properties:

- According to the kinetic theory of matter, the particles of matter are in continuous motion and possess kinetic energy.
- Some forces of attraction also exist between the particles of matter. These are called inter particle forces. The forces of attraction tend to hold the particles together and control their movements.

The following properties of particles decide whether a given substance will exist as a solid, a liquid or a gas:

- The spaces between the particles: the spaces between the particles are the minimum in solids, a little more in liquids, and the maximum in gases.
- The force of attraction between particles: the forces of attraction between the particles are the strongest in solids, less strong in liquids and negligible in gases.
- The amount of movement of particles (or kinetic energy of particles): the movement of particles is the minimum in solids, more in liquids and the maximum in gases.