

CHAPTER 1

MATTER IN OUR SURROUNDINGS

Matter:

- Anything that occupies space and has mass is called matter.
- It exists in the form of five basic elements, the Panch tatva – air, earth, fire , sky and water.
- For example: Chair, bed, river, mountain, dog, tree, building, etc.

Characteristics of matter:

- Matter is made up of small particles called atoms.
- These particles are too small to be observed with naked eye.
- These particles are constantly moving constantly.
- These particles have spaces between them.
- Particles of matter attract each other because of the force of attraction.

Diffusion:

Particles of matter intermix on their own with each other. They do so by getting into the spaces between the particles. This intermixing of particles of two different types of matter on their own is called diffusion.

Applications of Diffusion:

Dissolving a solid in a liquid:

- When a crystal of potassium permanganate is placed in a beaker of water, the water slowly turns purple on its own, even without stirring.
- Both potassium permanganate crystal and water are made up of tiny particles.
- When the potassium permanganate crystal is put in water, the purple colored particles of potassium permanganate spread throughout water making the whole water look purple.
- Actually, on dissolving, the particles of potassium permanganate get into the spaces between the particles of water.
- This shows that the particles have spaces between them and are continuously moving on their own.

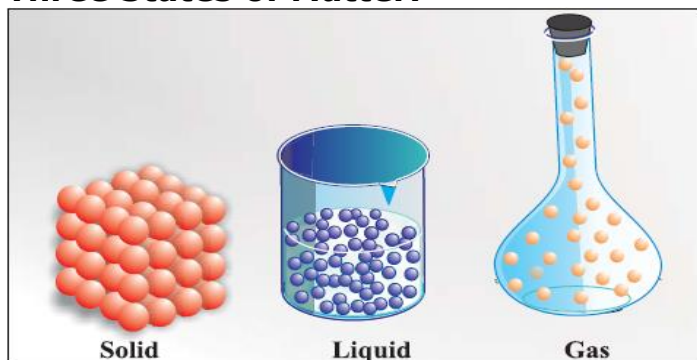
Mixing of two gases:

- Fragrance of an incense stick (agarbatti) lightened in one corner of a room, spreads in the whole room quickly.
- The particles of gases (or vapours) produced by burning the incense stick move rapidly in all directions and mix with the moving particles of air in the room
- This also shows that the particles of matter are constantly moving.

Basis of Classification of Matter:

- Based upon particle arrangement
- Based upon energy of particles
- Based upon distance between particles

Three States of Matter:



Solid	Liquid	Gas
Constituent particles are very closely packed.	Constituent particles are less closely packed.	Constituent particles are far apart from each other.
Force of attraction between particles is very strong.	Force of attraction between particles is less strong.	Force of attraction between particles is negligible.
Force of attraction between particles is very strong.	Kinetic energy between particles is more than that in solids.	Particles have maximum kinetic energy.

Have definite shape and volume.	Do not have definite shape but definite volume.	Neither have definite shape nor definite volume.
Have high density and and can not be diffused.	Density is lower than solids and can diffuse.	Density is least and can easily diffuse.
Incompressible.	Almost incompressible.	Highly compressible.

Try the following questions:

Q1. What are the conditions for something to be called matter?

Q2. Why do gases neither have fixed volume nor fixed shape?

Q3. How does the smell of food being cooked in the kitchen reaches us even from a considerable distance?

Q4. Explain why does diffusion occurs more quickly in gases than in liquids?