

• **Matter** is anything that has **mass** and **occupies space**. Matter is everything around us – air, water, stone, metal, food – is matter.

Examples: Gas, Liquid, Ice, Sugar, Oxygen, etc.

• **States of Matter**

Matter exists mainly in **three physical states**:

- **Solid:** Has a fixed shape and volume
Example: Ice, stone, wood
- **Liquid:** Has a fixed volume but no fixed shape
Example: Water, milk, oil
- **Gas:** Has neither fixed shape nor fixed volume
Example: Air, oxygen, steam

• **Particulate Nature of Matter**

All matter is made of **tiny particles** that:

- Are **too small** to be seen by the naked eye
- Are **continuously moving**
- Have **space** between them
- **Attract each other**

• **Behavior of Particles in Different States**

State	Particle Arrangement	Movement	Force of Attraction
Solid	Tightly packed	Vibrate only	Strong
Liquid	Loosely packed	Slide over each other	Medium
Gas	Far apart	Move freely & quickly	Very weak

• **Diffusion** is the process where molecules move from an area of high concentration to an area of low concentration, spreading out until they are evenly distributed.

• **Real-Life Examples:**

- Smell of perfume spreading in a room
- Ink drops spreading in water
- Smoke mixing with air

- Changes in States of Matter

Matter changes its state on heating or cooling:

Change	Process	Example
Solid → Liquid	Melting	Ice to water
Liquid → Gas	Evaporation	Water to steam
Gas → Liquid	Condensation	Steam to water
Liquid → Solid	Freezing	Water to ice

- Real-Life Observations

- **Salt or sugar dissolving in water:** Shows that water has empty spaces between particles.
- **Steam from hot water:** Gas particles move fast and spread.
- **Butter melting on a pan:** Heat changes solid to liquid state.