



Particle Arrangement in Matter

What is Matter?

Matter is anything that:

- Has mass and
- Occupies space.

Smallest Particles of Matter:

Matter is made up of tiny particles known as:

- **Atoms:** The basic building blocks of matter.
- **Molecules:** Groups of two or more atoms bonded together.

Intermolecular Space:

- The space between particles of matter.
- Varies depending on the state of matter.

Intermolecular Force of Attraction:

- The force that holds particles together.
- Stronger in solids, moderate in liquids, and weakest in gases.

Three States of Matter

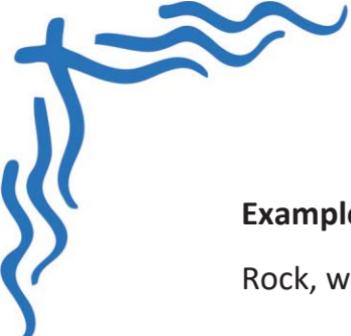
i. Solids:

Particle Arrangement:

- Tightly packed with very little or no intermolecular space.
- Particles are fixed in their positions and cannot move freely.

Properties:

- **Definite shape:** Solids do not change shape unless force is applied.
- **Definite volume:** The volume remains the same.
- **Cannot flow:** Due to strong intermolecular force.
- **Rigid and hard:** Due to strong bonding between particles.



Examples:

Rock, wood, iron, ice, and glass.

ii. Liquids:

Particle Arrangement:

- Less tightly packed than solids.
- Moderate intermolecular space, allowing particles to move around.

Properties:

- **No definite shape:** Takes the shape of the container.
- **Definite volume:** The volume remains the same.
- **Can flow:** Due to weaker intermolecular forces.
- **Fluidity:** Flows from higher to lower levels.

Examples:

Water, oil, milk, juice, and mercury.

iii. Gases:

Particle Arrangement:

- Very loosely packed with large intermolecular spaces.
- Particles move freely and rapidly.

Properties:

- **No definite shape:** Takes the shape of the container.
- **No definite volume:** Expands to fill the entire container.
- Can flow in all directions.
- **Highly compressible:** Due to large intermolecular space.

Examples:

Oxygen, nitrogen, carbon dioxide, and helium.