



LITTERA PUBLIC SCHOOL

CLASS V

CHAPTER 9.

SCIENCE

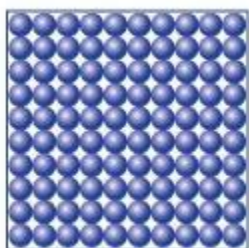
MATTER AND MOLECULES

Matter

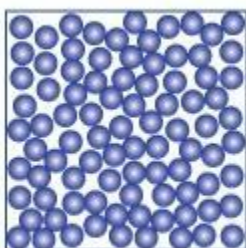
- The matter is any substance around us that occupies space and has mass. Examples : iron rod, plastic bag, air, water, rocks etc.
- All matter is made up of very small particles called **molecules**.
- Each molecule of a matter has two or more smaller units called **atoms**.
- Atoms are known as building blocks of matter.
- We cannot see atoms with our naked eyes.
- When atoms of the same kind come together they form **elements**.

There are three states of matter known as :

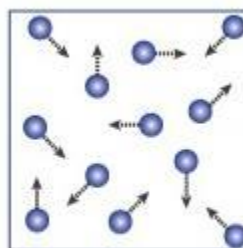
1. Solid
2. Liquid
3. Gas



Solid



Liquid



Gas

Solid

Solid is any material that has a fixed shape and volume. The reason for this is because the molecules are tightly packed together which does not allow them to move.

Example: Table, Books, pencils, trees, crystals of sugar etc.

Properties of solid:

1. Solids have a definite shape.
2. Solids have a definite volume.
3. Solids have a definite mass.
4. The particles are tightly packed .
5. Solids do not flow.

Solid



Liquid -

Liquid is any material that does not have a fixed shape. The particles in liquids are loosely packed which allows them to move easily. Thus, they take the shape of the container in which they are poured. But they are packed densely enough that volume is maintained.

Example: Milk, water, oil etc

Properties of liquid :

1. Liquids do not have a fixed shape.
2. Liquids have a definite volume.

3. Liquids have a definite mass.
4. The molecules can move freely in liquids. This helps the liquids to flow.

Liquid



Gas –

Gas is a matter that is composed of very loosely packed articles; therefore they can freely move around. They do not have a fixed shape or volume. It can flow freely and assumes all the space or volume of its container.

Example: air and cooking gas

Properties of gases

1. Gases do not have fixed shape and volume.
2. A gas does not have a definite mass.
3. The molecules in gases are very loosely packed
4. Gases can flow easily in all directions.

Gas



Difference between the states of matter

PHYSICAL STATE	SHAPE	VOLUME	FLOW	FORCES OF ATTRACTION	SPACE BETWEEN THE PARTICLES
Solid	Fixed	Definite	Can not flow	Very strong	Close together
Liquid	Not fixed	Definite	Can flow	Intermediate between solids and liquids	Intermediate between solids and liquids
Gas	Not fixed	Indefinite	Can flow	Very weak	Intermediate between solids and liquids

Dissolving solids, liquids and gases in water

Almost all substances can dissolve in water, making it the universal solvent. Let us see how different states of matter can be combined with water :

1) Solids in water :

Some solids get dissolved in water by occupying the space between the molecules of water. For example: sugar and water . However, some substances do not get dissolved in water e.g. chalk powder, sand etc.

2) Liquids in water:

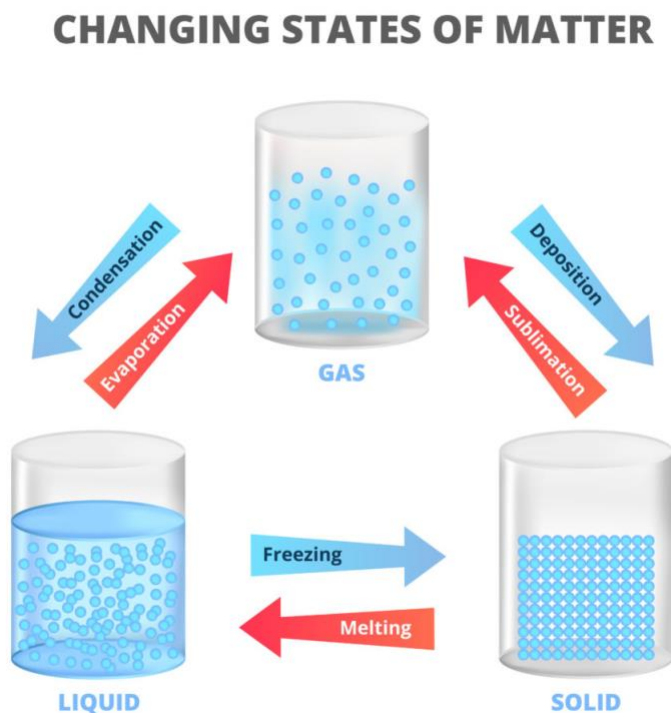
Some liquids mix easily when dissolved with water. For example: Alcohol is miscible with water. However, some liquids are insoluble in water e.g. petrol, diesel is immiscible with water.

3) Gases in water:

Some gases get dissolved in water e.g. carbon dioxide, nitrogen, oxygen and ammonia dissolve in water. However, some gases do not get dissolved in water e.g. hydrogen, nitrogen etc.

Change of State

- Matter can change its state from one form to another. The arrangement of
- Molecules in different forms of matter changes. These changes can be broadly



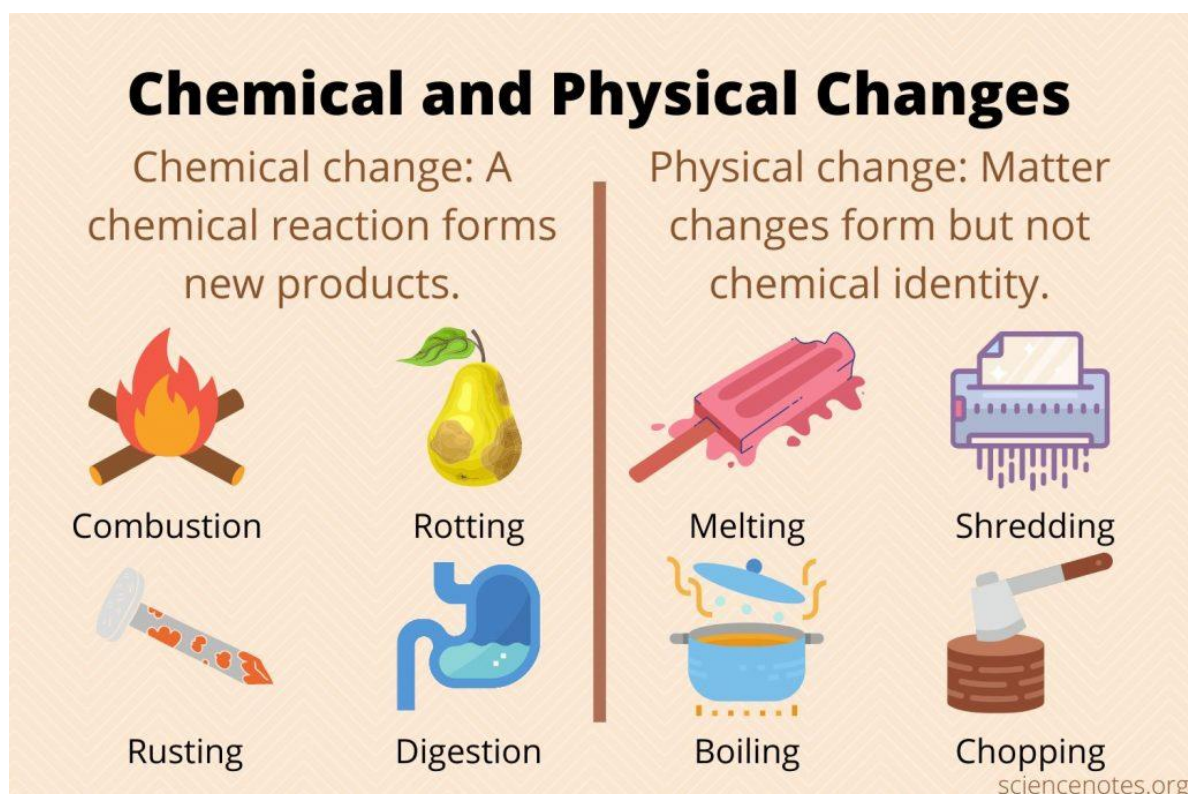
Divided into two types









- Physical change in matter
- Chemical change in matter

Chemical and Physical Changes

Chemical change: A chemical reaction forms new products.

Physical change: Matter changes form but not chemical identity.



Chemical Change	Physical Change
 Combustion	 Melting
 Rotting	 Shredding
 Rusting	 Boiling
 Digestion	 Chopping

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Physical change in matter :

- A physical change is a temporary change which can be reversed.
- No new substance is formed
- Only physical properties of the matter get changed like shape, size, colour etc.

- Chemical properties of the matter remain unchanged.
- For example: Water on cooling becomes ice . Ice on heating becomes water.

Here, only the state of matter is changed which can be easily reversible.

Chemical change in matter:

- In chemical change, heating or cooling of matter brings permanent changes in state of the matter.
- New substance is formed.
- This change is irreversible.
- For example: after we burn a piece of paper it changes into ash. The molecules of paper are different from the molecules of ash.