

Chapter 2: Physical and Chemical Changes

1. Revision of Physical and Chemical Changes

- Changes in matter can be classified as **physical** or **chemical** based on whether new substances are formed.
- **Physical changes** do not alter the chemical composition, whereas **chemical changes** result in new substances with different properties.

2. Classification of Physical and Chemical Changes with Examples

Physical Change	Chemical Change
No new substance is formed.	A new substance with different properties is formed.
Usually reversible.	Usually irreversible.
Only physical properties (shape, size, state) change.	Both physical and chemical properties change.
No change in molecular composition.	Atoms rearrange, forming new molecules.
Example: Melting of ice (solid → liquid, but still water).	Example: Burning of paper (produces ash and gases, a new substance).
Example: Boiling of water (liquid → gas, but remains H ₂ O).	Example: Rusting of iron (iron reacts with oxygen and water to form rust: Fe ₂ O ₃ ·xH ₂ O).

Key Differences

- **Physical changes** involve changes in **state, shape, or size** but no chemical reaction.
- **Chemical changes** result in **permanent transformations** with energy release or absorption (e.g., burning, rusting, cooking).