

Changes in Matter

Review

Physical properties of substances are **characteristics of that specific substance** and include colour, state, melting point, malleability, ductility, solubility, and density.

Chemical properties describe the behaviours of a **substances as it changes to a new substance**. Examples are flammability, corrosion, and reaction with acid.

Physical change and chemical change

Physical change: a change in which the **substance** remains the same before and after the change.

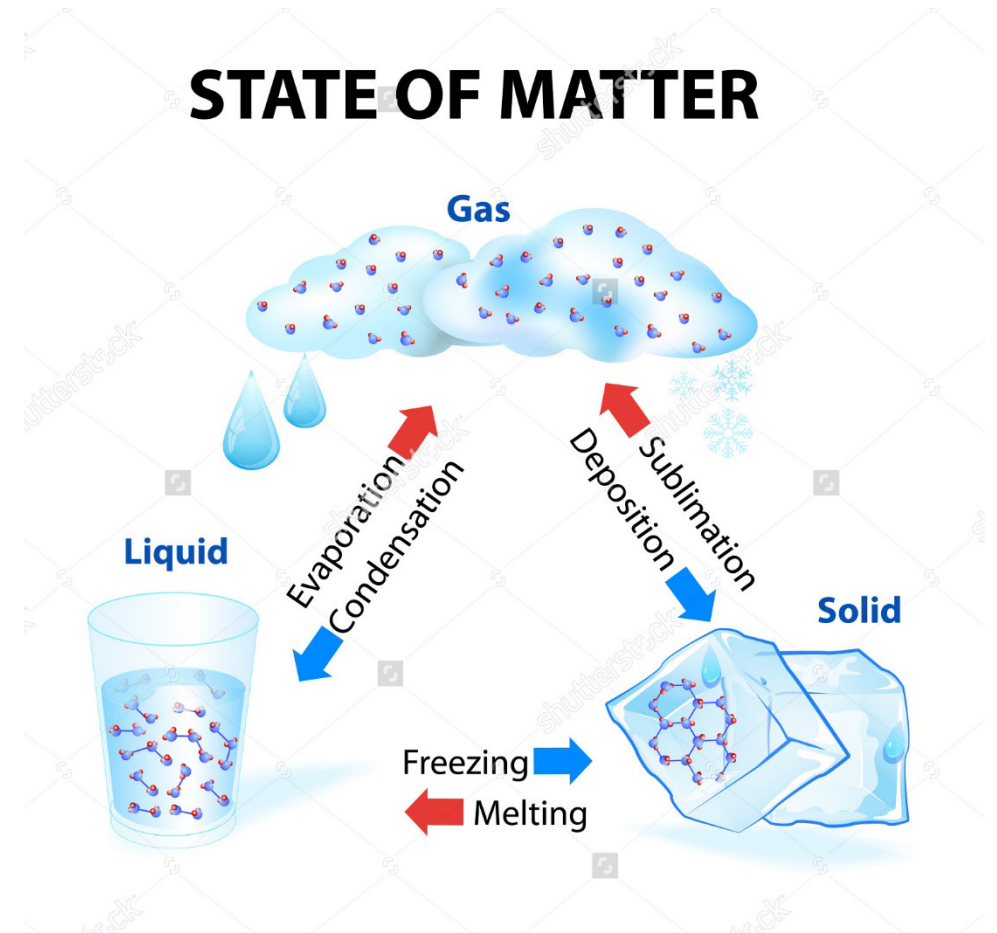
- state or form may be changed, but chemical formula isn't

Examples:

- i) Water (liquid) evaporates and becomes water vapour
- ii) Solid butter is melted to pour on your popcorn (solid to liquid)
- iii) Dissolving – sugar dissolved into tea. The sugar molecules remain unchanged

Physical Change

- Usually reversible
- No new materials are created
- A change where the particles of matter DO NOT CHANGE though the spaces between particles may change



Physical change and chemical change

Chemical change: a change in which the substance changes into one or more different substances (with different properties)

- The chemical formula does change
- Usually cannot be reversed
- A change in which different particles with new properties are created
- The old particles break apart, and the new particles form from the pieces.

Chemical change

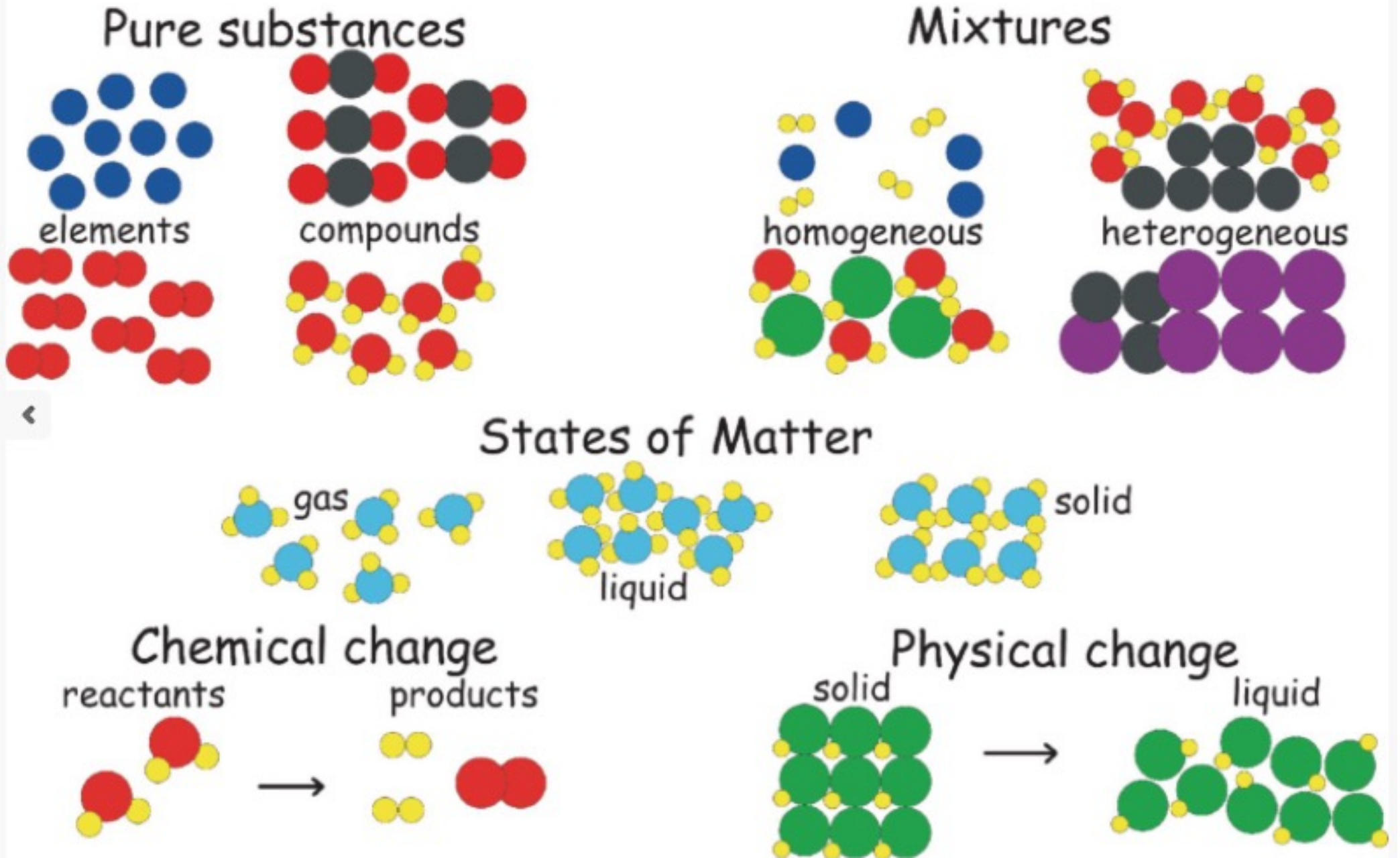
Examples:

- i) Baking soda and vinegar react to form a salt, water, and carbon dioxide.
- ii) Wood burns (in the presence of oxygen) creating heat, carbon dioxide, water, and ash.

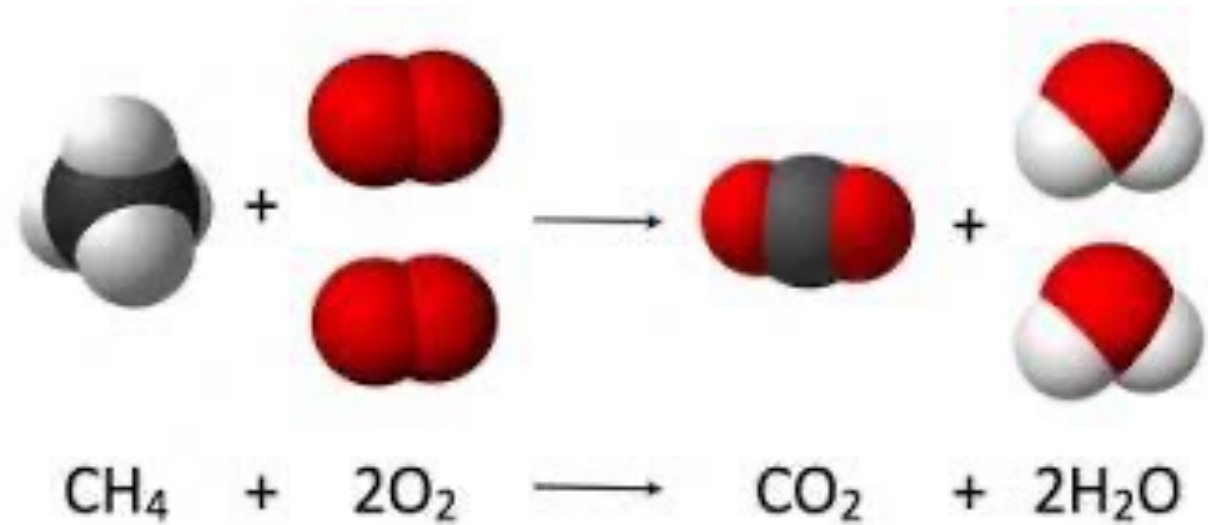
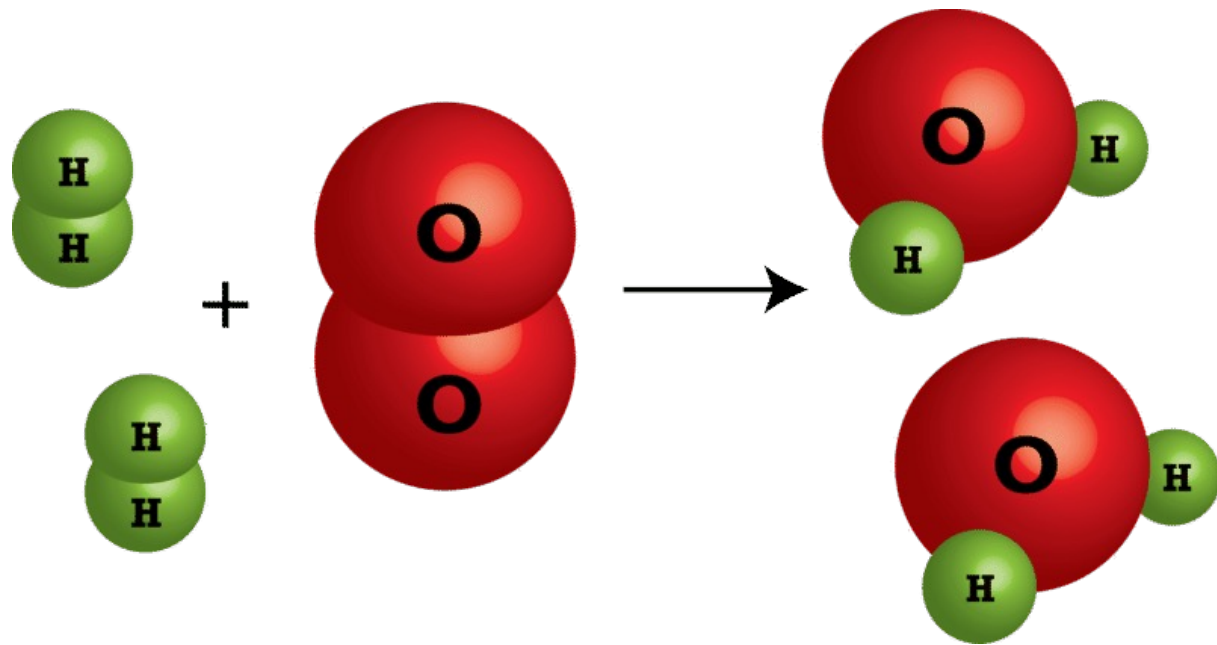
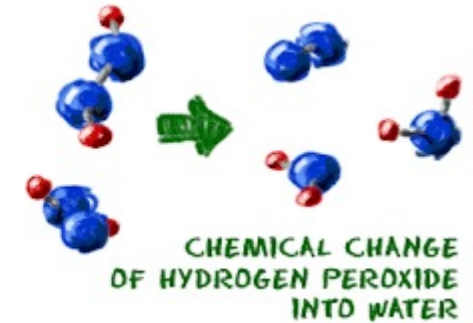
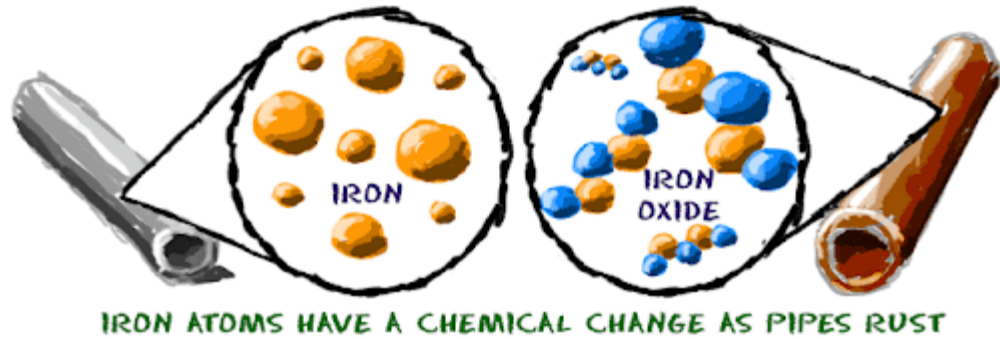
Identifying chemical changes

- There may be a change in colour
- A gas may be produced (bubbles)
- A solid may be produced
- Heat may be released or absorbed

Remember this?



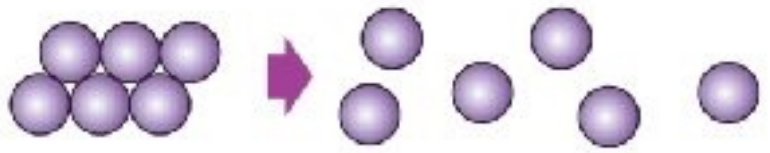
Chemical Changes result in new particle types



Description of change	Physical or chemical change?
Ice cube melting into water	
A nail rusting	
Fermentation of sugar into alcohol	
Pulling copper into a wire	
Sublimation of dry ice	
Turning water into Hydrogen and Oxygen gas	
Hydrogen peroxide used to lighten hair	
Whipping cream into fluffy whipped cream	
Grinding peanuts into peanut butter	

Physical or Chemical Change?

Heating iodine



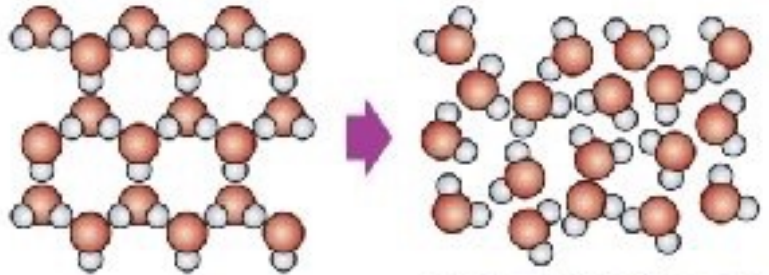
Sodium left in air



Decomposition of copper carbonate



Melting of water



Magnesium reacting with chlorine

