

Physical + Chemical Change

Physical Change

- is a change that alters a substance without changing its chemical identity or composition
- typical observations that indicate a physical change:
 - change in shape (crumpling paper)
 - change in state (solid, liquid, gas)
(add/remove heat melt, condense)
 - dissolving a substance

Chemical Changes

- during a chemical change or chemical reaction, one type of matter changes to produce 1 or more different types of matter

- this new matter has different properties and a different identity from the original.
- reactants - matter you start with
- products - matter that is formed/produced.

reactants $\rightarrow$ products
(left) (right)

Signs that a chemical change may have occurred:

- a new substance is formed
(see bubbles/fizzing - gas is formed)
(mix 2 liquids $\rightarrow$ solid forms
 $\hookrightarrow$ precipitate)
- a temperature change (gets hot/cold)
- light/sparks produced
- change of state when no heat

is added or removed)

- colour change (mix 2 colourless liquids and get a yellow liquid)

ex's cooking
burning wood
baking soda + vinegar

- chemical changes are not easily reversed. It can be possible but often requires a lot of energy.
- physical changes are often easily reversed & require less energy

The Law of Conservation of Mass

- Antoine Lavoisier performed many experiments measuring the mass of the reactants and the products.
- his findings are summarized in this law.

- it says that mass is neither created or destroyed during a chemical reaction (mass is always conserved)

$$\text{mass of reactants} = \text{mass of products}$$