CHAPTER TWO

PHYSICAL CHANGE, CHEMICAL CHANGE,

MIXTURES AND COMPOUNDS.

PHYSICAL CHANGE:

- This is a type of change in which no new substance is formed.
- An example is the changing of water which is in the liquid state, into the vapour state.
- In such a case, the water in the liquid state when changed into the vapour state still remains water.
- Because the vapour can easily be changed back into water by allowing it to cool, such a change is said to be easily reversible. -
Another example of a physical change is the heating of plastic.
- If plastic which is a solid is heated, it only melts or changes into the liquid state.
- Since the plastic in the liquid state can easily be changed back into the solid state by allowing it to cool, such a change is also easily reversible.

Characteristics of Physical Changes:

(i) In a physical change, no new substance is formed.
(ii) A physical change is easily reversible.

Examples of Physical Changes:

- The changing of water into vapour.
- The melting of ice into water.
- The heating of Shea butter.

Chemical Change:

- This is a kind of change in which a new substance is formed.
- For example the burning of paper to get soot.
- This is a chemical change since the soot is completely different from the paper.
- Since the soot cannot easily be changed back into paper, such a change is said to be not easily reversible.

Characteristics of Chemical Changes:

- They are not easily reversible.
- A chemical change always produces a new kind of substance.

Examples of Chemical changes:

(i) The rusting of iron.
(ii) The burning of any material.

(iii) The combination of oxygen and hydrogen to form water.

Physical and Chemical Combinations:

Elements, substances and items can either be physically combined or chemically combined. An example of a physical combination is the mixing together of stones and sand. In such a case, the stones and sand when combined together do not result in the formation of a new substance. Within such a mixture or combination, the stones within still remain stones whilst the sand still remains sand. Another example of a physical combination is the mixing together of gari and beans. An example of a chemical combination is the combination of oxygen and hydrogen to form water. In such a case a new substance is formed, since the oxygen and hydrogen are completely different from the water.

MIXTURE:

- This is the physical combination of two or more substances.
– Examples of mixtures are :

(1) A combination of sand and stones.
(2) A combination of water and alcohol.

Types of Mixture:

- There are different types and examples are:

(1) Solid - Solid Mixtures:

- This is formed when two or more solid particles are mixed together.
- An example of this type of mixture is a mixture of sand and stones.

(2) Solid - Liquid Mixture:

- This type of mixture is formed when solid particles are mixed with a liquid.
- An example of this type of mixture is a mixture of stones and water.

(3) Solid – Gas Mixture:

- This is formed when solid particles are mixed with a gas, and an example is a mixture of dust particles and air.

(4) Liquid – Liquid Mixture:

- This is had by mixing two different liquids together, and an example is a mixture of water and alcohol.

(5) Gas- gas mixture:

- This is a combination of two different gases, and an example is a mixture of hydrogen and oxygen.

SEPARATION OF MIXTURES:

- Methods of separation include the following :

(1) Picking.
(2) Filtration.
(3) Evaporation.
(4) Floatation.
(5) Sieving.
(6) Sublimation.
(7) Magnetic separation.

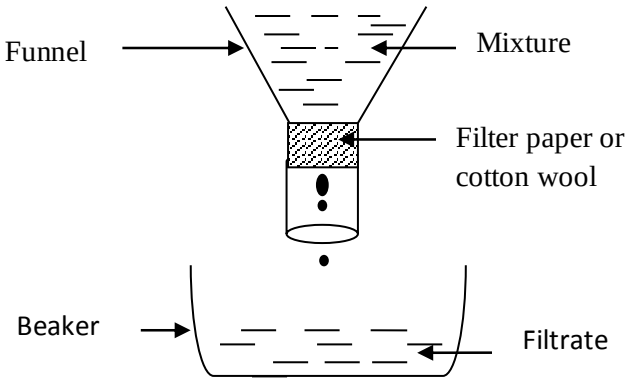
Picking:

- This method can be used to separate a mixture, in which one constituent is larger than the other.
- For example a mixture of sand and stones, can be separated by picking the stones from the sand.

Magnetic separation:

- This method of separation is used when one of the items or constituents of a mixture, is a magnetic material. - For example a mixture of iron filings which is a magnetic material and sand, can be separated by using a magnet to attract the iron fillings from the mixture.

Filtration:


Funnel
Mixture
Filter paper or
cotton wool
Beaker
Filtrate