Mixtures

- A mixture is a substance which consists of two or more elements or compounds not chemically combined together. All the solutions are mixtures. The various substances present in a mixture are known as “constituents of the mixture” or “components of the mixture”.

Ex. Lemonade (nimbu pani) is a mixture of water, lemon juice, sugar and salt.

- A mixture consists of two or more different type of particles having different chemical nature. Mixture may be homogeneous or heterogeneous. All the mixtures are impure substances. A mixture does not have a fixed composition or a fixed melting point and boiling point.

Types of mixtures

Mixtures are of two types **:**

(A) Homogeneous mixtures.

(B) Heterogeneous mixtures.

(A) Homogeneous mixtures :

- Those mixtures in which the substances are completely mixed together and are indistinguishable from one another, are called homogeneous mixtures.
- All the homogeneous mixtures are called solutions.

Ex. A mixture of sugar in water (called sugar solution) is a homogeneous mixture because all the parts of sugar solution have the same sugar-water composition and appear to be equally sweet. There is no visible boundary of separation between sugar and water particles in a sugar solution.

(B) Heterogeneous mixtures

Those mixtures in which the substances remain separate and one substance is spread throughout the other substance as small particles, droplets or bubbles, are called heterogeneous mixtures.

Ex. The mixture of sugar and sand is a heterogeneous mixture because different parts of this mixture will have different sugar-sand compositions. Some parts of this mixture will have more of sugar particles whereas other parts will have more of sand particles. There is a visible boundary of separation between sugar and sand particles. The suspensions of solids in liquids are also heterogeneous mixtures. A mixture containing two (or more) immiscible liquids is also a heterogeneous mixture.

Properties of mixture

- A mixture can be separated into its constituents by physical processes.
- A mixture shows the properties of all the constituents present in it.
- Energy is usually neither given out nor absorbed in the preparation of a mixture. So, the formation of a mixture is a physical change.
- The composition of a mixture is variable, the constituents can be present in any proportion by mass.

- A mixture does not have a definite melting point, boiling point.
- A mixture is usually heterogeneous.

Physical and Chemical Changes

On the basis of whether new substances are formed or not we can classify all the changes into two groups.

Physical change

- A change in which no new substances are formed but physical form of the substance changes is known as physical change.
- The product formed in such changes is chemically identical to the starting substance.

Ex. When ice is heated, it changes into liquid water, on further heating it changes into steam. But water in the solid form (ice) or liquid form or in gaseous form (steam) is chemically the same substance.

Thus, this transformation represents a physical change. Physical changes can be reversed easily.

Ex. Steam on colling forms liquid water, which on further cooling changes into ice.

Chemical change

- A change in which one or more substances change into new substances is known as chemical change.
- Such a change cannot be reversed easily. Chemical changes are also known as chemical reactions.

Ex. When electricity is passed through water. it decomposes into two new substances, hydrogen and oxygen. Thus, it represents a chemical change. Similarly, burning of candle, rusting or iron and calcination of lime-stone are also examples of chemical changes.