Topic:IS mater around us pure

Focous points

1.What is a substance?

- Anything that cannot be broken into further particles by applying any physical processes is called a Substance.
- Matter can be classified into two types of substances – Pure substances and Mixtures

2.What is a pure substance?

A substance that consists of only one type of particle is called a Pure Substance. For Example, Diamond, Salt, Sulfur, Tin.

3.What is a mixture?

- When we combine different substances into each other a mixture is formed. For Example, Lemonade is a mixture of three substances, Lemon Juice, Sugar and Water.
- Which of these is a mixture or a pure substance?

  Water, Copper, Chocolate cake, Hydrogen, Soil, Air

  Mixture – Chocolate cake, Soil, Air

  Pure substance – Water, Copper, Hydrogen

4.Types of Mixtures

There are two categories of mixtures: Homogeneous Mixtures and Heterogeneous Mixtures

Homogenous Mixtures

- When we add sugar, water and lemon juice together they all uniformly mix with each other. Now it is no possible to separate these substances from the mixture. Such mixtures in which the components mix with each other uniformly are called Homogenous Mixtures.

Heterogeneous Mixtures

- The components in a heterogeneous mixture do not completely dissolve in each other and we can separate them by physical means. In other words, the composition of such mixtures is not uniform.

5.What is a solution?

A solution is nothing but a uniform mixture of two or more substances. Homogenous Mixtures are solutions.

Solution of -

Solution constitutes of two types of substances, a solute and a solvent.

Solution = Solute + Solvent

Solvent – The substance in which another substance is mixed is called the Solvent. For Example, Water is a solvent in which we can mix different substances such as salt or sugar.
Solute – The substance that is added to the solvent to form a solution is called a Solute. For Example, Salt, when mixed in water, acts as a solute for the mixture.

6.Different Types of Solutions

- **Dilute** – A solution in which the concentration of the solute is much less than that of the solvent. For
- **Unsaturated Solution** – A solution, in which we can add more amount of solute as it has not achieved its saturation level yet, is called an Unsaturated Solution. A dilute solution can be called as an Unsaturated Solution.
- **Concentrated Solution** – A solution with a large amount of solvent is called a Concentrated Solution.
- Saturated Solution – A solution in which no more solute can be added since it has already dissolved the maximum amount of solute it can is called a Saturated Solution.

7.What is concentration?

Concentration refers to the amount of a substance per defined space or can be defined as the ratio of solute in a solution to either solvent or total solution.

To calculate the concentration consider the formulae below:

- Percent by Mass = (Mass of solute / Mass of solution) X 100
- Percent by Volume = (Volume of solute / Volume of solution) X 100

8.What is a suspension?

A suspension is formed when two or more substances are mix in a non-uniform manner. Heterogeneous mixtures are suspensions. The solute does not mix with the solvent and can be viewed through naked eyes.

Properties of Suspensions:

- A suspension is a heterogeneous mixture.
- We can see the particles of suspensions through naked eyes.
- We can see the path of light through the particles of a suspension.

9.What are colloids or colloidal solutions?

A colloidal solution or a colloid is a uniform solution of two or more substances. The particles are relatively very small that the solution appears as a homogeneous mixture but it is not.

What is the Tyndall Effect?
When a beam of light is passed through a colloid the particles of the colloid scatter the beam of light and we can see the path of light in the solution. For Example, when a ray of light enters a dark room it is scattered by the dust particles present in the air and we can see the path of light clearly.

We can separate the heterogeneous mixtures into their constituents by means of physical methods like:

- Filtration
- Hand-picking
- Sieving

The components of a mixture can be separated from each other using several other techniques like:

- Evaporation
- Centrifugation
- Sublimation
- Chromatography
- Distillation

11.Pure substances are classified as elements and compounds

Elements

An element is the simplest form of matter. Elements cannot be broken down into further elements by chemical reactions. Elements are further characterized as Metals, Non-Metals and Metalloids

Metals – Silver, Mercury, Copper, Gold

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Compounds

It is a substance that consists of two or more substances. These substances are combined chemically with each other in fixed proportions. The properties of a compound are different than that of its constituents. For Example, Ammonium Sulphate, Sulphur Chloride, Water.
Mixtures vs. Compounds.

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