Is Matter Around Us Pure
True Solution And Suspension

❖ SOLUTIONS AND ITS PROPERTIES:

SOLUTION:

A solution is a homogeneous mixture of two (or more substances). Some common **examples** of solutions are: Salt solution, Sugar solution, Vinegar, Metal alloys and Air. Salt solution and sugar solution are also known as true solutions because in these solutions the particles of salt and sugar are mixed so well with water that we cannot distinguish one from the other. Only soluble substances form true solutions

A solution in which water acts as the solvent is called an aqueous solution while the one in which any other liquid acts as the solvent is called a non-aqueous solution.

PROPERTIES OF A SOLUTION

1. A solution is a homogeneous mixture.
2. The size of solute particles in a solution is extremely small. It is less than 1 nm in diameter (1 nanometre $= 10^{-9}$ metre).
3. The particles of a solution cannot be seen even with a microscope.
4. The particles of a solution pass through the filter paper.
5. The solutions are very stable.
6. A true solution does not scatter light (This is because its particles are very, very small).

Types of Solutions:

The various types of solutions are:

1.Solution of Solid in a Solid. Metal alloys are the solutions of solids in solids. For example, brass is a solution of zinc in copper.

2.Solution of Solid in a Liquid. Sugar solution and salt solution are the solution of solids in liquids.

3.Solution of Liquid in a Liquid. Vinegar is a solution of acetic acid (ethanoic acid) in water.

4.Solution of Gas in a Liquid. Soda-water is a solution of carbon dioxide gas in water.

5.Solution of Gas in a Gas. Air is a solution of gases like oxygen, argon, carbon dioxide and water vapour, etc.

Saturated solution:

A solution which at a given temperature dissolves as much solute as it is capable of dissolving, is said to be a saturated solution.**Ex.** At 30°C, 55 g of common salt dissolves in 100g of water. However, if more of common salt is added to the above solution, it just does not dissolve. In such a situation, the solution of common salt containing 55 gm of salt in 100 gm of water, is a saturated solution at 30°C.

- If a saturated solution at some particular temperature is heated, the solution becomes unsaturated, because of the increase in solubility.
- If a saturated solution at some higher temperature is cooled, it remains saturated. The excess solute comes out of the solution and deposits itself in the form of crystals.

Unsaturated solution:

When the amount of solute contained in a solution is less than the saturation level, the solution is said to be an unsaturated solution.**Ex.** At 30°C, if 45 g of common salt is dissolved in 100 g of water, such solution so formed is capable of dissolving more of the common salt, then such a solution is called unsaturated solution.

Super saturated solution:

A solution which contains more of the solute than required to make a saturated solution, is called a super saturated solution.