Chemistry Study Materials for Class 9

(NCERT based Revision Notes on Chapter - 2)

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Is Matter Around Us Pure

What is a solution?

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

Solution	Examples
Liquid into liquid:	Water and Ink
Solid into solid:	Alloys
Gas into gas:	Air
Solid into liquid:	Sugar and Water
Solid into gas:	Hydrogen and Metals
Liquid into gas:	Carbon Dioxide and Water

What is an alloy?

An alloy is a mixture of different metals or non-metals and metals that cannot be separated from each other using physical methods.

For Example:

Brass – Copper with up to 50% zinc Bronze – Copper with up to 12% tin

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.

Properties of a Solution:

- A solution is a homogenous mixture.
- We cannot see the particles of a solution through naked eyes as they as are small as 1 nanometer in diameter.
- The path of light is not visible through the solution. The particles of a solution do not scatter light through them as they are extremely small.
- We cannot separate the particles of a solution by methods of filtration.

What is a stable solution?

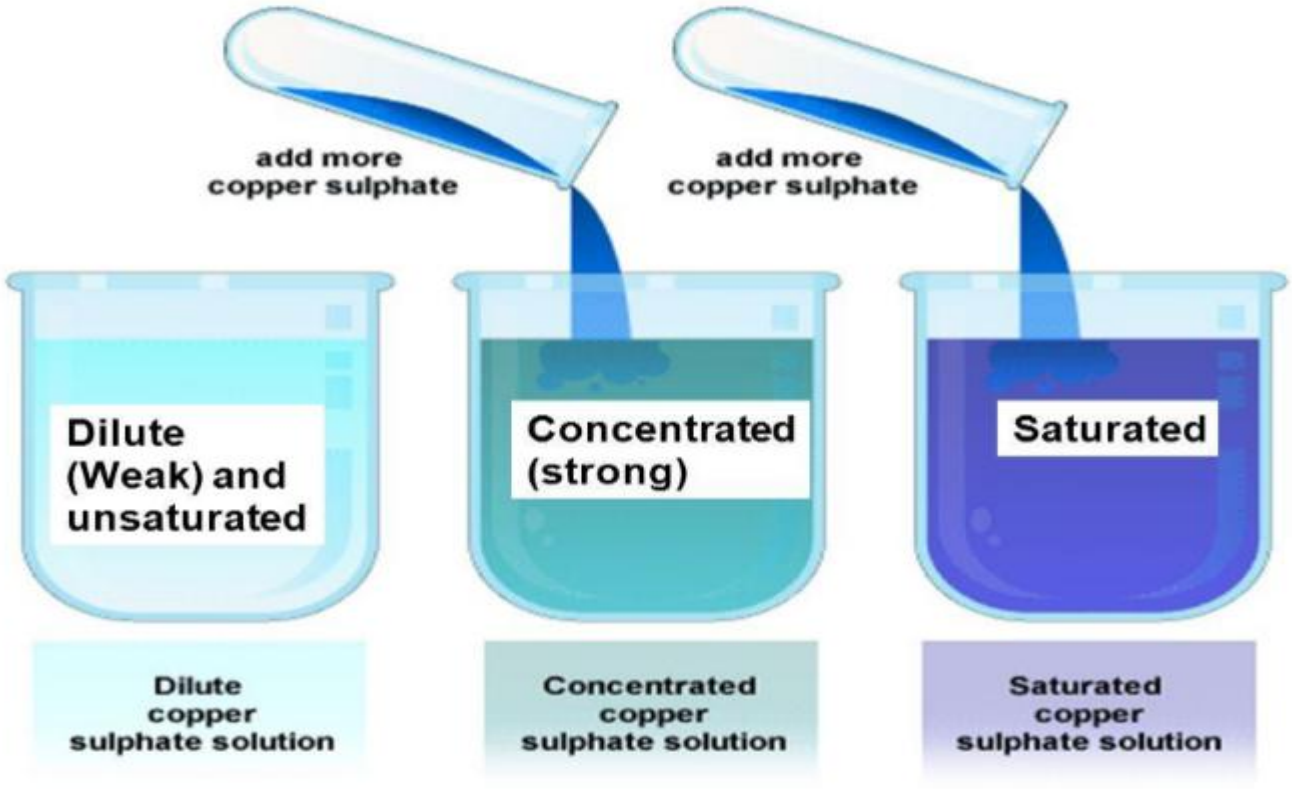
A stable solution is a solution in whose particles do not settle down if we leave the solution undisturbed for some time. This is because the particles of a stable solution are homogeneously spread.

Different Types of Solutions

- **Dilute Solution– A solution in which the concentration of the solute is much less than that of the solvent.**

  For Example, if we mix 1gm of salt in 500 ml of water, the salt solution thus obtained will be diluted. If we keep on adding the solute in a solution there comes a point when no more solute dissolves in the solution. This is called the **Saturation Point of a Solution**.

- **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**.



What is concentration?

C**oncentration** 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 considers 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
- **ppm (Parts Per Million)** = (Mass of Solute / Mass of Solvent) X 10^6

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