

Is Matter Around us Pure

Synopsis

- Chemistry deals with the study of matter. The matter around us is of two types: pure substances and mixtures.
- A pure substance is homogeneous in nature and has a definite set of properties. The composition of pure substances cannot be changed by physical methods. Pure substances can be further classified as elements and compounds.
- Elements: Pure substances in which molecules are composed of only one kind of atoms are called elements, e.g., silver, iron, oxygen, nitrogen, etc.
- Compounds: Pure substances in which two or more elements combine chemically in a fixed proportion by weight are called compounds. For example, water (H_2O) is considered as a pure substance even though it consists of two kinds of atoms, as it has a fixed number of hydrogen and oxygen atoms combined together chemically in a definite proportion by weight. Hydrogen and oxygen combine in a fixed ratio of 1:8 by weight to form water.
- Mixtures: Mixtures are those substances which contain two or more kinds of molecules.
- For example, sugar solution contains molecules of sugar and molecules of water. Mixtures can have their constituents either as an element, elements, a compound or only compounds.
- Solutions/suspensions and colloids differ in the size of solute particles (or dispersed particles), the size of particles being minimum in solutions and maximum in suspensions.
- A suspension is a heterogeneous mixture in which small particles of a solid are spread throughout a liquid without dissolving in it. Some common examples of suspensions are: chalk - water mixture, milk of magnesia, sand particles suspended in water.

- A colloid is a kind of solution in which the size of solute particles is intermediate between those in true solutions and those in suspensions. The size of solute particles in a colloid are bigger than that of a true solution but smaller than those of a suspension.
- The scattering of light by colloidal particles is known as Tyndall effect.
- The colloids can be classified into the following seven groups.
 - (i) Sol
 - (ii) Solid sol
 - (iii) Aerosol
 - (iv) Emulsion
 - (v) Foam
 - (vi) Solid foam
 - (vii) Gel