

SOLUTIONS

Solution - homogeneous mixture of solvent and solute

Solvent - the dissolving medium in a solution

Solute - the substance dissolved in the solvent

Concentration - relative amounts of solute and solvent in a solution

Concentrated and dilute are relative terms: For the same volume of solution, a concentrated solution has more solute in it than a dilute solution

Solubility - the maximum amount of solute that will dissolve in a given amount of solvent at a particular temperature

Soluble - if a solute dissolves to some defined extent. (often 1 gram solute in 100 g solvent or 0.01 mole of solute in 1 L of solvent)

Insoluble - a solute that is not soluble

Saturated solution - a solution that will dissolve no more of the solute with which it is said to be saturated at a particular temperature

Unsaturated solution - a solution containing less solute than it does when saturated

Supersaturated solution - a solution that has more solute dissolved in it than it can contain when saturated (unstable)

Miscible - liquids that are soluble in each other in all proportions

Immiscible - liquids that are insoluble in each other in all proportions

WAYS OF EXPRESSING CONCENTRATION

Mass percentage (%) number of grams of solute in 100 grams of solution

Parts per million (ppm) number of grams of solute in a million (10^6) grams of solution. For dilute aqueous solutions: number of mg of solute in one liter of solution

Parts per billion (ppb) number of grams of solute in a billion (10^9) grams of solution. For dilute aqueous solutions: number of μg of solute in one liter of solution

Mole fraction (X_i) ratio of the number of moles of component i to the total number of moles of all components in the solution

Molarity (M) number of moles of solute in one liter of solution

Molality (m) number of moles of solute in one kilogram of solvent