

Solutions Reference Sheet

Definitions

Solute

The substance that is being dissolved in a solution

Solvent

The substance that something is being dissolved into

Solution

The solute and solvent combined

Solubility

The amount of solute that can be dissolved at a given temperature

Saturated solution

Maximum amount of solute dissolved

Unsaturated solution

Less than the maximum amount of solute dissolved

Supersaturated solution

More than the maximum amount of solute dissolved

Dissolve

When molecules of solute are surrounded by molecules of solvent and are pulled apart from other solute molecules

Dissociate

When an ionic compound has its ionic bond disrupted by solvent molecules and it breaks into individual ions

Electrolytes

Ionic solutes that dissociate into ions in a solution

Non-electrolytes

Covalent compounds that do not dissociate into ions in a solution

Heat of solution

The energy involved when solute dissolves/dissociates

Equations

$$\text{Mass Percent} = \left(\frac{\text{mass of solute}}{\text{mass of solution}} \right) \times 100$$

$$\text{Parts per Million} = \left(\frac{\text{mass of solute}}{\text{mass of solution}} \right) \times 1,000,000$$

$$\text{Grams per Liter} = \left(\frac{\text{mass of solute}}{\text{volume of solution}} \right)$$

$$\text{Mole fraction of A} = X_a = \left(\frac{n_A}{n_A + n_B} \right)$$

$$\text{Molarity} = M = \left(\frac{\text{moles of solute}}{\text{Liters of solution}} \right)$$

$$\text{Dilutions} = M_1V_1 = M_2V_2$$