Solutions

Explore

What are the various parts of a solution?

Solutions

Solutions are homogeneous mixtures in which the components are distributed evenly and will not separate. Solutions can be solid, gaseous, or liquid. For example, steel is a solid solution in which carbon is mixed evenly with iron. (Solid solutions that contain metals are called alloys.) Air is a solution that contains primarily gases, but might also contain tiny particles in solid or liquid form. In chemistry, many of the solutions discussed are in liquid form.

There are two necessary components to every solution. A **solute** is the substance that is dissolved in a solution. The **solvent** is the substance that **dissolves** the solute. Usually, there is more solvent than solute in a solution. For example, if you add one spoonful of sugar to a jug of water, the water is the solvent and the sugar is the solute. Many solutions are formed in nature, where water commonly dissolves other substances in the environment. In fact, water is often referred to as the "**universal solvent**" because so many other substances will dissolve in it. Water is unique because it naturally exists in all three states of matter – solid, liquid, and gas. Water's unique properties are primarily caused by the **polarity** of the water molecule. The positive and negative areas of charge are attracted to many other types of particles, and can dissolve them easily.

An **electrolyte** is any substance that dissolves to form free ions, which make the solution electrically conductive. Batteries contain electrolytes because they allow negative charge (electrons) to flow from one location to another in an electric current. The human

body needs electrolytes to support cellular processes such as metabolism and muscle function. Electrolytes also help keeps the body's fluid levels in balance.

A nonelectrolyte is a solute that dissolves in water to form a nonconductive solution. For example, sugar is a nonelectrolyte. When mixed with water, sugar creates a nonconductive solution.

Colloids and suspensions are heterogeneous mixtures, not solutions. They are composed of small particles distributed throughout a medium, but the particles are large enough that they can often be filtered out. They are not truly dissolved.
