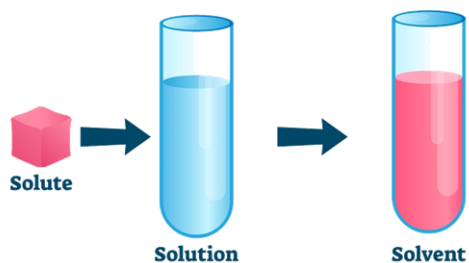


Solutions, Acids, & Bases

Section I: Solutions, Solubility, & Concentration



A **solution** is a mixture that has the same composition, color, density, and taste throughout. To describe a solution, there must be one or more substance dissolved in it. A **solute** is the substance being dissolved and the **solvent** is the substance doing the dissolving. For example, if you add a

spoonful of sugar to a glass of water, you have made a solution. The sugar dissolves in the water so the sugar is the solute and the water is the solvent. Solutions can also be gaseous like the air you breathe, or even solid, like sterling silver.

When forming a solution there are three ways to speed up the rate of the dissolving process. First, by stirring a solution it brings more solvent in contact with the solute. The solvent attracts the particles of the solute causing the solute to dissolve faster. Another way to speed up the dissolving process of a solid in a liquid is to increase the surface area. By breaking up a solid and crushing it into powder, it allows more solvent to come into contact with solute. Finally, increasing the temperature of a solvent also speeds up the rate at which something dissolves. Increasing the temperature speeds up particles causing them to bump into each other, break apart, and come into contact with solvent.

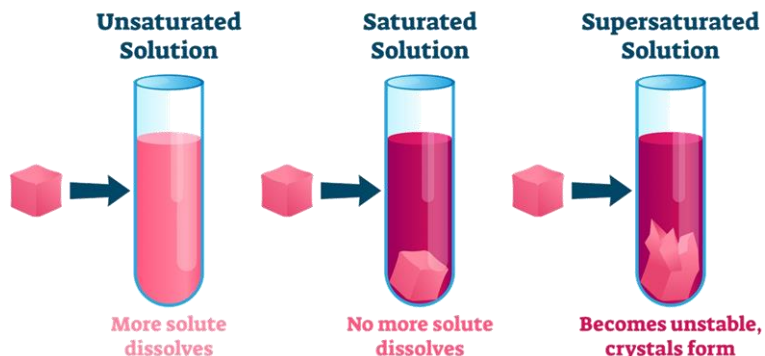
The maximum amount of a solute that can be dissolved in a given amount of solvent under a given set of conditions is called **solubility**. A substance's solubility can change if the conditions change. You can dissolve more sugar in hot water than you can in cold water. Not every substance will dissolve in every other substance like oil and water. If a solute does not dissolve a solvent, it is called **insoluble**.

The amount of solute in any given solvent is called **concentration**. It's the percentage by volume of solute in a solvent. If something is **concentrated** there is a large amount of solute in a solvent. If something is **dilute** there is a small amount of solute in the solvent.

Solutions, Acids, & Bases

Section I: Solutions, Solubility, & Concentration Continued

A solution that is **saturated** contains all of the solute it can hold at a given temperature. If a solution is **unsaturated**, it means that it's able to dissolve more solute at a given temperature. **Supersaturated** means it contains more solute than a saturated one and the solution is unstable.



Review:

1. In a solution, what is a solute? What is a solvent?
2. What does it mean if something is insoluble?
3. Compare saturated to unsaturated.