

Mixtures

By Cindy Grigg

¹ A mixture is a blend of two or more substances that have NOT combined chemically. A mixture can contain elements, compounds, or both, and in any amounts. In a mixture, each substance keeps its own properties. Substances in a mixture can be separated by physical means. Some different ways to separate the substances in a mixture are:

1. Sorting by hand
2. Shaking smaller particles through a sieve
3. Settling out solid particles by letting the mixture stand
4. Using a magnet to separate some metals out of a liquid
5. Passing the substance through a filter paper
6. Distilling to separate two liquids with different boiling points.



² There are different kinds of mixtures. A heterogeneous mixture is a mixture in which the particles are not spread evenly throughout. Soil, raisin bran cereal, and fruit salad are heterogeneous mixtures.

³ A suspension is a heterogeneous mixture with particles large enough to be seen with the eye or a microscope. A suspension looks cloudy. The particles in a suspension are not dissolved; they will settle out from the force of gravity. Shaking or stirring will suspend the particles again. The particles can be separated out with filter paper. Examples of a suspension are orange juice with pulp or a salad dressing with oil, vinegar, and spices.

⁴ A homogeneous mixture has particles spread evenly throughout the substance. Tea, root beer, and vinegar are examples of homogeneous mixtures. Each part of the mixture is exactly like every other part.

⁵ A solution is a homogeneous mixture with very tiny particles of a substance spread evenly throughout. A solution looks like a single substance. The particles will not settle out when the mixture sits for a while, and a filter cannot separate the particles. Salt water is a solution. A solution has the same properties throughout. If you took a small sample from the top, a sample from the middle, and a sample from the bottom, all three would contain the same mixture.

⁶ Within a solution, one substance is dissolved in another substance. The substance that dissolves is called a solute. The substance into which a solute dissolves is called a solvent. Solutions are not always in liquid form, however. Some gases and solids are also considered solutions. The air we breathe is a solution containing oxygen, carbon dioxide, and some trace gases dissolved in nitrogen. Bronze is a solution of the metals copper and tin.

⁷ A colloid is a heterogeneous mixture with particles of a size between that of a solution and a suspension. The particles do not settle out with gravity and cannot be filtered out. Examples of a colloid mixture are fog, clouds, cheese, jam, and whipped cream.

⁸ Solubility is the ability of a substance to dissolve in another substance. Sugar is a soluble substance that dissolves easily in water. Carbon dioxide is soluble. It is dissolved in soda to make it "fizz." Hot tea will dissolve more sugar than cold tea. But cold soda will dissolve more carbon dioxide than warm soda. Temperature of the substance affects the solubility. Pressure also affects solubility. What happens when you open a can of soda? Carbon dioxide dissolved in the liquid escapes rapidly from the can. Carbon dioxide is more soluble at higher pressures. When you open the can, you decrease the pressure on the gas, and it comes out of the solution.

Mixtures

<p>1. A mixture is a blend of two or more substances that have not _____.</p> <p><input type="radio"/> A Been mixed together</p> <p><input type="radio"/> B Combined chemically</p> <p><input type="radio"/> C Dissolved</p>	<p>2. Which type of mixture's particles are not spread evenly throughout?</p> <p><input type="radio"/> A Heterogeneous mixture</p> <p><input type="radio"/> B Homogeneous mixture</p> <p><input type="radio"/> C Colloid</p>
<p>3. Which type of mixture's particles are spread evenly throughout?</p> <p><input type="radio"/> A Heterogeneous mixture</p> <p><input type="radio"/> B Homogeneous mixture</p> <p><input type="radio"/> C Colloid</p>	<p>4. The particles in a suspension can be _____.</p> <p><input type="radio"/> A Seen with the eye or a microscope</p> <p><input type="radio"/> B Separated out with filter paper</p> <p><input type="radio"/> C Separated by the force of gravity</p> <p><input type="radio"/> D All of the above</p>
<p>5. Which type of mixture looks like a single substance and cannot be separated with filter paper?</p> <p><input type="radio"/> A Colloid</p> <p><input type="radio"/> B Heterogeneous mixture</p> <p><input type="radio"/> C Solution</p>	<p>6. The substance dissolved in a solution is called the _____.</p> <p><input type="radio"/> A Solvent</p> <p><input type="radio"/> B Suspension</p> <p><input type="radio"/> C Solute</p>
<p>7. What is a colloid?</p> <p><input type="radio"/> A A mixture whose particles do not settle out with gravity and cannot be filtered out</p> <p><input type="radio"/> B A heterogeneous mixture with particles of a size between that of a solution and a suspension</p> <p><input type="radio"/> C Both A and B</p>	<p>8. What is solubility?</p> <p><input type="radio"/> A The ability of a liquid to dissolve another substance</p> <p><input type="radio"/> B The ability of a substance to mix with other substances</p> <p><input type="radio"/> C The ability of a substance to dissolve in another substance</p>

