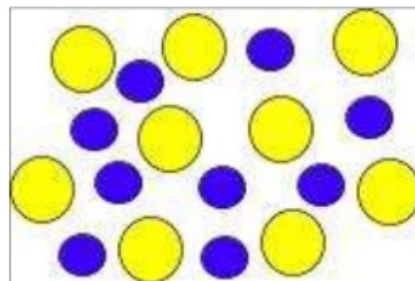


Mechanical Mixtures

Mixtures

Mixtures are made of two or more substances that are not chemically combined. They are combined physically and the substances combined together retain their original chemical identity. Mixtures can be in the form of solids, liquids, and/or gases, in any combination.



An example of a liquid mixture is vinegar and water. These will form a homogenous mixture because you will not be able to see the individual components. Two solids, salt and sand will form a heterogenous mixture. You will be able to see each component even after you mix them together. Brass is a solid homogenous mixture of copper and zinc.



Soft drinks are a mixture of all three states of matter. A liquid, water, is mixed with a solid, sugar and flavouring that could be solid or liquid. These ingredients are mixed with carbon dioxide, a gas, to give the drink bubbles. Air is a mixture of gases including nitrogen, carbon dioxide and oxygen.

Mechanical Mixtures

Mixtures can be classified as mechanical mixtures or solutions. Mechanical mixtures are heterogenous mixtures. You can see the components after you have combined the components. When you make a salad, you combine the ingredients, but you can still see them separately and they maintain their own properties.



The oil and vinegar salad dressing you use on your salad is also a heterogenous or mechanical mixture because the components don't mix, they maintain their own properties.

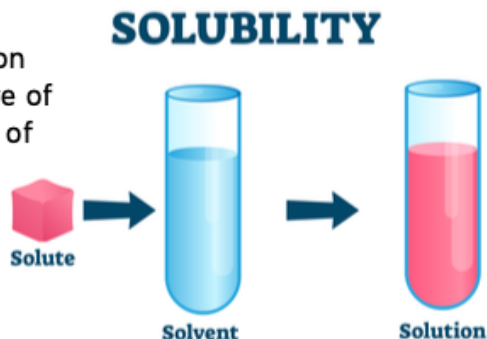
Another example of a mechanical mixture is asphalt. The components, gravel, sand and bitumen form together and make a strong solid road surface, however, you can still see the individual components of the asphalt.

Solutions

Solutions

A **solution** is a homogenous mixture. Therefore, a solution looks like a single pure substance. It is a uniform mixture of two or more pure substances. There are two main parts of a solution.

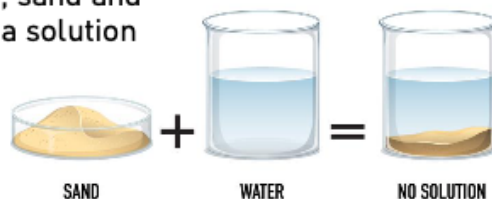
1. A **solute** which is the substance that is being dissolved into the other substance. The solute is the smaller part of a solution. Salt is a solute because it dissolves into water.
2. A **solvent** which is the substance that dissolves the other substance. The solvent is the larger part of the solution, the part of the solution into which the solute dissolves.



How Do Solutions Form?

When particles of one substance are more attracted to particles of another substance than they are to themselves, they will form a solution. Particles on the surface of the solute will break away and begin to fill the spaces between the solvent particles until all the solute particles are evenly mixed between the solvent particles.

The process of a solute mixing with a solvent is known as **dissolving**. Not all substances dissolve in other substances. For example, sand and water are two separate substances that will not form a solution because the sand will not dissolve in the water.



Water and Water Pollution

Water dissolves more different substances than any other solvent. Because water is the most common solvent in solutions it is called the **universal solvent**. Water does not dissolve everything. Oils and fats are not water soluble.

Our bodies are 70 percent water. The water in our bodies is a solvent that can carry calcium, potassium, oxygen and salt to name a few of the essential nutrients our bodies need to function. Blood is a solution made of the water (solvent), salt (solute), and proteins (solute).

Seventy percent of the earth's surface is covered by water. Solutes in the water can be absorbed by plants and living things. Fertilizer, pesticides, waste from mining, sewage and household products put down the drain are all solutes that can be dissolved in water causing water pollution.

Solid Solutions

Solutions that are solids have both solid solutes and solid solvents. Pure gold is 24 Karat gold. It is a pure substance. 14 Karat gold has 14 parts gold to 10 parts other metals. To make a solution both metals are heated and mixed together into a homogenous mixture. Gold is the solvent and the other metals are the solutes.