

Be REFLECTIVE: Review your learning



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CHEMISTRY: Separating mixtures

Name: _____

| Key word | Definition |
|----------------|---|
| Element | a substance that cannot be broken down in to other substances |
| Atom | smallest part of an element. Every element is made up of one atom/ all atoms in an element are the same |
| Compound | is made of two or more elements chemically combined. E.g. carbon dioxide & water. |
| Mixture | is made of two or more elements/ compounds not chemically combined |
| Molecule | a group of two or more atoms strongly joined together e.g. O ₂ . Weak forces hold molecules together |
| Pure | A material that is composed of only one type of particle e.g. elements or compounds |
| Impure | A material that is composed of more than one type of particle e.g. a mixture |
| Solution | A mixture of a solute dissolved in a solvent |
| Solute | The solid or gas that's dissolved in a liquid |
| Solvent | The substance, usually a liquid that dissolves other substances |
| Evaporation | The change of state from liquid to gas that occurs when particles leave the surface of the liquid only |
| Distillation | A process for separating the parts of a liquid solution. The solvent is heated and the gas is collected and cooled |
| Filtration | The act of pouring a mixture through filter paper, in attempts to separate pieces of a solid that are mixed with a liquid or solution |
| Chromatography | A technique used to separate mixtures of coloured compounds |

| Pure substances and mixtures | | |
|-----------------------------------|--|---|
| Pure mixture of elements | | Pure substances have a fixed melting and boiling point. |
| Pure mixture of compounds | | |
| Mixture of elements and compounds | | Mixtures (impure substances) do not have a fixed melting point. |
| Mixture of elements | | |
| Mixture of compounds | | |

| Solutions | | |
|------------|--|---|
| Solutions | Sugar is soluble in water. This means it dissolves in water. The resulting mixture of the solute (sugar) and solvent (water) particles is called the solution. | <p>Particles in solid sugar Particles in liquid water Particles in sugar solution</p> |
| Dissolving | During dissolving, the solvent particles surround the solute particles and move them away so they are spread out in the solvent. | |

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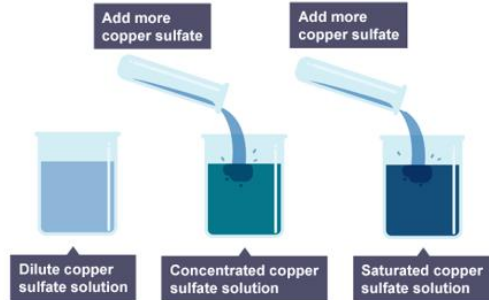
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Solubility

A **saturated solution** is a solution which no more solute will dissolve. The solution contains the maximum mass of a substance that will dissolve.

There is always some undissolved substance in the container.



Insoluble

Substances that cannot dissolve in water

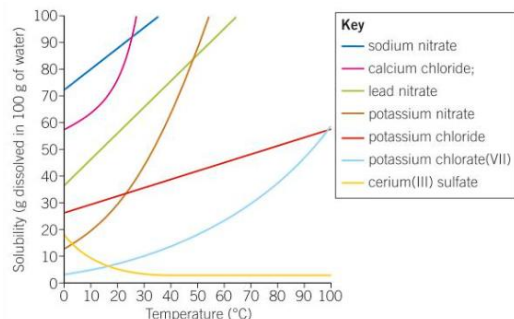
Solubility

The maximum mass of solute that dissolves in 100g of water.

Solubility curves

Every substance has a different solubility as shown by the solubility curve opposite.

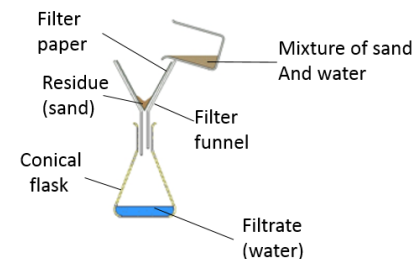
Most substances get more soluble as temperature increases.



Separating techniques

Filtration

If you have a mixture of an insoluble solids and a liquid then the mixture can be filtered.

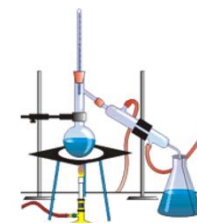


Evaporation

Evaporation separates salt from sea water. Once all of the water particles have left the **surface of the solution**, solid salt remains.



Salt has a much higher boiling point than water. You can use the difference in properties to separate the two substances by **distillation**. Uses boiling and condensing to separate substances with different boiling points.



Simple **chromatography** is carried out on paper. It can be used to separate dyes in food colourings. A spot of the mixture is placed near the bottom of the chromatography paper. As the solvent soaks up the paper it carries the mixtures with it. Different components of the mixture will move at different rates which separates the mixture out.

