

Box 1: Keywords

Chromatography	A technique to separate mixtures of liquids that are soluble in the same solvent
Dissolve	The mixing of a solute with a solvent to make a solution
Distillation	A technique that uses evaporation and condensation to obtain a solvent from a solution
Filtrate	The liquid or solution that collects in the container after the mixture has passed through the filter paper.
Filtration	A way of separating pieces of solid that are mixed with a liquid or solution by pouring through filter paper
Insoluble	A substance that cannot dissolve in a solvent
Mixture	A mixture is made up of substances that are not chemically joined together
Residue	The solid that collects in the filter paper
Saturated	A solution in which no more of the solute will dissolve.
Solvent	The liquid in which a solid or gas dissolves
Solute	The solid or gas that dissolves in a liquid
Soluble	A substance that can dissolve in a certain solvent
Solution	A mixture of a liquid with a solid or a gas. All parts of the mixture are the same.

Box 2: Mixtures, Solutions and Solubility

Mixtures are different substances found together, but not chemically bonded. This means the different substances can be separated from each other.

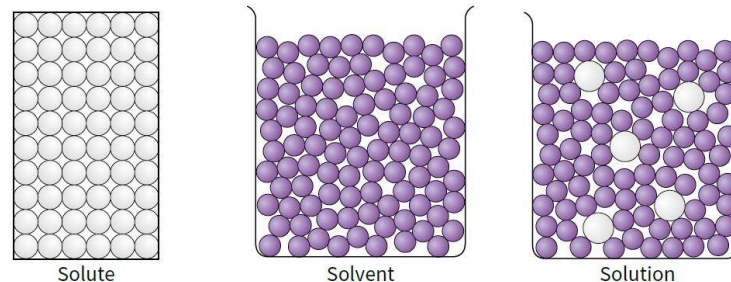


Solutions

Solutions are a type of mixture made of two parts:

1. Solvent: the liquid that makes up most of the solution.
2. Solute: the substance that is added to the solvent and dissolves into it.

The solute usually starts as a solid, and its particles break away from each other and move into the solvent.



Solubility

The solubility of a solute means how much solute can dissolve in a certain volume of solvent at a specific temperature.

- Different solutes have different solubilities in different solvents.
- Increasing the temperature often increases the solubility.
- Soluble substances can dissolve, insoluble substances cannot.

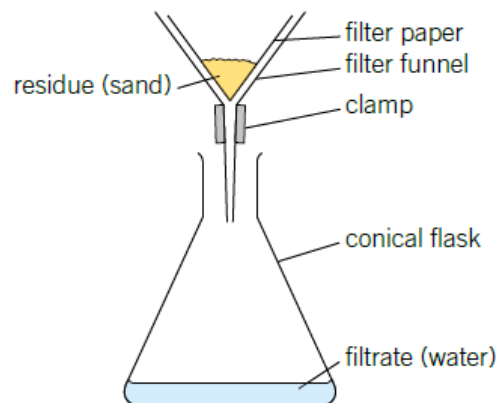
Saturated: when so much solute has been added to the solvent that no more can dissolve, we say the mixture is saturated.



Box 3: Filtration

A method to separate a mixture of an insoluble solid and a liquid.

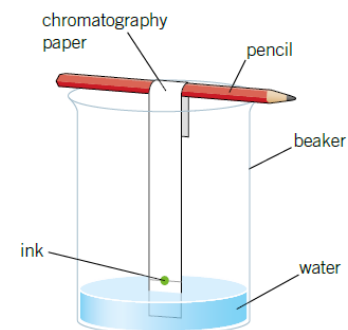
1. Filter paper has extremely small holes in it.
2. Particles in a liquid or solution are so tiny that they can fit through the holes.
3. Larger particles of the solid are too big to fit through the holes and are held back by the paper.



Box 5: Chromatography

A method used to separate mixtures that are soluble in the same solvent.

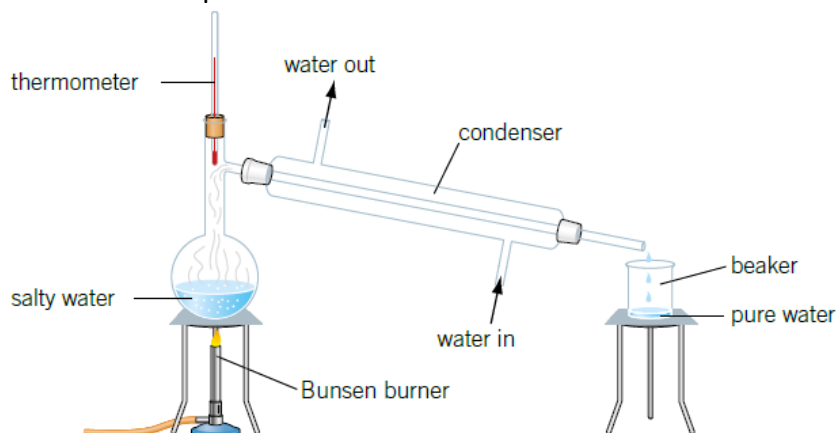
1. A mixture like ink is placed on a piece of paper, which is placed in a solvent.
2. As the solvent moves up the paper it separates all the different parts of the ink



Box 4: Distillation

A method that separates a solute and a solvent while keeping the solvent.

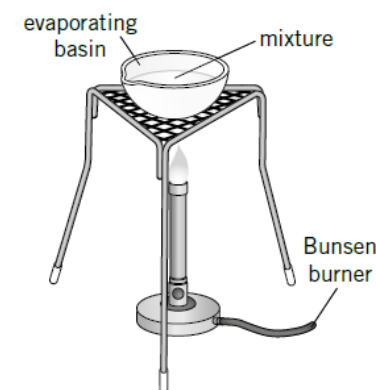
1. The solution is heated so the solvent turns into a gas (it evaporates).
2. The gas is then cooled down (it condenses) in a condenser, where it turns back into a liquid and can be collected.



Box 6: Evaporation

A method to separate a solute and a solvent, keeping the solute.

1. The solution is heated then left in an evaporating basin until all the solvent evaporates.
2. The solute is left behind as a solid.



Box 8: Pathway

Previous knowledge: KS2: filtering, sieving or a magnet to separate some mixtures, Y7 particle model, Y7 compounds and mixtures.

Future links: Chemical analysis, making salts, purifying water

Careers: chemical engineers, water treatment workers, brewers, chemical analysts, workers for the Environment Agency, chefs

Box 7: Key skills

Select the appropriate separation technique for different mixtures
Suggest advantages and disadvantages of different separation techniques

Box 9: Cross curricular links

Biology – chromatography of chlorophyll
Geography – water purification