

Atoms and Elements	Compounds and mixtures	Pure and impure substances	Planning solubility	Investigating solubility	Filtration and Crystallisation Theory	Filtration and Crystallisation Practical	Distillation	Chromatography
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Key Words

Key Word	Definition
Element	What all substances are made of, and which only contain one type of atom
Compound	Pure substances made up of two or more elements strongly joined together
Mixture	Two or more pure substances mixed together, whose properties are different to the individual substances.
Solvent	A substance, normally a liquid, that dissolves another substance
Solute	A substance that can dissolve in a liquid
Filtration	Separating substances using a filter to produce a filtrate (solution) and residue.
Distillation	Separating substances by boiling and condensing liquids.
Chromatography	Used to separate different coloured substances.

Misconceptions

A pure substance in chemistry contains a single element or a single compound.

Evaporation can take place lower than the boiling point of a substance.

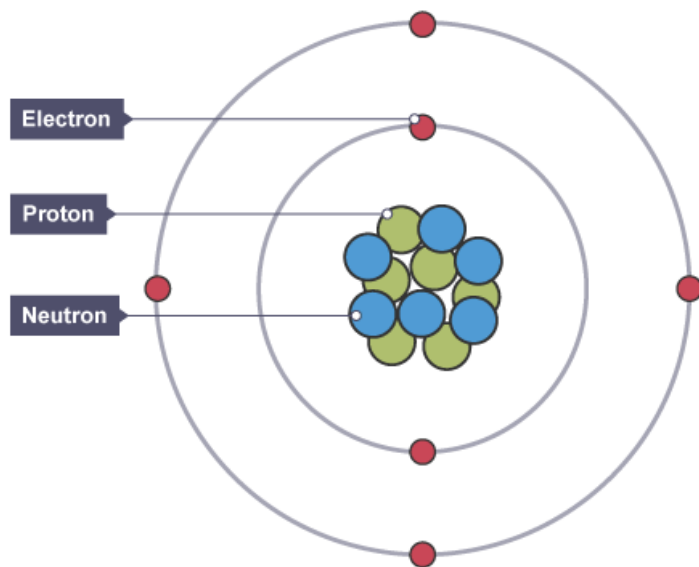
Key questions

Explain how to separate a mixture depending on its contents

Describe the difference between an element, compound and a mixture.

Atoms

Atoms have protons and neutrons in the nucleus and electrons are on the shells.



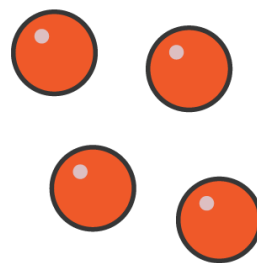
Particle	Relative Mass	Relative Charge
Proton	1	+1
Neutron	1	0
Electron	Very small	-1

Pure and impure substances

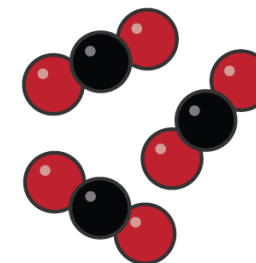
A pure substance is a single element or compound, not mixed with **any other** substance.

An impure substance is a mixture.

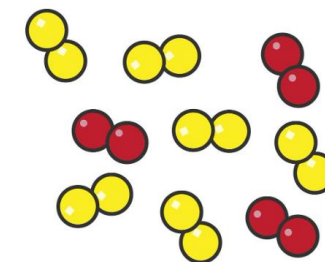
Elements, compounds and mixtures



Elements - What all substances are made of, and which only contain one type of atom



Compounds - Pure substances made up of two or more elements strongly joined together



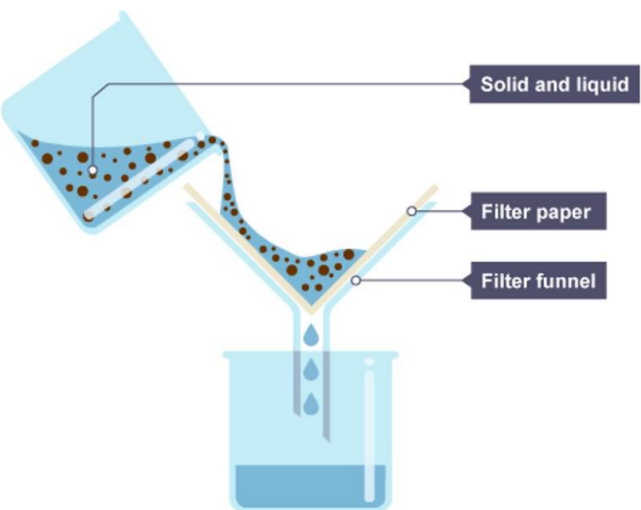
Mixtures - Two or more pure substances mixed together, whose properties are different to the individual substances. Can be separated.

Solubility

Solubility is a measure of the maximum mass of a solute that dissolves in a certain volume of solvent.

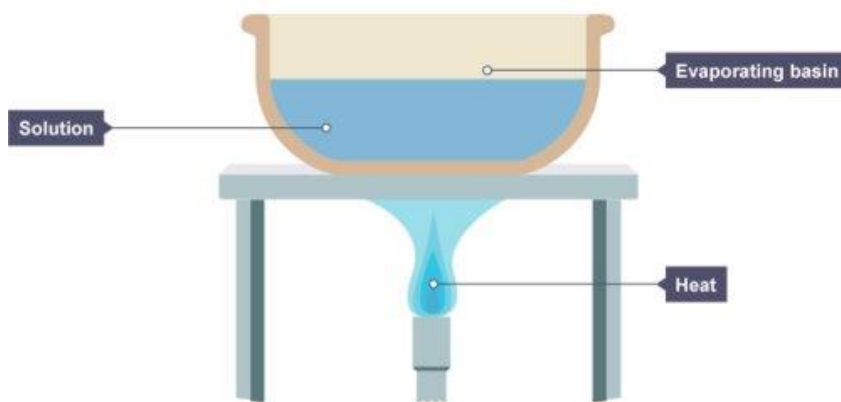
Keyword	Definition
Solute	A substance that can dissolve in a liquid
Solvent	A substance, normally a liquid that dissolves another substance
Solution	Mixture formed when a solvent dissolves a solute
Soluble	A substance that will dissolve in a liquid
Insoluble	A substance that will not dissolve in a liquid

Filtration and Crystallisation



Filtration – used to separate an **insoluble solid** from a solution e.g., sand and water

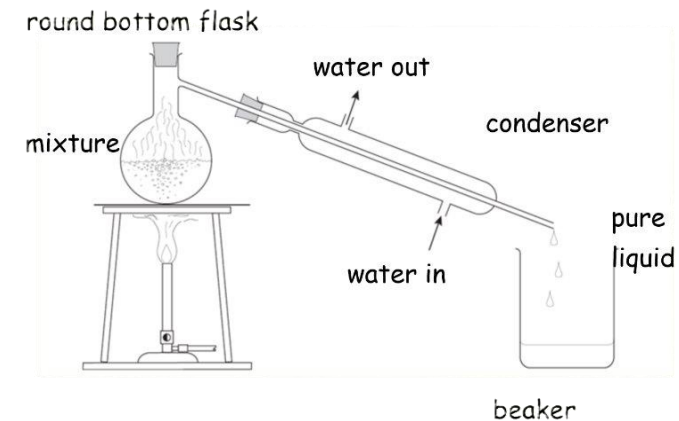
Crystallisation – used to separate a **soluble solid** from a solution e.g., salt and water



Distillation

Distillation is a method of separating out a mixture of liquids with different boiling points

The substance with the lowest boiling point evaporates in the round bottom flask and condenses in the condenser to be collected as a pure substance



Chromatography

Paper chromatography is a separation technique which separates different coloured substances.

The further a substance travels the more soluble it is.

A pure substance only has one dot in a vertical line.

You can determine what substance is in an unknown substance by comparing the distance travelled by the substances.

