

Pure substances	<i>A pure substance is a single element or compound, not mixed with any other substance.</i>	Pure substances melt and boil at specific temperatures. Heating graphs can be used to distinguish pure substances from impure.
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Element	Colour flames
Lithium	<i>Crimson</i>
Sodium	<i>Yellow</i>
Potassium	<i>Lilac</i>
Calcium	<i>Orange-red</i>
Copper	<i>Green</i>

Sodium hydroxide	<i>Is added to solutions to identify metal ions.</i>
White precipitates	<i>Aluminium, calcium and magnesium ions form this with sodium hydroxide solution.</i>
Coloured precipitates	<i>Copper (II) = blue Iron (II) = green Iron (III) = brown</i>

Pure substances

Purity, formulations and chromatography

Flame tests (chem only)

Metal hydroxides (chem only)

Carbonates, halides and sulfates (chem only)

AQA Chemical analysis

Identification of ions (CHEMISTRY ONLY)

Identification of common gases

Flame emission spectroscopy

Instrumental methods

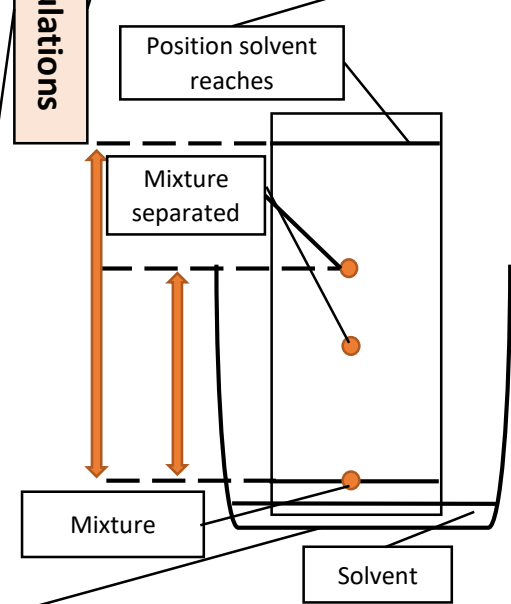
Melting point of a pure substance

Melting point of an impure substance

Formulation	<i>A formulation is a mixture that has been designed as a useful product.</i>
How are formulations made?	<i>By mixing chemicals that have a particular purpose in careful quantities.</i>
Examples of formulations.	<i>Fuels, cleaning agents, paints, medicines and fertilisers.</i>

Formulations

Chromatography



Chromatography	<i>Can be used to separate mixtures and help identify substances.</i>	Involves a mobile phase (e.g. water or ethanol) and a stationary phase (e.g. chromatography paper).
R_f Values	<i>The ratio of the distance moved by a compound to the distance moved by solvent.</i>	$R_f = \frac{\text{distance moved by substance}}{\text{distance moved by solvent}}$
Pure substances	<i>The compounds in a mixture separate into different spots.</i>	This depends on the solvent used. A pure substance will produce a single spot in all solvents whereas an impure substance will produce multiple spots.

Gas	Test	Positive result
Hydrogen	<i>Burning splint</i>	'Pop' sound.
Oxygen	<i>Glowing splint</i>	Re-lights the splint.
Chlorine	<i>Litmus paper (damp)</i>	Bleaches the paper white.
Carbon dioxide	<i>Limewater</i>	Goes cloudy (as a solid calcium carbonate forms).

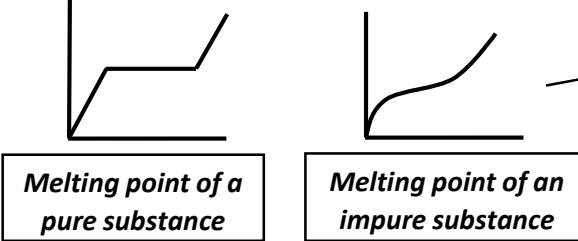
Instrumental methods	<i>Methods that rely on machines</i>	Can be used to identify elements and compounds. These methods are accurate, sensitive and rapid.
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Flame emission spectroscopy	<i>An instrumental method used to analyse metal ions.</i>	The sample solution is put into a flame and the light that is given out is put through a spectroscope. The output line spectrum, can be analysed to identify the metal ions in the solution. It can also be used to measure concentrations.
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Pure substances		
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Sodium hydroxide	
White precipitates	
Coloured precipitates	



Pure substances

Purity, formulations and chromatography

Flame tests (chem only)

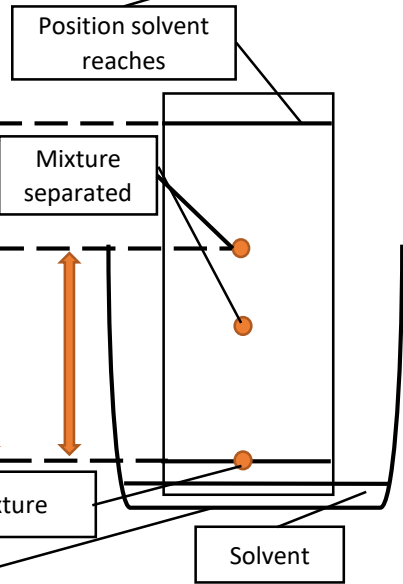
Metal hydroxides (chem only)

Carbonates, halides and sulfates (chem only)

Formulation	
How are formulations made?	
Examples of formulations.	

Formulations

Chromatography



AQA Chemical analysis

Identification of ions (CHEMISTRY ONLY)

Carbonates	
Halide ions	
Sulfate ions	

Identification of common gases

Flame emission spectroscopy

Instrumental methods

Chromatography		
R _f Values		
Pure substances		

Gas	Test	Positive result

Instrumental methods		
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Flame emission spectroscopy		
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