

AQA C8 Chemical Analysis
TRIPLE CHEMISTRY
RP – Chromatography and Ion Testing

Gas Tests

Gas	Test	Positive Result
hydrogen	burning splint	pop sound
oxygen	glowing split	relights glowing split
chlorine	damp blue litmus paper	bleaches the paper white
carbon dioxide	bubble gas through limewater	limewater goes cloudy

Flame Colours

Element	Flame
lithium	crimson
sodium	yellow
potassium	lilac
calcium	orange-red
copper	green

Tests for positive ions

Ion	Precipitate with sodium hydroxide
copper (II)	blue
iron (II)	green
iron (III)	brown
calcium	white
magnesium	white
aluminium	white, but redissolves in excess sodium hydroxide

Tests for negative ions

Ion	Test/Result
carbonates	React with dilute acids to form carbon dioxide
halide ions	Produce precipitates with silver nitrate in the presence of nitric acid. Cl = white, Br = cream, I = yellow
sulfate ions	Produce a white precipitate with barium chloride and hydrochloric acid.

Flame emission spectroscopy

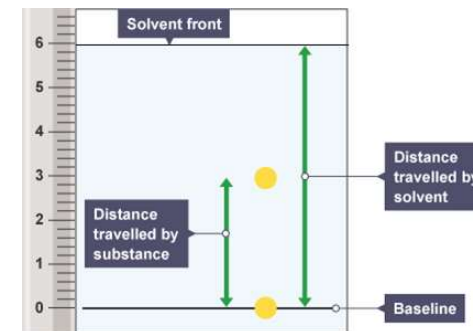


instrumental methods	Methods that rely on machines	Instrumental methods are accurate, sensitive and rapid.
flame emission spectroscopy	Instrumental method to identify ions. Each ion gives a unique pattern of lines.	The sample solution is put into a flame and the light that is given out is put through a spectroscope. The line spectrum can be analysed to identify the metal ions in the solution. It can also be used to measure concentrations.

Purity, Mixtures and Formulations

A pure substance is a single element or compound, not mixed with any other substance. Pure substances melt and boil at specific temperatures. Mixtures melt and boil over a range.

Formulations are mixtures that have been designed as a useful product. For example, fuels, cleaning agents, paints, medicines and fertilisers.



Chromatography

chromatography	Can be used to separate mixtures and help identify substances.	Involves a mobile phase (e.g. water or ethanol) and a stationary phase (e.g. chromatography paper).
R_f Values	The ratio of the distance moved by a compound to the distance moved by solvent.	$R_f = \frac{\text{distance moved by substance}}{\text{distance moved by solvent}}$
How does it work?	Different solubility in the mobile phase (e.g. water)	Substances that are more soluble in the mobile phase travel faster up the paper. This separates substances. Pure compounds give a single spot, but mixtures do not.