

**AQA C8 Chemical Analysis  
Combined HIGHER  
RP - Chromatography**

**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.

These are all formulations



**Gas tests**

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

Test for Oxygen  $O_2$

Oxygen relights a glowing splint

Test for Hydrogen  $H_2$

Hydrogen makes a squeaky pop with a lighted splint

POP!

Test for Carbon dioxide  $CO_2$

Carbon dioxide gas

Limewater (clear/colourless)

Limewater (cloudy/milky)

Test for Chlorine  $Cl$

Chlorine bleaches damp blue litmus paper

Blue

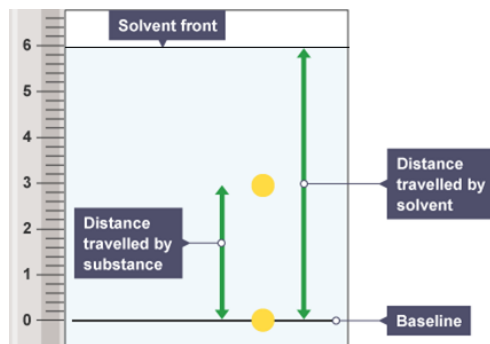
Red

White

Chlorine gas



Ice melts at exactly  $0^{\circ}C$   
Water boils at exactly  $100^{\circ}C$



**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.