

## 1. Keywords

Pure substance	A single element or compound not mixed with any other substance. They have a specific melting and boiling point
Melting point	The temperature at which a solid turns to a liquid
Boiling point	The temperature at which a liquid turns to a gas
Formulation	A mixture that has been designed as a useful product eg fuels, cleaning agents, medicines and fuels
Chromatography	Use to separate mixtures and identify substances
Rf	(distance moved by substance)/(distance moved by solvent)

## 2. Identification of common gases

Gas	Test	Observation
Hydrogen	Burning splint	Squeaky pop
Oxygen	Glowing splint	Relights
Carbon dioxide	Limewater	Goes cloudy
Chlorine	Damp Litmus paper	Bleached (goes white)

## 3. Flame tests (TRIPLE ONLY)

Metal ion	Colour
Lithium (Li <sup>+</sup> )	Crimson
Sodium (Na <sup>+</sup> )	Yellow
Potassium (K <sup>+</sup> )	Lilac
Calcium (Ca <sup>2+</sup> )	Orange-red
Copper (Cu <sup>2+</sup> )	Green

Flame emission spectroscopy: A sample is put in a flame and the light given out passed through a spectroscope that can identify the ions in the sample

## 4. Metal hydroxides (TRIPLE ONLY)

Metal ion	Observation with addition of sodium hydroxide
Aluminium (Al <sup>3+</sup> )	White precipitate which dissolves in excess
Calcium (Ca <sup>2+</sup> )	White precipitate
Copper (Cu <sup>2+</sup> )	Blue precipitate
Iron II (Fe <sup>2+</sup> )	Green precipitate
Iron III (Fe <sup>3+</sup> )	Brown precipitate

## 5. Testing for negative ions (TRIPLE ONLY)

Negative ion	Reagent	Observation
Carbonate	Add carboxylic acid	Fizzes releasing Carbon dioxide
Halide	Add silver nitrate	Cl <sup>-</sup> = white precipitate Br <sup>-</sup> = cream precipitate I <sup>-</sup> = yellow precipitate
Sulfate	Add Barium Chloride	White precipitate