

TEST FOR CATIONS		
Cation	Effect of aqueous sodium hydroxide (NaOH _(aq))	Effect of aqueous ammonia (NH _{3(aq)})
Aluminium (Al ³⁺)	White precipitate, soluble in excess giving a colourless solution	White precipitate insoluble in excess
Ammonium (NH ₄ ⁺)	Ammonia produced on warming	-
Calcium (Ca ²⁺)	White precipitate, insoluble in excess	No precipitation or very slight white precipitate
Chromium (III) (Cr ³⁺)	Green precipitate, soluble in excess	Grey-green precipitate, insoluble in excess
Copper (Cu ²⁺)	Light blue precipitate, insoluble in excess	Light blue precipitate, soluble in excess, giving a dark blue solution
Iron (II) (Fe ²⁺)	Green precipitate, insoluble in excess	Green precipitate, insoluble in excess
Iron (III) (Fe ³⁺)	Red-brown precipitate, insoluble in excess	Red-brown precipitate, insoluble in excess
Zinc (Zn ²⁺)	White precipitate, soluble in excess, giving a colourless solution	White precipitate, soluble in excess, giving a colourless solution

TEST FOR ANIONS		
Anion	Test	Test result
Carbonate (CO ₃ ²⁻)	Add dilute acid	Effervescence, carbon dioxide produced
Chloride (Cl ⁻)	Acidify with dilute nitric acid, then add aqueous silver nitrate	White precipitate
Bromide (Br ⁻)	Acidify with dilute nitric acid, then add aqueous silver nitrate	Cream precipitate
Iodide (I ⁻)	Acidify with dilute nitric acid, then add aqueous silver nitrate	Yellow precipitate
Nitrate (NO ₃ ⁻)	Add aqueous sodium hydroxide, then aluminium foil; warm carefully	Ammonia produced
Sulphate (SO ₄ ²⁻)	Acidify, then add aqueous barium nitrate	White precipitate
Sulphite (SO ₃ ²⁻)	Add dilute hydrochloric acid, warm gently and test for the presence of sulphur dioxide	Sulphur dioxide produced will turn acidified aqueous potassium manganate(VII) from purple to colourless

TEST FOR GASES	
Gas	Test and test result
Ammonia (NH ₃)	Turns damped, red litmus paper blue
Carbon dioxide (CO ₂)	Turns limewater milky (cloudy)
Chlorine (Cl ₂)	Bleaches damp litmus
Hydrogen (H ₂)	“pops” with a lighted splint (squeaky pop-sound)
Oxygen (O ₂)	Relights a glowing splint
Sulphur dioxide (SO ₂)	Turns acidified aqueous potassium manganate(VII) from purple to colourless

FLAME TEST FOR METAL IONS	
Metal ion	Flame colour
Lithium (Li ⁺)	Red
Sodium (Na ⁺)	Yellow
Potassium (K ⁺)	Lilac
Copper II (Cu ²⁺)	Blue-green