Test for Gases

Gas	Test	Result
Hydrogen	Lighted Splint	Squeaky Pop
Oxygen	Glowing Splint	Relights
Ammonia	Damp Red Litmus	Turns Blue
Chlorine	Damp Blue Litmus	Turns Red then White
Carbon Dioxide	Bubble through lime water	Turns Cloudy

effervescence

Test for Positive Ions

Ions	Test	Colour	Result
Cu^{2+}	Add NaOH	Blue Ppt	$Cu(OH)_2$
Fe^{2+}	Add NaOH	Green Ppt	$Fe(OH)_2$
Fe^{3+}	Add NaOH	Brown Ppt	$Fe(OH)_3$
NH_4^+	Add NaOH (warm)	Ammonia Gas	$NH_3 + H_2O$

Flame Tests:

- Clean nichrome wire with Hydrochloric Acid (HCl).
- Dip in sample hold in blue Bunsen flame.

Calcium (Ca)	Red - Orange
Copper (Cu)	Blue - Green
Potassium (K)	Lilac
Lithium (Li)	Red
Sodium (Na)	Yellow

Test for Presence of Water:

- White anhydrous copper(II) sulfate turns blue in the presence of wate

Test for purity of sample of water:

- Boiling point of water is 100°C if it is pure.

Testing for Carbonates (CO_3^{2-})

- Add Hydrochloric Acid (HCL)
- Acid + Carbonate —> Salt + Water + CO_2
- Bubble through lime water - If CO2 is present, limewater becomes cloudy.

Testing for Sulfates (SO_4^{2-})

- Add Barium Chloride ($BaCl_2$)
- If sulfate are present, becomes Barium Sulfate, a white precipitate.

Testing for Halides (Cl^-, Br^-, I^-)

- Add Nitric Acid (HNO_3) - removes CO_3^{2-}
- Add Silver Nitrate ($AgNO_3$)

Anion	Colour	Result	
Cl^-	White Ppt	AgCl	Silver Chloride
Br^-	Cream Ppt	AgBr	Silver Bromide
I^-	Yellow Ppt	AgI	Silver Ioidide