7. Chemical Tests

2.44

Test for gas

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

2.45

Flame tests are carried out with blue flame

2.46

Flame tests:

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

2.47

test for cations

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	$NH_3 + H_2O$

2.48

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

2.49

Presence of water tested by anhydrous copper (II) sulfate

2.5

If water is pure, it boils at 100 C