

<u>Ions</u>	<u>Tests</u>	<u>Test results</u>
K+	Flame test	Transient violet/lilac colour
Li+	Flame test	Crimson red colour
Na+	Flame test	Intense orange-yellow color
Ba <sup>2+</sup>	Flame test	Apple green colour
Ca <sup>2+</sup>	Flame test	Brick-red colour
Ca <sup>2+</sup>	Add NH <sub>3</sub>	No precipitate or a very slight white precipitate
Ca <sup>2+</sup>	Add NaOH	A white precipitate, <u>insoluble</u> in excess
Cu <sup>2+</sup>	Add NH <sub>3</sub>	A light blue precipitate, <u>soluble</u> in excess to give a deep blue solution
Cu <sup>2+</sup>	Add NaOH	A light blue precipitate, <u>insoluble</u> in excess.
Fe <sup>2+</sup>	Add NH <sub>3</sub>	A dirty green precipitate. <u>Insoluble</u> in excess
Fe <sup>2+</sup>	Add NaOH	A dirty green precipitate. <u>Insoluble</u> in excess
Fe <sup>3+</sup>	Add NH <sub>3</sub>	A reddish-brown precipitate, <u>insoluble</u> in excess
Fe <sup>3+</sup>	Add NaOH	A reddish-brown precipitate, <u>insoluble</u> in excess
Zn <sup>2+</sup>	Add NH <sub>3</sub>	A white precipitate, <u>soluble</u> in excess
Zn <sup>2+</sup>	Add NaOH	A white precipitate, <u>soluble</u> in excess
Al <sup>3+</sup>	Add NH <sub>3</sub>	A white precipitate, slightly soluble in excess
Al <sup>3+</sup>	Add NaOH	A white precipitate, soluble in excess
NH <sub>4</sub> <sup>+</sup>	Warm with NaOH	Ammonia is given off, detected by its characteristic smell and by its turning damp red litmus paper blue.
CO <sub>3</sub> <sup>2-</sup>	Add dilute acid	Effervesce as carbon dioxide is given off, detected by its turning limewater milky
HCO <sub>3</sub> <sup>-</sup>	Add dilute acid	Effervesce as carbon dioxide is given off, detected by its turning limewater milky. HCO <sub>3</sub> <sup>-</sup> is distinguished from CO <sub>3</sub> <sup>2-</sup> by reaction with MgSO <sub>4</sub> solution. HCO <sub>3</sub> <sup>-</sup> gives no precipitate in the cold - a precipitate forms on boiling. CO <sub>3</sub> <sup>2-</sup> gives a precipitate in the cold
Cl <sup>-</sup>	Acidify with dilute nitric acid then add aqueous silver nitrate	A white precipitate
Br <sup>-</sup>	Acidify with dilute nitric acid then add aqueous silver nitrate	A cream/pale yellow precipitate
I <sup>-</sup>	Acidify with dilute nitric acid then add aqueous silver nitrate	A pale yellow precipitate
I <sup>-</sup>	Acidify with dilute nitric acid then add aqueous lead (II) nitrate	A yellow precipitate. (This precipitate dissolved in much hot water forming a colourless solution which yields golden spangles' on cooling
SO <sub>4</sub> <sup>2-</sup>	Acidify with dilute nitric acid then add aqueous barium chloride or nitrate	A white precipitate
SO <sub>3</sub> <sup>2-</sup>	Add dilute HCl	Effervesce as sulphur dioxide is given off, detected by its suffocating odour (good ventilation is essential) or by its turning filter paper moistened with acidified K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> from orange to green
NO <sub>3</sub> <sup>-</sup>	Add aqueous NaOH then aluminium foil and warm carefully	Ammonia is given off, detected by its characteristic smell and by its turning damp red litmus paper blue.