

Sodium hydroxide

- Aluminium, calcium and magnesium ions form a white precipitate with NaOH.
- Only aluminium's precipitate dissolves when excess NaOH is added.
- Copper(II) produces a blue precipitate
- Iron(II) produces a green precipitate
- Iron(III) produces a brown precipitate

Testing for carbonates

- Carbonates react with dilute acids to create carbon dioxide.
- This gas can be bubbled through limewater, if the limewater goes cloudy, the gas is CO₂.

Halide ions

- First add dilute nitric acid, followed by silver nitrate solution
- Chloride gives a white precipitate
- Bromide gives a cream precipitate
- Iodine gives a yellow precipitate
- (cats with brains can ideally yodel)

Sulfate ions

- First add dilute hydrochloric acid, followed by barium chloride solution
- A white precipitate will form.

Titration

How to carry out a titration:

1. Wash burette using dilute hydrochloric acid and then water
2. Fill burette to 100cm³ with acid with the meniscus' base on the 100cm³ line
3. Use 25cm³ pipette to add 25cm³ of alkali into a conical flask, drawing alkali into the pipette using a pipette filler
4. Add a few drops of a suitable indicator to the conical flask (eg: phenolphthalein which is pink when alkaline and colourless when acidic)
5. Add acid from burette to alkali until end-point is reached (as shown by indicator)
6. The titre (volume of acid needed to exactly neutralise the acid) is the difference between the first (100cm³) and second readings on the burette)
7. Repeat the experiment to gain more precise results