

WJEC (Wales) Chemistry GCSE

Specified Practical 2.2b

Titration of a strong acid against a strong base
using an indicator

[Methods are adapted from the [Royal Society of Chemistry](#) and the [AQA GCSE Chemistry required practical handbook](#)]

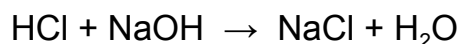
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Titration using an indicator

Aim

To carry out a **titration** of a strong acid against a strong base using an **indicator**. In this method, **sodium hydroxide** solution is titrated against **hydrochloric acid**. **Phenolphthalein** is used as the indicator.



Equipment list

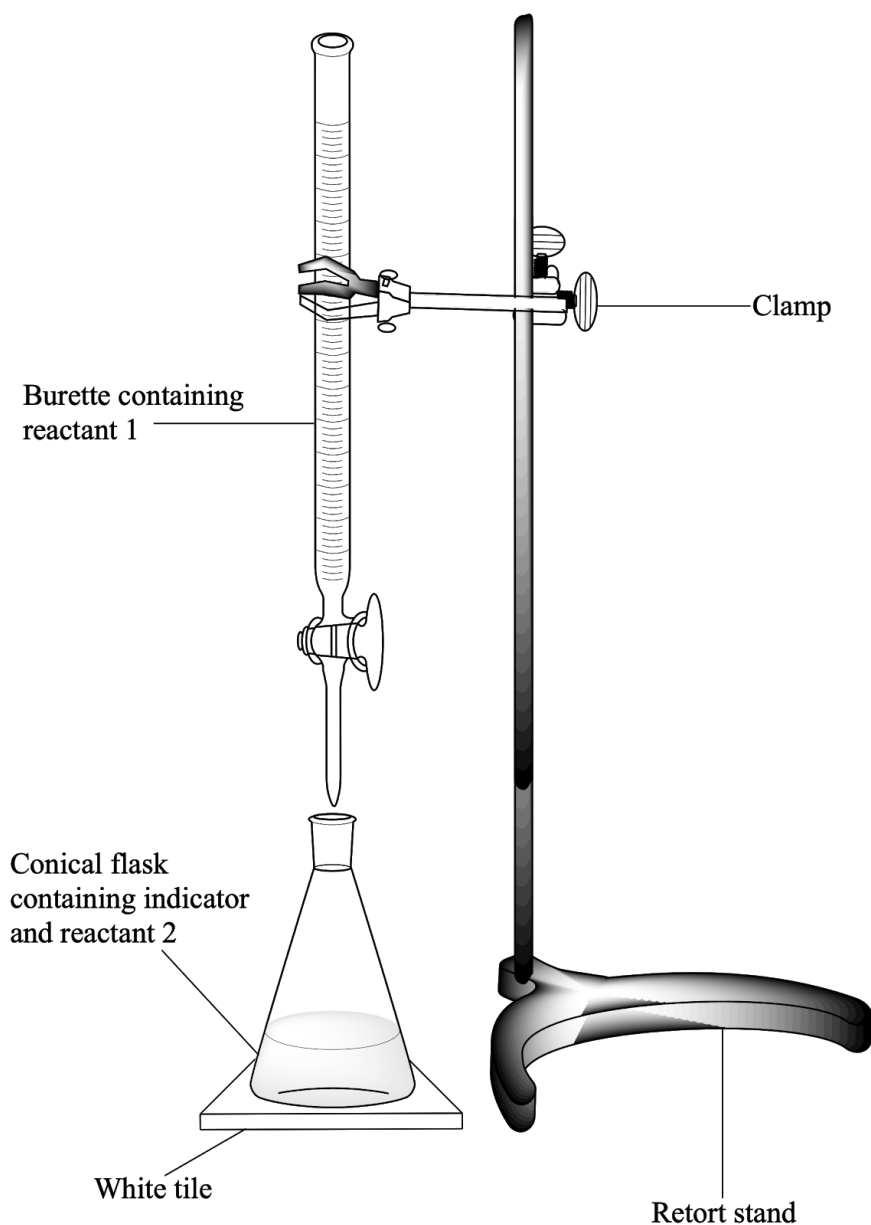
- 25 cm³ volumetric pipette
- Pipette filler
- 50 cm³ burette
- 250 cm³ conical flask
- Small funnel
- Clamp stand and clamp
- White tile
- Dilute sodium hydroxide solution
- Dilute hydrochloric acid
- Phenolphthalein indicator

Method

1. Use the **pipette** to measure 25 cm³ of sodium hydroxide into the **conical flask**.
2. Place the conical flask on a **white tile**.
3. Fill the **burette** with hydrochloric acid using the funnel. Run some acid into a waste beaker to remove the air bubble near the burette tap.
4. Record the **initial reading** of acid in the burette. Make sure to always take readings from the bottom of the meniscus.
5. Add 3 drops of **phenolphthalein** indicator to the conical flask.
6. Slowly open the burette tap while **swirling** the conical flask.
7. Add acid **dropwise** near the endpoint. At this point the colour will start to change slightly.
8. Close the burette when the indicator **colour change** occurs. The solution will turn from pink to colourless.
9. Record the final reading of acid in the burette and calculate the **titre** value. This is the volume of acid used to neutralise the alkali.
10. Repeat until you have **concordant** results. Concordant results are within 0.1 cm³ of each other.
11. Present the results in a table and calculate the **mean titre**. Do not include any anomalous results in the mean calculations.



Diagram



Safety Precautions

- Hydrochloric acid and sodium hydroxide are both corrosive. Wear safety goggles and clean up any spills. If any skin comes into contact with the solutions, wash the skin immediately.
- The glassware is very fragile. If any glassware breaks, clean it up immediately.

