

# C4 Titration required practical

AQA Separate Chemistry 8462 | Paper 1 extras | Foundation + Higher

## 1 Purpose and equipment

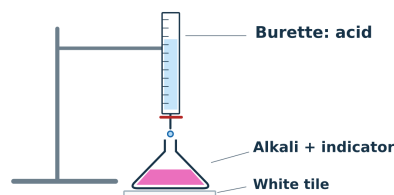


Find volumes of a strong acid and strong alkali that react exactly.

**A: pipette + filler** measures a fixed alkali volume into a conical flask.

**B: burette** delivers a variable acid volume. Wear eye protection.

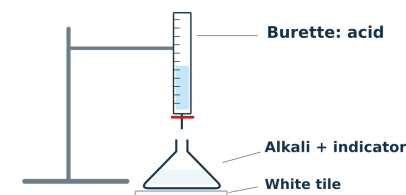
## 2 Prepare accurately



Rinse pipette with alkali; measure alkali into the flask. Add a few drops of a suitable indicator.

Rinse burette with acid, fill it and its tip, then remove the funnel. Record the initial reading.

## 3 Find the end-point



Place flask on a **white tile**; swirl while adding acid. Add **drop by drop** near the end. Stop at the first permanent colour change. With phenolphthalein, acid added to alkali changes pink → colourless.

## 4 Read and subtract

| Initial reading      | Final reading         |
|----------------------|-----------------------|
| 1.20 cm <sup>3</sup> | 24.60 cm <sup>3</sup> |

$$\text{Titre} = 24.60 - 1.20 = 23.40 \text{ cm}^3$$

Read the bottom of the meniscus at **eye level**. The burette scale increases downwards.

**Titre = final – initial reading.**

$$24.60 - 1.20 = 23.40 \text{ cm}^3.$$

Record appropriate precision.

## 5 Repeat and find a mean

Choose concordant accurate titres

| Rough                    | Run 1                    | Run 2                    | Run 3                    |
|--------------------------|--------------------------|--------------------------|--------------------------|
| 24.10<br>cm <sup>3</sup> | 23.40<br>cm <sup>3</sup> | 23.45<br>cm <sup>3</sup> | 23.40<br>cm <sup>3</sup> |

$$\text{Mean of runs 1-3} = 23.42 \text{ cm}^3$$

Do a rough run, then accurate repeats. Select **concordant** titres (commonly within 0.10 cm<sup>3</sup>; use the stated criterion).

Exclude the rough result. Calculate the mean of agreeing accurate titres.

## 6 Explain the choices

**White tile:** see colour change.

**Dropwise:** avoid overshooting.

**Swirl:** mix the solutions.

**Eye level:** reduce parallax.

**Remove funnel:** avoid extra drops entering the burette after the initial reading.

**Distilled-water rinse of flask walls:**

washes splashes into the mixture without adding acid or alkali.

Concentration calculations: Higher Tier.

**Required practical 2; section 4.4.2.5.**