

# Edexcel Chemistry A-Level

## Core Practical 02 - Preparation of a standard solution & titration

### Flashcards

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# What is a standard solution?



# What is a standard solution?

A standard solution is a solution of known concentration.



# How do you make a standard solution?



## How do you make a standard solution?

- Measure, using a balance, the mass of solid required.
- Transfer this to a volumetric flask and rinse the remaining weighing bottle content (with distilled water) into the flask so no solid is lost.
- Add a volume of distilled water to dissolve the solid. Swirl to mix.
- Then add more distilled water up to the line on the neck of the volumetric flask. Invert multiple times to mix.



What is the standard solution for this practical? How is it made?



What is the standard solution for this practical? How is it made?

- Diluted sulfamic acid
- Dissolve 2.5g solid sulfamic acid in 100 cm<sup>3</sup> of distilled water.
- Transfer to 250 cm<sup>3</sup> volumetric flask and fill up to line with distilled water.



# What is the weighing by difference technique?





## What is the weighing by difference technique?

- It is a method to weigh materials accurately.
- $\text{Mass of substance} = \text{Mass of weighing dish and substance} - \text{Mass of dish after substance has been transferred.}$



What equipment is used to carry out this titration?



## What equipment is used to carry out this titration?

- A pipette and pipette filler are used to accurately measure out the volume of NaOH before transferring it to a conical flask.
- A burette is used to add small volumes of sulfamic acid solution to the NaOH until the reaction has reached completion.



# How do you carry out this titration?



## How do you carry out a titration?

- Once the pipette has been used to place NaOH into the conical flask, fill the burette with the acid solution. Record initial volume.
- Add a few drops of methyl orange to the conical flask.
- Open the burette tap and allow the sulfamic acid to flow into the conical flask, swirling it to mix the contents.
- Close the burette tap once the expected colour change occurs. Use a white tile so the colour change is easy to identify.
- Record final burette volume.
- Repeat until you get concordant results, then calculate a mean titre.



# Why are acid-base indicators used?



# Why are acid-base indicators used?

To detect when a reaction reaches completion, usually by the presence of a colour change.



# What are concordant results?





What are concordant results?

Titres that are within  $0.1 \text{ cm}^3$  of each other.



How would you analyse the results from this titration?



## How would you analyse the results from this titration?

- Calculate the concentration of the sulfamic acid solution (If not already known).
- Calculate the mean titre using concordant results.
- Calculate the concentration of the burette solution.



What are some common potential hazards and risks in the laboratory?



# What are some common potential hazards and risks in the laboratory?

Hazard	Risk	Control
Bunsen burner	Burns.	Keep away from flammable chemicals and away from the edge of the desk.
Chemicals	<ul style="list-style-type: none"><li>- May be an irritant or corrosive, causing irritation to skin, eyes, lungs.</li><li>- May be toxic</li><li>- May be Flammable.</li></ul>	Handle with care and while wearing gloves. Wear eye protection. Keep away from the edge of the desk and from an open flame. Don't ingest.
Glassware i.e beakers, test tubes.	May break and cut you.	Handle with care. Keep away from edge of the desk.

