

Edexcel Chemistry GCSE

CP 5 - Acid-Alkali Titrations

(Chemistry only)

Flashcards

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How can you detect whether a substance is a strong acid or a strong alkali using universal indicator?



How can you detect whether a substance is a strong acid or a strong alkali using universal indicator?

Red - strong acid

Yellow - weak acid

Green - neutral

Light blue - weak alkali

Blue/purple - strong alkali



A few drops of methyl orange are added to a beaker of alkali. What will you observe when adding acid to this beaker?



A few drops of methyl orange are added to a beaker of alkali. What will you observe when adding acid to this beaker?

Colour changes from yellow to orange then red

Acid - red

Alkali - yellow



A few drops of phenolphthalein are added to a beaker of acid. What will you observe when adding alkali to this beaker?



A few drops of phenolphthalein are added to a beaker of acid. What will you observe when adding alkali to this beaker?

Colour change from colourless to pink

Acid - colourless

Alkali - pink



How is water formed in a reaction
between an acid and an alkali?



How is water formed in a reaction between an acid and an alkali?

H^+ ions from acid react with OH^- ions from alkali



List the apparatus required to carry out a titration



List the apparatus required to carry out a titration

- Burette
- Conical flask
- Clamp stand
- Pipette
- Small funnel
- White tile



Describe how to set up a titration



Describe how to set up a titration

Use a pipette to add a known volume of alkali to a conical flask.

Add a few drops of indicator.

Fill the burette with acid using a funnel.



Why should you rinse the burette and pipette with the solutions they will contain before filling them?



Why should you rinse the burette and pipette with the solutions they will contain before filling them?

To wash out any other unwanted ions from the apparatus



After the apparatus has been set up,
describe how to carry out a titration



After the apparatus has been set up, describe how to carry out a titration

Open the tap of the burette to slowly add the solution to the conical flask, swirling to mix. Close the tap when the end point is reached. Record the volume. Repeat.



What safety precautions should be taken when carrying out a titration?



What safety precautions should be taken when carrying out a titration?

Clear up spillages or broken glassware

Wear safety goggles and gloves

Fill burette below eye level using a funnel

Be aware of the harmful effects of the chemicals used e.g. irritant, corrosive..



Why is an indicator used in a titration?



Why is an indicator used in a titration?

To show when the end point has been reached



Why is a white tile used in a titration?



Why is a white tile used in a titration?

The white tile is placed under the reaction mixture to make the colour change easier to see



Why should the conical flask be swirled during a titration?



Why should the conical flask be swirled during a titration?

To ensure the solution is completely mixed



What is the purpose of repeating a titration?



What is the purpose of repeating a titration?

To obtain concordant results, allow a mean titre to be calculated, and reduce the effect of random error



Why is a trial titre carried out?



Why is a trial titre carried out?

To quickly check that the end-point can be reached with the concentrations and volumes being used.

To find the rough volume required to reach end-point.



What are concordant results?



What are concordant results?

Titres which are within 0.20cm^3 (or 0.10cm^3) of each other



How do you calculate the mean titre?



How do you calculate the mean titre?

Add the 2 concordant results and divide
by 2



What is the end point?



What is the end point?

The point when the indicator first permanently changes colour



Why is a volumetric pipette used to measure the volume of acid or alkali added to the conical flask?



Why is a volumetric pipette used to measure the volume of acid or alkali added to the conical flask?

Greater accuracy than a measuring cylinder



If you know the volume of acid required to neutralise an alkali, how could you calculate the concentration of the acid, given the alkali concentration and volume? (Higher)



If you know the volume of acid required to neutralise an alkali, how could you calculate the concentration of the acid, given the alkali concentration and volume? (Higher)

- Calculate the number of moles of the alkali using the known volume and concentration
- Use the chemical equation to work out the ratio of acid and alkali that react and hence work out how many mole of acid have reacted
- Divide the moles of acid by the volume used in neutralisation

