

AQA Chemistry GCSE

Required Practical 7 - Identifying ions (chemistry only)

Flashcards

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How do you carry out a flame test to identify metal ions?



How do you carry out a flame test to identify metal ions?

- Clean a platinum wire loop by dipping it in HCl and then holding it in the blue flame until it burns without any colour
- Dip the loop into the sample you want to test and put it into the blue flame of the Bunsen burner
- Record the colour of the flame



List precautions to take when using a Bunsen burner



List precautions to take when using a Bunsen burner

- Don't leave unattended
- Turn off gas or leave on orange safety flame when not in use
- Tie back long hair
- Keep flammable chemicals away from the flame



What is the result of the flame test on lithium ions?



What is the result of the flame test on lithium ions?

Lithium ions (Li^+): Crimson flame



What is the result of the flame test on sodium ions?



What is the result of the flame test on sodium ions?

Sodium ions (Na^+): Yellow flame



What is the result of the flame test on potassium ions?



What is the result of the flame test on potassium ions?

Potassium ions (K^+): Lilac flame



What is the result of the flame test on calcium ions?



What is the result of the flame test on calcium ions?

Calcium ions (Ca^{2+}): Orange-red flame



What is the result of the flame test on copper ions?



What is the result of the flame test on copper ions?

Copper ions (Cu^{2+}): Green flame



Why must the wire be cleaned before carrying out a flame test?



Why must the wire be cleaned before carrying out a flame test?

To remove any unwanted ions that might obscure the colour of the flame



Why can a flame test not be used when a compound contains a mixture of metal ions?



Why can a flame test not be used when a compound contains a mixture of metal ions?

The flame colours of some ions may be hidden by the colours of other metal ions



How can you test for carbonate ions?



How can you test for carbonate ions?

- Add a few drops of HCl to the sample in a test tube
- Connect this test tube to a test tube of limewater
- If carbonate ions are present, carbon dioxide will be produced. Limewater will turn cloudy when CO_2 is bubbled through.



Write the chemical equation for the reaction between HCl and Na_2CO_3



Write the chemical equation for the reaction between HCl and Na_2CO_3



How can you test for sulfate ions?



How can you test for sulfate ions?

- Add HCl to remove any CO_3^{2-} ions as these will obscure the results
- Add a couple of drops of barium chloride
- If sulfate ions are present a white precipitate of barium sulfate will form



Write the chemical equation for the reaction between BaCl_2 and MgSO_4



Write the chemical equation for the reaction between BaCl_2 and MgSO_4



BaSO_4 is a white precipitate



How do you carry out a test for halide ions?



How do you carry out a test for halide ions?

- Add a couple of drops of nitric acid to react with any carbonate ions which might obscure the experiment
- Add a couple of drops of silver nitrate
- Observe the colour of the precipitate



What colour precipitate is formed when silver nitrate is added to a chloride solution?



What colour precipitate is formed when silver nitrate is added to a chloride solution?

White precipitate of silver chloride



What colour precipitate is formed when silver nitrate is added to a bromide solution?



What colour precipitate is formed when silver nitrate is added to a bromide solution?

Cream precipitate of silver bromide



What colour precipitate is formed when silver nitrate is added to an iodide solution?



What colour precipitate is formed when silver nitrate is added to an iodide solution?

Yellow precipitate of silver iodide



What colour precipitate forms when sodium hydroxide reacts with calcium ions?



What colour precipitate forms when sodium hydroxide reacts with calcium ions?

White precipitate



What colour precipitate forms when sodium hydroxide reacts with copper(II) ions?



What colour precipitate forms when sodium hydroxide reacts with copper(II) ions?

Blue precipitate



What colour precipitate forms when sodium hydroxide reacts with iron(II) ions?



What colour precipitate forms when sodium hydroxide reacts with iron(II) ions?

Green precipitate



What colour precipitate forms when sodium hydroxide reacts with iron(III) ions?



What colour precipitate forms when sodium hydroxide reacts with iron(III) ions?

Brown precipitate



What colour precipitate forms when sodium hydroxide reacts with aluminium ions?



What colour precipitate forms when sodium hydroxide reacts with aluminium ions?

White precipitate at first.

Redissolves with excess NaOH to form a colourless solution.



What colour precipitate forms when sodium hydroxide reacts with magnesium ions?



What colour precipitate forms when sodium hydroxide reacts with magnesium ions?

White precipitate



Given two solutions, how can you identify which contains aluminium ions and which contains magnesium ions?



Given two solutions, how can you identify which contains aluminium ions and which contains magnesium ions?

Add excess sodium hydroxide.

Both will form white precipitates but the one containing aluminium ions will redissolve to form a colourless solution.

