WJEC (Wales) Chemistry GCSE

SP 1.2 - Identification of Unknown Ionic Compounds using Flame Tests and Chemical Tests for Ions

Flashcards

How is a flame test carried out?

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1. Clean a nichrome wire loop in dilute hydrochloric acid.
2. Dip the nichrome wire loop into the sample being tested.
3. Hold the wire loop with the sample on in the blue Bunsen burner flame.
4. Observe the colour of the flame.

What flame colour is produced when Lithium ions are present?

What flame colour is produced when Lithium ions are present?

Crimson flame

What flame colour is produced when Sodium ions are present?

What flame colour is produced when Sodium ions are present?

Yellow flame

What flame colour is produced when Potassium ions are present?

What flame colour is produced when Potassium ions are present?

Lilac flame

What flame colour is produced when Calcium ions are present?

What flame colour is produced when calcium ions are present?

Orange-red flame

What flame colour is produced when Copper ions are present?

What flame colour is produced when copper ions are present?

Green flame

Why can a flame test not be used on a sample which contains a mixture of metal ions?

Why can a flame test not be used on a sample which contains a mixture of metal ions?

If the sample contains a mixture of metal ions, the flame colour of some of the ions may be hidden by the colours of the other ions. This makes it hard to identify particular colours.

Outline the test for Carbonate ions (CO_3^{2-})

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1. Add dilute hydrochloric acid to the unknown solution.
2. If bubbles appear, bubble the gas produced through limewater using a delivery tube.

If carbonate ions are present then the gas is carbon dioxide which will cause the limewater to go cloudy.

Outline the test for Sulfate ions (SO_4^{2-})

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1. Add dilute hydrochloric acid to the unknown solution in a test tube.
2. Add Barium Chloride solution to the same test tube.

A white precipitate of Barium Sulfate is formed if sulfate ions are present.

Outline the test for Halide ions (Cl^-, Br^-, I^-)

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1. Add dilute nitric acid to the unknown solution in a test tube.
2. Add silver nitrate solution to the test tube containing the unknown solution.
3. Record the colour of the precipitate produced.

Give the colours of the precipitates produced when the Halides react with Silver Nitrate

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Chloride - white precipitate

Bromide - cream precipitate

Iodide - yellow precipitate

Why are solutions often acidified before testing for ions?

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The acid will react with various other ions present in the solution. This prevents them from interfering with the results.

For example, in the test for Halide ions, Carbonate ions also produce a white precipitate with Silver Nitrate.