Identify ions in unknown salts

Pearson Edexcel 1CH0 Separate Chemistry · Foundation and Higher

Use the test results as evidence for each identification.

Name _____ Date _____

1. Read two flame colours

Two solid salts contain metal ions covered by your course's flame tests. They give blue-green and yellow flames respectively. Name both ions and give their symbols, including the charges.

2. A green precipitate

Adding sodium hydroxide solution to a sample immediately gives a green precipitate. Choose the ion from Cu^{2+}, Fe^{2+} and Fe^{3+}. State the observation expected for each of the other two ions.

3. Distinguish two white precipitates

The possible metal ions are Al^{3+} and Ca^{2+}. A little sodium hydroxide solution gives a white precipitate. A student concludes that Al^{3+} is present.

Explain why their conclusion is premature. Give the next step and the result needed to identify aluminium.

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4. Gas and limewater

A solid fizzes when dilute acid is added. The gas turns limewater cloudy. Name the gas and choose the ion from carbonate, chloride and sulfate.

5. A silver nitrate test

A student adds dilute nitric acid and then silver nitrate solution to a sample. A cream precipitate forms. Identify the ion in the sample and name the precipitate.

6. A barium chloride test

A student adds dilute hydrochloric acid and then barium chloride solution to a sample. A white precipitate forms. Identify the ion in the sample and name the precipitate.

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7. Find the cation from a gas test

A student warms a salt with sodium hydroxide solution. A gas turns damp red litmus blue. Identify the gas and the ion indicated in the salt.

8. Put two observations together

A salt gives an orange-red flame. On a fresh sample, dilute nitric acid followed by silver nitrate gives a white precipitate. The anion is chloride, bromide or iodide.

Identify both ions and give the name and formula of the salt.

9. Extra challenge · Check three test results

An unknown salt could be ammonium bromide, sodium bromide or ammonium sulfate. Warming it with sodium hydroxide releases a gas that turns damp red litmus blue.

Dilute sulfuric acid followed by barium chloride gives a white precipitate in another sample. Dilute nitric acid followed by silver nitrate gives a cream precipitate in a fresh sample.

Identify the salt, explain which result is unreliable and describe how to repeat its test properly.

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