

Edexcel International Chemistry A-level

Practical 14

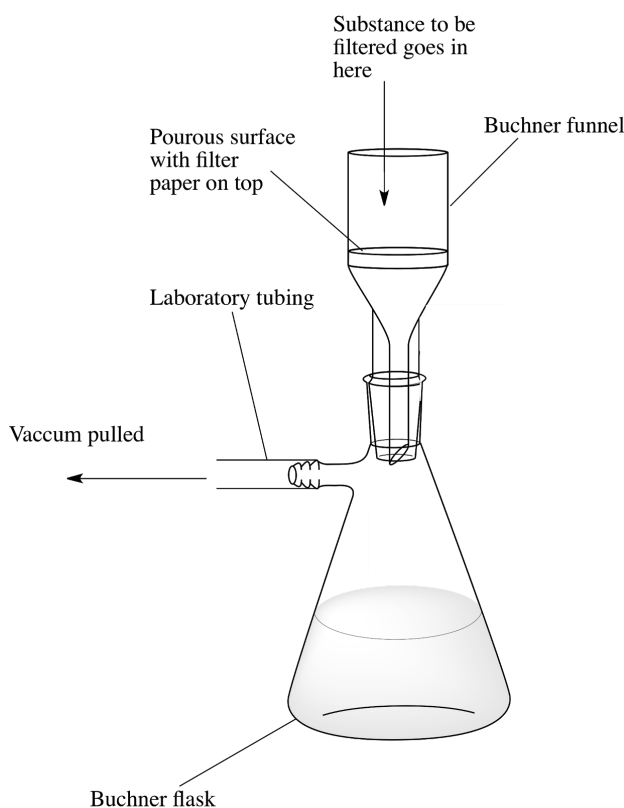
Preparation of a Transition Metal Complex



Method

1. Use the 'weighing-by-difference' method to accurately weigh out a mass of copper sulphate between 1.4 - 1.6g into a test tube and add 4 cm³ of water.
2. Fill a large beaker with freshly boiled water and rest the test tube containing copper sulfate and water in it. Stir until the copper sulfate has dissolved.
3. In a fume cupboard, add 2 cm³ of concentrated ammonia.
4. Stir the mixture and pour into ethanol. Then, cool the mixture in an ice bath. Crystals of product will form.
5. Set up the vacuum filtration apparatus with a Büchner funnel. Collect the crystals in the funnel. Wash the tube with cold ethanol and filter again, then wash the crystals with cold ethanol.
6. Leave crystals on the funnel for a short amount of time to dry. Then, press a second piece of filter paper on top of the crystals to dry them even more.
7. Record the mass of the crystals and calculate the percentage yield (relative to the hydrated copper sulfate).

Diagram



Safety

- Copper sulfate is **harmful to aquatic life**, therefore it should only be used in small quantities.
- Concentrated ammonia is corrosive so must be handled in a fume cupboard whilst wearing gloves.
- Ethanol is flammable, so use away from any naked flames.

Errors

- Losses could be from the reaction not going to **completion** and product staying in solution (i.e. not crystallising out.)
- Gains could be from **impure or wet** crystals.

