

Edexcel Chemistry IGCSE

Practical 4.43C: Prepare a sample of an ester such as ethyl ethanoate
(chemistry only)

Notes



Preparing Ethyl Ethanoate

Aim

To use distillation to prepare a pure sample of ethyl ethanoate.

Equipment list

- 50 cm³ round bottomed flask with delivery arm
- Thermometer
- Condenser
- 250 cm³ beaker
- Clamp and stand
- Bung
- Electric heater
- Dropping pipette
- Measuring cylinder
- Access to a tap and sink

Chemicals required

- Ethanoic acid
- Ethanol
- Concentrated sulfuric acid
- Sodium carbonate
- Calcium chloride solution

Method

1. Set up the apparatus as shown in figure one below. The round bottom flask should be held in a clamp stand and the condenser should be connected to round bottomed flask via the delivery tube. Set up the condenser so it is at an angle just below horizontal, with water entering at the bottom. Place a beaker at the open end of the condenser.
2. Add 10 cm³ ethanol, 12 cm³ ethanoic acid and 15 drops of concentrated sulfuric acid to the round bottom flask.
3. Reconnect the round bottomed flask to the rest of the apparatus. Turn on the tap for the condenser.
4. Gently heat the mixture using an electric heater. The ester will evaporate and condense in the condenser before being collected in the beaker.
5. Stop heating when no more ester seems to be vaporising.
6. Small quantities of sulfuric acid, ethanol and ethanoic acid may also have collected in the beaker. Add sodium carbonate to the solution to remove any acidic impurities. Stop adding sodium carbonate when the solution stops fizzing. Add calcium chloride solution to remove the ethanol.

Key points

- Ethanol is highly flammable so avoid heating with a Bunsen burner.
- The ester will be distilled off first due to its low boiling points and high volatility.



Diagram

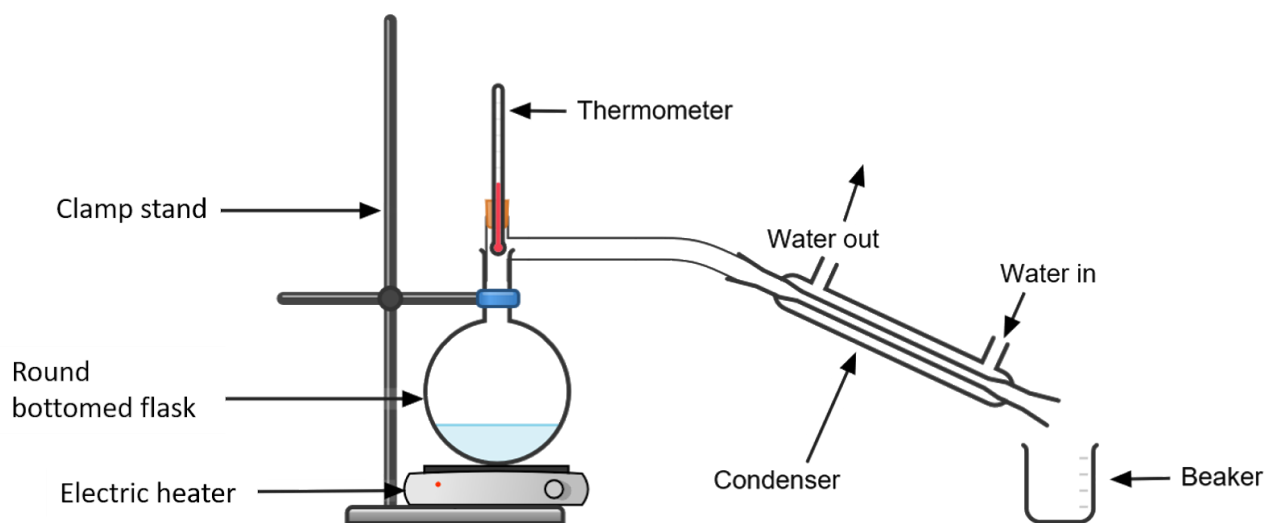


Figure 1 Experiment Setup

[Chemix](#)

Safety precautions

- Be careful with the fragile glassware. Clear up any broken glass immediately.
- Concentrated sulfuric acid is very corrosive. Take care to avoid contact with the skin. Wash hands immediately if any skin comes into contact. Clear up any spillages.
- Wear safety glasses.
- Ethanol and ethanoic acid are flammable so ensure there are no naked flames in the laboratory.
- Keep the laboratory well ventilated.

Analysis of results

The volume of ester ethyl ethanoate can be measured to see how much sample was collected.

