

WJEC (Eduqas) Chemistry A-level

SP C3.4 - Preparation of an Ester and Separation by Distillation

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SP C3.4 - Preparation of an Ester and Separation by Distillation

Aim

To prepare a **pure sample** of ethyl ethanoate from ethanoic acid and ethanol.

Apparatus and Chemicals

- 100 cm³ round bottom flask
- 100 cm³ beaker
- 100 cm³ conical flask
- 10 cm³ measuring cylinder
- 25 cm³ measuring cylinder
- Reflux condenser
- Thermometer
- Specimen tube
- Labels/suitable pen
- Anti-bumping granules
- Warm water bath (approximately 50°C)
- Clamp stand
- CH₃CH₂OH (ethanol)
- CH₃COOH (ethanoic acid)
- Concentrated H₂SO₄ solution

Safety Considerations

- ★ CH₃CH₂OH - flammable
- ★ CH₃COOH - irritant
- ★ H₂SO₄ solution - corrosive





Method

1. Measure 25 cm³ of CH₃COOH using a measuring cylinder and decant to a **round bottomed flask**.
2. Add 10 cm³ of CH₃CH₂OH solution and a few **anti-bumping granules** into the round bottom flask.
3. Add 10 drops of concentrated H₂SO₄ solution.
4. Swirl the flask gently to mix the reagents.
5. Warm the reaction mixture gently with the warm water bath for 15 minutes.
6. Set up the **distillation apparatus** (see diagram).
7. Distil off the CH₃COOCH₂CH₃ (ethyl ethanoate) produced and collect in a clean, dry, 100 cm³ conical flask.
8. Record the temperature at which the liquid product is collected.

Diagram

