

# WJEC (Wales) Chemistry A-level

## SP 2.7 - Preparation of an Ester and Separation by Distillation

Methods and images taken from the [WJEC practical handbook](#)

This work by [PMT Education](#) is licensed under [CC BY-NC-ND 4.0](#)





## SP 2.7 - 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 cm<sup>3</sup> round bottom flask
- 100 cm<sup>3</sup> beaker
- 100 cm<sup>3</sup> conical flask
- 10 cm<sup>3</sup> measuring cylinder
- 25 cm<sup>3</sup> measuring cylinder
- Reflux condenser
- Thermometer
- Specimen tube
- Labels/suitable pen
- Anti-bumping granules
- Warm water bath (approximately 50°C)
- Clamp stand
- CH<sub>3</sub>CH<sub>2</sub>OH (ethanol)
- CH<sub>3</sub>COOH (ethanoic acid)
- Concentrated H<sub>2</sub>SO<sub>4</sub> solution

### Safety Considerations

- ★ CH<sub>3</sub>CH<sub>2</sub>OH - flammable
- ★ CH<sub>3</sub>COOH - irritant
- ★ H<sub>2</sub>SO<sub>4</sub> solution - corrosive





## Method

1. Measure 25 cm<sup>3</sup> of CH<sub>3</sub>COOH using a measuring cylinder and decant to a **round bottomed flask**.
2. Add 10 cm<sup>3</sup> of CH<sub>3</sub>CH<sub>2</sub>OH solution and a few **anti-bumping granules** into the round bottom flask.
3. Add 10 drops of concentrated H<sub>2</sub>SO<sub>4</sub> 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 CH<sub>3</sub>COOCH<sub>2</sub>CH<sub>3</sub> (ethyl ethanoate) produced. Collect it in a clean, dry, 100 cm<sup>3</sup> conical flask.
8. Record the temperature at which the liquid product is collected.

## Diagrams

