

WJEC Chemistry GCSE

Specified Practical 8

Energy Released from Fuels

[Methods are adapted from the [Royal Society of Chemistry](#)]

England Specification





Calorimetry

Aim

To compare the different amounts of heat energy produced by burning various alcohols and monitoring temperature change.

Equipment

- Retort stand and clamp
- Conical flask (150cm³)
- Measuring cylinder (100cm³)
- Thermometer
- Measuring Balance
- Spirit burners (with wicks and caps) containing the following alcohols:
 - Methanol
 - Ethanol
 - Propan-1-ol
 - Propan-2-ol
 - Butan-1-ol

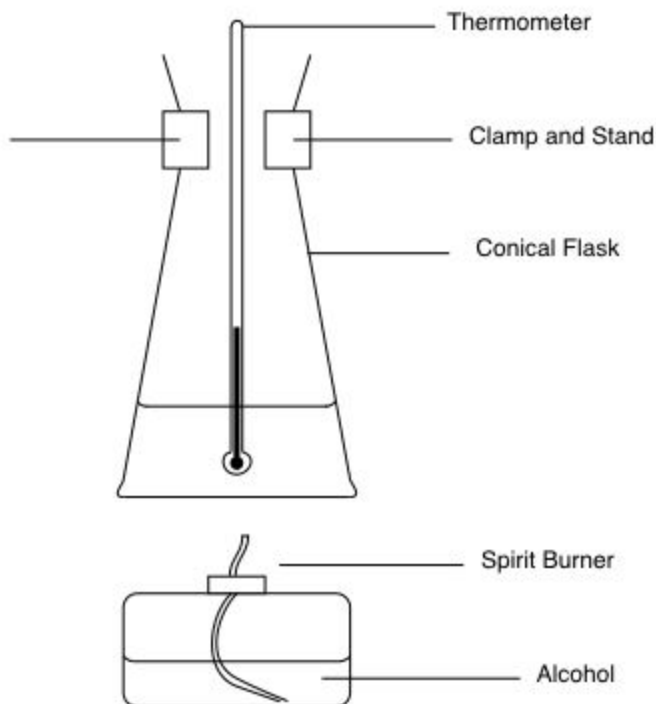
Method

1. Measure 100 cm³ of cold water into a conical flask.
2. Clamp the flask above the spirit burner on a heatproof mat (see diagram).
3. Weigh and record the mass of the spirit burner (and cap) containing the alcohol.
4. Record the initial water temperature.
5. Place the spirit burner under the flask and light the wick.
6. Allow the alcohol to heat the water by 40°C.
7. Extinguish the flame by replacing the cap.
8. Re-weigh the spirit burner and cap, and record this mass.
9. Calculate the mass of alcohol used.
10. Repeat steps 1 to 9 using a fresh 100 cm³ of cold tap water and a different alcohol.





Diagram



Safety Precautions

- Methanol is highly flammable and toxic.
- Ethanol is highly flammable.
- Propan-1-ol is highly flammable, an irritant and harmful.
- Propan-2-ol is highly flammable, an irritant and harmful.
- Butan-1-ol is harmful and volatile.

