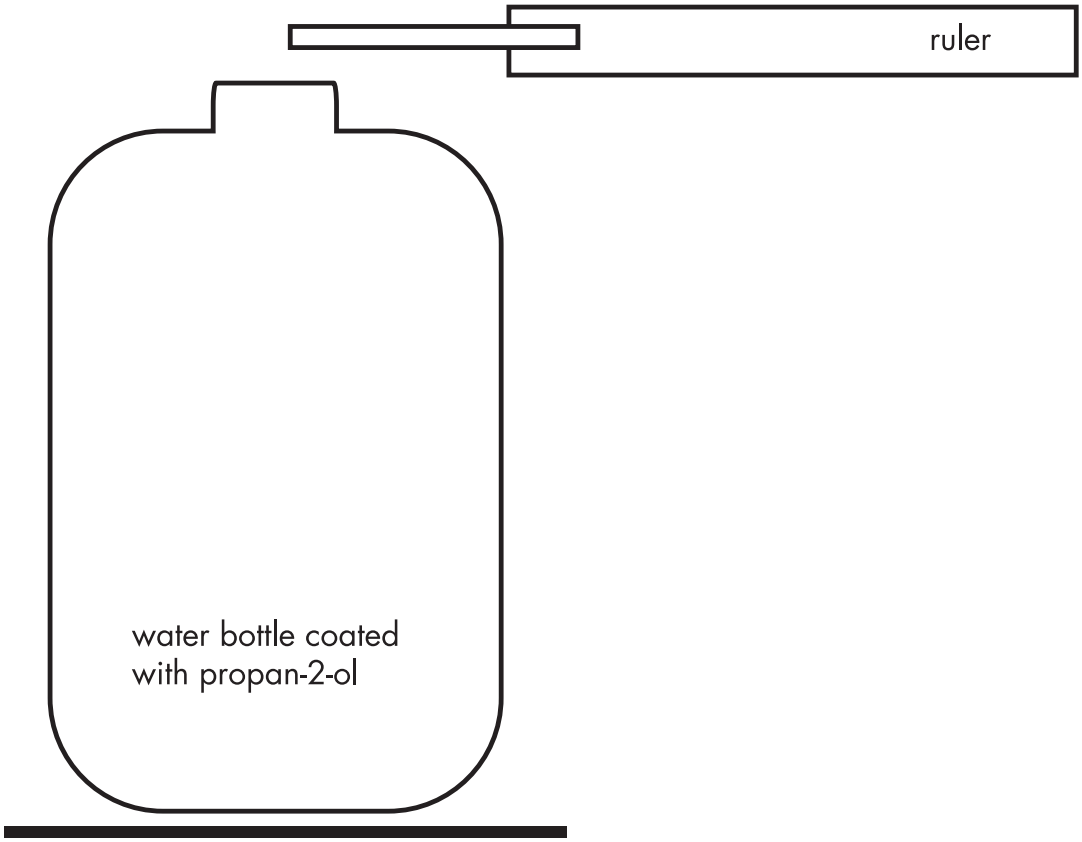
Top 10 Flash Bang Demos

Number 1 Whoosh bottle

See the **flames dance** and **listen** for the **whoosh** in this **bright** and impressive demonstration

Equipment

- 25 litre polycarbonate water bottle from a drinks dispenser
- 2 x 500ml beakers
- Long ruler
- Taper or spill
- 40ml propan-2-ol



Safety precautions

Demonstrator should wear safety goggles.
Ensure students are at least 3 metres away.
Propan-2-ol is highly flammable and an irritant (see hazcard 84).
A 25L polycarbonate bottle must be used.
See CLEAPSS supplementary risk assessment SRA06
Always carry out your own risk assessment for this demonstration.

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Method

- Ensure the water bottle is completely dry before starting this demonstration
- Attach a taper or spill to the end of the ruler
- Pour 40ml of propan-2-ol into the water bottle swilling it around to completely coat the inside
- Empty any remaining propan-2-ol into a beaker and remove to a safe distance
- Place the bottle on a bench, or on the floor
- Light the end of the spill
- Place the lit spill inside the rim of the bottle
- There will be a loud whoosh and visible blue and yellow flames
- Let the bottle cool slightly
- Tip up the bottle and pour out the contents into a beaker

The science bit

The propan-2-ol forms a vapour when swirled in the container. When ignited with the spill an exothermic reaction takes place, and the 'whoosh' sound is produced by the rapidly expanding gases leaving the bottle.
Once the bottle has cooled, a liquid will form in the bottom which can be poured into a beaker. This is a suspension of carbon particles in water which is the product of combustion.

Demonstration tips and interesting facts

Each bottle can only be used once per session - once the demonstration has been completed the bottle will need to be dried thoroughly before it can be used again. Store upside down if possible.

Pupils can touch the side of the bottle to feel how warm it is.

Other things to try

Methanol and ethanol can be used as an alternative to propan-2-ol.
The reaction time is quicker, but the flames are less visible.

Debate the importance of cleaner fuels and discuss the role scientists and chemical engineers play in developing them.

Instructions are in accordance with CLEAPSS guidelines and safety information.