



Learning notes

Rockets: physics and chemistry in action

Linked Article: [It's Not Rocket Science, Or Is It?](#)

Launching rockets brings together the chemistry of combustion and the physics of Newton's Laws. The author shows how with the combustion of a fuel and an oxidiser, the exhaust gases provide the thrust to accelerate the rocket and its payload in the opposite direction.

Learning Task:

This experiment must be performed in the laboratory with the supervision of a science teacher or technician. You will be launching your own ethanol fuelled rocket in the lab.

You will need:

- An empty (and dry) drinks bottle with sports cap
- Ethanol or isopropanol
- A section of guttering or similar
- Safety glasses
- Long matches or similar
- A beaker

1. Put on your safety glasses.
2. Pour 10ml of the alcohol into the drinks bottle, close the lid and shake for one minute. The idea is to produce a vapour within the bottle.
3. Pour off the excess liquid into the beaker, and close the lid again.
4. Place the bottle into the guttering and point away from people and fragile objects. Ideally, give as much room as possible for the rocket to travel.
5. Pull open the sports cap, light a match and hold it to the hole in the cap.

Health and safety - please seek advice from SSERC or CLEAPSS.

Take your learning further:

Investigate the chemistry of the reaction [with this learning resource](#).

Take your learning further still:

Place a force meter connected to a datalogger at the base of the bottle to measure the force vs. time for the rocket, and calculate the impulse. You will need to place a clamp or similar loosely around the neck of the bottle to ensure it does not flip when lit.