Activity Description

This is an experiment aimed at aged 11 - 14 pupils, although it could be suitable for younger pupils with more guidance from a teacher.

It consists of:

- A practical to explore hydrogen storage
- Reflection notes to explain what was seen during the experiment
- Questions to consider about the results of the experiment

Project funded by

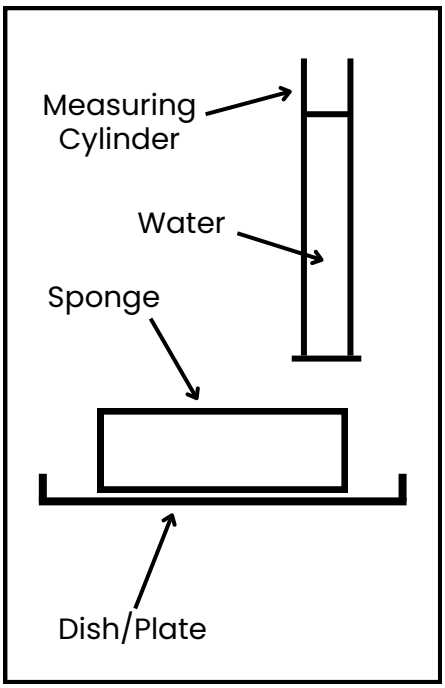
Bertz Associates HyAcademy.EU creative commons UK Research and Innovation Clean Hydrogen Partnership Co-funded by the European Union Swiss Confederation Federal Department of Economic Affairs, Education and Research EAER State Secretariat for Education, Research and Innovation SERI

The European Hydrogen Academy and Net-Zero Hydrogen Academy are supported by the Clean Hydrogen Partnership and its members under Grant Agreement No: 101137988, by UK Research and Innovation (UKRI), and the Swiss Confederation Secretariat for Education, Research and Innovation (SERI)

This resource was developed as part of the HyAcademy.eu project.

Exploring how Hydrogen can be Stored

Hydrogen can be difficult to store in small spaces because it is a gas with a low density, so it is often stored in porous rocks underground. This practical explores how effective porous rock storage using household items.



What Supplies do you Need?

- Clear dish or plate
- Sponge
- Measuring cylinder or small jug with measurements
- Water

How to Simulate Hydrogen Storage?

1. Measure the height, length and width of the sponge and calculate its volume by multiplying these values
2. Fill the measuring cylinder/jug with water and place the sponge in the clear dish/on the plate
3. Slowly pour the water onto the sponge and continue this until it can hold no more water
4. Record the volume of water that has been absorbed by the sponge

What did we see?

- The sponge absorbed lots of water!
- This is similar to how hydrogen can be stored in porous rocks: in our experiment, the sponge was the porous rock and the water was the hydrogen

Questions to Consider...

- How did the volume of the sponge compare to the volume of water it absorbed? Did this surprise you?
- What do you think would happen if you used multiple smaller sponges together? Would they absorb more or less water than the big sponge? Why?
- What advantages and disadvantages are there for storing hydrogen in porous rocks compared to in storage tanks? Are there any environmental issues that should be considered?

Project funded by

Bertz Associates · HyAcademy.EU · creative commons · UK Research and Innovation · Clean Hydrogen Partnership · Co-funded by the European Union · Swiss Confederation

The European Hydrogen Academy and Net-Zero Hydrogen Academy are supported by the Clean Hydrogen Partnership and its members under Grant Agreement No: 101137988, by UK Research and Innovation (UKRI), and the Swiss Confederation Secretariat for Education, Research and Innovation (SERI)