

Rock porosity experiment – teacher and technician notes

Education in Chemistry

May 2017

rsc.li/EiC317-carbon-capture

This experiment accompanies the above article ‘Carbon dioxide gets stoned’.

Aim

Rank the rocks in order of their suitability for carbon capture and see if any of the samples in your school rock box is better than the basalt mentioned in the science article we will be reading.

Introduction

Only porous rocks are useful for capturing carbon. Porous rocks contain lots of little holes. These can be seen with a hand lens but it is difficult to work out how many of these holes there are inside the middle of a rock. We can work out the porosity of a rock by weighing it, then soaking it in water (to fill up the holes) and then weighing it again to see what mass of water is gained. The more water is gained the more holes in the rock and the more porous it is.

Apparatus

- Access to electronic balances
- Sufficient washing up bowls for soaking (one bowl between 4 pupils is fine)
- Rocks of different types, pre sorted

Method

1. Collect one of the rocks from the groups set out by your teacher. Record its name in your table.
2. Weigh the dry rock and record its mass in your table.
3. Repeat this for each rock sample you are going to study. (Your teacher will tell you if you are sharing your results with another pair).
4. Now put all the rocks into the bowl of water and start the timer. Make sure you know which one is which!
5. While your rocks are soaking, read the science article given to you by your teacher, this tells you about carbon capture and how it could be important in tackling global warming.
6. When the timer gets to 10 minutes, take your rocks out and place them on a paper towel.
7. Weigh each rock again and record the masses in your table.
8. Now do your calculations

Notes

Prior to the experiment it is useful to test the various rocks in your sample box so you can make sure you get a good range of results. You will need to make sure you have enough rock samples for pupils as they cannot be reused once they have been soaked. This works best if pupils work in pairs and share a washing up bowl of water between 2 groups. Pupils may need to share results if you don't have enough rocks for one rock of each type per pair.

Download a student handout, and the full article that accompanies this experiment at rsc.li/EiC317-carbon-capture