

Acid Weathering – Teacher Notes

Measured dissolution of limestone - Fair test



Materials per student or group

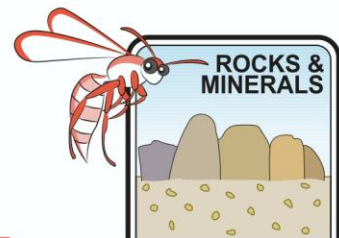
- A small lump of limestone, chalk or soft carbonate rock
- A nail to scrape a depression or hollow into the rock
- Triple beam balance
- One half of a plastic Petri dish
- Sand, soil or plasticine to support the rock so that the hollow will hold acid (see picture above)
- A small beaker of weak acid.
- A Pasteur or transfer pipette.
- A camera (optional)

1. With the nail, scrape a small depression into one side of the limestone rock
2. Using sand or plasticine, set the rock upright onto the Petri dish so that the depression will hold liquid
3. Take a picture of the rock
4. Compress the bulb of the pipette and suck in exactly 5mL of acid
5. Little by little drip acid into the depression on the rock. Be careful not to overfill and spill
6. Observe what happens
7. Continue refilling until either all the acid has been used up or 35 minutes have passed.
8. Review your activity to see if this used good scientific practice.

When you added the acid to the limestone, what did you observe? **A gas evolved – fizzing. The acid cut into/dissolved the limestone.**

At the end of the experiment, had the limestone changed. **Yes**

Was this a chemical change or physical change? **Chemical change – new substance produced**



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Write a word equation for this chemical reaction

Calcium carbonate + hydrochloric acid = carbon dioxide + calcium chloride + water

Limestone + vinegar = carbon dioxide + calcium acetate + water

Calcium carbonate + vinegar = carbon dioxide + calcium acetate + di-hydrogen oxide

Why had this change occurred? The acid reacted with limestone to produce a gas

Did you CONTROL the experiment? NO! We should have left a piece of limestone to compare with the piece affected by the acid. We didn't all use the same volume/amount of acid.

What things did you keep the same? We all used the same acid & carbonate at the same time in the same place etc

What things were not kept the same? Size of limestone lump, volume of acid.

What could you have done to improve control? Keep everything the same and have an untouched piece of limestone for comparison.

Explain your answers. Was your data:

Observable? Yes We could see a change

Measurable? No We should have measured the mass/volume of limestone before and after

Repeatable? Yes All the groups did the same thing

Reportable? No It needs to be improved

Was this a "fair test" NO