

DIY Lemon Volcano



Skill Level:

Easy

Time

5 minutes

What Do I Need?

- A plate
- 1 lemon
- Washing up liquid
- A teaspoon
- Bicarbonate of soda
- A knife
- Food dye

How Do I Do It?

1. Do the investigation on a plate to catch any juice that spills out (see the picture).
2. Cut the bottom off your lemon so that it stands up on the plate.
3. Cut the top off your lemon (get an adult to do this).
4. Hold the lemon and use the handle of a spoon to mash the centre of the lemon so that the juice is released. Any juice that spills will collect on the plate.
5. Place a few drops of food dye into your lemon if you want coloured lava. Add a good squeeze of washing up liquid to make more lava.
6. Your volcano is ready to start. Add a small spoonful of bicarbonate of soda to the open top of your lemon. Your lemon volcano should start to fizz and foam will pour out of the top like volcanic lava.
7. You can carefully use the teaspoon handle to mix the bicarbonate of soda and lemon juice. If the volcano stops, carefully add any spilled lemon juice from the plate and a small amount of bicarbonate of soda to continue the reaction.

Continued overleaf

DIY Lemon Volcano (continued)

Safety Advice:

IMPORTANT GENERAL SAFETY NOTE FOR SUPERVISING ADULTS. This Terrific Scientific investigation has been devised so that with adult supervision, reasonable care and by following the instructions provided, no special safety equipment or knowledge is required to enjoy the experience safely. These safety reminders are designed to assist the supervising adult when planning and carrying out the investigation. Please read the instructions fully before starting.

- Lemon juice is a weak acid. Avoid getting it in any cuts (it's not dangerous but will sting).
- Make sure it doesn't squirt onto faces and in particular into eyes. If this does happen wash out thoroughly with tap water.
- Do not cut your lemon on anything made from marble as the acid will slowly react with the marble.

What's Happening? The Sciency Bit:

The lemon contains citric acid which when mixed with the sodium bicarbonate, an alkaline, starts a chemical reaction. The white powder and clear juice join to make a colourless gas called carbon dioxide.

The fizzing is the reaction between the bicarbonate of soda and the citric acid. The bubbles produced are carbon dioxide gas. This reaction is very difficult to reverse so it's an example of an irreversible change.

My Lemon Volcano Didn't Erupt... What Can I Do?

- The inside of the lemon may not be mashed enough to release the acid juices. Use a teaspoon handle to mash a little more.
- The acid may have leaked out of the bottom of the lemon. If this accidentally happens, wrap the bottom half of the lemon in cling film and pour the juices back into the lemon.
- The bicarbonate of soda is sitting on top of the lemon and the eruption is very slow. Using the spoon handle, carefully mix the it into the lemon.
- Sometimes a lemon may have very little juice. If you do not have another lemon add a few drops of vinegar to the lemon (vinegar is an acid too).