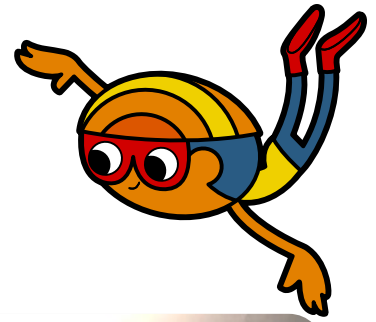


Baking powder volcano



Baking powder volcano

What happens when vinegar reacts with baking powder?



Research question

Have you ever wondered what baking soda is for in cake batter? Baking powder makes a cake batter fluffy and pleasantly soft during baking. This is because it releases a gas during baking: carbon dioxide. The experiment shows you how violent the reaction of baking powder with a liquid can be. It works especially well with an acid like vinegar. We investigate: **How violently does baking powder react with vinegar?**

You need

- 3 packets baking powder
- Vinegar
- Water
- Scissors
- 3 glasses
- Plate
- Aluminum foil
- Adhesive tape
- Large waterproof base, e.g., a tray
- (Food coloring)



How to do it

Step by step



Set-up

1. Place the plate on the waterproof base.
2. Attach a large glass to it with adhesive tape.
3. Place two sheets of aluminum foil over the plate and the glass.
4. Tape the aluminum foil to the underside of the plate.



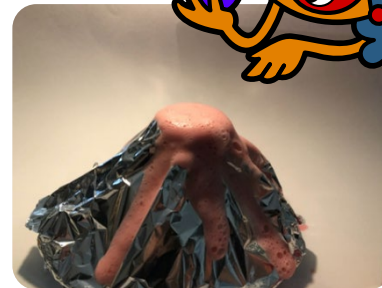
Prepare "crater"

1. In the center of the glass opening, cut a small hole in the aluminum foil with the scissors. Cut a cross from there to the inside wall of the glass.
2. Fold the four corners of the aluminum foil inward and tape them to the inside of the glass.



Fill with chemicals

1. Add the baking powder to the tall glass.
2. Fill a second glass halfway with vinegar and dilute it with water so that the glass is almost full at the end.
3. Now you can color the mixture with red food coloring, if you have some.
4. Then carefully pour the mixture into the large glass wrapped in aluminum foil that contains the baking powder.



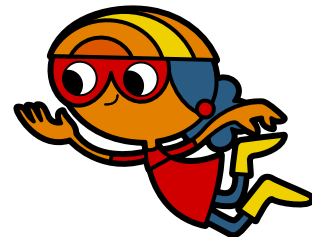
Observation

What happens in the "volcano"?
The liquid reacts very quickly with the baking powder. The substances contained in the baking powder release the gas carbon dioxide. The mixture starts to bubble violently and swells out of the glass as foam.



More information

For parents and teachers



Context

In everyday life, baking powder is used as a leavening agent to loosen cake batters. It is based on the release of carbon dioxide through the reaction of sodium bicarbonate with an acid. Based on this reaction, there are many experiments for children. Variants include the so-called "baking powder rocket" or extinguishing candles with the gas that is released.

The chemistry

Baking powder contains sodium hydrogen carbonate and a solid acid as its most important components. If the baking powder becomes moist, the two chemicals react with each other and carbon dioxide is released.

If a liquid acid (e.g. vinegar) is added to the baking powder instead of just water, the gas is released much more quickly. The mixture foams violently and suddenly. We use this impressive effect here to create a small "baking powder volcano".

