

## What Happens When You Mix Vinegar and Baking Soda

### What you need:

- A small bottle
- Paperclips and (small nuts or pebbles)
- Baking Soda
- Funnel (optional)
- Teaspoon
- Balloon
- Vinegar
- Pipette
- Vase or tall glass
- Water

### Instructions

1. Take a small bottle, fill it with some paper clips, small nuts or pebbles (high density materials), to make it heavy.
2. Add half a teaspoon of baking soda into the bottle. You might need to use a small funnel.
3. Use a pipette to put about 3 squirts of vinegar into the balloon.
4. Wrap the balloon around the lip of the bottle, but make sure that the vinegar does not go into the bottle.
5. Take a vase or tall glass and fill it with water.
6. Carefully grab the bottle by the neck, making sure that the balloon is hanging down by its side.
7. Drop it into the water.
8. What happens? Does the bottle go to the bottom? Does it stay there?



### The Science

This experiment looks simple, but a lot of science is involved here. Can you see the bubbles? Those bubbles are filled with a gas called Carbon dioxide ( $\text{CO}_2$ ), a substance that was created when we mixed the vinegar and baking soda. The combined density of the contraption we made is higher than that of the water, so it sinks to the bottom at first. After the chemical reaction takes place, created  $\text{CO}_2$  decreases the density of the contraption to a point lower than that of the water, so it floats to the top

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### What do you think will happen if you change:

Write down your predictions first, then complete the tests and write down your results.

#### 1. The size of the bottle

Predictions

Results

#### 2. The amounts of vinegar and baking soda

Predictions

Results

#### 3. The weight of the bottle by adding more paper clips

Predictions

Results