

Science in a Bag: Baking Soda Science

Summary

In this activity we will be expanding on the previous lesson about the forms of matter by inflating a bag with gas. In mixing baking soda (solid) and vinegar (liquid) together, we can cause a chemical reaction to occur. This reaction results in the release of carbon dioxide (a gas). This can be observed by the bubbles and how the bag slowly begins to inflate and fill with gas, similar to air filling a balloon.

Materials

**The materials marked with (*) give you the option to prepare the activity for 1, 2, or 3 demonstrations using different-sized baggies.*

- Glasses or sunglasses (eye protection)
- 1 Tablespoon baking soda
- 1 ½ Cups vinegar
- 1 paper towel or tissues (a half a sheet of paper towel will work)
- *1 Ziploc bag
 - 1 snack, 1 sandwich, and/or 1 gallon-size
- Tray or cookie sheet for easy cleanup

Steps to Follow *(All activities must be done with adult supervision)*

1. Begin by reviewing the forms of matter by observing the materials we have for this activity. *What form of matter is the baking soda, vinegar, cup, and the air all around us?*
 - a. Baking soda is a solid since it does have its own *tiny* shape.
 - b. The vinegar has a shape only when it is in a container and it can be poured easily.
 - c. Like air in a balloon, the air around us is also a gas that fills up a space.
2. On one piece of paper towel, place 1 Tablespoon of baking soda in the center and fold/bunch it up into a little packet. Place it in the Ziploc bag of your choice.
 - a. *Remember you can prep this part the same way for different-sized bags to observe how much the bag inflates.*
3. Pour ½ cup of vinegar into the bag and seal it shut. Place the bag on your tray or cookie sheet and observe without touching.
 - a. *If you are using the gallon sized bag you may need to hold the bag at an angle until the baking soda and vinegar can fully mix.*
4. What do you observe?
 - a. Carbon dioxide is released. Because the bag is sealed closed and no air can escape, it inflates like a balloon.

Ohio Early Learning & Development Standards

Cognition and General Knowledge/Science/Science Inquiry and Application/Inquiry
Cognition and General Knowledge/Science/Physical Science/Explorations of Energy

Learning Standards - Science

1.PS.1, 3.PS.2

Next Generation Science Standards (NGSS)

2-PS1-1, 5PS1-4