California State University of Bakersfield, Department of Chemistry

The Exploding Ziploc Bag

Standards:

HS-PS1-2. Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.

Introduction:

What happens inside the bag is actually pretty interesting- the baking soda and vinegar eventually mix (the tissue buys you some time to zip the bag shut) When they do mix, you create an ACID-BASE reaction and the two chemicals work together to create a gas, (carbon dioxide- the stuff we breathe out). Well it turns out the gasses need a lot of room and the carbon dioxide starts to fill the bag, and keeps filling the bag until the bag can no longer hold it anymore and, POP!

Materials:

- Regular Ziploc sandwich bags
- Arm and Hammer baking Soda
- Vinegar
- Measuring cups
- A paper towel

Safety:

- Always have an adult with you to help you during your experiment.
- Always wear eye protection and gloves when doing chemistry experiments.

Procedure:

1. You can do this experiment outside or in a sink
2. Put ½ cup of vinegar in Ziploc bag.
3. Put 3 teaspoons of baking soda into the middle of the paper towel and fold the paper towel in halves to form a square.
4. You will have to work fast now- partially zip the bag closed but leave enough space to add the baking soda packet. Put the paper towel with the baking soda into the bag and quickly zip the bag completely closed.
5. Shake the bag until the baking soda has contacted the vinegar.
6. Put the bag in the sink or down in the ground (outside) and step back. The bag will start to expand, and expand, and if all goes well…POP!

Data and Observations:

What did you see? Anything you weren't expecting?

Questions:

What amount of baking soda creates the best reaction?

Which size bag creates the fastest pop?

<u>References</u>:

1. Spangler, S. How to Make a CO_2 Sandwich. Steve Spangler Science. http://www.stevespanglerscience.com/lab/experiments/puff-pop-how-to-make-a-co2-sandwich (accessed July 17, 2013).