

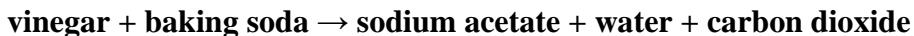
Law of Conservation of Mass Lab

Purpose: To attempt to verify & observe the Law of Conservation of Mass

Materials:

- Electronic balance
- ~10 mL vinegar
- 1 balloon
- Apron
- Weigh boat
- Goggles
- 125 mL flask
- 10 mL graduated cylinder
- Spatula
- ~2 g baking soda

Introduction: Adding vinegar to baking soda causes the following reaction to occur:



In the lab, we are going to see if the mass of the compounds we start with match the mass of our reactants after the reaction takes place.

Safety: Wear safety goggles and a lab apron for this activity, you are handling a weak acid!

Procedure:

Vinegar Preparation:

- Place the empty flask on the balance and record the mass in your data table. Measure out about 10 mL of vinegar into the graduated cylinder. Carefully pour the vinegar into the empty flask, make sure that the vinegar does not spill onto the rim of the flask. Place the flask containing vinegar onto the balance and record the mass in data table. Find the mass of the vinegar. Set flask aside.

Baking Soda Preparation:

- Take an empty balloon and record the mass using the electronic balance. Record in data table and set aside. **Take a piece of weigh boat and zero it on the balance.** Using a spatula, measure out about 2.0 g of baking soda onto the weigh boat. ***DO NOT record mass of baking soda at this point!*** Carefully transfer the baking soda into the balloon using the powder funnel. Use the balance to find the mass of the total mass of the balloon and baking soda. Record in data table. Use data to find the mass of the baking soda inside the balloon.

The Reaction:

- Have one partner hold the flask containing vinegar firmly on the table. The other partner will take the balloon with baking soda and stretch the opening of the balloon over the rim of the flask while making sure that none of the baking soda falls into the flask. Once the balloon is secured to the flask, tip the balloon upright so that the baking soda drops into the bottom of the flask. Record all observations. Once the reaction is complete, take the mass of the flask with the balloon still attached. Record. Use the data to find the mass of the products. Clean up all lab equipment, wash glassware and dispose of chemicals according to your teacher's instructions.

Results: Data Table

Before the Reaction

a) Mass of empty flask: _____

b) Mass of flask with vinegar: _____

c) Mass of vinegar ($b - a$): _____

d) Mass of empty balloon: _____

e) Mass of balloon and baking soda: _____

f) Mass of baking soda in balloon ($e - d$): _____

g) Total Mass of reactants ($c + f$): _____

After the Reaction

h) Mass of all equipment and products: _____

i) Mass of products ($h - d - a$): _____

Conclusion Questions:

1. What evidence was there that a chemical reaction occurred?
2. How did the final mass of the reaction compare with the initial mass of the reaction? Does this match the Law of Conservation of Mass? Why or why not?
3. What could have caused some error in your experiment and affected your results?