

Name: _____

Date: _____

OBSERVING CHEMICAL REACTIONS

Baking Soda and Different Acids

In this experiment, you will mix baking soda with different acids to observe chemical reactions. You will look for clues that a reaction is happening.



QUESTION

How does baking soda react with different acids?

HYPOTHESIS

What do you think will happen when baking soda is mixed with each acid?

MATERIALS

- Baking soda (sodium bicarbonate)
- White vinegar
- Lemon juice
- Diluted hydrochloric acid* (muriatic acid, diluted 1:10 with water)

*Use with adult supervision.

- 3 clear cups or containers
- Measuring spoons
- Dropper or small measuring cup
- Stirring stick or spoon
- Notebook or lab sheet (this sheet)
- Safety goggles (recommended)

PROCEDURE

1. Place 1 teaspoon of baking soda into each of the 3 clear cups.
2. Label the cups: Vinegar, Lemon Juice, Hydrochloric Acid.
3. Add 3 tablespoons of the acid to the cup labeled Vinegar.
4. Stir gently and observe the reaction. Record your observations in the data table.
5. Repeat steps 3–4 for Lemon Juice and Hydrochloric Acid.
6. Compare the reactions. Which acid caused the most bubbles? The least? Why do you think that happened?

DATA TABLE

Acid Used	Bubbles / Fizzing (High, Medium, Low)	Temperature Change (Warmer, Cooler, No Change)	Odor (Yes/No) and Describe	Other Observations
White Vinegar				
Lemon Juice				
Diluted Hydrochloric Acid				

CONCLUSION

What did you learn from this experiment?

SAFETY FIRST

- Wear safety goggles.
- Work in a well-ventilated area.
- Do not taste any materials.
- Wash hands after the experiment.
- Use diluted hydrochloric acid with adult supervision and handle carefully.

BACKGROUND

A chemical reaction happens when substances change into new substances. One clue of a chemical reaction is the production of a gas. When baking soda (a base) reacts with an acid, it produces carbon dioxide gas. You can often see this as bubbles!

WHAT TO LOOK FOR

During each reaction, observe and record:

- Bubbles or fizzing (gas production)
- Any change in temperature (warmer or cooler)
- Any odor
- Other changes you notice (color, clarity, etc.)

THINK AND EXTEND

Why do you think some acids reacted more strongly with baking soda than others?
