

INVESTIGATE BATTERY BREAKDOWN

Pressure Build-Up Simulation • Student Worksheet

Name: _____ Date: _____

Your mission: Observe what happens when baking soda and vinegar react inside a sealed bag. Record evidence and use it to think about pressure and battery safety.

Materials

- 1 sealable quart-size zip-top bag
- 2–3 tablespoons baking soda
- 1/4 cup vinegar
- 1 paper towel
- Safety goggles for each student
- Tray or container to catch spills (optional)

Safety First

- Wear safety goggles and follow your teacher's directions.
- Keep the bag pointed away from faces and do not hold it close to your body.
- Place the bag on a tray, step back, and do not squeeze or shake it.
- Do not open the bag yourself. Your teacher will tell you when the activity is finished and how to clean up.

Procedure

1. Pour the vinegar into the zip-top bag.
2. Place the baking soda in the center of the paper towel and fold the towel around it to make a small bundle.
3. Carefully place the baking-soda bundle into the bag without letting it mix with the vinegar yet.
4. Seal the bag securely, then gently tip the bag so the baking soda bundle falls into the vinegar.
5. Place the bag on the tray and step back. Watch closely as the reaction begins. Do not touch or squeeze the bag.
6. Record your observations below. Follow your teacher's directions for cleanup.

Record Your Observations

Use specific details. Write what you see, hear, and notice changing over time.

Before the ingredients mixed, what did the bag look and feel like?

What happened when the baking soda and vinegar mixed?

What changes did you notice in the bag as the reaction continued?

What evidence suggests that a gas was produced?

Think Like a Scientist

1. What caused the bag to expand? Use an observation from the experiment as evidence.

2. How did the bag change from the beginning to the end of the experiment?

3. What might happen if gas continues to build up in a sealed container? Explain your thinking.

4. How could pressure or heat be a concern if a lithium-ion battery is damaged or overheats?

5. How is this model similar to a battery problem—and how is it different? Remember: this experiment uses vinegar and baking soda; it does not recreate the chemistry inside a battery.

6. What is one safety action people should take if a battery becomes unusually hot, swells, leaks, or is damaged?

My Conclusion

Complete the sentence using evidence from your observations:

When gas builds up inside a sealed bag, _____

One thing I learned about battery safety is _____
