

Baking Soda Stoichiometry

Background

Baking soda is used in recipes to make batter rise and produce a product with a light and fluffy texture (think delicious pancakes). When heated, baking soda (sodium hydrogen carbonate) decomposes to form sodium carbonate, carbon dioxide, and water.

Materials

Ring stand	Crucible (no lid)	Balance
Ring	Crucible tongs	Baking soda
Clay triangle	Bunsen burner	

Pre-lab question

Write the equation for the decomposition of baking soda (sodium hydrogen carbonate). You *must* get your equation approved by your favorite chemistry teacher before proceeding!

Procedure

1. Measure the mass of a clean, dry crucible.
2. Add *approximately* 5 grams of baking soda to the crucible. **Record** the *exact* mass of baking soda.
3. Set up a ring stand with a ring and clay triangle for heating the crucible.
4. Heat the crucible slowly at first and then with a stronger flame for 7-8 minutes. **Record** your observations.
5. Use tongs to remove the hot crucible. Let it cool *completely*.
6. Obtain the mass of the crucible and sodium carbonate. Determine and **record** the mass of the sodium carbonate alone.

Data and Observations

Create a data table that includes the following information:

- The mass of the empty crucible, baking soda alone, crucible + sodium carbonate product, and sodium carbonate alone.
- Your observations during the heating of the baking soda.

Calculations

1. Show your subtraction steps for the mass of sodium carbonate produced in the lab.
2. Start with your mass of baking soda. Use stoichiometry to calculate the mass of sodium carbonate that *should be* produced.
3. Determine the percent yield for your experiment.

Conclusion