



Name: _____ Period: _____

Baking Soda Stoichiometry Minilab

Introduction: When baking soda is used in cooking, it makes the batter rise. This happens because baking soda (NaHCO_3), decomposes when heated to form a solids & 2 gases.

Purpose: In this experiment, a Bunsen burner is used to heat & decompose baking soda. From the products, the expected & actual mass of Na_2CO_3 produced will be calculated.



Hypothesis: Predict the mass of sodium carbonate (Na_2CO_3) formed when 3 g of baking soda decomposes. What do you think it will be? _____.

Procedure:

1. Measure the mass of a clean, dry evaporating dish. Record in your data table.
2. Add about 3 grams of NaHCO_3 to the evaporating dish and measure the combined mass. Record in data table.
3. Calculate the mass of just the NaHCO_3 . Record in data table.
4. Set up a ring stand with a ring and clay triangle for heating the evaporation dish. Record in data table.
5. Using a Bunsen burner, heat the crucible for about 10 minutes. Record in the "Observations" Section.
6. While substance is heating, calculate the mass of Na_2CO_3 that "should" be produced. This is done in the "Calculations" Section.
7. After 10 minutes of heating, extinguish the flame, and allow the evaporating dish to cool for 3 min.
8. When the crucible has cooled, mass it with its contents. Record in data table.
9. Calculate the actual mass of Na_2CO_3 that was produced. Record in data table.

Data Table:

Mass of empty evaporating dish (g)	
Mass of evaporating dish + NaHCO_3 (g)	
Initial mass of NaHCO_3 (g)	
Mass of evaporating dish + Na_2CO_3 (g) (post heating)	
Final mass of Na_2CO_3 (g) (Actual mass)	

Observations

-Record at least 3 observations while heating (how is the texture of the baking soda changing?)

Calculations:

- Using your "3 step stoichiometry", calculate the mass of Na_2CO_3 that "should" be produced.
- Calculate percent yield using the actual mass over the expected mass.

Analysis Questions:

- What happened to the baking soda as it was heated?
- How did your actual mass of Na_2CO_3 compare with the amount that "should have been" produced?

Conclusion:

Write a 3-4 sentence conclusion. Why was the percent yield not 100%? What were sources of error? Think of three and explain.