

Name: _____

Per: _____

Law of Conservation of Mass

II. Purpose: To study the law of conservation of mass by carefully monitoring the initial and final masses of reactants and products during a gas producing reaction.

III. Procedure:

1. In a graduated cylinder, measure exactly 10.0 mL of 1M sodium carbonate (Na_2CO_3) solution. Pour into a small, clean Erlenmeyer flask. Rinse the graduated cylinder.
2. Label a small test tube CaCl_2 . Measure exactly 3.0 mL of 1M calcium chloride (CaCl_2) solution into the test tube. Stand the test tube in a 50 mL beaker.
3. Label a small test tube H_2SO_4 . Measure exactly 3.0 mL of 1M sulfuric acid (H_2SO_4) into the test tube. Stand the test tube in the same 50 mL beaker.
4. Carefully measure the mass of **all four** pieces of glassware.
5. Slowly pour the content of the CaCl_2 test tube into the flask containing the Na_2CO_3 . Swirl the flask to thoroughly mix the two solutions. Record your observations.
6. Carefully measure the mass of **all four** pieces of glassware.
7. Slowly pour the content of the H_2SO_4 test tube into the flask containing the Na_2CO_3 and the CaCl_2 . Swirl the flask to thoroughly mix the two solutions. Record your observations.
8. Carefully measure the mass of **all four** pieces of glassware.
9. Pour the resulting solution down the drain and rinse all pieces of glassware.

IV. Data

Qualitative Data:

Step 5

Step 7

Quantitative Data:

Mass before reaction (step 4): _____ grams

Mass after reacting CaCl_2 and Na_2CO_3 (step 6): _____ grams

Mass after reacting H_2SO_4 with contents from step 5 (step 8): _____ grams

V. Calculations ($\Delta\text{mass} \leq 0.01\text{g} = \text{no change in mass}$):

Mass change during first reaction:

Mass change during second reaction:

VI. Conclusions:

1. What indications that a chemical reaction took place did you observe in step 5? Step 7?

2. Did you experience a mass change in reaction 1? Reaction 2?

3. Account for any mass change you experienced in reaction 2.

4. In your opinion, does this experiment verify the law of conservation of mass? How might you change the procedure for the second reaction so your results better support the law of conservation of mass?
