

Lab: Law of Conservation of Mass

Name: _____

Date: _____

Period: _____

Teacher: _____

Introduction: The law of conservation of mass states that in any physical change or chemical reaction, mass is neither created nor destroyed, it is conserved.

Purpose: Carry out a chemical reaction and collect data to verify the law of conservation of mass.

Safety: Wear goggles. Contents may be flushed down the drain with adequate amounts of water.

Materials: 250mL Erlenmeyer Flask, 100mL Graduated Cylinder & Electronic scale
25mL of Acetic Acid (CH_3COOH) & 2g of Sodium Bicarbonate (NaHCO_3)
1 Balloon & 1 Square of tissue paper

Procedures:

1. Use tissue paper to measure approximately 2 grams of NaHCO_3
2. Tightly fold the tissue paper around the NaHCO_3 to make a small packet.
3. Use the Graduated Cylinder to measure 25mL of Acetic Acid and pour it into the Erlenmeyer Flask.
4. Measure the mass of the Erlenmeyer Flask with the Acetic Acid
5. Tilt the Erlenmeyer Flask so the small packet of NaHCO_3 rests on the neck of the flask.
Be careful not to let it fall in.
6. Carefully and completely cover the opening of the Erlenmeyer Flask with the balloon
7. Tilt the Erlenmeyer upright and allow the packet to mix with the Acetic Acid. Swirl it to ensure all of the contents mix together.
8. Measure the mass of the Erlenmeyer Flask with all of its contents.

Results:

Item	Mass (g)
1. Packet of NaHCO_3	
2. Erlenmeyer w/Acetic Acid	
3. Erlenmeyer w/all contents	

Analysis and Conclusions:

1. When the two solutions were mixed, did a chemical reaction occur? What evidence can you give to support your answer?
2. How did the total mass compare before and after making the solution?
3. Do your observations and measurements support or contradict the law of conservation of mass? Explain.
4. The equations below represent chemical reactions. Fill in the missing numbers below the equations to show conservation of mass:
 - a. $2\text{Mg} + \text{O}_2 = 2\text{MgO}$
 $48\text{g} + 32\text{g} = \underline{\hspace{2cm}}\text{g}$
 - b. $2\text{NaCl} = 2\text{Na} + \text{Cl}_2$
 $116\text{g} = 46\text{g} + \underline{\hspace{2cm}}\text{g}$
 - c. $2\text{Al} + 3\text{CuCl}_2 = 2\text{AlCl}_3 + 3\text{Cu}$
 $5.4\text{g} + \underline{\hspace{2cm}}\text{g} = 267.0\text{g} + 19.2\text{g}$