***Lab: Demonstrating the Law of Conservation of Mass***

**Problem:** During a chemical change, will the mass increase, decrease, or remain constant?

**Hypothesis:** When we mix baking soda (NaCHO3) and vinegar, (a base and an acid) what will happen to the mass before and after?

**Materials:** Erlenmeyer Flask

Triple Beam Balance

Watch glass (or petri dish)

Graduated Cylinder

Balloon

Vinegar

Baking soda (NaCHO3)

Funnel

**Procedure:**

1. Measure out \_\_\_\_\_\_ mL of vinegar in the graduated cylinder.
2. Pour the vinegar into the Erlenmeyer Flask
3. Measure \_\_\_\_\_\_\_ g of baking soda into the container (watch glass or petri dish)
4. Measure mass of the container with the triple beam balance
5. Add the amount of baking soda to the mass of the container
6. Set the triple beam balance to the new mass
7. Add baking soda to the container until it balances
8. Using a dry funnel, put the baking soda into a balloon
9. CAREFULLY stretch the end of the balloon over the opening of the Erlenmeyer flask. ***DO NOT LET THE BAKING SODA GET INTO THE VINEGAR!!***
10. Reset the triple beam balance to zero (0).
11. Find the mass of the flask, balloon, baking soda and vinegar. This is your before mass
12. Carefully, lift the balloon so the baking soda falls into the vinegar in the flask, keeping a good seal on the balloon.
13. Watch the reaction, in the results, write what you are observing.
14. When the reaction is finished, check the mass again. Record your findings in the Results
15. Answer the Conclusion Questions.

(OVER)

**Results:**

1. Baking Soda (NaCHO3)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Container  (watch glass or petri dish) | + | (NaCHO3) | = | Total |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ g | + | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ g | = | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ g |

1. Reaction

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Before |  | After | = | Difference |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ g |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ g | = | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ g |

1. Write your observations here:
2. What did you see happen? Describe it.
3. Did the mass increase, decrease or stay the same?

**Conclusion Questions:**

1. Was your hypothesis correct? Why do you think that was?
2. Did the mass increase, decrease or stay the same before and after the reaction?
3. How does this show the Law of Conservation of Mass? Explain.
4. Compare the demonstration we did of a physical change (cutting the cardboard) and this lab.
5. How did both of these show the Law of Conservation of Mass?
6. How are the 2 activities different?
7. What do you think would have happened to the results if the balloon wasn’t over the flask?
8. What was in the balloon? Did it have mass?