

## Mass and Chemical Reactions

Name - \_\_\_\_\_

Partner - \_\_\_\_\_

Purpose - To discover what happens to the mass of reactants as a chemical reaction occurs and new products are made.

Materials - safety goggles                      mass scale                      weighing paper                      sodium bicarbonate  
5% acetic acid                      1 small test tube                      dropper bulb                      plastic bottle with lid

Procedure - 1.) Put on safety goggles.

- 2.) Using the weighing paper, weigh approximately 1.0 g of sodium bicarbonate. \*\*\*This amount does **NOT** have to be exact!\*\*\*
- 3.) Transfer the sodium bicarbonate powder to your bottle.
- 4.) Using the dropper fill the test tube  $\frac{3}{4}$  full with acetic acid.
- 5.) Tilt the bottle to one side and gently lower the half filled test tube into the bottle without spilling any of the acetic acid. Place the lid on the bottle and twist to ensure a tight seal.
- 6.) Record the appearance of both reactants in the data table below (figure 1).
- 7.) Weigh your assembled apparatus containing the reactants and record this mass in figure 1.
- 8.) With one hand over lid to hold the lid securely on the container, tilt the bottle to allow the reactants to fully mix. Do this a few times to be sure.
- 9.) Weigh your apparatus carefully on the scale and record this mass in figure 1.
- 10.) Remove the sealed apparatus from the scale and **carefully** remove the lid. As you unseal the apparatus, observe and record what happens under your observations section.
- 11.) With the lid on loosely, reweigh your apparatus and record the mass in figure 1. \*\*\*Don't forget the lid when you reweigh your apparatus!\*\*\*
- 12.) Empty the bottles contents into the sink and thoroughly wash the bottle and test tube with lots of water.

Data and Observations -

Figure 1 -

|                               | Observations | Total Mass (g) |
|-------------------------------|--------------|----------------|
| Sealed apparatus + reactants  |              |                |
| Sealed apparatus + products   |              |                |
| Unsealed apparatus + contents |              |                |

Observations section -

Discussion Questions -

- 1.) What evidence indicates that a chemical reaction took place between the sodium bicarbonate and the acetic acid?
  
  
  
  
  
  
  
  
  
  
- 2.) Calculate the mass change between reactants and products in the **SEALED** bottle.

- 3.) Calculate the mass change between reactants and the **UNSEALED** bottle.
- 4.) Generally speaking, what change in mass results from a chemical reaction? How do you explain your results from question #3?
- 5.) With reference to atoms, suggest an explanation for the change (or no change) in mass in the **SEALED** bottle.
- 6.) Again, with reference to atoms, suggest an explanation for the change in mass in the **UNSEALED** bottle.

Conclusion -