

Demonstration Document

Explanation- This experiment will demonstrate the Law of Conservation of Mass through the endothermic reaction of Acetic Acid and Sodium Bicarbonate. This demonstration is intended for grades K-12.

Supplies- (all may be purchased at a local grocery store)

- 3g of Baking Soda (Sodium Bicarbonate)
- 20g of Vinegar (Acetic Acid)
- Scale in grams
- 100ml beaker, cup, or container
- A balloon or glove

Instructions-

- Measure out 3g of baking soda and place in balloon
- Measure 20g of vinegar and place in beaker
- Stretch balloon over the beaker without getting any of the baking soda in the beaker yet.
- Weigh the apparatus and note the starting weight
- Begin the reaction by pouting the baking soda out of the glove and into the beaker. Note the gas being formed. The scale may slightly decrease, this is simply the gas pushing up on the balloon making the apparatus slightly lighter.

Safety-

Sodium Bicarbonate- Irritant



Acetic Acid- Irritant



Disposal-

- The liquid resulting from the reacting may be dumped down the drain
- The balloon may be thrown away
- The beaker may be washed with detergent
- The scale may be wiped down but not submersed

Activity

Introduction-

Imagine an ice cube in a cup out on the counter. If it sits out long enough you may notice it begins to melt! Now try to think, where does the ice go? Does it just disappear? No! It simply changes from solid water to liquid water! This is called the "Law of Conservation of Mass".

Experiment-

- 1) First we will measure 3 grams of baking soda and put it into the balloon
- 2) Next we will pour 20 grams of vinegar into the cup
- 3) Now stretch the balloon over the cup, but be careful not to spill any baking soda in the vinegar yet!
- 4) Weigh the whole thing and don't forget to write down the number!
- 5) Finally we can begin the reaction! Carefully shake the baking soda out of the balloon and into the cup.
- 6) Watch the reaction!
- 7) Check to see what the new weight is and write it down.

Data Collection-

Starting Weight in Grams	Ending Weight in Grams

Analyze-

- 1) Did the weight change after the reaction? Why?

- 2) What happened to the balloon? Why do you think this happened?

Explanation Hints-

- 1) Where did the gas come from?
- 2) What could explain the weight going up or down?
- 3) Why did the balloon inflate?
- 4) Was there any observations? Fizzing? Temperature change?