

# Conservation of Mass

The “**Law of Conservation of Mass**” states that when matter goes through a physical or chemical change, the amount of matter stays the same before and after the changes occur. In other words, matter cannot be created or destroyed.

**Question:** In a closed system, will the mass remain the same after a chemical reaction takes place?



## Procedure - Part 1:

- 1) Using your graduated cylinder, measure **45 mL** of vinegar.
- 2) Add the vinegar to your 125 mL Erlenmeyer flask.
- 3) Stretch your balloon out for about a minute so that it will inflate easily.
- 4) Using the white plastic spoon, add **3 level teaspoons** of baking soda to your balloon. Use the paper funnel to avoid spilling.
- 5) While keeping all the baking soda in the balloon, carefully place the mouth of the balloon over the opening of the Erlenmeyer flask to make a tight seal. The balloon will hang to the side of the flask. **Record/draw observations.**
- 6) Using your Triple Beam Balance (TBB), find the mass of the closed system. (Flask, vinegar, balloon, and baking soda) **Record the mass in the data table.**
- 7) While the balloon is still **attached** to the flask, lift the balloon so that the baking soda falls into the flask and combines with the vinegar. Swirl gently.
- 8) **Record/draw all observations.**

## My Observations:

Before Chemical Reaction	During Chemical Reaction	Completion of Chemical Reaction

*Cut along dotted lines and paste into lab journal*



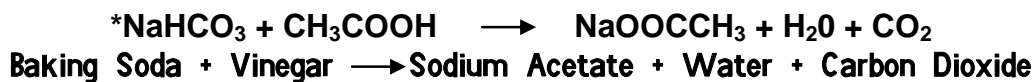
Mass of System Start (g)	Mass of System End (g)	Mass of System Gas Released (g)

### Procedure - Part 2:

- 1) Using your TBB, **find the mass** of the closed system once the chemical reaction has completed. Be sure to keep balloon attached.
- 2) Record the info into the data table above.
- 3) Carefully remove the balloon and let all the gasses escape.
- 4) Place the deflated balloon back onto the Erlenmeyer flask.
- 5) **Find the mass** again using your TBB.
- 6) Record your info into the data table above.

### Analysis and Results:

- 1) Look at the chemical equation below:



- a) Name the reactants
  - b) Name the products
  - c) Name the gas produced
- 2) Compare the mass of the closed system before and after the reaction. Share your results with the class. Explain your results.
  - 3) Were any new elements introduced into the closed system? Where did the gas come from? Explain.
  - 4) What evidence did you observe to indicate that a chemical reaction took place?
  - 5) After the gas was released, what happened to the mass of the system and why?
  - 6) Restate the law of conservation of mass into your own words. Do your results support this statement? Why/Why Not?

### Conclusion:

2-3 sentences on what you learned in this experiment.

Cut along dotted lines and paste into lab journal

