

Conservation of Mass (Pg. 125-126)

Who is Antoine Lavoisier?

What data did Lavoisier collect about chemical reactions?

What is a closed system?

What happens when mercury(II) oxide is heated?

What did Lavoisier observe many times when he performed experiments with mercury(II) oxide, and what conclusion did he draw from his observations?

What is the law of conservation of mass in a chemical reaction?

Conservation of Mass

In this reaction, a stopper is used to ensure that the contents do not escape.

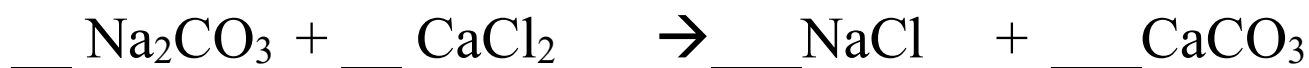
Materials:

1. Large Erlenmeyer Flask
2. Small Test tube
3. Rubber Stopper for Flask
4. Sodium Carbonate, NaCO_3
5. Calcium Chloride Solution CaCl_2
6. Scale

Procedure:

1. Pour the sodium carbonate solution into the flask to a depth of about 1 cm.
2. Pour calcium chloride solution into the test tube until it is about $\frac{3}{4}$ full.
3. Slide the test tube gently into the flask and put a rubber stopper firmly on the flask.
4. Place both the test tube and the beaker onto the scale and record the total weight.
5. Carefully turn the flask upside down while you hold the stopper firmly to empty the contents of the test tube into the flask.
6. Place both the test tube and the beaker onto the scale and record the total weight again.

The Mass of Everything. the flask, test tube, chemicals, and stopper before .	Observations - Evidence that a reaction occurred	The Mass of Everything the flask, test tube, chemicals and stopper again after .



Bohr Diagrams

Bohr Diagrams

Bohr Diagrams

Bohr Diagrams

Conservation of Mass

In this reaction, no stopper is used. When hydrogen gas is produced it escapes into the atmosphere.

Materials:

- | | |
|--------------|---------------------------------|
| 1. Beaker | 4. Sodium Hydrogen Carbonate |
| 2. Test tube | 5. Scale |
| 3. Scoopula | 6. Vinegar CH ₃ COOH |

Procedure:

1. Carefully pour hydrogen acetate into the test tube until it is $\frac{3}{4}$ full.
2. Pour the sodium hydrogen carbonate solution into the beaker to a depth of about 1 cm.
3. Place both the test tube and the beaker onto the scale and record the total weight.
4. Remove the beaker from the balance and then slowly pour the acid into the beaker.
5. Place both the test tube and the beaker onto the scale and record the total weight again.

The Mass of Everything. the beaker, test tube, and chemicals, before .	Observations - Evidence that a reaction occurred	The Mass of Everything the beaker, test tube, and chemicals again after .



Bohr Diagrams

Bohr Diagrams

Bohr Diagrams

Bohr Diagrams

Bohr Diagrams



Analysis

What evidence is there that a reaction occurred in the first experiment?

Why do we expect that the total weight will not change during the first experiment?

What evidence is there that a reaction occurred in the second experiment?

Now knowing the chemical equation, why did we expect the second reaction to decrease in mass?

What chemical caused the decrease in mass?