

Limiting Agent Laboratory
Chapter 9

Name: _____

Purpose: To observe how a limiting agent affects how much product can be produced in a chemical reaction.

Materials:

1 bag ingredients (per group)

Bunsen burner

1 wooden skewer per person

Procedure: Whether you want a s'more or not please follow the instructions below exactly. Do not eat any of the ingredients until you are told to do so.

1. Take 1 graham cracker, 1/2 of the chocolate bar, and 1 marshmallow and set aside. Repeat this process until you run out of something. Keep the piles separate.
2. Take note of how many complete s'mores you were able to make. # Made

3. Put the extra pieces back in the bag and set aside.
4. Weigh the graham crackers used. Mass=_____
5. Weigh the marshmallows used. Mass=_____
6. Weigh the chocolate bar used. Mass=_____
7. Each person may now take 1 graham cracker, 1 marshmallow and 1/2 chocolate bar.
8. Break the graham cracker in half.
9. Place your chocolate on one piece of graham cracker
10. Cook the marshmallow over the Bunsen burner using the wooden skewer.
11. Take the marshmallow off the skewer using the two pieces of cracker. You should now have a s'more.
12. Eat and enjoy.

Observations:

1. How many complete s'mores were you able to assemble?
2. What determined how many s'mores you were able to make?
3. What is this ingredient called in a chemical reaction?
4. Write a balanced word equation for s'more making.
5. Did the mass of each ingredient have anything to do with the balanced equation?
6. What do the coefficients of your balanced equation represent?
7. If you wanted to make twice the number of s'mores how much of each ingredient would you need.

8. What do the coefficients of a real balanced equation represent?

Conclusions:

1. Come up with an example of something that a limiting agent could affect other than a chemical reaction.
2. How do you think scientist determine what the limiting agent is in a chemical reaction?