

The Stoichiometry of S'Mores



INTRODUCTION: In this laboratory experiment, you will explore the principles of stoichiometry by building S'mores treats

PURPOSE:

1. To gain an understanding of reactants and products in a chemical reaction.
2. To perform stoichiometric calculations.
3. To describe what a limiting reagent is and what it does in a chemical reaction.

SAFETY:

Because students will be allowed to eat their S'mores at the end of the activity, precautions should be taken to prevent materials from coming into contact with lab equipment or surfaces. Materials should remain on paper plates or on clean napkins at all times.

MATERIALS:

bunsen burner
paper towels

balance
graham crackers

roasting tool
chocolate bars

marshmallows

PROCEDURE:

The following symbols will be used for each reactant

Sm = graham cracker (whole, not broken in half yet.)

Or = marshmallow

Es = chocolate square

1. Mass each of the reactants and record below.

Chocolate square (the amount you wish to use on each S'more): _____ g

Marshmallow (the amount you wish to use on each S'more): _____ g

Graham crackers (the amount you wish to use on each S'more): _____ g

2. Perform a **synthesis reaction** with the resulting product taking the form that you and your partner agree on. Write out a balanced equation for this synthesis reaction.

3. Make as many of the product as you possibly can. Mass and record ONE of the representative products.

S'more: _____ g

Compare this mass to the total mass of the reactants you found in #1? Explain the relationship.

4. Count and record how many products you were able to complete. _____

5. What caused your reaction to stop?

6. What, if anything, did you have leftover? Why?

7. Use the masses recorded (#1) and the synthesis reaction you created (#2) to perform the calculations below. How many s'mores could you make if you had:
 - a. 100 g of chocolate = ? S'mores

 - b. 100 g of graham crackers = ? S'mores

 - c. 100 g of marshmallows = ? S'mores