

Chapter 7
Stoichiometry: Mass Relationships and Chemical Reactions
Learning Objectives

8.12.2022

To satisfy the minimum requirements for this course, you should be able to:

1. **Write balanced chemical equations including states of reactants and products,** and
 - interpret balanced chemical reactions at the particulate and molar level
 - identify the reactants and products in the combustion reaction for hydrocarbons

2. **Understand the concept of reaction stoichiometry** and be able to:
 - calculate the amount (in moles or grams) of a particular reactant consumed or product formed in a chemical reaction
 - identify the limiting and excess reagents in a reaction mixture and determine the amount (in moles or grams) of product formed or excess reagent(s) remaining at the end of a reaction
 - calculate the theoretical yield assuming the reaction goes to completion
 - given the actual yield, calculate the percent yield for a chemical reaction

3. **Apply the principles of stoichiometry to compounds.** Be able to:
 - determine the percent composition by mass of its component elements given the molecular or empirical formula of a compound
 - determine the empirical formula for a compound given its percent composition by mass and vice versa
 - determine the molecular formula of a compound given its empirical formula and molecular weight

Note - Section 7.7 (Combustion Analysis) is not assigned