

Module 4.2: Reaction Rates

Learning Objectives

By the end of this sub-module, students should be able to:

- LO 4.2.1: Define chemical reaction rate.
- LO 4.2.2: Produce reaction rate expressions for reactants and products in a balanced chemical reaction.
- LO 4.2.3: Calculate reaction rate given timed chemical concentration data.

Prior Knowledge Review

- [CHEM I Module 7.2: Stoichiometry and chemical reactions](#) (LO 4.2.2)
 - Description: Chem I module discussing how reactions are balanced. Balanced reactions are important to derive a chemical reaction rate.

Instructional Materials

Textbook Sections

- OpenStax: Chemistry Atoms First 2e
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 - [Section 17.1](#) (LO 4.2.1-4.2.3)

Video Resources

- [Rate of a reaction](#) (LO 4.2.1-4.2.3)
 - Description: Walk through defining chemical reaction rate with time and the consideration of the reaction from product formation and reactant consumption.
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Other Resources (if applicable)

- [Instructor Google Slides \(Slides #4-14\)](#) (LO 4.2.1-4.2.3)
 - Description: Editable lecture slides for use in this subtopic.

Activities and Assessments

Conceptual Activities/Assessments

- [Student Reading Guide - Intro to Reaction Rates](#) (LO 4.2.1-4.2.2)
 - Description: Student reading guide to guide students through this part of the kinetics chapter. Focuses more on the concepts involved in the chapter and less on mathematical operations.
 - Teaching Tip: Assign with section.
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Application Activities/Assessments

- OpenStax: Chemistry Atoms First 2e Section 17.1 [Exercise # 1](#) (LO 4.2.1) [Exercise # 3.4.6](#) (LO 4.2.2, 4.2.3)
 - Description: Exercise 1 asks the student to define terms. The remaining exercises ask the student to set up mathematical expressions for reaction rates.