

Endothermic and Exothermic Reactions

Re-Energy
Learning Activity
Grade Level: 7-12



Main Objectives

Learners will test their knowledge on endothermic and exothermic reactions

Learning Outcomes

By the end of this activity, learners will:

- Understand what thermal energy storage is and the importance in providing energy to communities
- Understand the science of endothermic and exothermic reactions by conducting an experiment

Length of Activity

1 - 2 hours

Materials List

Thermal Energy Storage Backgrounder
Learner Worksheet
Data Sheet

Experiment #1

Beaker
Stir stick
Graduated cylinder
Thermometer
Timer
Yeast
Hydrogen peroxide

Experiment #2

Beaker
Stir stick
Graduated cylinder
Thermometer
Timer
Baking Soda (sodium bicarbonate)
Vinegar (acetic acid)

Introduction

Before you begin: Review the Thermal Energy Storage Backgrounder and complete the associated activity worksheet.

Procedure

Experiment #1: Yeast and Hydrogen Peroxide

Step 1: Measure 20 mL of 6% hydrogen peroxide in a graduated cylinder and add to a beaker

Step 2: Record the starting temperature

Step 3: Add 2 teaspoons of yeast to the hydrogen peroxide and stir

Step 4: Record the temperature every 10 seconds

Step 5: Record all observations in the data sheet

Step 6: Create a Time vs Temperature graph with your results

Experiment #2: Baking Soda and Vinegar

Step 1: Measure 20 mL of vinegar in a graduated cylinder and add to a beaker

Step 2: Record the starting temperature

Step 3: Add 2 teaspoons of baking soda to the hydrogen peroxide and stir

Step 4: Record the temperature every 3 seconds

Step 5: Record all observations in the data sheet

Step 6: Create a Time vs Temperature graph with your results

Conclusions and Questions

Write a concluding paragraph explaining chemically what happened in each experiment. Support your claims with your experiential data and graphs. Think about when there was the most or the least change. How did the temperature, colour, or consistency change? Did any gas form? What else did you see?