

# Endothermic and Exothermic Reactions

Re-Energy Activity Grade Level 7-12



# **Main Objective**

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**

**Experiment 1:** Yeast and hydrogen peroxide

**Experiment 2:** Baking soda and vinegar

#### **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)





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# **Activity**

#### **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.

#### **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. Some things to think about:

- 1. When there was the most or the least change.
- 2. How did the temperature, colour, or consistency change?
- 3. Did any gas form?
- 4. What else did you see?