

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

Curriculum Connections

Alberta

Science 9: Matter and Chemical Change

Science 10: Energy and Matter in Chemical Change

Science 30: Chemistry and the Environment

Science 30: Energy and the Environment

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)*

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?