

Endothermic & Exothermic Reactions

Re-Energy

Answer Key

Grade Level 7-12



Endothermic: An endothermic reaction is a chemical process that requires energy (i.e., heat) from its surroundings. Endothermic reactions are typically cool (i.e., an ice cube). Baking soda and vinegar is endothermic.

Exothermic: An exothermic reaction releases energy in the form of heat or light. It is the opposite of an endothermic reaction where energy is produced rather than consumed. Fire is an example of an exothermic reaction. Yeast and Hydrogen peroxide is exothermic.

Chemical name: Hydrogen Peroxide

Chemical Formula: H_2O_2

Appearance, Odor, Solubility, Stability, etc.: Clear, colourless liquid. Odorless. Stable at room temperature. pH 3.7. Melting point: $-33^{\circ}C$. Boiling point $108^{\circ}C$. Completely soluble in water.

Handling: Use only in a well-ventilated area. Do not inhale or ingest. Wear appropriate protective gear (i.e., gloves, eye protection, clothing, etc.). Keep away from combustible or flammable materials. If chemical comes in contact with eyes or skin, rinse thoroughly.

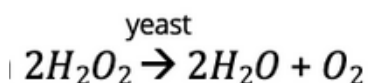
Storage: Keep container in a cool area out of direct sunlight and away from combustibles.

Hydrogen peroxide safety data sheet:

<https://www.columbuschemical.com/MSDS/SDS/Hydrogen%20Peroxide%206%25%202705.pdf>

What is the chemical reaction in Experiment #1?

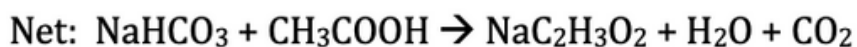
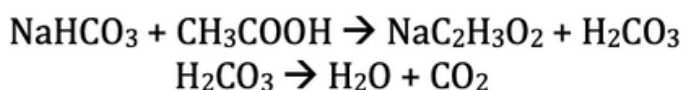
Exothermic reaction:



What is the role of yeast in Experiment #1? Yeast acts as a catalyst. A catalyst is used to speed up the rate of the reaction.

What is the chemical reaction in Experiment #2?

Endothermic reaction:



*Carbonic acid is an intermediate that quickly decomposes into water and carbon dioxide.

What happened in the two reactions? What can you conclude? Learners should identify that reaction one is exothermic and reaction two is endothermic. Learners should discuss supporting evidence they observed to conclude the types of reactions.