

KEY

Thermochem and Collision theory Study Guide

What is enthalpy? (define it and indicate its symbol)

heat content of a reaction or process. H

What is thermochemistry?

Study of heat (E) changes of a reaction

What is an exothermic reaction?

a reaction that gives off heat

Explain why an exothermic reaction have a negative enthalpy change?

b/c reactants lose heat to become products. (The overall ΔH is negative)

What is an endothermic reaction?

a reaction that absorbs heat

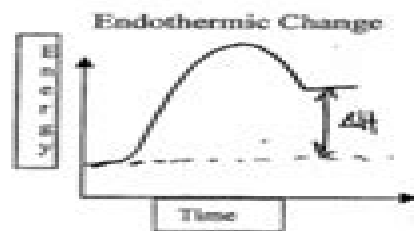
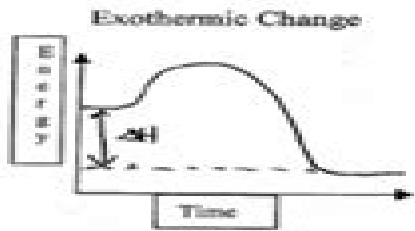
Explain why an endothermic reaction have a positive enthalpy change?

b/c reactants absorb heat to become products (The overall ΔH is +)

Complete the following chart:

Type of Reaction	Sign of ΔH_{rxn}	Which has more energy: reactants or products?	What temperature change would you see?
Exothermic	-	Reactants	Temp would \uparrow
Endothermic	+	Products	Temp. would \downarrow

Make enthalpy diagrams for the two chemical reactions from above, showing clearly the amount of energy released or gained.



Does the energy go from the surrounding to the chemicals or from the chemicals to the surroundings in an exothermic reaction? from chemicals to surroundings

Does the energy go from the surrounding to the chemicals or from the chemicals to the surroundings in an endothermic reaction? from surroundings to chemicals

Classify each of the following as an exothermic or endothermic process.

- Melting ice cubes endothermic
- Burning a candle exothermic
- Evaporation of water endothermic

- Baking Bread Endothermic
- Splitting a gas molecule apart endothermic (breaking bond!)
- Formation of snow in clouds exothermic (freezing!)

What type of reactions are the following based on the enthalpy?

- $C + H_2O \rightarrow CO + H_2 \quad \Delta H_{rxn} = +113 \text{ kJ}$ endothermic
- $2H_2O_2 \rightarrow 2H_2O + O_2 \quad \Delta H = -190 \text{ kJ}$ exothermic
- $6CO_2 + 6H_2O + 2803 \text{ kJ} \rightarrow C_6H_{12}O_6 + 6O_2$ endothermic
- $3NO_2 + H_2O \rightarrow 2HNO_3 + NO + 138 \text{ kJ}$ exothermic
- $P_4 + 5O_2 \rightarrow 3013 \text{ kJ} + P_4O_{10}$ exothermic

Thermo Study Guide Key

**Michael J. Moran, Howard N.
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B. Bailey**

Thermo Study Guide Key:

Fundamentals of Engineering Thermodynamics Michael J. Moran, Howard N. Shapiro, Daisie D. Boettner, Margaret B. Bailey, 2020-06-23 Fundamentals of Engineering Thermodynamics 9th Edition sets the standard for teaching students how to be effective problem solvers Real world applications emphasize the relevance of thermodynamics principles to some of the most critical problems and issues of today including topics related to energy and the environment biomedical bioengineering and emerging technologies *Guide for the Preparation of Thermodynamic Tables and Correlations of the Fluid State* Selby Angus, 1983

Chemistry, Student Study Guide John A. Olmsted, Gregory M. Williams, 2002-01-04 This third edition continues to innovate by providing students with an integrated and modern approach to the subject The text emphasizes the modern tools of chemistry while incorporating historical evidence and its unique molecular quantitative emphasis is further reinforced by an integrated media package developed by the authors Also of benefit is the just in time presentation of key content only providing details once they are needed While key topics and analytical techniques have been updated there is now an additional third chapter on chemical equilibrium The authors have also developed an expanded and more integrated problem solving emphasis that now incorporates a 4 step strategy throughout complete with text icons The whole is backed by a range of supplements including a new illustration program a tutorial CD interactive learningware an extensive Web CT component an instructor s resource CD and a solution CD

Materials and Technologies in Construction with Reference to Energy Efficiency and Sustainable Development Mohammad Arif Kamal, 2016-02-12 Special topic volume with invited peer reviewed papers only

University Physics Hugh D. Young, Roger A. Freedman, 2000 This work aims to enable students to develop physical intuition and strong problem solving skills In addition it points out the conceptual and computational pitfalls that commonly plague beginner physics students

American Druggist and Pharmaceutical Record, 1902

Advanced Research on Material Engineering, Chemistry, Bioinformatics II Helen Zhang, David Jin, 2012-06-04 Selected peer reviewed papers from the 2012 2nd International Conference on Material Engineering Chemistry Bioinformatics MECB 2012 July 14 15 Xi an China

Tappan's Handbook of Healing Massage Techniques Frances M. Tappan, Patricia J. Benjamin, 2005 The 4th edition of Tappan s Handbook of Healing Massage Techniques continues to be an authoritative and comprehensive resource for massage therapy courses This book lays the theoretical groundwork and provides detailed descriptions of techniques for Western and contemporary massage Asian bodywork therapy and applications for special populations Whether you are a licensed massage therapy practitioner another health related professional or simply interested in basic massage therapy techniques this is the book for you New to this Edition Accompanying CD ROM provides instructional video of the most common massage techniques to provide readers with a visual aid to accompany chapter content Includes the Wellness Massage Pyramid which introduces a new model for the understanding the broad scope of massage therapy based on the wellness perspective End of chapter Study Outlines provide

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Table of Contents Thermo Study Guide Key

1. Understanding the eBook Thermo Study Guide Key

- The Rise of Digital Reading Thermo Study Guide Key
 - Advantages of eBooks Over Traditional Books
2. Identifying Thermo Study Guide Key
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
 3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Thermo Study Guide Key
 - User-Friendly Interface
 4. Exploring eBook Recommendations from Thermo Study Guide Key
 - Personalized Recommendations
 - Thermo Study Guide Key User Reviews and Ratings
 - Thermo Study Guide Key and Bestseller Lists
 5. Accessing Thermo Study Guide Key Free and Paid eBooks
 - Thermo Study Guide Key Public Domain eBooks
 - Thermo Study Guide Key eBook Subscription Services
 - Thermo Study Guide Key Budget-Friendly Options
 6. Navigating Thermo Study Guide Key eBook Formats
 - ePub, PDF, MOBI, and More
 - Thermo Study Guide Key Compatibility with Devices
 - Thermo Study Guide Key Enhanced eBook Features
 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Thermo Study Guide Key
 - Highlighting and Note-Taking Thermo Study Guide Key
 - Interactive Elements Thermo Study Guide Key
 8. Staying Engaged with Thermo Study Guide Key
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Thermo Study Guide Key

9. Balancing eBooks and Physical Books Thermo Study Guide Key
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Thermo Study Guide Key
10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Thermo Study Guide Key
 - Setting Reading Goals Thermo Study Guide Key
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Thermo Study Guide Key
 - Fact-Checking eBook Content of Thermo Study Guide Key
 - Distinguishing Credible Sources
13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
14. Embracing eBook Trends
 - Integration of Multimedia Elements
 - Interactive and Gamified eBooks

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