



Thermochemistry Project

Expectations, and how to meet rubric standards.

Enthalpy of Chemical Reactions

- *Demonstrates a clear understanding of chemical reactions and their relationship to enthalpy*
- Explain your chemical reaction: show balanced chemical equation
- Explain process: what's happening?
- Explain enthalpy of reaction in your own words.

Calorimetric Calculations

- *Complete and appropriate and correct theoretical calorimetric calculations are presented to explain how heat should work in the product*
- Show and explain your actual (experimental) calculations.
- Show theoretical calculations
- How do they compare (% efficiency)?

Specific Heat

- *Specific heat is thoroughly discussed and relevantly tied to the project*
- Explain what specific heat is and how it relates to the project
- Why is it included in the Calorimetry calculation ($q = mC\Delta T$)?
- What does this calculation measure?
 - $C = q / (m\Delta T)$

Cost analysis

- *Costs of all materials are included with a price point and demonstrate a full understanding of the necessity to produce profits in relation to costs*
- Cost to produce each handwarmer including
 - Individual handwarmer
 - Equipment used
 - Time/manpower

Chemical, Material and Environmental Safety

- *Provides accurate, in-depth material and environmental safety data on all substances used in hand warmer*
- Include MSDS (Health, flammability, reactivity and LD50)
- Proper disposal method
- Environmental effects
- Safety precautions for use AND production

Marketing of Product

- *Marketing pitch is persuasive, directed, and concise and highlights the most important aspects of the product (ie. efficiency, heating time, temperature, safety, etc.)*

R



scientific based source.

- Bibliography in MLA format

Product Design

- *Product is clean, organized, and well-designed (ie. functions appropriately and as expected)*
- Well thought-out design
- Easy to use by consumer
- IT ACTUALLY WORKS



Presentation Rubric

Explanation of Ideas & Information

- *presents information, findings, arguments and supporting evidence clearly, concisely, and logically; audience can easily follow the line of reasoning*
- *selects information, develops ideas and uses a style appropriate to the purpose, task, and audience*
- *clearly and completely addresses alternative or opposing perspectives*

Organization

- *meets all requirements for what should be included in the presentation*
- *has a clear and interesting introduction and conclusion*
- *organizes time well; no part of the presentation is too short or too long*

Eyes & Body

- *keeps eye contact with audience most of the time; only glances at notes or slides*
- *uses natural gestures and movements*
- *looks poised and confident*
- *wears clothing appropriate for the occasion*

Voice

- *speaks clearly; not too quickly or slowly*
- *speaks loudly enough for everyone to hear; changes tone and pace to maintain interest*
- *rarely uses filler words*
- *adapts speech for the context and task, demonstrating command of formal English when appropriate*

Presentation Aids

- *uses well-produced audio/visual aids or media to enhance understanding of findings, reasoning, and evidence, and to add interest*
- *smoothly brings audio/visual aids or media into the presentation*

Response to Audience Questions

- *answers audience questions clearly and completely*
- *seeks clarification, admits “I don’t know” or explains how the answer might be found when unable to answer a question*

Participation in Team Presentations

- *All team members participate for about the same length of time*
- *All team members are able to answer questions about the topic as a whole, not just their part of it*