

Hot Pack Engineering Design Rubric

4: Highly Proficient	3: Proficient	2: Nearly Proficient	1: Developing
<p>I can collect, present, and analyze data and observations clearly and completely and give evidence based explanations that include correct discussion of chemical reactions.</p> <p>Correctly describe in words, pictures, and mathematically how the total number of each type of atom does not change during the chemical reaction that occurs in hot pack.</p> <p>Correctly describe evidence that a chemical reaction has occurred.</p> <p>Correctly describe the reason the chemical reaction generates thermal energy. Explanation include a chemical equation and drawing of atoms and molecules.</p> <p>I explain how my design meets the criteria and constraints.</p> <p>I can analyze data to evaluate competing hot packs, comparing cost, heat, and chemical risks (all 3) to determine how well they meet the criteria and constraints of the problem.</p> <p>I can justify my final design proposal based on quoted data and an explanation of the chemical processes involved.</p>	<p>I can collect, present, and analyze data and observations mostly clearly and completely and give evidence based explanations that include correct mention of chemical reactions.</p> <p>Correctly describe in words, pictures, and mathematically (use 2 of the three) how the total number of each type of atom does not change during the chemical reaction that occurs in hot pack.</p> <p>Correctly state evidence that a chemical reaction has occurred.</p> <p>Correctly state the reason the chemical reaction generates thermal energy. Explanation include a chemical equation or drawing of atoms and molecules.</p> <p>I state how my design meets the criteria and constraints.</p> <p>I can refer to data to evaluate competing hot packs, comparing cost, heat, or chemical risks (2+) to determine how well they meet the criteria and constraints of the problem.</p> <p>I can justify my final design proposal based on referenced data and a mention of the chemical processes involved.</p>	<p>I can collect, present, and analyze data and observations with some errors or omissions and give evidence based explanations that include mention of chemical reactions, with significant error.</p> <p>Describe in words, pictures, or mathematically how the total number of each type of atom does not change during the chemical reaction that occurs in hot pack with minor error(s).</p> <p>State evidence that a chemical reaction has occurred with some error.</p> <p>State the reason the chemical reaction generates thermal energy.</p> <p>I state how my design meets some of the criteria and constraints.</p> <p>I can state how competing hot packs, comparing cost, heat, or chemical risks (1+) to determine how well they meet the criteria and constraints of the problem.</p> <p>I attempt justify my final design proposal based on referenced data and a mention of the chemical processes involved.</p>	<p>I attempt to collect, present, and analyze data and observations, but do so with significant errors or omissions and give evidence based explanations show major errors in understanding.</p> <p>Attempt to describe in words, pictures, or mathematically how the total number of each type of atom does not change during the chemical reaction that occurs in hot pack with significant error(s).</p> <p>Attempt to state evidence that a chemical reaction has occurred with some error.</p> <p>Attempt to state the reason the chemical reaction generates thermal energy.</p> <p>I attempt to state how my design meets the criteria and constraints.</p> <p>I attempt to evaluate competing hot packs, comparing cost, heat, and chemical risks to determine how well they meet the criteria and constraints of the problem, but do not refer to data.</p> <p>I attempt justify my final design proposal but do not reference data or mention the chemical processes involved.</p>