

CALIFORNIA STATE SCIENCE FAIR 2007 PROJECT SUMMARY

Name(s)

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Project Number

J0503

Project Title

Temperature: Hot or Cold: Exothermic and Endothermic Chemical Reactions

Abstract

Objectives/Goals

Do exothermic & endothermic chemical reactions have an affect on temperature of the reactants (chemicals)?

Methods/Materials

5 glass beakers; 1 graduated cylinder; 1 glass-STIRRING rod; 1 small spoon; 1 digital lab thermometer; 1 pint of distilled water; 14 grams of calcium chloride; 14 grams of sodium hydro carbonate; 14 grams of ammonium nitrate; 28 milliliters of concentrated sulfuric acid; safety goggles; surgical gloves.

Results

Temperatures (Celsius)

Names of Solutions

30 sec. 1 min. 1.5 min. 2min. 2.5 min 3 min. 3.5 min 4 min 4.5

min 5 min

Water Only (Control)*

Water + Calcium Sulfate

Water + Sodium Bicarbonate

Water + Ammonium Nitrate

Water + Sulfuric Acid

All temperatures are measured in Celsius

*= The #water only# box has the one control temperature

Conclusions/Discussion

My experiment showed which chemicals were endo/exothermic but also the severity if the reaction. Some were weaker than others. From the results, you can guess which of the reactions was the most powerful. My hypothesis was correct, but not completely. As I said before there are different severities of the reactions. I did not even think about that while I was writing my hypothesis. I would like to point out something that may need adjusting for future scientists: There is only one chemical that produces an endothermic reaction with water. That is the chemical, Sodium Bicarbonate (baking soda). I think that the experiment should have included at least one more endothermic-reacting chemical.

Summary Statement

Learning if exothermic and endothermic chemical reactions produce or take in heat.

Help Received

Mother ordered chemicals online.