CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)
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Project Number
J1720

Project Title
The Effect of Color on Heat Absorption

Abstract

Objectives/Goals
The objective of this experiment was to determine how different colors affect the absorption of heat in a material. I hypothesized that black would absorb the most heat, followed by red, green, blue, and white.

Methods/Materials
Colored substrates were placed in direct sunlight and the temperature of each substrate was measured with an infrared camera every 30 seconds for 15 minutes in °C. The key materials used in this experiment were metal, wood, and plastic substrates, spray paint (black, red, green, blue, and white), FLIR C2 infrared camera, substrate holder, and stopwatch.

Results
The results of 15 trials showed that black absorbed the most heat, followed by green, blue, red, and white.

Conclusions/Discussion
My results demonstrated that heat absorption was very much affected by the color of the substrate. My hypothesis was only partially supported because red absorbed less heat than green and blue, which was not what I had predicted. This knowledge can be directly applied to saving energy and money because of less need for heating and cooling appliances.

Summary Statement
Color affects the amount of heat absorbed by a material, and results show that black absorbs the most heat, and white absorbs the least.

Help Received
FLIR Systems provided use of an infrared camera and a spectrophotometer. Dr. Richard Bornfreund helped run the spectrophotometer and answered various questions. My science teacher, Laura Ulvaeus, taught about the scientific process and gave practice for the science fair through many lab activities.