CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)
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Project Number
J0204

Project Title
Will the Bog Break the Log?

Abstract

Objectives/Goals
My objective is to find if relative humidity affects the strength of wood. I predict that as relative humidity rises, the strength of wood will diminish. I don't think that temperature will have much noticeable effect as a factor.

Methods/Materials
I subjected 3 identical dowel sticks made up of the same wood to 3 different levels of humidity: a normal, 29% humidity room, a steamed pot at 88% humidity, and a totally saturated (100% humidity) bucket of water. After exposing them at an equal amount of time, I measured the kilograms of pressure required to snap the sticks.

Results
On average, the sticks exposed to room-temperature humidity (29%) broke under the weight of 11.31kg. The totally saturated, submerged sticks (100%) broke on average of 7.4kg. The steamed sticks exposed to an average of 88% humidity broke under the average weight of 5.57kg.

Conclusions/Discussion
The results of my experiment were quite surprising. As I hypothesized, increased humidity did weaken the wood sticks. What was surprising was that the sticks which were totally saturated in water were harder to break than the sticks heavily steamed in 88% humidity. The 2 groups of steamed sticks were close in humidity, but quite different in temperature; it appears that heat indeed played a factor in this experiment. So my hypothesis was both right and wrong. My results did not go with the logic that sticks subjected to 100% humidity would be more easily broken then with 88% humidity, so the heat of the steam may have been a factor. But nevertheless, humidity does indeed affect the strength of wood.

Summary Statement
My project is about whether or not relative humidity will affect the strength of wood.

Help Received
My mom helped me gather materials for the experiment.