CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J0207

Project Title
Comparing the Strength of Solid and Laminate Wood Beams

Abstract

Objectives/Goals
The objective of this project was to compare the strength of solid and laminate wood beams and to determine if increasing the layers in a laminate would make it stronger.

Methods/Materials
The strength of balsa wood beams of the same size were compared--solid vs. 2-layer vs. 4-layer vs. 8-layer laminate. Each beam was suspended and secured by C-clamps over the seats of two chairs with a bucket hanging at the center of the beam. Sand was carefully poured into the bucket until the beam broke. The weight of the bucket with sand was recorded for each beam for a total of nine trials each. The average weight needed to break each beam was compared to find out which beam was the strongest.

Results
The 8-layer laminate carried the most weight before breaking at an average of 6.79kg, followed by the 4-layer laminate at 5.53kg, then the 2-layer laminate at 4.14kg. The solid wood beam carried the least weight at 3.54kg which was 48% less than that carried by the 8-layer laminate.

Conclusions/Discussion
My conclusion is that a laminate wood beam is stronger than a solid one and that increasing the number of layers in a laminate made it stronger.

Summary Statement
This project is about comparing the strength of solid and laminate wood beams and determining if increasing the layers in a laminate would make it stronger.

Help Received
My mother helped me get all the materials I needed and assisted in catching the bucket with sand.