CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)
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Project Number
31187

Project Title
Impact Absorption

Abstract

Objectives/Goals
My objective was to determine which packaging material absorbs the most impact. My hypothesis was that the packaging peanuts would do the best because they are soft, flexible and don't have many air pockets in them.

Methods/Materials
Using a 4" PVC pipe, I drilled a hole that marked the fist 12 inches and then continued to drill holes every 2 inches above the initial 12 inch mark, until reaching 48 inches. I placed an egg at the bottom of the pipe in a viewing tee and I put 8 inches of material above the egg. I then dropped a 2 pound weight in 2 inch intervals above the material until the egg broke. I did the experiment three times on each material and then averaged the scores. Materials used: 4" PVC pipe (5'long), PVC tee, 2 pound weight (bar bell) string, duct tape, nail, drill, eggs, packaging peanuts, bubble wrap, cotton balls, newspaper, ladder bungee cord, swimming noodle, Sharpie pen, plastic wrap, paper plate, journal and pencil.

Results
The results showed that the bubble wrap and packaging peanuts did the best, with both averaging a 23 inch drop before breaking the egg. The cotton balls did the poorest, breaking the egg with only 16 inches of drop and the newspaper averaged only slightly better at 17 inches.

Conclusions/Discussion
My results show that the packaging peanuts tied with the bubble wrap for being the best to absorb the impact. My hypothesis was close to accurate, but not completely supported, because the bubble wrap did just as well and was actually more consistent. My results enabled me to meet my objective to determine the best absorbing material.

Summary Statement
Determine which packaging material will absorb the most impact.

Help Received
Mother helped me correct mistakes and taught me how to make a graph. Father tied the string to the weight, helped me drill the holes in the pipe and put a nail in the hole so I would know where to drop the weight.