CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)

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Project Number

36814

Project Title

The Comparison of Strength in Different Shapes When Used in Composite Sandwich Panels

Abstract

Objectives/Goals

For my project I tested what shape, octagon, hexagon, square, triangle, or circle, when used to make the core of a composite sandwich panel, would be the strongest/withstand the most weight. I knew that hexagons(in a honeycomb pattern) were widely used because they are extremely efficient to manufacture, but what I wanted to know was whether the hexagons were actually the strongest.

Methods/Materials

Kraft paper(used commonly to make cardboard), ruler, scissors, rubber cement(used due to flexibility when dry), sand(used as weight because it could be easily added incrementally). Used paper, ruler, scissors, and glue to make 15 composite sandwich panels, with five different shapes used in the core, with 3 panels of each shape. Then added weight to test weight threshold in order to determine which shape was strongest.

Results

Five shapes were tested in three trials to determine which one was stronger. After testing it was found that a composite sandwich panel with a core made from circles was the strongest.

Conclusions/Discussion

The performance of the circles shows that there is a stronger alternative to the widely used hexagons/honeycomb when dealing with the design of the core for composite sandwich panels.

Summary Statement

Composite sandwich panels are commonly made from a honeycomb core and are used widely in many fields; I tested wether hexagons(honeycomb) was actually the strongest shape that could be used, and found that circles were actually stronger.

Help Received

None. I designed, built, and performed the experiments myself.