CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)

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Project Number

22143

Project Title

What Are the Effects of Cooking Oils on Ball Bearing Performance?

Abstract

Objectives/Goals

In my project, I hope to determine whether cooking oils could be used as lubricants. I wanted to see if they could compare with modern day mineral oil lubricants. If they could, if a person ran out of lubricant, they would not have to rush to the store, they could just use some cooking oil from the house on their item in need of lubrication. It would be cheaper and more environmentally safe.

Methods/Materials

I used three different oils in my project. I used two different cooking oils and one mineral oil. For my cooking oils I used Canola Oil and Olive Oil. My Mineral oil was the control group. For my tests, I put all three of the oils onto skateboard ball bearings separately. I then put the ball bearings onto tx skateboard and rolled it down a .5meter tall ramp. I measured the distance from the end of the ramp to the spot where the front wheel stopped its motion. I did this 100 times for each oil, which totalled to 300 tests/rolls. I then averaged the rolls and measured the performance of the rolls according to that.

Results

After all of my rolls were completed, I got my averages. My first set of rolls were with my Mineral Oil, the control group. The average of the Mineral Oil was 2.68 meters long. My second group of tests were with my Canola Oil. The average of the rolls of my Canola Oil, was 3.76 meters. The third group of tests were with my Olive Oil. The Olive Oil went on average 3 meters long per roll. In order from longest to shortest rolls on average, it went from the Canola Oil, to the Olive Oil, to the Mineral Oil.

Conclusions/Discussion

The results of my tests were very interesting. When it showed me that the vegetable oils did better that the Mineral Oil, I was awed. I had read that up until the 19th century, cooking oils were used t lubricants, and I wondered why they stopped using them. With further research I soon found out the reason why people no longer used cooking oils. Under immense heat and pressure, cooking oilp deteriorate and break down. Even though cooking oils broke down this way, they could still be used x many household items. People could use these oils in things like skateboards, bikes, or even door hinges. These oils are environmentally safe and would prove as good lubricants. People would still have to make sure though that they did not put these oils into machines, especially cars. This could cause accidents and even serious crashes.

Summary Statement

My project was to determine whether cooking oils could be used instead of modern day mineral oil lubricants.

Help Received

My mother helped my organize my board; My brothers helped me with my tests; My father helped me grammatically correct my reports; My teacher helped guide me in my format.

Preliminary