Name(s)	Project Number
Emily A. Ogawa	**22380**

Project Title

What Contaminants Introduced to Oil Affect Lubricity the Most?

Abstract

Objectives/Goals

The goal of my project was to show that adding substances to oil affected how slippery the oil was.

Methods/Materials

These two experiments used eight contaminants. They were salt, sugar, used 10-40 wt. Oil, water, pulverized charcoal, charcoal ash, sand and soil. There was also a controlled trial done with 30 wt. Oil. I mixed one teaspoon of each contaminant with 4 ounces of the 30 wt. Oil. I tested the amount of force needed to pull a 1 pound weight across a 12 inch plexiglass surface covered with an oil solution with a force measurer gauge. Forty trials were completed for each oil mix and control. In the second experiment I determined at what angle the one pound weight slid on the plexi glass surface as I tilted it. The plexi glass was again covered with the same oil mixtures and control as were tested in the first experiment.

Results

Salt created the least amount of friction in both experiments. My first experiment showed that charcoal ash required the most amount of force to pull the one pound weight across the plexi glass. The second experiment showed that the pulverized charcoal needed the most amount of lift for the weight to fall.

Conclusions/Discussion

In conclusion to these experiments I found that most of the contaminants that had a more uniform size and shape did not seem to effect the oil as much as the contaminants without uniform size. In addition to this I think that the contaminants with a more uniform size had a ball bearing effect making the weight slide more easily on the plexi glass surface. The charcoal ash apparently had no ball bearing effect on the oil because it may have acted more like a paste when it was added to the oil.

Summary Statement

Finding out what substances effect oil lubrication.

Help Received

Mother helped write down numbers for results, and also helped me edit my writing. My advisor printed out flow chart, table of experiment results, and graphs.