



CALIFORNIA STATE SCIENCE FAIR

2002 PROJECT SUMMARY

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| Name(s) W. Britt Wilson | Project Number S1520 |
| Project Title The Effect of Different Surface Materials on the Sliding Friction of Fiberglass | |
| Objectives/Goals The objective is to determine which material has the least sliding friction when dragging a piece of weighted fiberglass across it, and if there is a relationship between the weight on the fiberglass and the amount of friction. | Abstract A bucket was attached to a piece of fiberglass with fishing line. The fiberglass was placed behind a starting line on each of the five different materials, astroturf, carpet, aluminum, plywood, and plastic. Water was meticulously added to the bucket from a graduated cylinder until the fiberglass (weighted during different trials with 150, 300, 450, 600, and 750 grams) moved two feet across the material. Five trials for each weighted fiberglass were conducted. The amount of water required to move the fiberglass the designated distance for each trial was recorded. |
| Results The results show that aluminum and astroturf created the least amount of friction for the weighted fiberglass, with carpet a close third. Plastic ran a more distant fourth and plywood required the most force to move the fiberglass, indicating the most amount of friction. A strong linear correlation between the weight on the fiberglass and the amount of force required to move the fiberglass across the different materials was found. | |
| Conclusions/Discussion This experiment was designed to determine which material would be the best surface for sliding a fiberglass boat across when getting it in and out of its slot. The experiment effectively demonstrated that aluminum and astroturf provided the least friction when weighted fiberglass was dragged across it. Overall, the data was very accurate, as indicated by error bars. The numerous trials clearly established the differing slopes of friction coefficients for the different materials. | |
| Summary Statement Using weight as a measure of frictional force, a piece of fiberglass was pulled across different surface materials to determine which material had the least sliding friction and if the friction coefficients were linear. | |
| Help Received While collecting data, my dad told me when the fiberglass started moving and when it crossed the finish line so that I could concentrate on pouring the water into the bucket at a constant rate. I also had a peer edit in class. | |