



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Stephen J. Steckbeck	Project Number J1810
Project Title Fender Bender Damage Resistance	
Abstract Objectives/Goals The objective of this project is to determine which material will resist low speed automobile collision impact damage the best and potentially meet the Highway Transportation requirements. Methods/Materials The researcher used four materials with the same thickness and size. Each material was formed into a U-shaped channel to simulate a bumper of an automobile. Each bumper was impacted by an 18.18 Kg weight at 34.9 Km/Hr which simulates the kinetic energy of a 1364 Kg car travelling at 4 Km/hr. The 34.9 Km/Hr was achieved by dropping the weights down a chute from 4.8 Km high. the dent in the bumper was measured after each impact. Results Titanium had the least damage with a dent of only 2.0 mm. The remaining materials had an average depth of 104.6 mm for aluminum and 50 mm for stainless steel. Plexiglas was also tested but shattered upon impact. Conclusions/Discussion The researcher's conclusion is that titanium resists low speed automobile impact damage better than any of the other materials tested.	
Summary Statement The project is about discovering a material that won't dent in a low speed automobile collision.	
Help Received Grandmother's neighbor owns a sheet metal shop and supplied most of the material and formed all of the test specimens; Father helped me pour the foundation, build the wooden chute, and drop the 18.18 Kg weights during the testing; Grandmother allowed use of her back yard and garage for testing.	