



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Clinton L. Hatayama	Project Number J1807
Project Title The Effects of Different Amounts of Styrofoam on the Strength of Concrete	
Abstract Objectives/Goals The objective is to determine if using styrofoam as an admixture in concrete will make the concrete stronger while making it lighter in weight. Methods/Materials Eighty concrete bricks were constructed and divided into twenties. The first group of twenty bricks had 18gms of styrofoam beads added, the second had 12gms styrofoam beads, the third had 6gms styrofoam beads, and the fourth group of twenty bricks was control. The concrete ingredients and ratio of ingredients was the same for all. The bricks were cured, weighed and tested for strength. The weight required to break each brick was recorded. A ratio of weight to strength was used to see if the styrofoam bricks were lighter but stronger than the control. Results Comparing the strength of the brick in proportion to its weight, the control brick was the strongest. It took an average of 20.6 times its weight to break the control brick. The group of bricks with 18gms styrofoam added took an average of 14.83 times its own weight to break. It was lighter, but still not stronger than the control. The 12gms styrofoam added took 12.45 times its weight and the 6gms styrofoam added brick took 12.0 times its own weight to break the brick. Conclusions/Discussion In these proportions, and using the concrete ingredients in the ratio I did, styrofoam added to the concrete did make the brick lighter, but did not make it stronger in any of my trials. The data suggests that styrofoam could be used to lighten concrete, but more testing would have to be performed to determine a better ratio of both concrete ingredients and styrofoam to make it stronger than regular concrete.	
Summary Statement My project is to determine if adding styrofoam to concrete will make it stronger while making it lighter.	
Help Received Used scales from school to weigh ingredients, mother helped type final project papers, Mr. G. helped with graphs.	