



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

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<p>Project Title The Future of Building: Styroflex, A New Building Material</p>	
<p align="center">Abstract</p> <p>Objectives/Goals The goal of this project was to find an efficient building material (Styroflex) superior to standard drywall in the properties of strength, weight, water resistance, temperature and sound insulation, and flame resistance, while using recycled materials.</p> <p>Methods/Materials Two boxes were created from twelve 1x1" pieces of wood. One of these boxes was covered with Styroflex, the other was covered with traditional drywall. Both of these boxes have undergone a series of tests to examine their efficiency. The following tests/comparisons were performed: strength (material: bb gun), weight (material: scale), water resistance (material: timer, container and colored water to monitor reaction to exposure to water), temperature (material: thermometers and heater) and sound insulation (materials: sound generator, amplifier and decible meter), and flame resistance (materials: propane/butane stove).</p> <p>Results Styroflex outperformed the standard drywall on the Weight, Durability, and Water Resistance Tests. The drywall box's performance was slightly better than Styroflex in the sound test through most frequencies, but this is possibly due to the fact that Styroflex is not as thick as drywall. Styroflex and drywall tied on the temperature test, and the drywall was found to be superior on the flame test, as the Styroflex began to burn slightly after about 30 seconds exposure to the flame.</p> <p>Conclusions/Discussion Although Styroflex was superior in many aspects (weight, durability and water resistance), the failure in the flame test requires that a flame retardant paint or similar material be added to the exterior recycled plastic sheeting. To increase the efficiency of the Styroflex as an insulator to sound and temperature, because of the light weight of the Styroflex, it could be made thicker to create a more dense and more efficient insulating building material.</p>	
<p>Summary Statement My project involved the creation and testing of a new multi-layered material using recycled plastic that would replace standard drywall as a building material.</p>	
<p>Help Received My father cut the recycled plastic sheeting as it was difficult to cut and required the use of a saw.</p>	