



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) James Isaac T. Staten	Project Number J1098
Project Title Bags to Bricks for Humanity	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective is to make bricks by reducing plastic waste and mixing it with other materials to determine which compound will make the best brick for human habitats. I hypothesize that melted plastic bags mixed with rock pebbles is the best material to build bricks because they will have a higher density and can withstand a greater amount of force.</p> <p>Methods/Materials I melted 1oz of plastic grocery bags with canola oil in a fryer and molded them into a rectangular block shape in a mint tin. The first brick contained no added materials and became the control sample. This process was repeated three more times, to create samples 1,2 and 3, as I combined the melted bags with patching compound, rock pebbles or saw dust respectively. Once I had my sample bricks, I tried to break them with a drill press to measure the maximum force I could apply, before material failure. I measured the volume and mass and calculated the density for each sample. I then measured the force required to reach failure using a scale, located beneath the sample. I analyzed the results by comparing the density of each sample with the maximum force at time of failure and graphed the outcomes.</p> <p>Results Although in theory, the highest density could withstand the greatest force, my second sample, made of melted plastic bags and patching compound, was more dense than my control, but withstood less force before the breaking point. The plastic and wood brick were less dense than the pebble brick, but withstood exceptionally high levels of force before failing. However, the pebble brick, which had the highest density, withstood the highest maximum force before its breaking point.</p> <p>Conclusions/Discussion My hypothesis was accurate because the plastic grocery bags combined with the pebbles made the best brick due to its higher density and withstood the maximum force applied. Further analysis of some samples lead me to conclude that certain variables may have existed that were not controlled for, however, the directions of the results were still in line with my hypothesis. Present applications for the bricks could be light construction and home and garden decor. Hopefully, future uses of these bricks will include more efficient and stable construction, while equally reducing waste and toxins released into our environment.</p>	
Summary Statement Recycling plastic bags into bricks to help reduce the trash in our landfills and helping humanity construct homes at lower cost can be a great investment in our future.	
Help Received Mother supervised melting of plastic; brother-in-law provided use of drill press	