



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Holden Moreno	Project Number J0917
Project Title The Effect of Varying Air Pressure on the Fluidity of Different Sand Types	
<p style="text-align: center;">Abstract</p> <p>Objectives My project was to determine the effect of varying air pressure on the fluidity of different types of sand. I believed that the finer sand would fluidize more easily than the more coarse sand. I thought that the smaller, lighter grains would be moved more easily and allow the golf ball to sink faster.</p> <p>Methods I placed a pvc lattice with a valve connected to an air compressor in the bottom of a clear, plastic container. I alternately filled the container with 4 different types of sand (play sand, mesh sand, all purpose sand and washed all purpose sand) and turned on the air compressor (with 3 different pressures) and measured the time it took for a golf ball to sink below the sand. I performed 25 trials at each air pressure for each type of sand. Before coming to the State Fair, I am going to change the golf ball to a small piece of weighted plywood to more closely simulate buildings of different weights. I will also add more types of sand to my trials.</p> <p>Results According to the data the all purpose sand became more fluid when more pressure was applied. The larger grains of sand allowed more air to infiltrate between the particles and they moved more freely than the smaller grained sands (mesh sand and play sand).</p> <p>Conclusions As the particle size of the sand increased the faster the golf ball sank. There is a direct relationship between particle size and fluidity of the sand (liquefaction). It is concluded that liquefaction depends in part on the particle size of the soil.</p>	
Summary Statement My project is about the fluidity of sand under varying air pressures.	
Help Received I built the device with the help of my father and performed the experiment myself.	