



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

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<b>Project Title</b> <b>Block Those Beats</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of this project is aimed for business buildings that either have sound that does not want to flow out to the streets (e.g. Music Schools, Bands, etc.), or buildings that DO NOT want outside sounds (e.g. major business offices, banks, libraries, etc.) can find out what materials are best suitable for soundproofing. I want to prove and show which kind of material is the best for soundproofing.</p> <p><b>Methods/Materials</b> For this experiment, I will be using six 5 1/2 x 5 1/2 inch patches of each soundproofing material to patch up my mock-up room. Then, after each kind of material was used, I will use the graphs and see, numerically, which material insulates sound the most.</p> <p>The materials I used in this experiment are: Acoustic Foam (pyramid), Acoustic Foam (wedged), Soundproofing vinyl, Rock Wool, Open-Celled foams, Lego Technic Pieces, Mindstorms NXT Sound Sensor, Lego sound brick, Tape, Computer, Mindstorms NXT DATA LOGGING</p> <p><b>Results</b> From my data analysis, I have found that vinyl foam was the best insulator. I also found that rock wool is the worst insulator. I think rock wool wasn't good because it was very light weight and hollow. Also, because it is fiber glass, I think sound passed through.</p> <p><b>Conclusions/Discussion</b> In my experiment, I had 2 possible sources of error. The first one is the noise level of where I tested. I tested in a decently quiet place, but there is no such thing as absolute silence. Without knowing, I tested where there were a lot of doors, so people were going in and out. The final possible source of error is how there are small gaps in my LEGO box. Some sound might of escaped from those cracks.</p> <p>In the end, my hypothesis was incorrect. Open-celled foam was the second best insulator, but not the first. If I were to redo my experiment, I would start from a pre-made wooden box, so there won't be any gaps. I would also go to a much quieter room to test.</p>	
<b>Summary Statement</b> Which materials are best for soundproofing	
<b>Help Received</b> Parents helped buying materials	