



CALIFORNIA STATE SCIENCE FAIR 2003 PROJECT SUMMARY

Name(s) Megan Ashjian; Katelyn Jundt	Project Number J1102
Project Title Wood Stability: How Does Age Affect the Dimensional Stability of Wood?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Our objective was to determine if the dimensional stability of wood is affected by age (when the tree was milled). We also wanted to be able to predict which pieces of lumber would be the most stable for construction, by simply looking at the growth rings in each piece of lumber.</p> <p>Methods/Materials Our method was to find which pieces of wood were better for construction by determining which was the most stable. We used wood milled from 1870-2002, and obtained from remodeling and demolition projects. We dried the wood, and measured the moisture content and starting length using an oven, a micrometer and scales. We found the moisture content of each sample by cutting small blocks from each sample and baking them. We measured the increase in length after saturating the samples and counted the number of growth rings per inch.</p> <p>Results After comparing the change in length from each piece of wood, our experiment proved that older wood (milled over 50 years ago) expanded less than the newer lumber, making it more stable. Since the older wood is more stable, it is not likely to cause cracks in the ceilings of homes built with trusses. The width between the growth rings and the length change helped us determine which lumber would be better for construction.</p> <p>Conclusions/Discussion We were able to determine which pieces of lumber would be better for construction and least likely to cause damage such as ridging and cracking in the ceilings of homes, which cost more than \$22-65 million annually to repair. We noticed that most of the expansion occurred over the first week, then expanded slowly and slightly the next few weeks. The quick change in length means that builders can minimize cracking by heating and drying homes before putting drywall on the ceilings and walls.</p>	
Summary Statement Our project determined how the age of milled lumber affected its dimensional stability, which will help home owners, home builders, and truss companies select and use better lumber to minimize costly ridging and cracking problems.	
Help Received Both dads helped us with the table saw used to cut the pieces of lumber. Both dads helped cut the foam board with an exacto knife so we would not injure ourselves. We also got help from an engineering company that loaned us the display truss.	