



Architect and Photographer (HAUS | Architecture For Modern Lifestyles)



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# Thermally Modified Wood Market Perception Report

Architects in the eastern U.S. were surveyed to determine their perceptions regarding TM wood. The survey also included questions related to their perceptions of the performance and characteristics of TM wood such as mechanical performance (bending, shear strain, modulus of elasticity, and surface hardness), water relationships (moisture repelling, shrinkage and swelling), durability (decay resistance and maintenance aspects), and visual aspects (color).

The surveys were sent to those listed under the NAICS classifications including Architectural Services and Landscape Architectural Services in the eastern United States.

The results indicated that architects generally lack a familiarity with TM wood's technical and marketing aspects such as pricing, availability, and promotion.

## Implementation

This marketing study was conducted to capture the perception of architects located on the East Coast of the U.S. on TM wood. In 2015, Espinoza et al. reported that TM wood producers were concerned about the lack of knowledge that customers, such as architects, had about TM wood.

This study, conducted by researchers at Virginia Tech, included questions related to technical aspects such as their knowledge of bending strength, modulus of elasticity, surface hardness, shrinkage, and visual aspects. Different types of questions, such as open, closed, and Likert items, were formulated to capture the perceptions from the target population.

Survey management followed the procedures suggested by survey experts such as Dillman et al., (2014). The survey's were submitted and approved by the institutional review board at Virginia Tech and then sent to architects in both hardcopy and online format. Following the first mailing, a reminder was sent to the participants that did not respond to the first mailing. A second mailing and emailing of the survey was sent for those participants that did not respond to the first mailing and reminder.

Once the results were obtained, the data was analyzed and is summarized in this document.



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## Sample Frame

The sample frame included companies under NAICS 541310, and 541320 (Architectural Services and Landscape Architectural Services) subscribed to the Chamber of Commerce on the most populated counties in the East Coast of the U.S.

## Results

A total of 146 responses were obtained from the surveyed sample. From the total responses, 47 came from the mail mode and 99 from the web mode. These 146 responses correspond to 1.8% of the total population of 8,000 firms in the targeted region. Out of the total responses obtained, only 22 of the respondents indicated that they had worked with TM wood products and have experience with it, and completed the entire survey. The rest of the respondents answered the first seven questions regarding the demographics of their respective businesses and returned the questionnaire. With only 22 respondents indicating they had worked with TM wood; the results need to be considered with caution. However, this low response could be interpreted as an indication that there is still little awareness of TM wood among the architectural community. The demographics responses are summarized in Table 1.

**Table 1. Summary of demographic responses**

Question	Variable	Does not work TM wood	Does work TM wood
1) Gross Sales	Gross sales between 0-\$2.5M	56%	77%
	Gross sales between \$2.5M - \$7.5M	18%	5%
	Gross sales greater than \$7.5 million	26%	18%
2) Average Growth Sales	Average growth sales between 1-10%	83%	68%
	Average growth sales between 11-20%	9%	23%
	Greater than 20%	8%	9%
3) Target audience	Commercial	36%	29%
	Residential	28%	37%
	Institutional	21%	18%
	Landscape and Other	15%	16%
4) Average distance between to provide services	Distance between 0-50 miles.	39%	50%
	Distance between 50-100 miles.	26%	9%
	Distance between 100-250 miles.	19%	32%
	Greater than 250 miles	16%	9%
5) Years in business	5 years or less	3%	5%
	6-20 years	26%	36%
	More than 20 years	71%	59%
6) Architectural/Civil Engineer Service	Construction	8%	9%
	Architectural/Civil Engineer Service	70%	50%
	Constructors	4%	5%
	Other	18%	36%

The architects who reported experience with TM wood projects indicated that they have used the product in 1 to 5 projects on average. In addition, in 68% of these projects it was the architects who selected TM wood as the material, not the customer. Respondents who work with TM wood indicated that they typically obtained materials through a distributor (41%) or a subcontractor (41%). Architects also indicated that the most attractive species are yellow poplar (27%), white ash (27%), soft maple (15%), and red oak (15%). Architects stated that most of the time their customers do not specify the species, however when they do, most of them preferred white ash.

Those respondents that have worked with TM wood, often selected that they are “Not at all familiar” and “Not so familiar” (5% - 41%) with respect to TM wood, a strong indication that more information needs to be provided and disseminated to architects regarding the specifications of TM wood. Results also suggest that architects are unaware that TM wood is a good economical alternative to other wood products.

Overall, there were many respondents who did not know much about TM wood and its properties and advantages, which may be the reason they do not work with TM wood. For example, 53% of respondents were “Not familiar” with the “non-toxic aspect” of TM wood. This result is an indication that the non-toxicity aspect could be used as a strong marketing driver to capture consumers’ interest. Another aspect that respondents were not familiar with was the pricing of TM wood. Product pricing should be a good marketing driver, since it is relatively low compared to tropical hardwoods, wood-plastic composites, and pressure treated wood.

**Figure 1. TM wood factors familiarity**

Customer's technical aspect interest

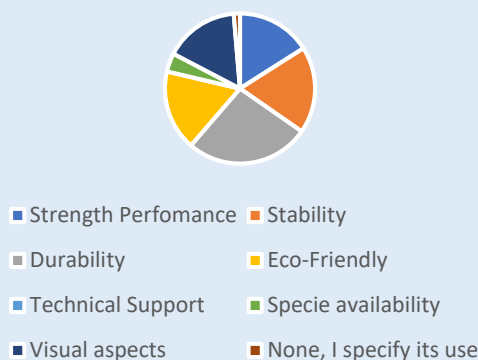


Figure 1 shows the familiarity of architects with TM wood. The results show that the respondents overall have a lack of familiarity with the technical and marketing aspects of TM wood.

The most known factors for architects are dimensional stability, strength, and the non-toxicity aspect of the material. On the contrary, factors such as product pricing and availability of species are the factors least familiar to the respondents.

**Figure 2. Customer’s technical aspect Interest**

TM wood factors familiarity

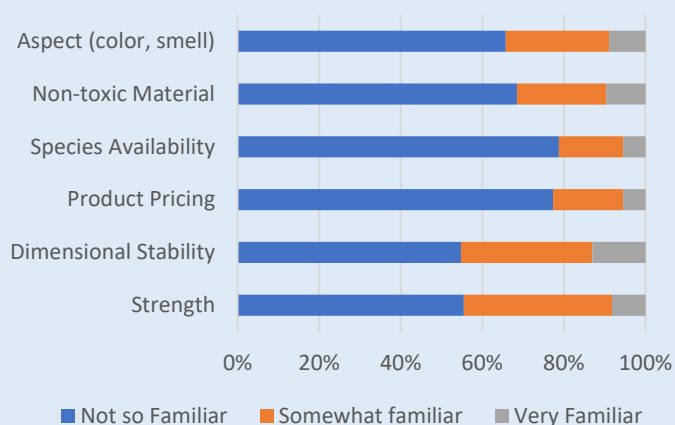


Figure 2 shows the main technical aspects that the architect’s customers are interested in.

This question allowed the respondent to choose more than one option, where durability was the most important aspect (26%), followed by dimensional stability, eco-friendly aspect, appearance (visual aspect), and strength performance with 18%, 17%, 16% and 16%, respectively.

**Figure 3. Customer's marketing aspect Interest**

Customer's marketing aspect Interest

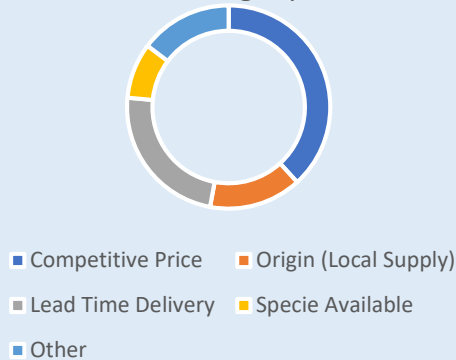


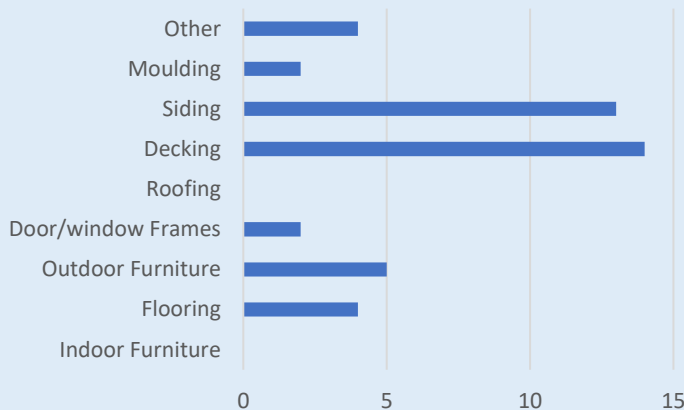
Figure 3 shows marketing aspects that the respondent's customers are more interested in when customers request TM wood.

Most of the respondents indicated that their customers are interested in competitive prices (38%) and lead time delivery (24%) of the product. Species availability was once again, the least important.

Results in Figure 4 display aspects regarding the intended applications that the architecture's customers are planning for when they choose TM wood products.

Results show that the intended applications are decking (32%), siding (30%), outdoor furniture (11%), and flooring (9%). The applications that they specified on the "Other" option (9%) were towards, sheds, pergolas, fencing, framing, and exterior trim.

**Figure 4. TM wood Intended Application**



In an open-ended question, the respondents expressed their desire for additional information with their current interests and concerns in the market. Some other insights were:

- The responses talked about the marketing aspects such as pricing and lead time of delivery being weak, where the product is not available from many local distributors or they do not have information about it.
- Architect's are interested in information regarding the long-term data on its time average of decay resistance, installation techniques, and environmental stability.
- Architects are also interested in ways to maintain the products color, want more information regarding prices since they believe it is an expensive product, and learn more about species availability. They are interested not only in information regarding the good aspects of the product but also what any potential problems or downfalls of the product may be.
- The availability of technical detailing requirements, performance metrics, and aesthetics choices.
- The respondents are also interested in an environmental product declaration, where they can rely on the environmental performance of the product.

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