



Structural Panel Use in Residential Construction in 2001

This study was designed to develop a better understanding of the ways in which residential builders perceive and use structural softwood panels (primarily plywood and oriented strand board). This research (reported in CINTRAFOR WP 93) describes the trends in structural panel use in the residential construction industry in 2001.

In this study, residential builders were asked to estimate their use of plywood, oriented strand board (OSB) and structural insulated panels (SIPs) in residential construction. While plywood had just over a 50% market share in sub-floor applications, OSB dominated in wall and sub-roof applications, Table 1. On a regional basis, plywood use was highest in the northwest and lowest in the southwest. With respect to firm size, the Top 100 builders reported the highest use of OSB while small builders reported the highest use of plywood. Interestingly, there was a substantial difference observed between the Top 100 builders and the large builders, with large builders using substantially more plywood than the Top 100 builders.

Across all end-uses, regions and firm sizes, opposing trends were observed for plywood and OSB. For plywood, only about 5-10% of respondents indicated that they had increased their use of plywood whereas 30-50% indicated that their use of plywood had decreased. In contrast, the usage patterns for OSB were opposite those observed for plywood with 35-50% of respondents indicating that their use of OSB had increased and just 5-10% reporting decreased use. However, it is important to note that approximately 40-60% of respondents indicated that their use of plywood had not changed during the past two years, Figure 1.

Respondents were asked to evaluate nineteen panel attributes and rate the importance of each with respect to their specification of a structural sheathing material. Builders rated resistance to delamination, resistance to edge swelling and resistance to thickness swell as being the most important panel attributes. They were then asked to compare the performance of plywood and OSB with respect to each of the panel attributes. The survey respondents indicated that plywood was generally perceived as having superior performance relative to OSB, Table 2. In contrast, OSB was perceived as being superior to plywood with respect to just four structural panel attributes: price, price stability, presence of panel voids, and resistance to delamination.

The results of this survey show that builders continue to increase their use of OSB at the expense of plywood, despite the fact that plywood is generally perceived as having better performance characteristics than OSB. This suggests that while the performance of OSB is perceived as being below plywood, it is still considered as being adequate for structural sheathing application in residential construction. Further, these results suggest that price remains the driving factor in the material specification process for structural panels.

Table 1. Structural panel use in major residential end-use applications.

	Northeast			Southeast		
	Plywood	OSB	SIP	Plywood	OSB	SIP
Sub-floor	45.2%	54.1%	4.8%	56.2%	39.2%	2.6%
Exterior Wall Sheathing	16.5%	76.7%	4.2%	17.8%	73.5%	2.6%
Roof Sheathing	33.0%	67.0%	0.0%	36.4%	60.8%	0.8%
	Northwest			Southwest		
	Plywood	OSB	SIP	Plywood	OSB	SIP
Sub-floor	57.9%	38.0%	2.0%	40.3%	55.8%	0.0%
Exterior Wall Sheathing	35.3%	61.5%	2.0%	18.1%	78.6%	0.3%
Roof Sheathing	48.5%	51.4%	0.2%	23.9%	76.2%	0.0%

Table 2. Comparative ratings for plywood and OSB.

Panel Attribute	Comparative Ratings	
Weight of panel*	4.8	} Plywood is perceived to be better than OSB
Shear Strength*	4.8	
Resistance to Thickness swelling*	4.7	
Resistance to Edge Swelling*	4.7	
Deflection Performance (stiffness)*	4.6	
Ease of nailing*	4.5	
Durability*	4.5	
Ability to Withstand Natural Disasters*	4.4	
Resistance to Linear Expansion*	4.3	
Decay Resistance*	4.2	
Quality	4.2	
Product Warranty*	4.2	
Resistance to Fire*	4.1	
Energy Efficiency	4.0	} OSB is perceived to be better than plywood
Non-slip Surface*	3.9	
Resistance to Delamination*	3.4	
Price Stability*	3.3	
Overall Price*	2.9	
No voids in panel	2.8	

* Significantly different than 4 p<.05

Comparison ratings based on a Likert-like scale where a rating of 1 indicated that OSB is perceived to be much better than plywood while a rating of 7 indicated that plywood is perceived to be much better than OSB.

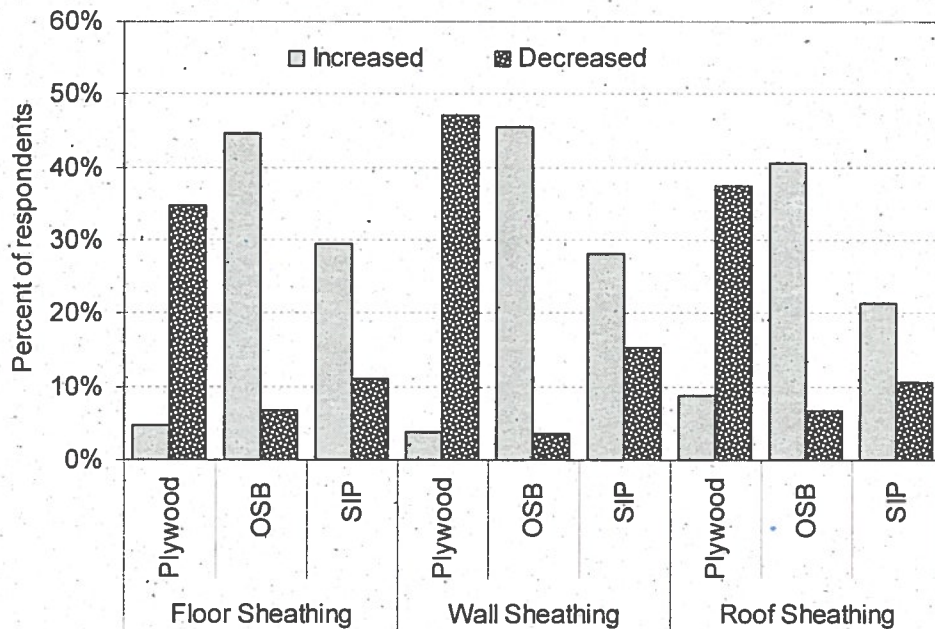


Figure 1. Trend in builders' use of structural panels in sheathing applications, 2001.