Use of New Wood Material for Pallets, Containers Is Stagnant To Declining

Softwoods Not Being Substituted for Hardwoods, *New Study Shows*

(Editor's note: In 1994, the authors reported in the Pallet Enterprise *on their study of new and recovered wood use for pallets and containers. In this article they report on the results of a new survey in 1996 of new wood use by the pallet and container industry, comparing the latest results to previous studies. Their research is based on a study of 2,600 wooden pallet and container manufacturers in the United States who were surveyed about their 1995 production. Part two of their report will focus on recycled pallets and will appear in October's* Pallet Enterprise.)

By Robert Bush
and
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The pallet and container industry continues to change: it has made attempts at consolidation, new and sometimes quite different players have entered, alliances and partnerships have been formed, and the issues of quality and standards continue to be addressed.

As important as these changes are, one that continues to generate considerable interest is the use of pallet materials other than new wood. These materials include a variety of plastics, corrugated paperboard, and recovered or recycled wood from used pallets. An often asked question is:"How are these materials affecting the use of new wood?"

This new study helps to answer this question. It was conducted by the Center for Forest Products Marketing and Management at Virginia Tech in collaboration with the Southern Research Station of the U.S. Forest Service and with the help of the scientists at the Forestry Sciences Laboratory, USDA-Forest Service, Princeton, W.Va. In addition to the pallet industry, the studies track wood use changes in the furniture and cabinet industries. The goal is to provide firms with market information they can use to remain informed of changes that could affect their future competitiveness.

Overall, the use of new solid wood materials of pallets and containers is stagnant to decreasing. As compared to 1992, a larger percentage of firms in 1995 used hardwood lumber and cants, but the total volume of use decreased. The use of softwood lumber and cants was down both in terms of volume and in terms of the proportion of firms using the material. Consequently, no mass substitution of softwoods for hardwoods appears to have taken place.

Parts use did not compensate for decreased use of lumber and cants. The use of parts, both hardwood and softwood, decreased in total volume between 1992 and 1995. However, individual firms may have substituted parts for lumber as the frequency of part use -- the percentage of firms using the material -- increased over the study period. This increase was especially evident in the frequency of hardwood parts use.

We do not know how softwood plywood and oriented strand board (OSB) use by the industry has changed in terms of volume, but the proportion of firms using the products either stayed essentially the same (as is the case for OSB) or decreased (as is the case for softwood plywood).

What, if anything, is being used to "pick up the slack" in pallet materials? Non-wood materials are one possibility, and certainly they are being used. However, recovered and recycled pallets probably are making a larger impact. (Part two of this report will examine changes in the use of recovered pallets, and the changes are dramatic.)

Frequency of Wood Materials Use

In 1995, pallet and container manufacturers used solid wood (lumber,

Figure 1: Proportion of Pallet and Container Companies Using Various Wood Materials in 1995

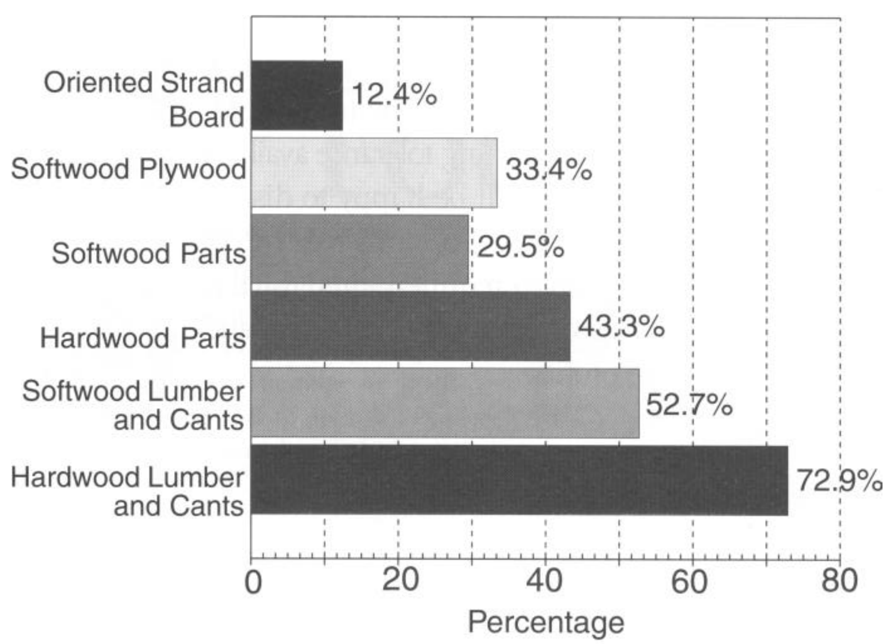

Table 1. Estimated Wood Material Use by the Pallet and Container Industry: 1995, 1993, 1992

Wood Material	Unit of measure	Estimated Use 1995	1993	1992
Hardwood lumber & cants	MMBF	3,867	3,852	3,957
Softwood lumber & cants	MMBF	1,533	1,504	1,623
Hardwood parts	MMBF [2]	661	972	785
Softwood parts	MMBF [2]	254	615	529
Oriented strand board [1]	MMSF	21	18	20
Softwood plywood [1]	MMSF	187	178	169

[1] Panel volumes in 1992 and 1993 are reported without an assigned thickness basis. Panel volumes for 1995 are reported on a 3/8" thickness basis.

[2] These volumes are estimated on a nominal basis.

and parts) as well as panels such as softwood plywood and oriented strand board. Figure 1, (page 34) provides the percentage of firms using each of these materials to make pallets and containers. Almost 73 percent of the firms used hardwood lumber or cants and just over one-half (52.7 percent) used softwood lumber or cants. Softwood plywood was used by 33 percent of the firms and approximately 12 percent used OSB. Of course, many firms used more than one type of wood material. As a result, the percentages sum to more than 100.

Pallet and container manufacturers were asked a similar question in the 1992 study. At that time, 66 percent of the respondents used hardwood lumber or cants and 59 percent used softwood lumber or cants. Softwood plywood was used by 39 percent of the firms and OSB by 13 percent.

Use of New Wood Materials

Firms in the U.S. wood pallet and container industry used an estimated 4.53 billion board feet of solid hardwood in 1995 (Table 1, this page). Lumber and cants accounted for 3.87 billion board feet (85 percent of the total) and the remaining volume consisted of parts.

The 1996-97 *North American Factbook* lists 1995 U.S. production of hardwood lumber as 11.88 billion board feet. Using this figure, solid hardwood use by the pallet and container industry was equivalent to 38 percent of production. Using the same source of production figures, the industry used a volume equivalent to 48 percent of production in 1992 and 46 percent in 1993.

A comparison of the results of the 1992, 1993 and 1995 studies shows the use of hardwood lumber and cants has decreased slightly. From 1992 to 1993, estimated use dropped approximately 105 million board feet. However, between 1993 and 1995 it increased by 15 million board feet. Overall, from 1992 to 1995 hardwood lumber and cant use decreased by only 2 percent based on volume.

The use of hardwood parts increased from 1992 to 1993 by 24 percent but decreased 32 percent between 1993 and 1995. Overall, hardwood part use in 1995 was down by over 100 million board feet as compared to use in 1992.

In addition to hardwoods, the industry uses large volumes of solid softwoods (lumber, cants, and parts). Consumption was an estimated 1.79 billion board feet in 1995 (Table 1). Most of this use (86 percent) was in the form of lumber and cants rather than parts. Unlike hardwoods, pallets and containers do not represent a large part of the market for solid softwoods. With 1995 U.S. production of softwood lumber at 32.2 billion board feet (as reported in the 1996-97 *North American Factbook),* use for pallets and containers is equivalent to only 5.6 percent of total volume. In 1992, softwoods used for pallets and containers represented 6.2 percent of production.

Mirroring hardwood trends, the use of softwood lumber and cants decreased from 1992 to 1993 and increased slightly between 1993 and 1995. Overall, from 1992 to 1995, softwood lumber and cant use decreased by 5.5 percent. During the same period, softwood parts use decreased by 275 million board feet, a dramatic 52 percent reduction.

One finding appears clear based on the studies: solid softwoods are not being widely substituted for solid hardwoods in pallets and containers. While hardwood use decreased, so did softwood use. This suggests that some other material or materials are being used to satisfy customer pallet and container needs. We believe that, in large part, recovered or recycled pallets are making up for decreased use of solid new wood materials.

Species Use

The study also collected information on the species of solid wood used by firms in the pallet and container industry. Among the hardwoods, oak was the most commonly used single species, accounting for 27 percent of total hardwood use (Figure 2, on page 38). Yellow-poplar was the second most commonly used species (8.4 percent of hardwood use). However, the majority of hardwood used by the industry (56.2 percent) was not segregated by species and instead was used as mixed hardwoods.

Compared to 1992, the use of oak as a proportion of total hardwood use decreased over 10 percentage points. Yellow-poplar and alder use each decreased by approximately four percentage points. Increases occurred in the use of mixed hardwoods and other species.

Solid softwood use in 1995 (Figure 3, on page 38) was dominated by Southern pine (40.9 percent of total softwood volume), the spruce-pine-fir group (30.9 percent), Douglas-fir (11.2 percent), and the hemlock-fir group (10 percent). The remaining volume of softwoods used by the industry was split among several species including imported Radiata pine.

When compared to 1992, Southern pine use -- as a proportion of total softwood use -- essentially was unchanged in 1995. The use of Douglas-fir, however, decreased by over 17 percentage points.

Panel Products

The industry uses wood panel products in addition to lumber or solid wood. Much of this use is for containers. An estimated 64 percent of industry use of softwood plywood and 60 percent of OSB is for containers. However, panel-deck and even panel block pallets are not uncommon. The survey indicates the industry used 187 million square feet (3/8-inch basis) of softwood plywood, and 21 million square feet (3/8-inch basis) of oriented strand board in 1995 (Table 1). Unfortunately, these figures cannot be compared to those from earlier studies because previous figures were reported without an assigned thickness basis.

Firms in the Southern region of the U.S. used the largest portion of hardwood lumber and cants (50 percent of nationwide use) while the West was the largest user of softwood lumber and cants (40 percent of nationwide use). Firms in the Midwest used the second largest portion of hardwood lumber and cants (30 percent) and led the other regions in the use of parts, both hardwood (49 percent) and softwood (35 percent). In terms of softwood parts, the West was a close second at 33 percent of nationwide use. Softwood plywood was used primarily by firms in the South (48 percent) and West (25 percent). In contrast, OSB use was concentrated in the Midwest (63 percent) and South (26 percent).

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Figure 2: Solid Hardwood Use by Pallet and Container Companies by Species: 1995

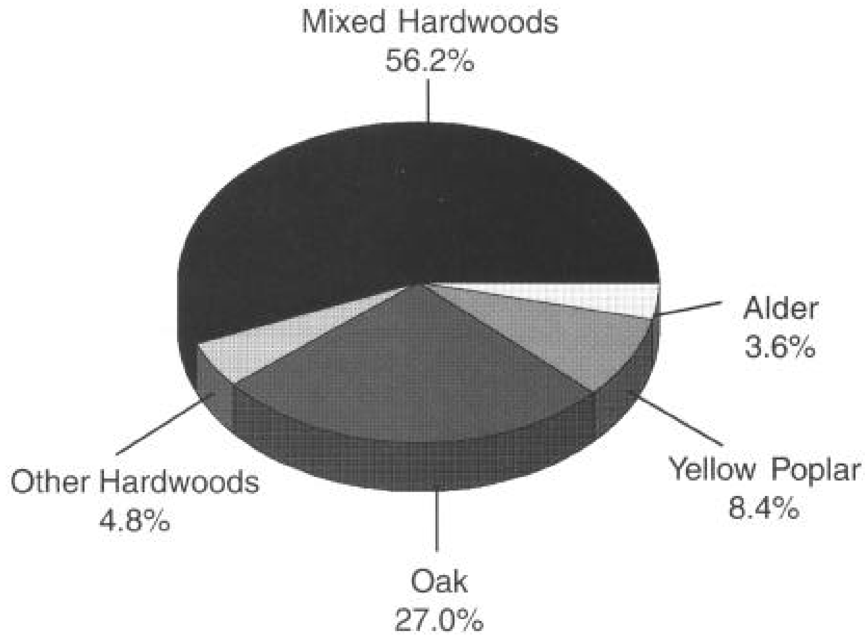

Figure 3: Solid Softwood Use by Pallet and Container Companies by Species: 1995