

The Use of New and Recycled Wood Materials by the Pallet Industry

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Few people would argue with the statement that interest in pallet recycling has increased in the last few years. Several trends have lead to this increased interest. First, increased awareness of the environment and activities that affect the environment has caused a previously unconcerned public to ask: What happens to all those pallets? Many pallet producers, concerned about the availability of reasonably priced materials, have begun to look at used pallets as a raw material opportunity. Pallet users have turned to repaired and recycled pallets as a way to decrease their product handling costs. Finally, increasing attention is being paid to recycling and solid waste disposal at many levels of government.

Pallet recycling is now big business. The National Wooden Pallet and Container Association (NWPCA) reports that pallet recycling is now the most profitable sector of the pallet industry and more and more new pallet producers are entering the recycled market. At least two associations (NWPCA and the International Association of Pallet Recyclers) now represent the interests of pallet recyclers and preliminary standards for pallet repair have been developed. A previous article in *Pallet Enterprise* reported that pallet recyclers are generally optimistic concerning the future growth of the recycling business.

In spite of this interest and activity in pallet recycling, we found that good estimates of the volumes of new and recycled materials used by the industry were not available. Consequently, the Center for Forest Products Marketing at Virginia Tech, in collaboration with the Southeastern Forest Experiment Station of the Forest Service, began tracking wood use in the industry. We have been tracking the use of new wood material by the pallet and container industry annually since 1991. Our first study of recycling in the pallet industry covered 1992. In addition, the Center for Forest Products Marketing conducts annual

studies of wood use in the furniture and cabinet industries.

This article presents the results of our study of wood materials used by the pallet and container industry in 1992 and initial findings concerning use in 1993. We do not explain the methods used to arrive at our estimates. However, we would be pleased to provide this information to any interested readers.

The Use of New Wood Materials

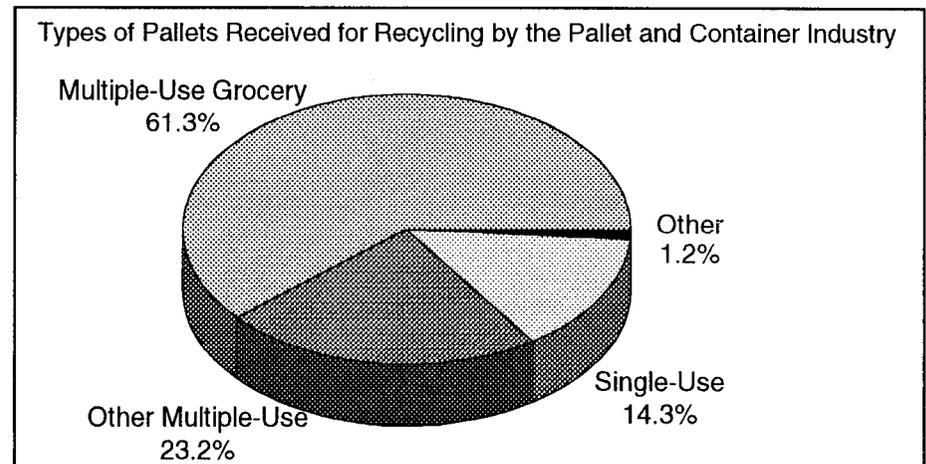
We estimate that firms in the U.S. wood pallet and container industry (Standard Industrial Classifications 2441, 2448, 2449) used 4.74 billion board feet of solid hardwoods in 1992. Lumber and cants accounted for 3.96 billion board feet (83.4% of the total) and the remaining volume consisted of pallet parts and shook. The American Forest & Paper Association reports total U.S. hardwood lumber production at 11.2 billion board feet in 1992. Using this figure, the industry consumed a volume of hardwood equal to 42 percent of total hardwood lumber production.

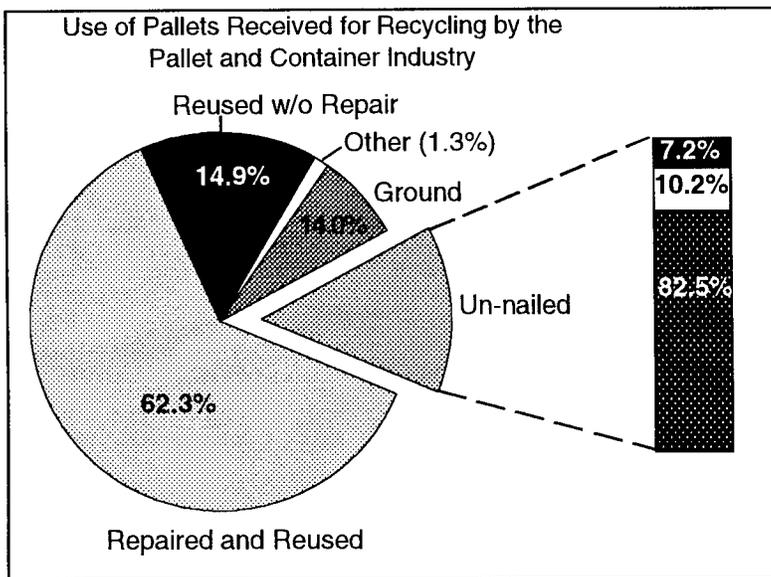
The industry also uses considerable volumes of solid softwoods. We estimate that consumption was 2.15 billion board feet in 1992. Most (75.4%) of this use was in the form of lumber and cants rather than pallet parts or shook. It will come as no surprise to learn that pallets and containers are not a large part of the market for softwoods. With estimated

total consumption of softwood lumber at 45.7 billion board feet in 1992 (American Forest & Paper Association numbers), the pallet and container industry accounts for slightly less than 5 percent of the market by volume.

In addition to volumes, we investigated the species of solid wood used by the industry. We found that oak made up the largest portion of the hardwood used in the industry in 1992 (39.6% of total use). The general category of mixed hardwoods (hardwoods used without segregation by species) was also large at 33.4 percent of total use. Yellow-poplar use was 12.7 percent of the total and alder accounted for 7.6 percent. Solid softwood use was dominated by southern pine (39.7% of total softwood volume) and Douglas-fir (28.8%). The remaining volume of softwoods used by the industry was split among several species including imported radiata pine.

The industry uses wood panel products in addition to lumber or solid wood. While much of this use is for containers, panel-deck pallets are also seen. The major panel products used by the industry are softwood plywood, oriented strandboard, and to a lesser extent, hardwood plywood. We estimate that the industry used 169 million square feet of softwood plywood, 20 million square feet of oriented strandboard, and 16 million square feet of hardwood plywood in 1992.





Many firms utilized a variety of materials to satisfy their customers' pallet and container needs in 1992. Hardwood lumber or cants were used by 66 percent of the firms in the industry and softwood lumber or cants were used by 59 percent. Softwood plywood was used by 39 percent of the firms and oriented strandboard by 13 percent. Hardwood plywood was used by only 3 percent of the firms in the industry.

The Use of Recycled Material

As mentioned, recycling has become a significant part of the pallet business. In fact, we estimate that 44 percent of U.S. pallet manufacturers were involved in recycling during 1992. These firms received 65.8 million pallets (containing an estimated 1.03 billion board feet of wood) for recycling during 1992. Of this total, 912 million board feet were used again in a pallet.

The most common pallet received for recycling was the multiple-use grocery (GMA) type (61.3% of the pallets received). Other types of multiple-use pallets accounted for 23.2 percent of the total and single-use pallets (also called limited-use) accounted for 14.3 percent.

An important goal of our study was to determine how the pallets received by pallet manufacturers were utilized. We found that almost 15 percent (14.9% to be exact) were inspected and reused without the need for repair. Technically, this may be reuse rather than recycling but, regardless of what it is called, this activity saved the pallet from becoming a disposal problem. The largest portion

of pallets (62.3%) were repaired and reused. Some pallets (14.0%) were un-nailed (disassembled) to allow parts to be reused and 7.6% went directly to the grinder.

The reason pallets are disassembled is to allow the parts to be reused. Consequently, it is not surprising that 82.5 percent (by volume) of disassembled pallet parts were used to rebuild pallets in 1992. Another 10.2 percent were apparently unusable and were ground, chipped, hogged, or otherwise reduced to particles. Other uses of disassembled parts accounted for 7.2 percent of the total volume.

We estimate that 91.5 million board feet of pallet material was ground by the industry in 1992. Markets for this material were quite diverse. The largest portion (53.1%) was used directly as fuel, 12.3 percent was used as mulch, and 5.8 percent was used as bedding. This leaves 28.8 percent of the wood volume in the other category. A small amount of this material was landfilled. However, most was used in ways that included furnish (for particleboard, hardboard, and paper), pellets for wood stoves, soil amendments, compost, and for molded wood products.

Trends in the Use of New and Recycled Materials

Since we have data representing only a limited number of years, it is probably too early to begin to speak of long term trends. However, we have seen some changes that may be worth watching. The use of new solid wood materials by the industry changed little from 1992 to

1993. The initial findings of our 1993 study suggest that the use of both solid hardwoods and solid softwoods increased by less than two percent. In 1992, firms predicted increases in solid wood use of six to eight percent over the following two years. However, this increase does not appear to be taking place.

In 1992, pallet and container manufacturers predicted decreased use of oriented strandboard and this change does appear to be taking place. Use of OSB in 1993 was down by approximately nine percent as compared to 1992. The use of softwood plywood increased during this period in spite of rising panel prices.

The initial results of our 1993 study also suggest changes in the use of recycled materials. Perhaps the most significant is an over 25% increase in the number of pallets received for recycling. While the number of pallets increased, the percentage of pallet firms involved in recycling remained unchanged at 44 percent.

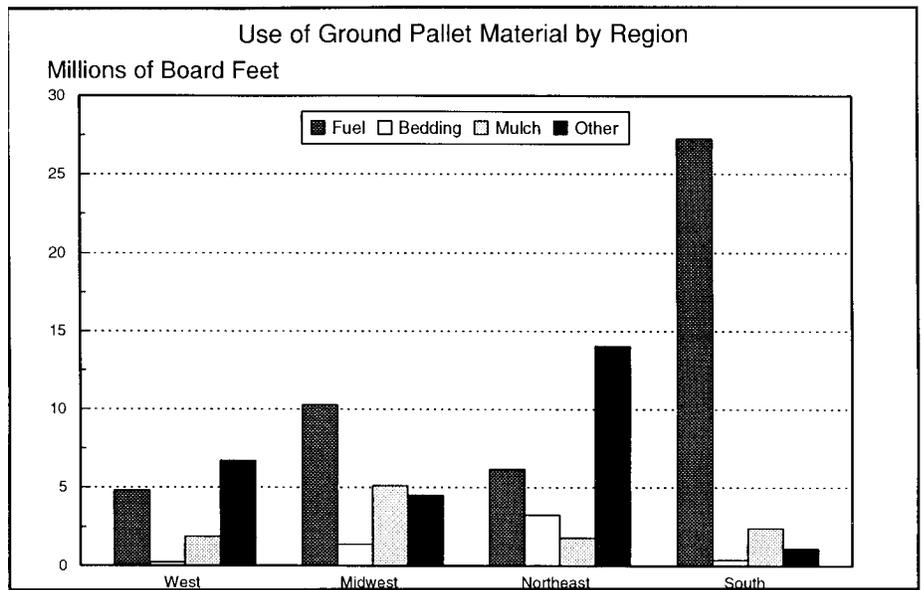
The volume of wood contained in the pallets received in 1993 increased 21 percent from 1992. Comparing this figure to the change in the number of pallets (25%) suggests possible changes in the mix of pallets received. In fact, this is exactly what we found. Single-use pallets were a larger percentage of the total number received in 1993 than they were in 1992. In general, pallet utilization (repaired, un-nailed, ground, etc.) changed little from 1992 to 1993. A slightly larger percentage of pallets were un-nailed in 1993 and the un-nailed parts were more likely to be ground.

One thing that did change in 1993 was the use of ground pallet material. Pallet recyclers are becoming more successful at finding markets for this valuable resource. Initial results indicate a drop of over ten percent in the use of ground pallet material for fuel in 1993 as compared to 1992. During the same period, increased amounts of ground material were marketed as bedding and mulch. In our 1993 study, we added a category for marketing ground material as furnish for wood-based products such as particleboard, hardboard, and paper (this use was reported under the other category in the 1992 study). Almost 22 percent of ground pallet material was marketed for this use in 1993.

What the Results Do Not Mean

It is important to note that the results presented in this article represent wood material use within only the pallet and container industry. This includes establishments in Standard Industrial Classifications (SICs) 2448 (Wood Pallets and Skids), 2449 (Wood Containers, Not Elsewhere Classified), and 2441 (Nailed and Lock Corner Wood Boxes and Shook). The results concerning pallet recycling are further limited to only SIC 2448. This was done because firms primarily involved in pallet recycling are classified under SIC 2448 and because our initial investigations indicated that very little pallet recycling was conducted by firms in SIC 2449 or SIC 2441.

Because some pallet recycling and reuse takes place outside of the pallet and container industry the results should not be interpreted as representing all of the pallet recycling taking place in the United States. For example, pallet users may have repair/recycling operations in-house and some landfills grind pallets so that the wood can be reused. These methods of recycling are not covered in our study. However, recycling and reuse by landfills will be the subject of a future study.



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