

COMBAT OAK SHORTAGE PROBLEMS USING FORTIFIED STRINGERS

Oak pallet material supplies from sawmills have been and may continue to be difficult to secure in quantities by the pallet industry. Other oak using markets such as the furniture, cabinet, tie and flooring markets need more oak and are paying much higher prices than pallet manufacturers & recyclers wish to or can pay, according to Phil Araman, Project Leader, USDA Forest Service, Blacksburg, VA, "These other markets are also willing to take more of the low-grade lumber that has traditionally been used for pallet products.

"This problem is compounded because oak pallets are preferred by some pallet customers because they are stronger and last longer than pallets made of other typically used domestic hardwoods," Araman continued. For example, a full specification all oak grocery pallet designed with the Pallet Design System (PDS) can have an economic life of 47 trips with proper repair and a cost per trip of around \$0.29. A similar pallet made with poplar stringers and oak deckboards can have an economic life of 31 trips with proper repair and a cost per trip of \$0.45. Can we improve the characteristics of the poplar to make it as good or better than the oak stringers to provide some relief from the oak supply challenge?

According to Araman, recently completed research at Virginia Tech in cooperation with the USDA Forest Service, Southeastern Forest Experiment Station at Virginia Tech has provided a solution. It was found that new yellow poplar stringers with metal connector plates (MCP's) applied between notches and on the end feet are stronger and stiffer, and more resistant to forklift tines than unplated oak stringers. Other less desirable species have not been tested but may also hold the same potential.

According to the research, most stringer failures occur between the notches and at the end feet. The lab tested the properties of yellow poplar stringers that were rein-

forced in these areas with MCP's to prevent or delay potential failure and to improve the strength properties of the poplar stringers.

Bending tests indicated that reinforced poplar stringers were stronger. The plated poplar stringers on average were 33% stronger than the unplated oak stringers. End foot reinforcement with plates improved the durability of the end foot area for poplar stringers. They were able to withstand more forklift tine impacts than unreinforced oak stringers. The plated poplar stringers on average were 37% more durable.

If reinforced poplar stringers are used in full spec grocery pallet with oak deckboards, a pallet that is better than the PDS generated oak pallet. (which has an economic life of 47 trips with proper repair and cost per trip of around \$0.29), can be manufactured for customers presently requesting just oak pallets.

Araman encourages you to discuss the above idea with your customers and start plating and upgrading poplar to help reduce the amount of oak you maybe trying to find in the market.