



# Quality Hardwood Veneer

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Private forest landowners have long understood that some trees are distinguished as being exceptional. Not every forest contains such rare trees. In the hardwood industry, such trees are termed *veneer*. From veneer trees, come veneer logs; from veneer logs, come veneer sheets. Unlike most logs which are processed into conventional lumber, veneer sheets are thin layers of wood produced by slicing logs.

Essentially any log can be processed as veneer. However, for hardwood trees, normally only those logs of desired species and with finest characteristics are selected. This is especially the case when the finished wood product is used as a face veneer (surface covering) on top of core stock for decorative purposes. Core stock is the underlayment on which the face veneer is placed. Core stock is common and does not require the fine charac-

teristics as does face veneer. For example, red oak cabinets could have side panels with a thin layer of fine oak face veneer overlaid on a thicker layer of common yellow poplar core stock veneer. The focus of this article is primarily on hardwood face veneer and the trees that produce it.

Veneers are erroneously accepted as a somewhat recent development in the timber industry. In truth, the trade originated



Photo by Dr. David Mercker

nearly 3,500 years ago by the Egyptians, evidenced by coffins discovered in ancient tombs. Modernization and expansion in the veneer industry occurred in the 20th century, improving construction and design of furniture, and leading to better utilization of the wood resource.

### Veneer Markets

Markets for veneer are classified either as **veneer trees** or **veneer logs**. Forest owners are most concerned with markets for their veneer trees. Many unaware landowners have mistakenly sold fine veneer trees as standard lumber trees, receiving a fraction of full market value. Landowners who are not expert at identifying, measuring, and appraising veneer trees should seek the assistance of professional foresters.

Most loggers, timber buyers, and mill operators are potential markets for standing veneer trees. These individuals normally have direct markets with veneer mills, so

for small quantities of veneer trees, these are landowners' best markets. However, when a timber sale has exceptional quality veneer trees, or a large quantity of them, owners should extend beyond these markets and include the veneer mills.

Veneer logs are marketed for four major uses: architectural, secondary manufacturing, profile-wrapped mouldings, and paneling. The **architectural market** is for premium logs only – those without defects, longer lengths, and a narrow, well-centered heart. Architectural veneer

becomes wall paneling in executive offices and public buildings. Groups of veneer trees originating from the same forest are especially sought after for this market because their physical traits (color and texture) will be similar and can be bulked and marketed together and used to fill large orders for the same building. The **secondary manufacturing market**, which serves primarily the furniture, cabinet, and flooring industry, is less rigid in quality specification than is the architectural market. Shorter lengths of veneer are used which can be cut between defects. Uniformity in wood color, however, is important. The **profile-wrapped moulding market** fits between the previous two. This veneering is wrapped or glued around reconstituted products such as fiber-board and is then used to substitute for solid wood moulding. The **wall paneling market** is the lowest class and includes 8-foot mismatched wall panels. Because panels do not need to match, some wood defects (if sound) are acceptable.

### Methods of Slicing Veneer

Manufacturing quality face veneer is highly specialized and capital intensive, requiring watchful control on the quality of logs to be processed. Only the finest logs will pay for the cost of processing, a standard that varies with each mill. Two common methods of slicing hardwood veneer are flat slicing and half round.

Finest decorative face veneers are produced from **flat slicing**. With this method, "flitches" are first created. Flitches are pieces of wood produced when a veneer log is halved or quartered. The side of the flitch that has the most aesthetically pleasing face is from where veneer sheets are sliced. To make slicing easier, flitches are first heated in water vats to soften the wood. At the slicing machine, the flitch is held down (or dogged) into place on a metal frame which rapidly moves down against a long, stationary knife, producing thin sheets of veneer. Sheets vary in thickness, but the standard for most domestic uses is 1/32 of an inch (thinner for export markets).

**Rotary cutting** is a method that is primarily used to manufacture commercial veneers for construction-grade plywood from softwood markets. With hardwoods, it is used to produce core

stock for underlayment of finer flat-sliced stock, or it is stained or printed and finished to imitate a more expensive wood. With rotary cutting veneer, the log is turned against a giant lathe, unrolling the veneer into extended sheets as the log turns (much like unwinding a roll of paper).

Veneers are processed in other ways as well, including quarter-slicing, half-round slicing, and with rift-cut. Each method produces a different visual effect, forming unlike grain patterns.

### Criteria for Veneer Trees

Criteria for qualifying as a fine veneer tree is condensed into one precondition . . . quality. Quality is related to the amount and extent of grade defects found in the lower trunk of the tree. Typically, veneer logs are only produced on the butt log (first log cut) from the lower tree trunk. Grade defects are abnormalities which lower butt log quality by reducing its utility. Grade defects cannot be removed by adjustments in scaling; they are permanent. Two types of grade defects are recognized: exterior and interior.

**Exterior grade defects** include abnormalities on the bark surface which can be seen. They indicate interior defects and include bumps, bulges, butt swell, knots, lesions, and sweep (or curve). Holes (both large and very small, including bird beak) are also exterior grade defects, as are seams caused by lightning, frost, or drought. Perhaps the most difficult exterior grade defect to detect is adventitious buds. These are dormant or recessed buds that exist along the trunk from which small sprouts (called epicormic branches) will periodically flush. If logs with adventitious buds are processed into veneer slices, reduced quality will be evident on the surface.

**Interior grade defects** are abnormalities which are typically not apparent on the exterior bark surface, but which become visible on the surface of the log end when the tree is felled and "bucked" into logs. The most common interior grade defect is discoloration such as staining or streaking of the wood. Interior defects also include double pith (two hearts resulting from two trees growing together when they were young), loose heart (separating of the annual growth

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rings), and grease spots, soak or pin worms (all results of poor site quality or mismanagement of the forest).

Internal natural wood characteristics such as texture and color are also factors. Premium veneer logs must have a well-centered heart and an even grain texture, meaning that the annual growth rings are relatively evenly spaced, not fluctuating between rapid and slow growth. The wood color should be consistent, without mineral or fungal streaks. Although, lesser markets for off-colored wood occasionally exist.

Interior grade defects are very difficult to detect – proficiency comes only after years of experience. Seasoned foresters, veneer buyers, and loggers are often surprised at how poorly logs look internally once harvested, when the tree's exterior signals *appeared* safe prior to the harvest. Judgment on interior wood quality must be made based on **characteristics of the forest**. Forest clues can signal poor internal wood quality. Previous mismanagement such as heavy woodlot pasturing or ground fires are examples. A poor site is another. Poor sites typically have shallow topsoil, are prone to drought, are very poorly drained, or are found on south and west slopes. Further, forest stands which are overly-mature are also high risk for interior grade defects. Overly-mature forests have trees with many broken tops, stem holes, or swollen-bases. Sometimes irregular bark pattern will signal caution, indicating a site limitation or that tree growth has been altered by some external stimuli.

A set of specifications relative to **log length and diameter** must also be met. Most markets for quality face veneer logs require a minimum of 8 feet in length (10 to 12 feet for top price) and prefer at least a 16-inch diameter inside the bark (dib) at the small end of the log. This is a general guide. Each veneer mill has its own unique specifications.

Given all these criteria, it's a wonder that any hardwood trees qualify as veneer. And indeed, most do not. Normally only 1-2% of the board foot volume in a hardwood timber sale is

veneer. Yet that same volume could account for as much as 20% of the total sale value.

## **Hardwood Tree Species Commonly Veneered**

All tree species can be veneered, but only a few are in sufficient enough demand to develop sustainable markets. Traditional hardwood face veneer markets have favored white and red oaks, as well as black walnut. More recently, sugar maple and black cherry have increased in demand, but these species are not as common in the South. Lower value core stock veneer, used as underlayment for face veneer, includes yellow poplar, sycamore, and sweetgum.

## **Forest Management for Hardwood Veneer**

Normally forests are not managed to specifically grow hardwood veneer trees. Rather, if one is found, it's a bonus. Veneer logs – just as with lumber logs, pallet and railroad tie logs, and pulpwood – are among many products that result when forests are harvested. However, the likelihood of producing more veneer trees increases if proper silvicultural procedures are followed.

To produce oak veneer trees, the following situations must occur: (1) quality seed sources (acorns) must be present, (2) sunlight reaching the forest floor during establishment must be adequate, (3) during early stand development, undesirable competition must be controlled, and (4) stocking during stand development must be regulated while protecting and favoring those trees with veneer potential.

**Seed Source** - Because of their shape and weight, oak acorns will not travel far from their parent tree. If adequate seed sources are not present, oak will not likely regenerate. Even when seed sources are present, if the genetics are inferior or site is too poor, the potential to produce quality veneer oak trees will be limited.

**Sunlight** - Oak species are classified as intermediate in shade tolerance, meaning that they do not regenerate nor

develop well in shaded environments. Therefore, single tree selection (STS) harvesting is not recommended for oak development because STS does not allow a sufficient amount of sunlight to reach the forest floor. Instead, oaks regenerate best in partial to full sunlight, such as that which results from group selection or clearcut harvests. But even with these harvest methods, if a yellow poplar seed source is present on good forest sites, oaks will typically not grow rapidly enough and will be out-competed by the yellow poplar.

**Control of Undesirables** - Along with the development of the desirable veneer trees will be undesirable species, too. These undesirables will compete for growth elements . . . slowing, suppressing, and even killing the preferred trees. Through a process called crop tree release, young forest stands can be manipulated to improve the percentage of potential veneer trees.

**Regulating the Stocking** - Stocking is an indication of available growing space. Producing quality veneer trees requires that a relatively consistent growing space be maintained. Forest stands should be thinned on approximately 15-year intervals to ensure consistent growth. Waiting too long will cause suppression; then when released, will cause trees to grow too rapidly. This sudden increase in growth leads to wider than normal annual growth rings and often epicormic branching, both of which lower the chances of a tree becoming veneer. Only an experienced forester and a conscientious logger should be trusted to select and thin stands having a goal of future veneer production.

## **Selling Your Veneer Trees**

Before selling any trees, seek the assistance of a professional forester. It is normally not recommended to select and sell only the veneer trees from your forest, while leaving the undesirables. Doing so is a practice of "high-grading" or removing the most valuable, highly desired trees, while the undesirables are

left to reseed and perpetuate the future stand.

Instead, select trees for harvest based on their financial maturity. This might include veneer trees which have matured, but should also consist of smaller, inferior trees or those undesirable species whose crowns are competing with future veneer trees. In other words, manage your forest with a constant goal of improving it.

Your professional forester is trained to understand selection of trees for harvest based on these criteria. Trees for harvest should be marked with paint, measured to estimate volume, and appraised to arrive at a fair market value. A separate listing of your veneer trees should be kept. Then, through proper marketing, which exposes your trees to all potential regional markets, bids are accepted and the contract awarded. For a list of professional foresters serving your area, contact your county Forestry Commission office.

Be patient. Your trees took decades to grow. The decision to sell them and the procedure to accomplish the project should also be thorough. 🌲

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