How veneer is made

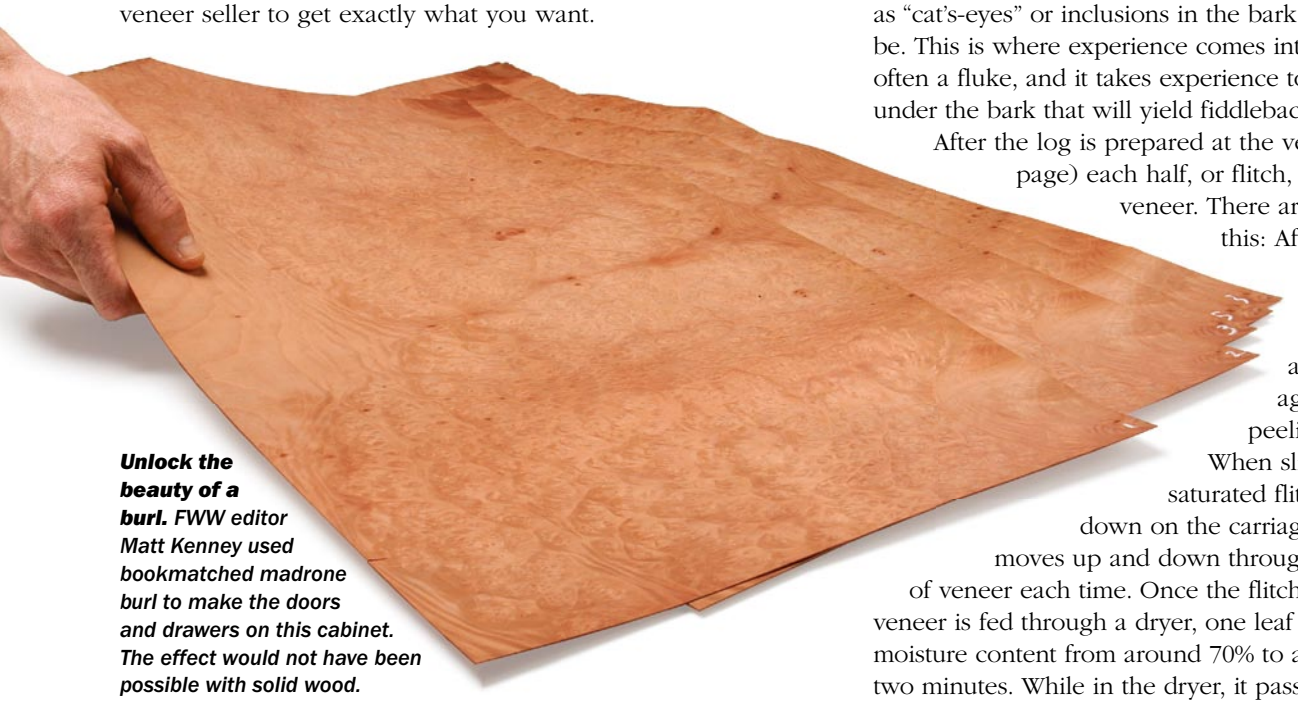
PEEK INSIDE A VENEER MILL, THEN LEARN HOW TO ORDER THIS VALUABLE PRODUCT

BY BEN BARRETT

As far back as the ancient Egyptians, people have been using veneer. It offers options for the woodworker that are simply unobtainable in solid wood. Grain patterns can range from a simple book-match to a breathtaking sunburst. Highly figured parts of the tree such as burls and crotches are much easier to work with as veneer than as solid stock. Using a stable substrate such as medium-density fiberboard (MDF) opens up new design and construction opportunities not constrained by seasonal wood movement.

Then there is the green aspect. The population pressures on the earth are only going to increase with time, and the demand for beautiful wood will never go away. One way to utilize this resource more efficiently is to use veneer. That way, future generations of woodworkers can have access to some of the precious woods we enjoy today.

I'll explain how a suitable veneer log is discovered, and the different ways veneer is made. Having spent more than 20 years in the veneer business, I'll show you how to work with a veneer seller to get exactly what you want.



Unlock the beauty of a burl. *FWW editor Matt Kenney used bookmatched madrone burl to make the doors and drawers on this cabinet. The effect would not have been possible with solid wood.*

One tree in a hundred

While logs for lumber typically go to a sawmill in bulk, the very best ones are individually selected to go to a veneer mill. Obviously size and species play a role, but how is the maple with fiddleback figure spotted from the mass of other logs?

A specialist log buyer acts as the middleman between the forest owner and the veneer mill. He chainsaws off a thin slice from the end of a log, and then sprays the newly exposed wood with water to accentuate any defects or figure. He then rolls over the log to expose all four "faces," searching for defects such as "cat's-eyes" or inclusions in the bark where a branch used to be. This is where experience comes into play: Figured logs are often a fluke, and it takes experience to see compression figure under the bark that will yield fiddleback figure.

After the log is prepared at the veneer mill (see facing page) each half, or flitch, is ready to be turned into veneer. There are two main ways to do this: After the flitch is soaked in hot water, it either moves up and down past a knife, a process known as slicing, or it revolves against a knife, called peeling.

When slicing, the hot, super-saturated flitch is mounted flat-side down on the carriage of a slicer. The flitch moves up and down through the knife, slicing a leaf of veneer each time. Once the flitch is completely sliced, the veneer is fed through a dryer, one leaf at a time, reducing the moisture content from around 70% to about 15% in less than two minutes. While in the dryer, it passes over a measurement

Photos: Mark Schofield

Life of a veneer log

Hand-picked. *The logs arrive at the veneer mill already marked with a unique barcode. Metal "S" irons or plastic "I" clips minimize end splits.*

Kept wet. *Sprinklers keep the logs wet and prevent them from drying out and checking.*

Sawn and soaked. *After being debarked, the logs are sawn into halves or quarters depending on the size and species (right). After a week in hot water, the halves and quarters, banded together, emerge black and steaming (far right).*

Skimmed off. *Soaking the logs causes minerals to collect on the outside. To protect the veneer-slicing knives, workers grind away the contaminated surface of the logs.*

Honing the edge. *Before running each new log through the veneer slicer, they hone the 12-ft.-long knife with an oilstone and remove any wood remnants with a penknife.*

system that calculates its square footage. Now it's organized by length and grade and ready for presentation to a buyer.

The most common method for cutting decorative, high-end veneers—those with cathedral pattern in the grain—is plain or flat slicing. Quarter-sliced veneer is just like quartersawn lumber, where the goal is to generate product with the growth rings 60° to 90° to the face. This produces a strong medullary flake figure in oaks and lacewoods, superimposed on an extremely straight-grained background.

There are also different methods to peel veneer. A full rotary cut involves mounting a log on a lathe and peeling off sheets, much like a paper towel is pulled off a roll. There is little waste but it creates a wild, erratic grain, so this is primarily done for utilitarian uses. A half-round cut is used mainly to increase the yield from smaller 13-in.- to 16-in.-dia. logs. Generating an effect similar to plain slicing, it is often used on maples as it allows the white part of the log to be fully used.

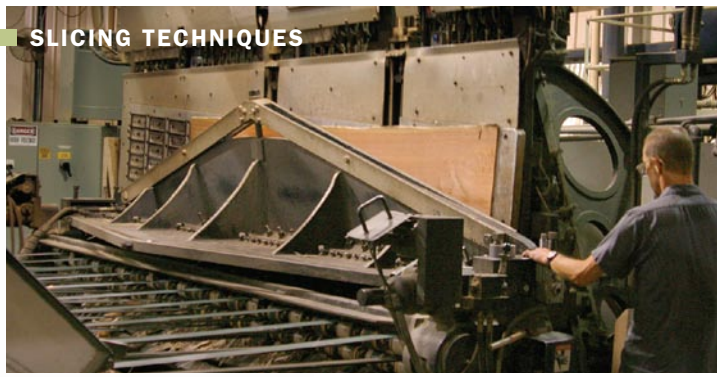
Why does veneer keep getting thinner?

A hundred years ago, veneer averaged ⅛ in. thick; today, most veneers are sliced from 1/42 in. to 1/49 in. thick, whether for plywood or veneer sold retail. Can it get any thinner? In Asia,

Two ways to make veneer

Depending on the intended use of the veneer, the log size, and the wood species, it can be sliced or peeled. At International Veneer Company's Mercer, Pa., mill, both methods are used.

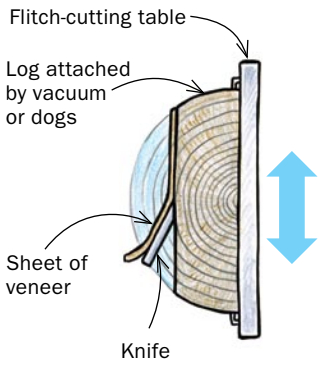
SLICING TECHNIQUES



One at a time. *The log, attached to the flat steel plates, moves up and down past a knife attached to the triangular shaped section.*

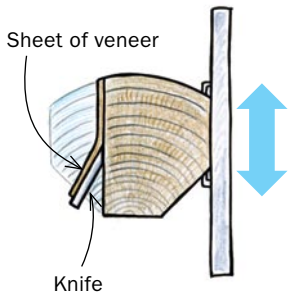
FLAT-CUTTING

Flat cut or plain slicing is by far the most common way to cut high-quality veneers. Among the species commonly plain-sliced are cherry, walnut, red and white oak, and mahogany. Crotches are also plain-sliced.



QUARTER-SLICING

White oak is commonly quarter-sliced to reveal the ray flecks also seen in quartersawn lumber. Other species quarter-sliced to produce a ribbon-stripe figure include mahogany, sapele, and sycamore.

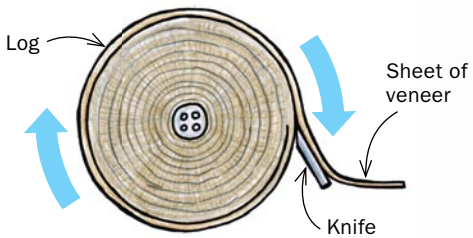


PEELING TECHNIQUES

Round and round. *Rotary-cutting, or peeling, produces wider sheets from smaller logs and is also used for certain figured veneers.*

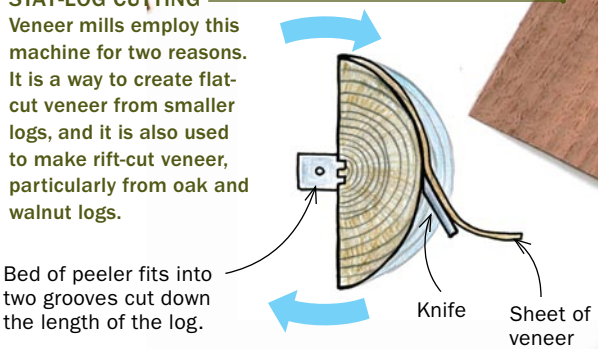
ROTARY CUTTING

Peeling a whole log typically produces veneer with wildly alternating grain best used for utility plywood. However, the method enhances bird's-eye maple.



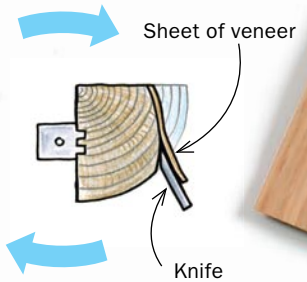
STAY-LOG CUTTING

Veneer mills employ this machine for two reasons. It is a way to create flat-cut veneer from smaller logs, and it is also used to make rift-cut veneer, particularly from oak and walnut logs.



RIFT-CUTTING

Done almost exclusively in oaks, it requires larger-diameter logs, which are quartered and peeled on a bias to limit the medullary flake figure. The need for larger logs means rift-cut veneers command a premium over plain-sliced ones.



some use 1/85-in.-thick veneer, so thin that the core must be color-coordinated to the veneer because it shows through.

A cynic would say profit was the only motive for this ever-decreasing thickness, but there are benefits. The thinner the veneer, the smoother the surface, as thick veneer does not slice as cleanly and tends to tear as it comes off the knife. And on plain-sliced veneer, the thinner the veneer, the smaller the jump in grain pattern between sheets.

Learn the lingo to get what you want

The more information you share with your suppliers, the better they can meet your needs with the most cost-effective veneer for

Drawings: John Tetreault

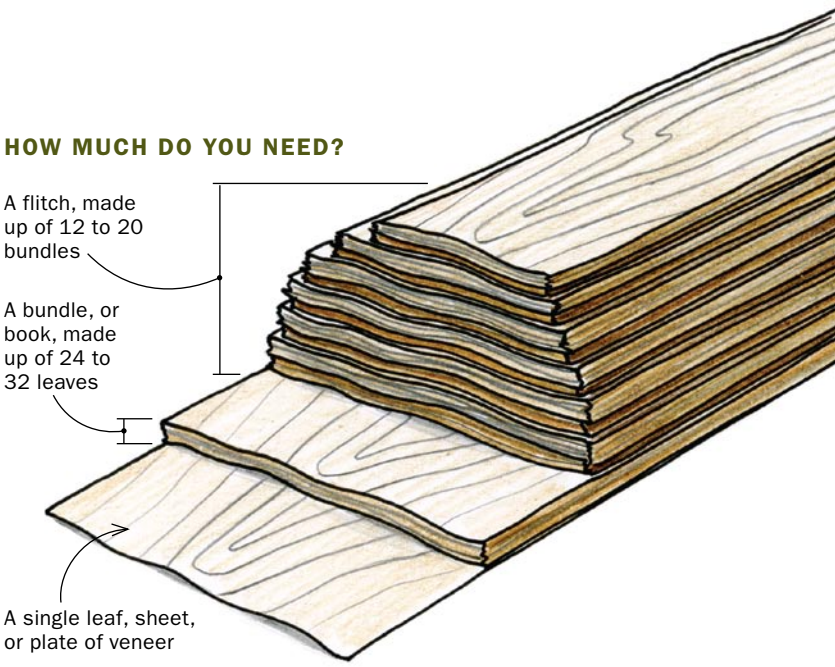
A buyer's guide

Half a log. *This walnut flitch represents one half of the log. The blue tape marks where individual sheets have been removed and sent to a prospective buyer for inspection.*

Keeping track. *When you receive consecutive cuts of veneer, the first thing to do is clearly number the sequence. This way you can shuffle the sheets around, arranging them in a sunburst, for example, without losing track of the order.*

A rose(wood) by any other name. *Santos (pau ferro), Brazilian, and East Indian all fall under the name rosewood. If possible, specify the Latin genus and species name when ordering.*

HOW MUCH DO YOU NEED?



your project. And talking the talk reduces miscommunication. Don't make the mistake one of my customers made by asking for a flitch when all he wanted was a bundle of veneer. I think I'm still selling off that flitch.

Begin with the species you want. If possible, give the Latin genus and species to remove ambiguity. Your supplier won't know where to begin if you simply ask for "rosewood." Instead specify *Dalbergia latifolia* or East Indian rosewood. If possible, give a backup alternative to rare veneers in case what you're after doesn't exist.

For lengths and widths, give the net size of your project. Don't call for 12-ft. veneers for a 10-ft. project just because that's what you do when ordering lumber. Tell the supplier you're looking to "net 120 in." and they might have stock that's 128 in. clean (meaning no end splits or defects) that will work fine and save you money.

Don't forget that you will also need to veneer the back of the core to prevent cupping. The thinner the core, the more important it is to use the same species, thickness, and cut as the face veneer. However, if you're using something pricey, ask your supplier for a cheaper substitute with similar density, cellular makeup, and shrinkage coefficient.

Veneer production is very exacting — the tolerances are measured in thousands of an inch and there are plenty of things that can go wrong. You should not accept "rough" veneer where the cutting process has smashed the wood fibers and distorted the grain—no amount of sanding will cure this. Also reject thick and thin veneer where the thickness varies from side to side or end to end. However, don't expect all veneers to arrive dead-flat. Crotches and burls are typically buckled and need to be flattened prior to use (see "An Introduction to Veneering," *FWW* #189).

If you haven't tried veneering, I encourage you to give it a go. It opens the door to a wider world of woodworking and leaves some wood to future generations. □

Ben Barrett is president of Berkshire Veneer Co. in Massachusetts.