

NUCRAFT

VENEER GUIDE

Go with the Grain

THE RESPONSIBLE CHOICE

With innovative materials being developed in labs every year, why should we still embrace something tried and true like wood? The simple answer is that there are so many reasons why wood will always be in high demand. This abundant resource delivers versatility, renewability, beauty and even health benefits.

As the world continues to deplete mineral resources and struggles to recycle manmade materials, it's becoming clear that wood is the most environmentally friendly material available. It takes only sunlight to grow wood and only nature to decompose it. Harvesting from sustainability managed forests guarantees that each tree cut will be replanted, resulting in an ecosystem that will be vibrant for future generations. Even after factoring in the manufacturing processes, wood leaves a positive carbon footprint throughout its life cycle.

In addition to its sustainable benefits, wood has many natural advantages. The superlative strength-to-weight ratio creates significant strength in a relatively lightweight product, as well as durability that can last several lifetimes. In fact, wood can even get better with age, gradually developing a patina that reveals a complex character. Unlike many manufactured materials, it is also naturally antistatic, dust repellant and antimicrobial. Now you know why you see so much wood in education and healthcare settings!

Naturally Beautiful. Incredibly Versatile.

Every knot is distinctive. Every grain pattern unique. And with hundreds of hardwood species to choose from, the choices in warmth, texture, color and character are virtually endless. Wood doesn't just look and feel better, it even sounds better. The natural acoustical properties make it ideal for concert halls and lecture rooms.

Working with wood is easier than most materials because it's stylistically pliable. Traditional or contemporary, rustic or elegant, formal or laid back. Wood can be cut to any size and help you achieve any aesthetic.



From Log to Veneer

FROM FOREST TO MILL

Wood takes quite a journey from the verdant forest to the industrial saw. Trees are carefully selected based on a number of qualifications, inspected for maximum yield, cooked to soften the texture and reveal the character, and placed in vats to loosen the cellulose fibers for the slicing process. Along this journey, every step is critical to bringing out the best in every specimen.

STEP 1: GRADING

Experts who are well versed in what makes great veneer select the best candidates for veneers that are harvested. Each one is recorded and classified based on species, quality, length, size or intended customer. The tree is then cut into a log and moved into the production process.



STEP 2: SAWING

Once the logs enter the milling facility, the bark must be removed. Then the raw logs must clear a metal detector inspection to prevent bullets, nails and other metal objects from ruining the blades. Finally, the log is sawn into halves or quarters, known as a flitch.



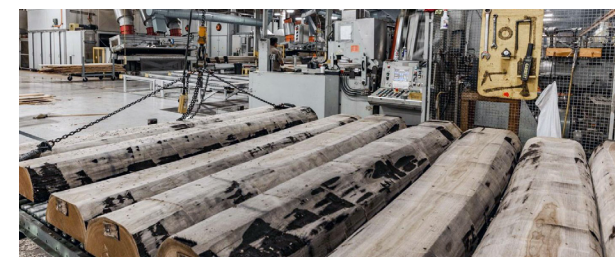
STEP 3: COOKING

To ensure the leaves of veneer stay intact when sliced thinly, logs are placed into a steel vat and heated with water to cook them. The temperature and length of cooking depend on the species, and each veneer mill has its own preferences.



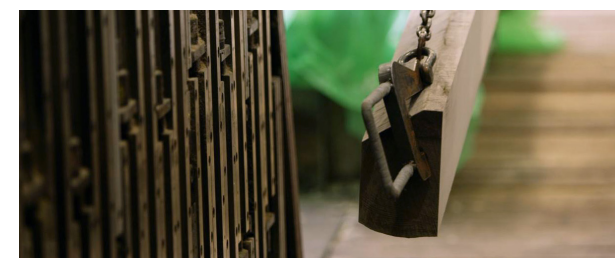
STEP 4: PREPPING

Each section of the log, or flitch, must then pass through a final cleaning process to plane the outside of the log, which removes excess bark or irregularities.



STEP 5: ATTACHING

Before slicing the flitch into thin veneers, it must be attached to the flitch table, and typically a vacuum is used to secure it.



STEP 6: SLICING

This is where the magic happens. The flitch is converted into leaves, or sheets, of very thin veneer, and the average slicer will produce up to 100 sheets per minute, depending on the type of wood and cut.



Types of Veneer Cuts

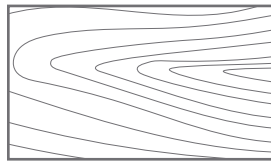
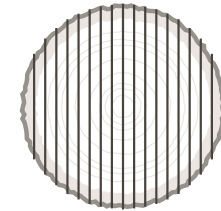


SLICING TECHNIQUES

While a plain slice or flat cut is the most recognized type of slicing method for high-quality veneers, there are several ways to cut a log. Each method creates a distinctive look, from putting the growth rings on display to embracing the irregularities present in all wood. The type of slicing method used depends on aesthetic preferences, budget and other factors.

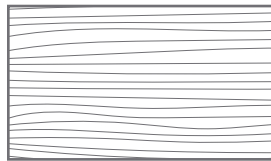
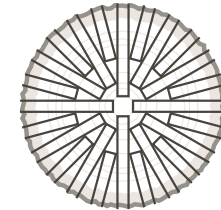
PLAIN SLICE (FLAT CUT)

This popular slicing method runs parallel to the center of the log, creating a “cathedral effect” formed by the annual growth rings.



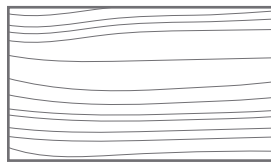
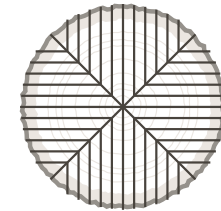
RIFT CUT

Slicing at a slight angle minimizes the irregularities in the wood and creates a narrow striped grain appearance. This type of cut is used primarily when working with red and white oak.



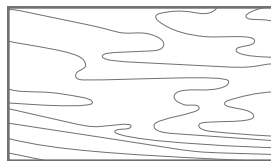
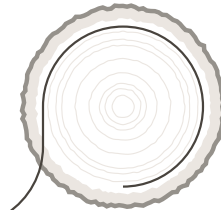
QUARTER CUT

Going perpendicular to the plain slice, this cut is made vertical (if looking at the actual tree). Cutting in this direction turns the concentric growth rings into a straight grain appearance.



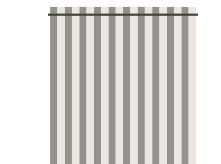
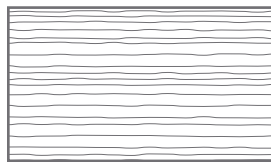
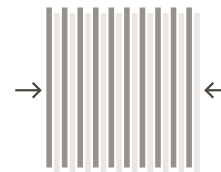
ROTARY CUT

Turning the log on a lathe and cutting with a broad knife at a slight angle creates a variegated figure grain appearance. A rotary cut veneer cannot be matched due to the nature of the cut, but the seams do have uniform grain and color.



DOUBLE CUT/RECONSTITUTED VENEER

This wood-cutting technique typically uses logs from secondary species trees such as poplar or obeche, which are widely available, dry quickly and have little tendency to warp. They are rotary-sliced, veneer sheets that are dried and dyed, glued together with dyed adhesive, and then compressed to create a solid, layered block. This block is then cut into veneers that create a unique grain pattern that is the result of the tinted adhesive. The end result is a more environmentally friendly straight grain veneer that can be produced with uniform grain and manageable color consistency.



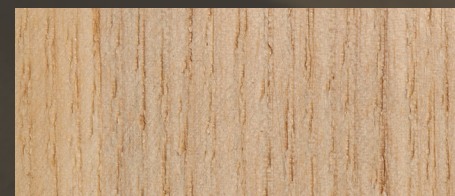


Grading Veneers

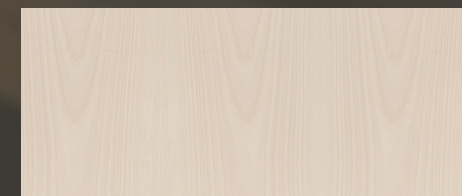
COMPARING APPLES TO OAKS

Since every tree is as unique as a snowflake, how can you compare veneer quality? The answer is simple...by grading them. Each grade shares common criteria, although each species has a different set of specifications. The industry standard grades issued by the Architectural Woodworking Institute (AWI) are AA, A and B, and manufacturers rely on these grades along with experienced staff members to determine which veneers to purchase.

To simplify the grading process, each set of standards includes at least two different species, grouped by shared characteristics. For example, Red Oak and White Oak are grouped together, and Ash, Birch, Poplar and Maple form a “white wood” grouping.



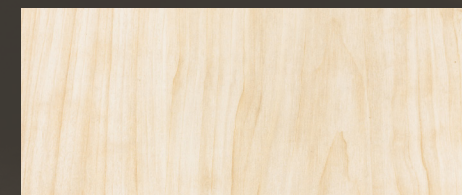
Ash



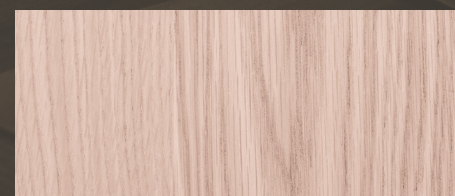
Birch



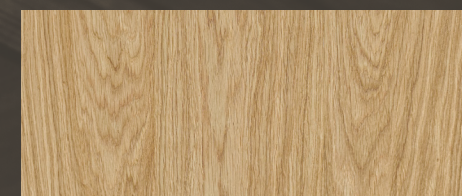
Maple



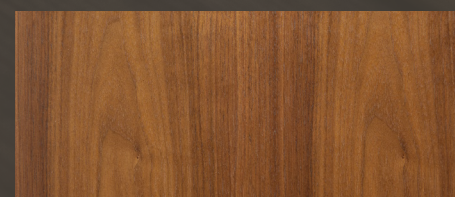
Poplar



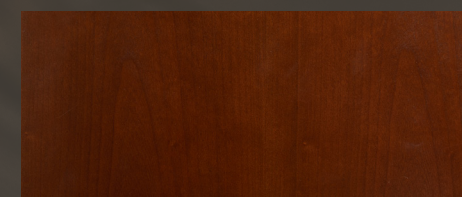
Red Oak



White Oak



Walnut



Cherry

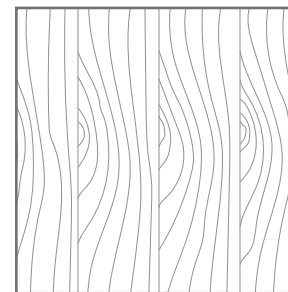
From Veneer to Furniture

(PART I)



CREATING THE LAYUP

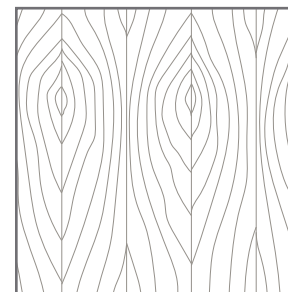
Most veneer products require more than one sheet of veneer, which means decisions must be made regarding the positioning of adjacent grain leaves or grain patterns, which is called matching the “layup.” There are a variety of ways to layup veneer, depending on the desired aesthetic or cost.



SLIP MATCHING

This is the most popular method, and it makes the grain patterns look as linear as possible. This is achieved by joining adjacent veneer leaves without flipping them, which keeps a consistent grain direction. Slip matching is incredibly useful for certain types of cuts, including non-figured, quarter cut, rift cut and double cut.

This method helps minimize metamerism, or color flip, which results in two similar pieces of veneer appearing to be very different because of viewing angles, lighting, grain pattern or texture. Cherry and maple are quite prone to color flip, so slip matching is often used when working with these species.



BOOK MATCHING

This method is similar to slip matching, except that every other veneer is flipped. This produces a mirror-image effect, similar to opening the pages of a book, and works especially well with “curly” figured veneers such as quartered figured anigre, curly sycamore and curly maple.

While all wood species have the potential to display different colors from different viewing angles, some species demonstrate this trait much more than others. Book matching accentuates these differences and takes advantage of them.



PLANK STYLE

This increasingly popular layup style creates dramatic contrast between colors of various species. Because the true beauty of this style is in the contrast, it really only works well when used with species that exhibit very distinct color differences when positioned adjacent to one another. The plank flooring aesthetic is a great example of this style, and Walnut, Cherry and Mahogany are the most common species used.

From Veneer to Furniture

(PART II)



A PANEL DISCUSSION

Veneer beauty is only skin deep, but beneath that gorgeous exterior you need a solid core to support and protect the exterior. To create a panel, thin layers of veneer are adhered to a core material. This construction protects the panel from warping. The material opposite the veneer, referred to as backer, is either a veneer or an engineered material, depending on whether the surface is visible or not.

CORE MATERIALS

Nucraft uses Medium Density Fiberboard (MDF), particleboard and plywood as our core materials. MDF provides the smoothest surface when exposed on the underside of tops with thinner hardwood edges and when painted. Particleboard is used when edge veneer or hardwood edges are applied, which completely cover the core. Particleboard has superior screw retention strength compared to other materials and is also lighter and more cost effective. Plywood adds strength when used in certain applications, such as heavy-duty shelves or vertical panels.

Material Properties	MDF	Particleboard	Plywood
Dimensional Stability	Fair	Fair	Fair
Visual Edge Quality	Good	Poor	Good
Flat	Excellent	Excellent	Good
Surface Uniformity	Excellent	Excellent	Good
Screw Holding	Fair	Good	Excellent
Bending Strength	Good	Good	Excellent
Availability	Readily	Readily	Readily

EDGE CONSTRUCTION

Typical tabletop construction is a three-ply panel composed of an inner thicker core with a thinner finished veneer face and an equal-thickness backer material on the underside. This construction is considered a “balanced” construction and is utilized to eliminate warping.

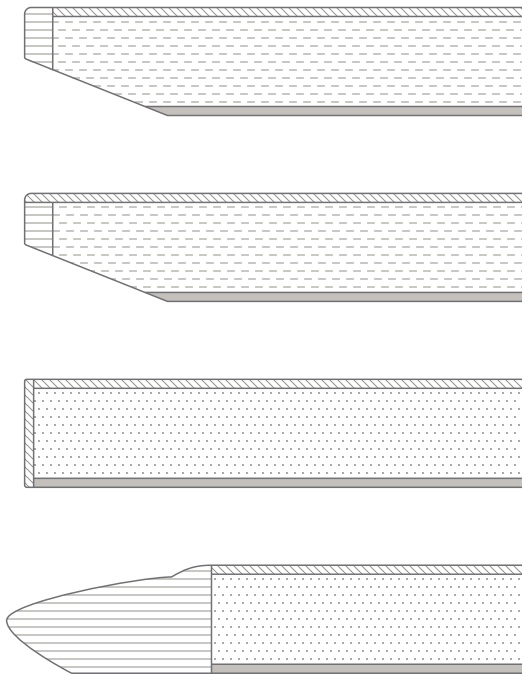
To create a durable edge, a lumber rail is applied around the perimeter of the top. A profile can be machined into the lumber rail to create a variety of edges. If the edge profile cuts into the inner core, then a medium-density fiberboard (MDF) is typically used to provide a smooth surface once machined, although particleboard can also be used.

-  = Hardwood

 = MDF

 = Backer
-  = Veneer

 = Particleboard





There are several desirable characteristics to look for in the finishing process, including:

- SCRATCH RESISTANCE
- CHEMICAL RESISTANCE
- MOISTURE RESISTANCE
- CLARITY
- APPEARANCE
- REPARABILITY

Finish Process

(PART I)

THE FINISHING TOUCHES

There are a variety of ways to finish a veneer product, and the decision rests on a combination of desired characteristics. Our products are finished as a complete unit instead of individual flat panels, then assembled.

There have been a number of different ways veneers have been finished throughout history. Starting with natural finishes such as beeswax or linseed oil, the furniture industry's techniques have evolved to include a number of different catalyst, water-based and urethane finish options. A catalyzed finish mixes a resin with a catalyst to create a reaction, and this includes catalyzed lacquer, conversion varnish, urethanes, polyesters and UV-cured processes. Water-based finishes are exactly what they sound like, and urethane or urethane/acrylic blends can be solvent-based or water-based.





Finish Process

(PART II)

THE FINAL STEPS

Pulling out the rich character of wood grain is no small feat—it's the result of deliberate finishing steps. Typically, there are two-step, three-step and five-step finish processes to ensure the highest-quality veneer.

TAKE A SHEEN TO IT

The brightness and luster of the finish is called the sheen, and it's measured with a gloss meter. Nucraft offers three standard sheen options: matte, gloss and high gloss.

MATTE (10–20 SHEEN RANGE)

This finish option creates a low-luster open-pore appearance that tends to mask normal wear, while leaving the wood grain visible to the eye.

GLOSS (40–50 SHEEN RANGE)

Gloss is the most common sheen, creating a medium-sheen appearance that leaves the grain visible to the eye with a durable finish.

HIGH GLOSS

(80–90 SHEEN RANGE)

The high-gloss option creates a mirror-like appearance, but this hand-rubbed treatment tends to show more wear.

STAIN/TONER

Semitransparent colors used to block out or reduce color variation.

WASH COAT

Seals in the base color of the stain, while still allowing the wiping glaze to seep into the pores without changing the background color.

WIPING GLAZE

A pigmented oil applied to the wood fills the pores to provide a subtle undertone that accents the grain.

SEAL

A protective layer of clear coating locks in the colors and provides a smooth surface for the clear coat.

TOPCOAT

A clear coat that provides protection and the finished appearance.





Environmental Standards

KEEPING WOOD GREEN

When working with a renewable material such as wood, you're already one step ahead from a sustainability standpoint. Logging companies have made great strides in recent decades to replant forests and eliminate irresponsible harvesting practices. However, from a manufacturing standpoint, there are many environmental standards and regulations that must be strictly adhered to.

The most critical sustainability standard for wood manufacturers is the control and elimination of emissions. The Business and Informational Furniture Manufacturers Association (BIFMA) has created the Furniture Emissions Standard (FES) to help measure Volatile Organic Compounds (VOCs) and other chemicals. Formaldehyde is a major issue for wood furniture makers, because it is used in the acid catalyzed finishing systems and the creation of core materials. BIFMA FES rates manufacturers based on their performance, distinguishes between open and private office products and awards coveted certifications to those that meet the stringent guidelines.

Other industry standards include the Forest Stewardship Council (FSC), which verifies that all FSC-certified forests and chain of custody operations conform to specific requirements. LEED certification has seven credits related to furniture, including the following:

- MR 4.1 – RECYCLED CONTENT (10%)
- MR 4.2 – RECYCLED CONTENT (20%)
- MR 4.5 – LOW EMITTING MATERIALS
- MR 5.1 – REGIONAL MATERIALS (MANUFACTURED)
- MR 5.2 – REGIONAL MATERIALS (EXTRACTED & MANUFACTURED)
- MR 6 – RAPIDLY RENEWABLE MATERIALS
- MR 7 – CERTIFIED WOOD



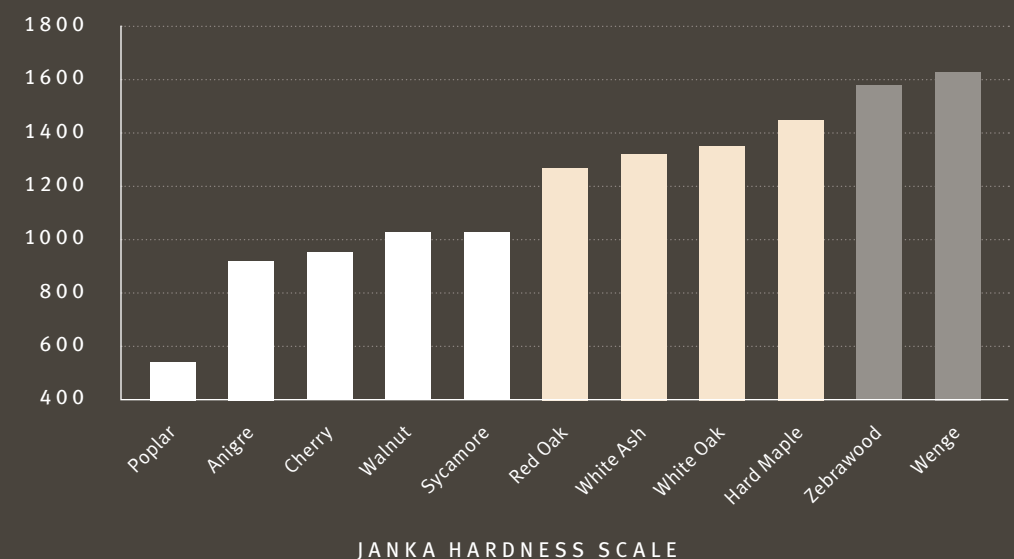


Durability

MAINTAINING THE INTEGRITY

Keeping your wood products looking great from year to year, or even generation to generation, requires planning on two fronts: selecting the right species of the wood and choosing the right finish. Wood hardness varies from species to species, and a basic chart outlines the most common woods used in furniture. For example, Oak, Ash and Maple are significantly harder than Cherry or Anigre, making them more durable over the long run.

However, because it has the strength of a core material behind it, a veneer does not have to withstand the same heavy use as a product made of solid hardwood. The hardness rating will be more of a predictor of possible indentation issues, the result of everything from writing utensils to basic daily wear and tear. A topcoat alone will not protect wood from indenting, so it's a good idea to avoid writing on a wood surface without putting a pad below the paper.





Types of Veneer

SEEING THE FOREST FOR THE VENEERS

COMMON DOMESTIC SPECIES



Walnut

Open pore with strong cathedral-type grain patterns



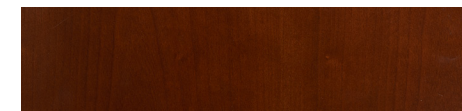
Oak

Open pore with strong cathedral-type grain patterns



Maple

Closed pore with mild grain patterns and some mineral streaks



Cherry

Medium pore with uniform grain pattern



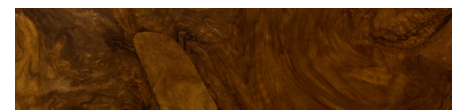
Ash

Closed pore with tight grain pattern

RECONSTITUTED VENEER

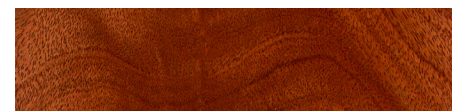
This environmentally friendly wood product offers the natural appeal and beauty of wood and outstanding color and linear grain consistency from sheet to sheet.

EXOTIC SPECIES



Burl

A knot or growth on a tree that creates a swirl-like grain pattern. Often used in fine furniture.



Mahogany

A species prized for its hardness and rich color, often used for furniture and instruments.



Black Limba

An African species with black stripes, harvested from the lower trunk of the tree.



Sapele

A large tree native to tropical Africa. Usually ribbon grained and used in fine furniture.



Anigre

A tropical hardwood, often preferred as a figured exotic.



Zebrano

Also called Zebrawood, features interlocking grain which produces an iridescence when quarter-sawn.

Terminology

KNOWING THE LINGO

There's a lot to learn and remember about the properties of wood, so use this handy guide to keep track of the terminology.

Balance Panel Matching

Balance panel matching uses the same width for each veneer leaf, giving panels a more symmetrical look than running-matched panels. They are not center balanced—panel faces may use an odd or even number of veneer leaves. The grain may change between panels over long runs as the number of leaves needed for each panel may increase or decrease.

Bird's Eye

Bird's eye figure is created by a depression in the trunk that distorts succeeding growth rings. This figure of small “eye” patterns occurs in a small percentage of trees. It is found most often in Northern Maples and is always rotary cut.

Bleached and Dyed

Bleached and dyed veneer is first bleached and then processed with dye, resulting in consistency of depth and color. Certain qualities of the wood that are not always apparent with traditional staining methods are often magnified in the dye process.

Book Matching

Book matching flips consecutive leaves of veneer open facing each other like pages in a book, creating a mirror image of the previous leaf. This technique results in a symmetrical pattern that accentuates the grain, figure and decorative characteristics of the log. Book match is the most common veneer-matching technique and may be used with plain, quarter or rift sliced veneers.

Burl

Burl figure appears as a close pattern of many small “eyes” surrounded by wildly distorted grain. It's the result of a wart-like growth on Walnut, Maple, Mappa, or Redwood trees, which are rotary cut to produce veneer. Burl leaves are generally smaller than other veneers.

Cathedral

Cathedral grain pattern is easily identified by the loop pattern or “cathedral” in the center with straighter grain along the edges. Cathedral grain is only produced in flat-cut veneers.

Certified Wood

Certified wood is material that has been harvested with forestry practices that are sustainable as defined by widely accepted standards. Certification guidelines developed and monitored by organizations like the Forest Stewardship Council (www.us.fsc.org) have been a major factor in the acceptance of sustainable forestry practices globally.

Chain of Custody

Chain of custody is the record-tracking protocol for certified material moving through the manufacturing process from harvest in the forest to end use by the consumer. Chain of custody records are used to provide evidence that material claimed as certified originates from duly certified forests. For further information we recommend reviewing the Forest Stewardship Council website at www.us.fsc.org.

Character Marks

Character marks in veneer are part of the dappled beauty and authenticity of natural materials, unrepeatable in man-made surfaces. For many designers, the natural appeal of veneer is in its irregularity—flecks, pin knots, pitch marks, gum marks and mineral streaks—the marks that tell the tree's unique history over decades.

Controlled Wood

Controlled wood is noncertified wood that can be mixed with certified material during manufacturing of FSC mix products. It is subject to controlled condition standards as defined by the Forest Stewardship Council. A risk assessment independently verified as part of chain of custody certification is required, and only those sources deemed “low risk” may be considered controlled wood. For further information we recommend reviewing the Forest Stewardship Council website at www.us.fsc.org.

Crotch

Crotch figure is cut from the juncture of a tree's trunk and main branches. It comes in a range of appearances, including flame, plume, rooster tail, feather or burning bush. Leaves are generally smaller. This figure is most common in Walnut and Mahogany.



Curly

Curly figure appears as an undulating wave pattern produced when contortions in the grain reflect light differently. Many species develop a curly figure, but Maple is the most common.

Cut

Cut is the method used to slice veneer from a log. There are a handful of ways that veneer can be cut, each producing its own effects in the grain. You could conceivably take a single log, cut it four different ways and end up with four completely different-looking veneers.

Edgeband

Edgeband is a thin strip of veneer used for the exposed edges of panel substrates.

Face

Face is a veneer cover for the panel made from several selected veneer leaves spliced to a certain pattern, glued together and cut to exact size. It is also referred to as a Layon.

Fiddleback

Fiddleback figure appears as a tight, fairly uniform, roll appearance across the grain. While other species produce fiddleback, it's most common in Maple, Mahogany and Anigre and is named for the use of fiddleback maple in violin production.

Figure

Figure is the surface effect of grain, character and color patterns produced by the natural patterns of growth or biological “defects” in the tree. Not all species produce figured wood, and the effects are highly variable from log to log. The appearance of figure is influenced both by the specie and how the veneer is cut.

Flake

Flake are character markings that appear in species having a heavy medullary ray growth—Oak, Lacewood and Sycamore, for example—and are the result of quarter slicing through the medullary rays, which run like ribbons perpendicular to the grain.

Flat Cut

Flat cut is a method of producing veneer where a half log is used and individual leaves of veneer are sliced parallel to the original cut, producing the easily recognized “cathedral” effect in the center of the leaf and straighter grain along the edges.

Flitch

Flitch is a bundle of veneer leaves sliced from a single log and arranged as they were cut from the log. Even within the same species, a flitch can vary in color, grain, figure, size (length and width of leaves) and yield (square footage).

Fumed

Fumed veneers are steamed with ammonia to darken and “age” the wood. The color remains stable over time and with exposure to light. While almost any wood with tannins can be fumed, the process is especially well suited for Oak, Pine, Larch, Swiss Pearwood and Douglas Fir.

Grain

Grain is formed by the tree's annual growth rings—it's tight in slow-growing trees, widely spaced in fast growth and variably spaced in trees that grow differently at different times of the year. In veneer, grain appears as the long lines that typically run parallel to each other down the length of the leaf or panel. Grain varies based on the specie, the way it's cut and whether or not the veneer is figured.

Gum Marks

Gum marks are natural character marks in the form of discolored patches or spots.

Interlocked Grain

Interlocked grain is produced by trees that grow in a spiral (like the threads of a screw). Many tropical trees grow in this way, and in some species, the spiral changes direction from year to year, producing an interlocked grain, noted for its light and dark patterns and lustrous surface. Most noticeable in quarter-cut veneers, this grain can produce ribbon stripe, mottled, curly and fiddleback figures.

Terminology

(CONTINUED)

Irregular Grain

Irregular grain is produced when a tree swirls or twists in unexpected ways due to knots, burls, crotches or branches.

Knots, Open

Open knots are character marks that are produced when a portion of the wood substance of a knot has dropped out of the leaf.

Knots, Pin

Pin knots are character marks that are caused by knots smaller than 1/4 or less of an inch, are not easily detectable and do not contain dark centers.

Knots, Tight

Tight knots are character marks that are caused by knots, are solid across their face and fixed by growth to retain their place.

Leaf

Leaf refers to the single slice of veneer within the flitch.

LEED

LEED, or Leadership in Energy and Environmental Design, is a certification program for buildings and communities that guides their design, construction, operations and maintenance toward sustainability. It's based on prerequisites and credits that a project meets to achieve a certification level: Certified, Silver, Gold and Platinum. For more information reference the U.S. Green Building Council at www.usgbc.org.

Mineral Streak

Mineral streak is a natural character mark in the form of a dark patches or discoloration caused by the presence of minerals in the soil from which the tree grew.

Medullary Rays

Medullary rays are character marks that appear as “ribbons” running vertically through the tree, perpendicular to the growth rings, allowing the movement of sap. When veneer is quarter cut through the medullary rays, it produces a fleck pattern on veneer, mostly notably in White Oak.

Pecky

Pecky refers to elongated character markings caused by localized decay or infection of the growth rings or as a result of localized injury (including bird pecks). They're most evident when veneer is rotary cut following the growth rings and look somewhat like a sparse bird's eye figure.

Pippy

Pippy character marks identify veneer that looks like it has a case of the measles—with multiple tiny spots that dot the grain.

Quartered

Quartered is a method of producing veneer where individual leaves of veneer are sliced at a 90-degree angle to the growth rings, producing a striped, straight grain effect. In some species—most notably white oak—the quarter cut produces a flake pattern as a result of cutting through the medullary rays that radiate outward and run like ribbons perpendicular to the grain.

Quilted

Quilted figure is a larger version of pommele or blister in which the blister is elongated and crowded, giving it a softly raised 3D effect. It is common in Maple, Mahogany, Moabi and Sapele.

Random Matching

Random matching occurs when leaves are placed as if randomly stacked, board by board—deliberately unmatched for color and grain and then randomly spliced edge to edge. Random matching tends to result in a casual or rustic feel and are an excellent way to use flitches with short leaves or to capitalize on flitches with inconsistent width, color or grain.

Reconstituted

Reconstituted veneers are rotary cut from a fast-growing secondary specie and then dyed, layered, laminated and laid up with grain that replicates a natural species. They are extremely consistent in grain and color, available in standard sizes that simplify planning, and are an environmentally friendly wood product.

Reverse Slip Matching

Reverse slip matching results when alternating leaves of veneer are slid or “slipped” across each other and every other leaf is flipped end to end. Reverse slip matching creates an alternating grain pattern that breaks up the repetitive “marching” pattern of the slip match. It balances the character of the veneer in the face and is often used where curved shapes might cut off the grain in peculiar ways.

Rift Cut

Rift cut is a method of producing veneer where a quartered oak log (the only specie that is rift cut) is sliced about 15 degrees off the quartered position to avoid the flake pattern common in quartered oak. Rift cutting produces a tight, straight, comb-grain effect.

Rotary Cut

Rotary cut is a method of producing veneer where a full log is turned in a lathe while the blade peels a continuous sheet of veneer along the annual growth rings. The effect produces wide sheets of bold, variegated grains.

Rustic

Rustic veneer refers to the appearance of natural marks and irregularities in the wood that are the result of a tree's specie, growth pattern and unique history.

Slip Matching

Slip matching results when consecutive leaves of veneer are slid or “slipped” across each other side by side, creating a repeating grain pattern across the panel. Common in quarter and rift-cut veneers, slip matching produces a pleasing, repeating grain. Because all leaves are similarly oriented, it minimizes the “barber pole” phenomenon, resulting in fairly uniform color because leaves are positioned to have the same light-reflecting properties.

Straight

Straight grain is a pattern with lines that run parallel to each other and to the tree's trunk.

Veneer Grade

Veneer grade is an industry standard rating used to indicate the veneer's value and potential uses. Grading starts with an evaluation of the length and widths of the flitch. Longer and wider flitches are typically graded for architectural use, mid-range for doors, shorter lengths for furniture.

Wormy

Wormy character marks are numerous elongated “spots” interspersed where the wood has been eaten away by boring insects (generally beetles). Sometimes the hole is filled in by natural processes, leaving elongated, worm-shaped, discolored areas. In many trees, wormholes are more likely in the sapwood than in the heartwood.

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