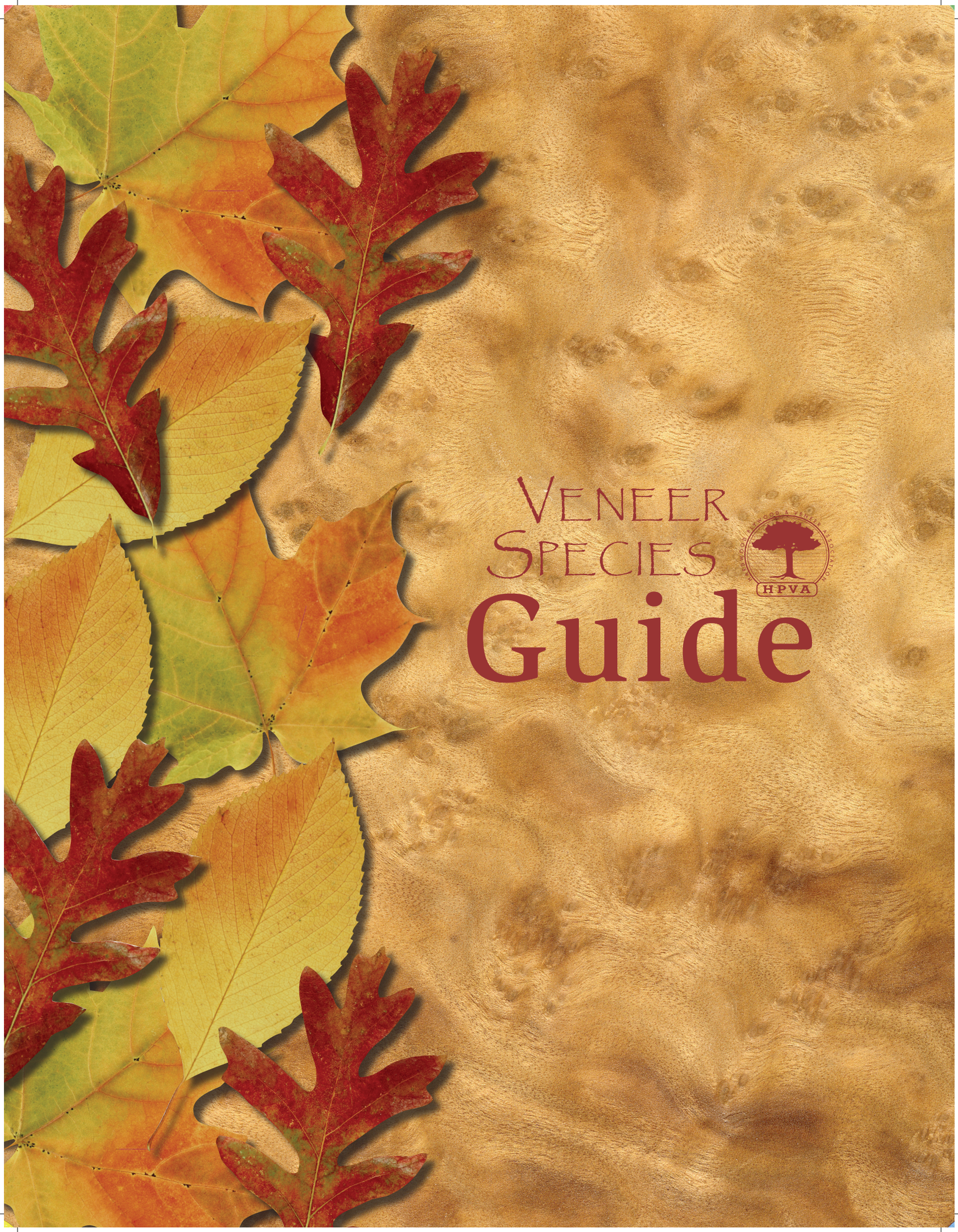
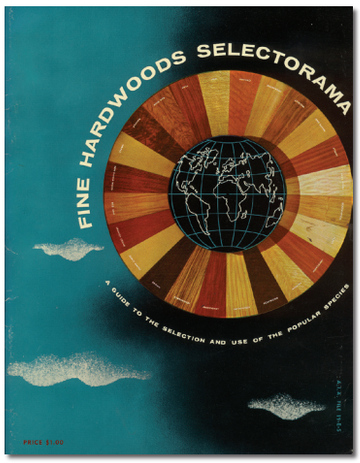
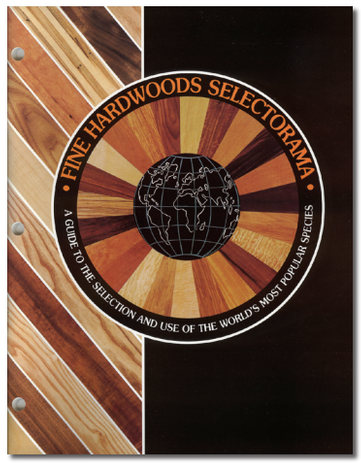


Veneer Species Guide

HPVA

This new *Veneer Species Guide* replaces the *Fine Hardwoods Selectorama,* which has been helping consumers select the right wood for their projects since 1953.





Credits

Photos pages 1, 2, and 8 courtesy of AHEC.
Photos page 3: Top–AHEC, bottom–Hardwood Forestry Fund
Cutting graphics on pages 4–7 provided compliments of Saunders Wood Specialties, Inc.

Our sincere thanks to the following companies for providing veneer images or samples for this book:

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Editor: Curt Alt

This book is published by the Hardwood Plywood & Veneer Association (HPVA), formerly the Hardwood Plywood Manufacturers Association, an international trade association representing wood industry companies in the United States, Canada, and abroad. Association members include manufacturers of hardwood plywood, veneer, and engineered hardwood flooring, hardwood plywood prefinishers, distributors of hardwood plywood products, and suppliers to the industry. HPVA's mission is "to promote and support the use of high quality, environmentally sound, decorative wood products manufactured in North America." The Association offers numerous services to members, including: industry promotion, communication services, government representation, and technical, laboratory, and testing services.

The processes and procedures shown in this publication represent the industrial manufacture of hardwood veneer and should not be attempted by unqualified individuals.

Comments or questions regarding the content, format, use, or reprinting of this publication are welcome and should be directed to the following address:

HPVA
P.O. Box 2789
Reston, VA 20195–0789
Phone: (703) 435–2900; FAX: (703) 435–2537
Email: hpva@hpva.org; Web site: www.hpva.org

Wood species shown on cover: Camphor Burl. See page 25.

INTRODUCTION

For more than 50 years, the Fine Hardwoods Selectorama has been an essential resource for those individuals sourcing and using fine hardwoods. Generations of users have relied on the Selectorama to help them select the right wood for their most challenging projects.

Building on that illustrious history, we are pleased to offer this new Veneer Species Guide. More a refinement of purpose than a simple revision of the Selectorama, this new publication provides information tailored specifically to the discriminating veneer user. Rather than attempting to provide comprehensive information on every commercial wood species, we have chosen to focus instead on the 150 species commercially available in North America in veneer form. By limiting the scope of this work to commercially available veneer species, we hope to increase the usefulness of this resource to the veneer buying public.

Helpful Hint

The term "veneer" refers only to raw sliced or peeled wood, not material further processed into faces, two ply sheet goods, panel stock, etc.

This new Veneer Species Guide takes its place alongside our Hardwood Plywood Handbook, ANSI HP–1 Plywood Standard, videos, and other books as part of a growing resource of information available to the woodworking public. We encourage readers to visit HPVA's website at www.hpva.org for additional product information and a complete listing of all of our publications. There is also information on the website on hardwood plywood and veneer producers and links to other related websites. If you have questions about sourcing or using hardwood veneer or plywood, HPVA's website should be your first stop on your quest for answers.

As you will see from this species guide, there are many different veneer species available to meet your needs. For specific information on availability and a list of mills that can meet your product needs, we suggest you get a complimentary copy of HPVA's in–depth "Where to Buy Hardwood Plywood, Veneer, and Engineered Flooring" membership directory and product guide, available on HPVA's website.

It is our hope that this publication will fill the same role as the Selectorama—that of an essential desktop reference for users of fine domestic and international veneers. As such, this publication will make identifying and comparing the various veneer species less complicated and help the designer, craftsman, and consumer select the perfect wood for their needs.

GREEN BY DESIGN: RENEWABLE, DURABLE, SUSTAINABLE WOOD

Never before have consumers cared so deeply about the environmental impacts of the products they use. In these environmentally conscious times, wood products offer concerned consumers a breath of fresh air by giving them the peace of mind of knowing that they are using an environmentally friendly building material.

Wood is renewable, reusable, recyclable, and completely biodegradable. The well–managed forests from which our wood is derived are natural air filters, absorbing carbon dioxide and releasing oxygen. Forests also provide us with clean water and scenic beauty and provide habitat for wildlife and plants.

Wood—The Environmentally Conscious Choice

Life cycle assessment, or LCA, is an internationally recognized analytical method that quantifies energy and material usage, emissions to the air and water, and the solid waste generated at each stage of a product's life cycle. The LCA process asks some basic questions—the same questions that more and more architects, designers, and consumers are asking of building products:

- How is the environment affected at each stage of the building product's life cycle—from resource extraction through manufacturing, transportation, installation, and eventual disposal?
- How can the impacts on the environment be compared for one material choice over another?

LCA is becoming the world standard for dealing with these complex environmental issues and objectively improving environmentally based decision making. When examined under the LCA framework, wood is clearly superior to alternate building materials. Metal, masonry, and plastics are originally extracted from fixed, non–renewable sources and, in all cases, take more fossil fuel energy to process and manufacture (see chart). Wood can be easily reused or recycled throughout its life cycle and, when no longer needed, is completely biodegradable. Try saying that about metal, concrete, or plastics!

Life Cycle Assessment of the Environmental Impacts of a House Built from Wood, Sheet Metal, and Concrete

	Wood	Sheet Metal	Concrete
Global Warming Potential (CO2 equivalent kg)	62,183	76,453	93,573
Air Toxicity (critical volume measurement)	3,236	5,628	6,971
Water Toxicity (critical volume measurement)	407,787	1,413,784	876,189
Weighted Resource Use (kg)	121,804	138,501	234,996

Source: Canadian Wood Council, Technical Bulletin No. 5, *Life Cycle Analysis for Residential Buildings*, www.cwc.ca

Responsibly Meeting a Growing Demand

HPVA members are committed to the integration of the science of sustainable harvest and production with the conservation of soil, air, and water quality that preserves wildlife and fish habitat and promotes healthy forests. Our policy statement on Sound Forestry and Utilization Practices is available online at www.hpva.org.

Worldwide, there are a number of forest certification programs that strive to meet consumer and manufacturer demands for greater environmental accountability by documenting and improving forestry practices. HPVA members fully support the fundamental concepts of forest certification and actively participate in the two major certification initiatives in the US: the Forest Stewardship Council (FSC) and the Sustainable Forestry Initiative (SFI). Information on those and other forest certification programs and the companies that manufacture to certification standards is available on our website, www.hpva.org, and in our "Where to Buy" membership directory.

Internationally, recent attention has focused on the problem of illegal logging and the subsequent trade in illegal wood products. HPVA members support international efforts to ensure that all countries have the resources necessary to monitor and sustainably manage their forest resource. Individually, our member companies encourage the proper stewardship of our international forest resource by supporting community activities that promote natural resource education and policies that enhance forest health and vigor.

Forest Facts:

- There are 737 million acres of forest land in the U.S.
- The U.S. hardwood resource has grown by 91% since 1952.
- Tree growth exceeds harvest in all areas of the U.S.
- 5.4 million trees are planted *every day* in the U.S.

Stewardship in Action

A great example of that stewardship in action is the hardwood tree planting initiatives coordinated and sponsored each year by the Hardwood Forestry Fund. The Fund, created by the HPVA membership in 1990 to educate the public about the importance of active forest management, works closely with natural resource professionals to fund the planting of hardwood trees on public sites.

The Hardwood Forestry Fund's proactive mission has received broad–based support from the forest products industry, conservation–focused foundations, and environmentally concerned individuals. Since 1990, the Fund has planted more than 2.5 million trees through 190 planting projects in 22 states and 4 foreign countries.

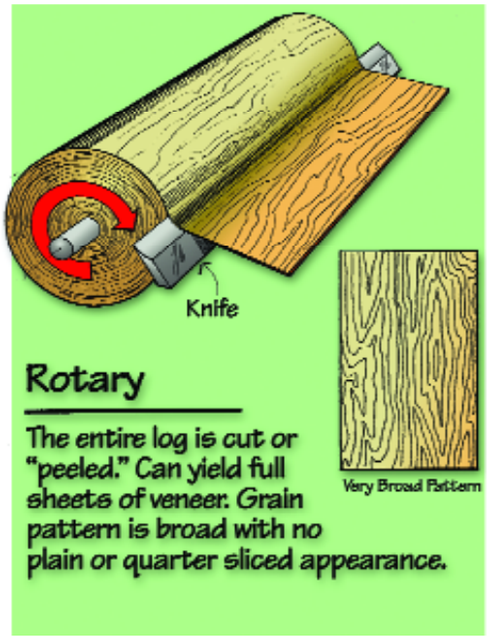
The Hardwood Forestry Fund is a growing program that helps companies and individuals that do not own forestland have a hand in the establishment and management of future forests. The Fund and its members replace the trees used today and create healthy hardwood forests for future generations. You could say our future is growing every day. We invite you to learn more about how you can help by visiting our website at www.hardwoodforestryfund.org.

VENEER CUTTING METHODS

Rotary:

Helpful Hint

Rotary is the only cutting method that is capable of producing whole piece faces.

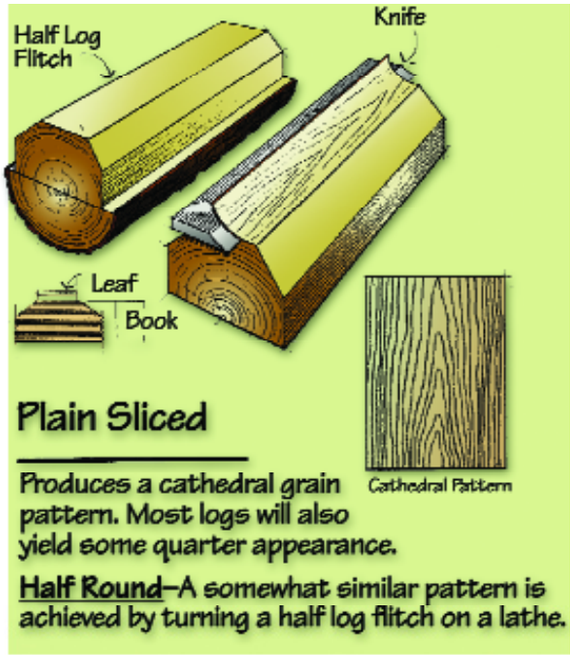


- Used in the majority of stock panels produced in North America
- Produces a broad, variegated pattern
- Yields the most veneer per log
- Can produce a limited amount of full–sized whole piece faces
- Generally, rotary cut veneer is less expensive than sliced veneer

Rotary Birch

Rotary Red Oak

Plain Sliced:



- Most common slicing method
- Veneer cut along the growth rings
- Frequently results in a combination of familiar "cathedral" pattern and straight grain patterns
- Because plain slicing offers the highest yield of the slicing methods, it is generally the least expensive

Helpful Hint

Both plain slicing and half round slicing produce the familiar cathedral appearance.

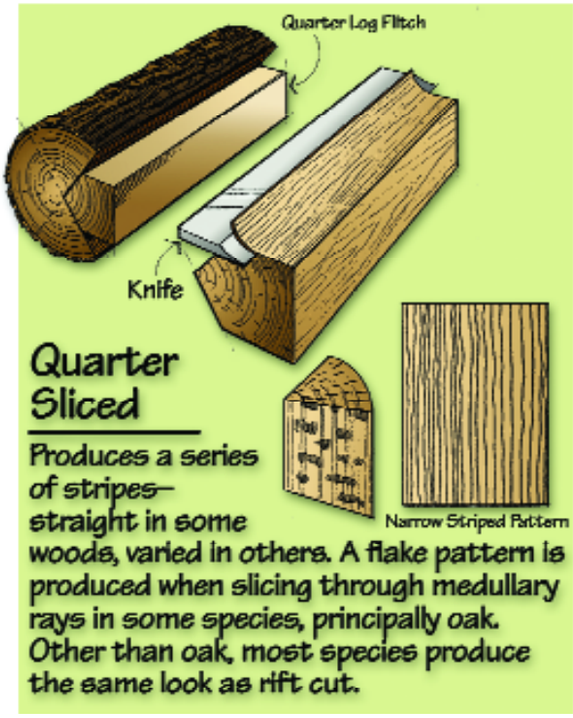
Plain Sliced Cherry

Plain Sliced Red Elm

Quarter Sliced:

Helpful Hint

Quartered oak veneer will contain flake. If you do not want flake in your oak veneer, you should consider specifying rift cut oak.

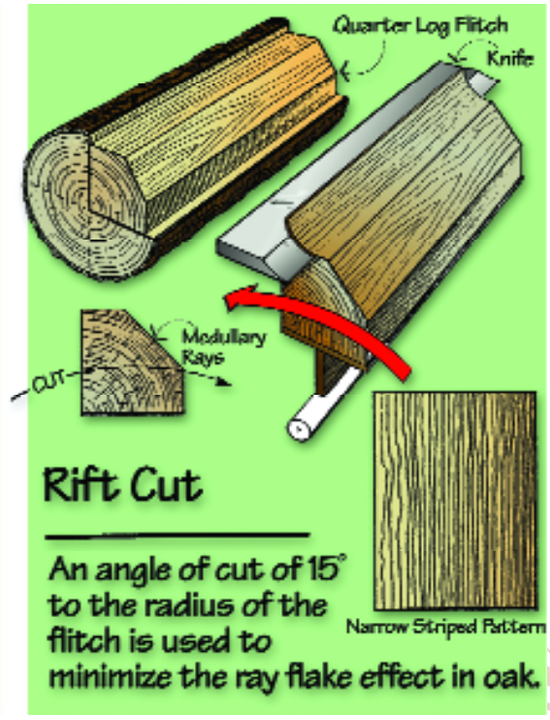


- Cut is perpendicular to the growth rings
- Produces a straight grain appearance
- May produce ray flake in red and white oak
- Produces narrower components than plain slicing
- Because quarter slicing yields less veneer per log than plain slicing, it is generally more expensive than plain slicing

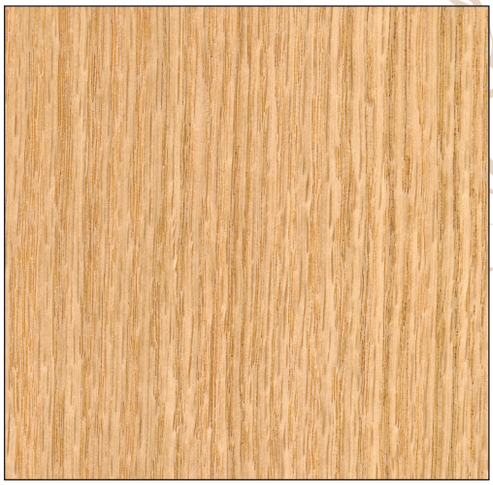
Quater Sliced Mahogany

Quarter Sliced Oak

Rift Cut:



- Red and white oak are generally the only species that are rift cut
- Produces straight grain appearance in oak with minimal flake
- Produces the narrowest components of the slicing methods
- Because rift cutting yields the least veneer per log, it is generally the most expensive slicing method

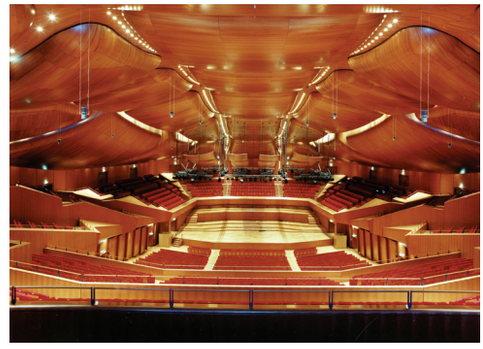


Rift Cut Red Oak

Rift Cut White Oak

SPECIFYING VENEER

For many people, the process of properly specifying veneer is a challenge. The wide selection of available veneer species, cutting methods, and natural figure types and characteristics combine to confront the potential specifier with a dizzying array of possibilities. Add to that mix the fact that there are no set veneer grades upon which a specifier can rely, and the process of specifying veneer can seem overwhelming.



Helpful Hint

Don't be confused by the existence of the ANSI HP–1 Hardwood Plywood Standard. The HP–1 grades apply only to hardwood plywood panels, not raw veneer.

However, the process need not be confusing or complicated. With a little preparation and forethought, you'll have no trouble finding the perfect veneer for your project. The key to the entire process is effective communication. To get the right veneer, you need to have a complete understanding of what it is you need, and you have to be able to communicate those needs to your supplier.

Although there is no set veneer standard to refer to, there are some basic questions that any veneer supplier will want answered when taking your order. By having answers to those questions ready before you pick up the phone to call, you'll have much of the information your veneer supplier needs ready at your fingertips.

Helpful Hint

As the product specifications become more restrictive, the amount of material available to meet your specifications decreases and the cost of your veneer will increase.

When selecting your veneer, however, please give some thought to the cut, appearance, and grade of the veneer you specify. Many busy specifiers go straight to a request for a high quality veneer because they view it as the easiest way to get an acceptable product that will do the job. However, they may be doing themselves a disservice by not considering alternate veneers that would work just fine in their application. As the accompanying graphic shows, the typical hardwood veneer log produces only a very small amount of AA panel grade veneer. If you insist on only high grade veneer, you may not only be paying too much for your veneer, but you are also putting an unnecessary strain on our valuable hardwood resource.

Your veneer supplier has a wide range of underutilized cuts, appearances, and species available to meet your needs at an affordable price. By discussing your needs with an educated veneer supplier, they may be able to suggest a product you hadn't considered that would fulfill your needs and possibly even save you money.

To facilitate effective communication between you and your veneer supplier, we offer the following list of veneer specifying considerations. While not exhaustive, these questions cover much of the basic information your veneer supplier needs to know to get you the proper veneer:

Basic Customer Questions:

Your veneer supplier will need this fundamental information to get a frame of reference for your expectations and needs.

- Where are you calling from?
- What are you making?
- How are you going to use the veneer?

Basic Veneer Questions:

This basic veneer information will form the basis of your discussions with your veneer supplier.

- What wood species do you want?
- What veneer cut do you want?
  - If you are requesting plain sliced veneer, what percentage of crown bundles are you expecting?
- Do you want to buy veneer priced per individual flitch or priced per graded pallet?

Veneer Specifications:

The dimensions and amount of veneer you need are critical considerations, as the availability of certain types of veneer may be limited.

- What are your length and width requirements?
  - Are all the required lengths the same, or are various lengths required?
- How many square feet of veneer do you need?
- What are your thickness requirements?
- Are large sequential runs required?

Veneer Color and Figure Requirements:

Veneer is an infinitely variable natural product, so it is important for you to clearly explain your expectations for color, natural figure, and natural characteristics.

- Do you have any color restrictions?
- Do you want figured or non–figured veneer?
  - If figured, which type of natural figure do you want?
  - If figured, do you want heavy, medium, or light figure?
- How many natural characteristics will you accept?
- Are open defects allowable?

Packaging Requirements:

In addition to the veneer specs, your veneer supplier will need to know what you want done with the veneer once it has been cut.

- Do you want clipped and bundled veneer stock or unclipped (flitch stock) veneer?
  - If you want clipped veneer, do you require a measurement list and tally by bundle?
  - How many sheets of veneer per bundle are you expecting?
- How are the veneers to be crated? Unitized or palletized?

Additional Considerations:

Your veneer supplier can supply you with additional information or documentation if required.

- Is the veneer being consumed or exported? If it is to be exported, do you need a certificate of origin?
- Are you aware that woods such as mansonia, afromosia, Santos rosewood, makore, etc. may present health concerns (dermatitis, breathing irritant, etc.)?

Additional Information:

You should provide your veneer supplier with any additional information you can to help them understand your veneer request.

- Can you send digital photos or samples of the look that you want?

Helpful Hints

In clipped and bundled veneer, some quartered bundles typically accompany the crown bundles.

Verify sufficient availability of your veneer in the early planning stages of your project.

Typically, veneers thicker than 1/42nd inch are special order items.

Any color, figure, or other special requirements must be explicitly communicated to your supplier when placing an order.

INTRODUCTION TO THE SPECIES LISTINGS

The species descriptions on the following pages provide basic information on the 150 veneer species commercially available in North America. The species are listed alphabetically by their most commonly used commercial trade name.

Each species is presented with a photo of the wood (or multiple photos if there are particular characteristics or appearances that warrant highlighting) and the following information, which is identified in the sample listing shown on the next page:

- Trade Name: The species are listed alphabetically by common trade names. If a group of woods are generally sold together under a single trade name (such as *hard maple* or *spruce*), those woods are collected together under that single broad trade name. If a wood has become known by a trade name that is botanically incorrect (such as "Tasmanian oak," which is not a true oak), it will be listed in quotations to indicate the name may be misleading.

Helpful Hint

To avoid confusion, the scientific name of the veneer species should always be used when discussing or specifying veneer.

- Scientific Name: The scientific name for each species is provided. Because trade and other common names are often misleading (or unintentionally used incorrectly), all discussions about a particular wood species must be based on the scientific name of the species. The importance of using scientific names for clarity cannot be overemphasized. Even when used correctly, common names are often confusing. This oft cited example from William Lincoln's "World Woods in Color" demonstrates how confusing wood names can be:

  > The wood known as "Australian silky oak" (*Cardwellia sublimis*) in the UK is known as lacewood in America. Lacewood (*Platanus acerifolia*) in the UK is known as sycamore in America, while sycamore (*Acer pseudoplatanus*) in the UK is known as maple in America.

- Common Names: Other frequently used common names are listed. As with the trade names, any botanically misleading common names are identified with quotations. If a collection of woods is grouped together under a single trade name, the individual woods in that group are identified here in the common names text.

Helpful Hint

Political and social situations in the source country can change and affect the availability of logs and veneer.

- Species Information: For each species, the source region of the world from which the wood comes, the typical color of the wood, the grain patterns, and descriptive characteristics are provided.

- Special Notes: For some species, additional informational notes have been offered that describe unusual appearances or characteristics specific to that species.

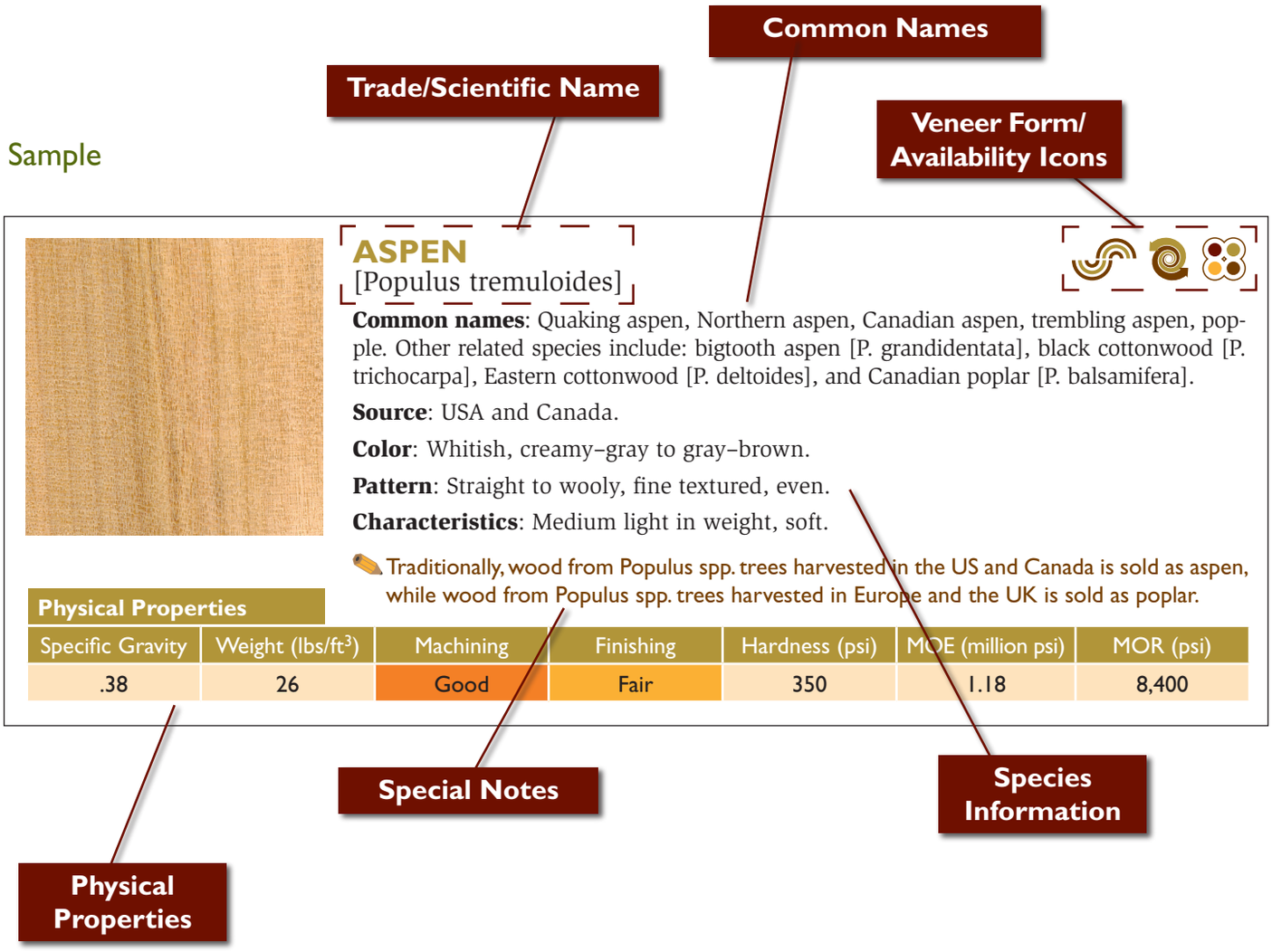
- Physical Properties: The physical properties of the wood and the ease of machining and finishing are provided. Physical properties are given for wood at 12% moisture content. The hardness of the wood is the force needed to embed a 0.444–inch ball to one–half its diameter in the wood.

- Veneer Form: Graphical icons are used to show whether the species is commonly available in sliced veneer form  , rotary veneer form  , or both forms  . Wood that

is indicated as being readily available in one form may often be obtained in the other form, although it may be a special order item and might delay delivery or increase the cost of the veneer.

- Face Availability: If this icon is present in the listing, it indicates that that veneer species is readily available as a face that can be used to make hardwood plywood panels. For species without this icon, the veneer may be more difficult to find in face form or may only be available for specialized uses.

Sample



AFRORMOSIA
[Pericopsis elata]

Common names: Kokrodua.

Source: West Africa.

Color: Yellow darkens on exposure to deep orange–brown.

Pattern: Straight to interlocked, some rope; resembles teak, not oily.

Characteristics: Heavy, dense, durable.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.71	44	Good	Good	1,560	1.94	18,400

AFZELIA
[Afzelia spp.]

Common names: Doussie.

Source: Tropical West and East Africa.

Color: Straw sapwood, reddish–brown heartwood.

Pattern: Grain irregular to interlocked, coarse.

Characteristics: Medium weight, tough, durable.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.67	51	Fair	Poor	1,810	1.90	18,100

ALDER, RED
[Alnus rubra]

Common names: Alder, western alder.

Source: USA Pacific Coast to Canada.

Color: White to pinkish–brown.

Pattern: Subdued to not distinct; fine texture.

Characteristics: Good working properties.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.41	28	Excellent	Excellent	590	1.38	9,800

AMBOYNA BURL
[Pterocarpus indicus]

Common names: Narra.

Source: Malaysia and SE Asia.

Color: Heartwood varies from light yellow to golden brown to reddish–brown, to sometimes red.

Pattern: Interlocked to wavy grain; moderately fine to moderately coarse textured.

Characteristics: Heavy, hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.52	40	Excellent	Excellent	1,200	1.70	14,000

ANDIROBA
[Carapa guianensis]

Common names: Cedro macho, figueroa.

Source: Central and South America.

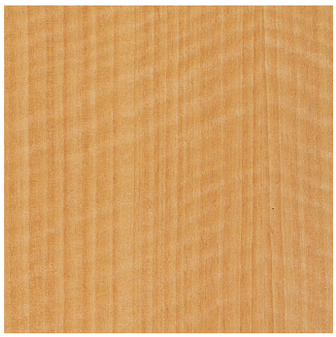
Color: Light salmon to reddish–brown.

Pattern: Straight to interlocked, some ripple.

Characteristics: Medium to low density; season slowly.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.65	40	Excellent	Excellent	1,130	2.00	15,500



ANEGRE
[Aningeria spp.]

Common names: Aningeria.

Source: West and East Africa.

Color: Cream to tan, pinkish tinge.

Pattern: Straight, often fiddleback to mottle figured.

Characteristics: Fine texture, lustrous, slightly siliceous.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.44	33	Fair	Poor	995	1.17	7,980

ANTIARIS
[Antiaris africana]

Common names: Ako, chenchen, chen.

Source: West, Central, East Africa.

Color: Creamy–white to yellow–gray.

Pattern: Straight, stripy, interlocked.

Characteristics: Soft, lightweight, medium to coarse.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.38	27	Excellent	Good	500	0.96	7,270

ASH, BLACK
[Fraxinus nigra]

Source: Lake states, Southern Canada, New England.

Color: Whitish to light brown sapwood, dull, grayish–brown to brown heartwood.

Pattern: Straight grain; coarse, even texture.

Characteristics: Medium to lightweight, soft.

✎ Brown ash refers to black ash grown in certain locations in Michigan, Wisconsin, and Minnesota that exhibits a uniform, warm brown heartwood with narrow light–brown sapwood.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.56	35	Good	Excellent	1,023	1.60	12,894

Inset Photo: Olive Ash Burl

ASH, EUROPEAN
[Fraxinus excelsior]

Common names: English, French, Polish, etc., according to origin, white ash burl (sapwood burl), olive ash burl (heartwood burl).

Source: Europe, North Africa, Western Asia, U.K.

Color: Cream to pale tan heartwood.

Pattern: Straight grain; coarse, even texture.

Characteristics: Heavy in weight, hard, strong, stiff, high shock resistance, excellent bending qualities. Available in burl form (white and olive).

✎ In some logs, the dark brown to black, sound heartwood is sold as olive ash.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.71	44	Good	Excellent	1,754	1.86	16,741

ASH, JAPANESE
[Fraxinus mandschurica]

Source: Japan, SE Asia.

Color: Straw to light brown.

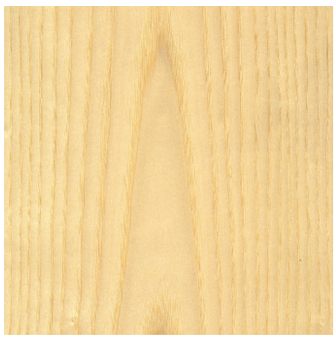
Pattern: Straight grained, but sometimes wavy and curly producing a peanut figure; coarse textured.

Characteristics: Light in weight, strong, good bending qualities.

Highly figured logs are sold as tamo ash or, simply, tamo.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.69	43	Good	Good	1,636	1.83	16,223



ASH, WHITE
[Fraxinus americana]

Common names: American ash.

Source: Great Plains, Eastern USA, Southeastern Canada.

Color: Somewhat lustrous; sapwood nearly white, wide; heartwood grayish brown to light brown to pale yellow streaked with brown.

Pattern: Straight grain; coarse, even texture.

Characteristics: Heavy in weight, hard, strong, stiff, high shock resistance, excellent bending qualities.

Veneer from Oregon ash [Fraxinus latifolia] and green ash [Fraxinus pennsylvania] is not distinguished from white ash.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.60	42	Good	Excellent	1,320	1.74	15,000

ASPEN
[Populus tremuloides]

Common names: Quaking aspen, Northern aspen, Canadian aspen, trembling aspen, popple. Other related species include: bigtooth aspen [P. grandidentata], black cottonwood [P. trichocarpa], Eastern cottonwood [P. deltoides], and Canadian poplar [P. balsamifera].

Source: USA and Canada.

Color: Whitish, creamy–gray to gray–brown.

Pattern: Straight to wooly, fine textured, even.

Characteristics: Medium light in weight, soft.

Traditionally, wood from Populus spp. trees harvested in the US and Canada is sold as aspen, while wood from Populus spp. trees harvested in Europe and the UK is sold as poplar.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.38	26	Good	Fair	350	1.18	8,400

AVODIRE
[Turraeanthus africanus]

Common names: Apaya, apeya.

Source: Tropical West Africa.

Color: White, darkens on exposure to creamy–gold.

Pattern: Straight grained, but often figured with mottle; attractive crotches and swirls.

Characteristics: Medium in weight; moderately hard; lustrous; can be difficult to season.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.56	35	Fair	Good	1,080	1.49	12,700

BALDCYPRESS
[Taxodium distichum]

Common names: Bald–cypress, southern–cypress.

Source: Southeastern USA.

Color: Yellowish red to salmon–colored.

Pattern: Distinct, leafy grain; attractive crotch figure.

Characteristics: Soft springwood, hard summerwood; moderately strong, light, durable.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.46	28	Excellent	Excellent	510	1.44	10,600

BALSAMO
[Myroxylon balsamum]

Common names: “Santos mahogany,” cabreuva.

Source: Central and South America.

Color: Heartwood reddish–brown, darkens upon exposure; sapwood nearly white.

Pattern: Medium to high luster, medium texture, interlocked grain.

Characteristics: Moderately difficult to work, with a dulling effect on cutting tools. Finishes very nicely.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.81	62	Poor	Excellent	2,200	2.43	20,130

Inset Photo: Carmelized Bamboo

BAMBOO
[Phyllostachys pubescens]

Common names: Moso.

Source: China.

Color: Natural or caramelized.

Pattern: Straight, close grained. Attractive nodules randomly interspersed throughout.

Characteristics: Hard, dense, heavy, and strong; can be worked easily with carbide–tipped tools. Fine texture; takes detail well; resistant to insects and mildew.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.83	65	Good	Good	1,939	2.06	19,878

BANAK
[Virola spp.]

Common names: Virola, cuangare.

Source: Tropical America.

Color: Pinkish–brown to gray–brown.

Pattern: Straight grained; medium to coarse textured.

Characteristics: Similar to American tulipwood.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.44	27	Excellent	Excellent	530	1.61	11,450

BASSWOOD, AMERICAN
[Tilia americana]

Common names: American linden, American lime.

Source: Northern USA and Canada.

Color: Creamy white.

Pattern: Fine grain, not distinct.

Characteristics: Very light in weight, fairly soft.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.37	26	Excellent	Excellent	410	1.46	8,700

BEECH, AMERICAN
[Fagus grandifolia]

Source: USA and Canada.

Color: White sapwood; heartwood white to pinkish to reddish–brown.

Pattern: Straight to interlocked, close–grained; fine texture.

Characteristics: Hard, strong, stiff.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.64	45	Excellent	Excellent	1,300	1.72	14,900

BEECH, EUROPEAN
[Fagus sylvatica]

Common names: German, French, etc. according to origin.

Source: Europe, U.K., West Asia.

Color: White sapwood; heartwood whitish to pale–pinkish–brown.

Pattern: Straight to interlocked, close–grained; fine texture.

Characteristics: Hard, strong, stiff.

✎ European beech is sold in both steamed and unsteamed versions. Steaming the veneer darkens the color of the wood.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.72	45	Fair	Excellent	1,800	1.83	17,100

BENGE
[Guibourtia arnoldiana]

Common names: Mutenye.

Source: West Central Africa.

Color: Heartwood pale yellowish–brown to medium brown, with gray to black striping.

Pattern: Interlocked and wavy, striped and mottled.

Characteristics: Medium density; fine textured.

✎ Some authorities prefer to lump benge [G. arnoldiana], ovangkol [G. ehie], and bubinga [G. tessmannii] together.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.64	50	Good	Good	2,060	2.04	21,400

BINTANGOR
[Calophyllum spp.]

Common names: Damanu.

Source: Southeast Asia.

Color: Heartwood deep red to orange red; sapwood yellow brown with a pink or orange tinge.

Pattern: Course, uneven texture; interlocking grain.

Characteristics: Moderately easy to work, but tends to torn and chipped grain.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.40	31	Good	Good	1,475	1.71	13,255

Natural birch shown

BIRCH
[Betula spp.]

The birch group is comprised of paper birch [Betula papyrifera] (white birch), sweet birch [Betula lenta] (black birch, cherry birch), and yellow birch [Betula alleghaniensis] (grey birch, silver birch). The veneer from paper, sweet, and yellow birch is indistinguishable in the marketplace and is sold simply as birch.

Source: USA and Canada.

Color: Light brown to yellow sapwood; heartwood brown tinged with red.

Pattern: Straight, close grained; fine, uniform texture.

Characteristics: Heavy, hard, strong.

Birch veneer is sold as sap, heart, or natural.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.62	43	Good	Excellent	1,260	2.01	16,600

Inset Photo: Karelian Burl

BIRCH, EUROPEAN
[Betula pendula, B. alba, B. odorata]

Common names: English, Finnish, Russian, Baltic, etc. according to origin. Flame, ice, etc. according to figure. The burl figure of this species is often sold as Karelian Burl or Alpine Burl.

Source: Europe, U.K., Scandinavia.

Color: Cream–white to tan.

Pattern: Straight grained; fine textured and lustrous.

Characteristics: Heavy, hard, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.66	41	Good	Good	1,480	1.78	15,449

BLACKBEAN
[Castanospermum australe]

Common names: Beantree.

Source: Australia.

Color: Chocolate–brown with gray–brown streaks.

Pattern: Straight grained; sometimes interlocked; coarse textured.

Characteristics: Heavy, hard, tough, durable.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.70	44	Fair	Excellent	1,690	1.85	16,482

BOSSE
[Guarea spp.]

Common names: "African cedar."

Source: Tropical West Africa.

Color: Heartwood pinkish–brown, darkens on exposure.

Pattern: Straight to wavy or interlocked; fine uniform texture; lustrous.

Characteristics: Medium density, dust may irritate.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.48	36	Good	Good	1,000	1.57	15,500

"BOXWOOD, WEST INDIAN"
[Gossypiospermum praecox]

Common names: "Maracaibo boxwood," castelo.

Source: West Indies, Venezuela, Colombia.

Color: Cream to pale yellow.

Pattern: Straight grain; fine texture.

Characteristics: Heavy, hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.73	50	Excellent	Excellent	1,857	1.90	17,260

BREU
[Protium spp.]

Common names: Copal.

Source: Tropical Central and South America.

Color: Pale buff to pinkish sapwood; brown to reddish–brown heartwood.

Pattern: Variable texture with high luster.

Characteristics: Easy to work; low resistance to decay and insects.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.45	33	Good	Good	720	1.46	11,000

BUBINGA
[Guibourtia tessmannii]

Common names: Flat and quarter–sliced veneers are generally sold as bubinga; rotary veneers are sold as kevazingo.

Source: West Africa.

Color: Pink to vivid red to reddish–brown with lighter red to purple stripes or veining.

Pattern: Straight grained or interlocked; the interlocked, irregular grained logs are veneered and sold as kevazingo; texture is moderately coarse.

Characteristics: Heavy, some gum.

Some authorities prefer to lump benge [G. arnoldiana], ovangkol [G. ehie], and bubinga [G. tessmannii] together.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.80	49	Good	Good	2,690	2.48	22,600

BUTTERNUT
[Juglans cinerea]

Common names: White walnut.

Source: USA and Canada, but limited because of disease.

Color: Warm medium–brown.

Pattern: Straight grained; coarse, soft texture.

Characteristics: Light to medium weight, easy to work.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.38	23	Excellent	Excellent	490	1.18	8,100

"CEDAR, RED"
[Juniperus virginiana]

Common names: "Aromatic red cedar," "eastern red cedar," "redcedar," "Tennessee red cedar."

Source: Eastern USA.

Color: Sapwood nearly white; heartwood purplish to rose–red, matures to dull red or reddish–brown.

Pattern: Straight grained; fine textured.

Characteristics: Characteristic pencil–cedar odor, moderately heavy, hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.53	33	Excellent	Good	904	1.54	12,136

"CEDAR, SPANISH"
[Cedrela spp.]

Common names: Cedro, "Central American cedar," Honduras, Brazilian, etc., according to origin.

Source: Central, South America, Mexico.

Color: Light reddish brown to dark reddish brown.

Pattern: Straight grained; uneven or wavy to curly or mottled, cedar–like odor.

Characteristics: Soft, durable.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.48	30	Good	Good	723	1.45	10,883

"CEDAR, WESTERN RED"
[Thuja plicata]

Common names: Giant arborvitae.

Source: Western Canada and USA.

Color: Sapwood nearly white; heartwood reddish-brown, loses red tinge on exposure.

Pattern: Straight grained, course texture.

Characteristics: Light, easily worked, aromatic scent; extremely resistant to moisture.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.32	22	Excellent	Excellent	350	1.11	7,500

CEDAR OF LEBANON
[Cedrus libani]

Common names: True cedar.

Source: Middle East.

Color: Sapwood light to yellowish; heartwood light reddish–brown to dark reddish–brown.

Pattern: Straight grained, course texture, with in–grown bark pockets.

Characteristics: Soft, brittle wood is easily worked, strong aromatic scent.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.56	35	Excellent	Good	1,023	1.60	12,894

CEIBA
[Ceiba pentandra]

Common names: Lupuna, fuma, fromager, sumauma.

Source: South and Central America, Africa, Malaysia.

Color: Light–brown with pinkish cast.

Pattern: Straight to irregular grained; coarse textured.

Characteristics: Light, soft, weak.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.25	18	Good	Fair	240	0.54	4,330

CELTIS
[Celtis spp.]

Source: West Africa.

Color: Whitish to pale–yellow.

Pattern: Straight grained; interlocked.

Characteristics: Hard, fairly heavy.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.65	50	Good	Fair	1,670	1.62	14,700

CEREJEIRA
[Amburana cearensis]

Common names: Amburana.

Source: Brazil, Central and South America.

Color: Yellow to medium–brown with orange–pinkish tinge.

Pattern: Straight to irregular grain; coarse textured.

Characteristics: Heavy. Available as crotch figure.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.60	37	Good	Excellent	1,194	1.67	13,911

CHERRY, AMERICAN
[Prunus serotina]

Common names: Black cherry.

Source: Eastern USA.

Color: Sapwood nearly white; heartwood light pinkish–brown to dark reddish–brown.

Pattern: Fine, straight, close–grained.

Characteristics: Light, strong, hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.50	35	Excellent	Excellent	950	1.49	12,300

CHERRY, EUROPEAN
[Prunus avium]

Source: Europe, U.K., Scandinavia, West Asia, North Africa.

Color: Sapwood nearly white; heartwood pale pinkish–brown.

Pattern: Fine, straight, close–grained.

Characteristics: Light, strong, hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.61	38	Good	Excellent	1,240	1.69	14,166

CHESTNUT, EUROPEAN
[Castanea sativa]

Common names: Sweet chestnut, Spanish chestnut.
Source: U.K., Europe, Asia Minor.
Color: Straw to light–brown.
Pattern: Straight to spiral; coarse textured.
Characteristics: Medium weight, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.54	34	Excellent	Excellent	942	1.56	12,389

Inset Photo: Camphor Burl

CINNAMON
[Cinnamomum camphora]

Common names: Camphorwood, camphor burl.
Source: Ceylon, China, Japan, SE Asia.
Color: Light tan or straw to dark–brown, with dark streaks.
Pattern: Straight grained to ropy; fine textured.
Characteristics: Medium weight, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.50	39	Good	Good	793	1.48	11,383

COCOBOLO
[Dalbergia retusa]

Common names: Granadillo.
Source: Central America.
Color: Varies from rich red to variegated veins of yellow, orange, red, purple, or black.
Pattern: Straight to interwoven grain; irregular.
Characteristics: Heavy, tough, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.90	69	Excellent	Fair	2,974	2.18	21,730

COFFEETREE, KENTUCKY

[Gymnocladus dioicus]

Common names: Coffeenut, American coffeebean.

Source: Eastern USA.

Color: Sapwood creamy–white; heartwood rich, light pinkish–brown.

Pattern: Coarse grained.

Characteristics: Heavy, although not hard, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.60	39	Good	Fair	1,124	1.74	14,650

CORDIA, AMERICAN

[Cordia alliodora; C. trichotoma]

Common names: Bocote, canaletta, “Mayan rosewood,” “Mexican rosewood,” ziricote.

Source: West Indies and Tropical America.

Color: Dull golden–brown.

Pattern: Straight grained, medium coarse textured; with attractive ray fleck on quarters.

Characteristics: Heavy, medium strength.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.63	48	Excellent	Excellent	2,200	1.58	15,700

CURUPIXA

[Sapium spp.]

Common names: Lechero, gogo, curupi.

Source: Mexico, Central America, South America.

Color: Uniform cream to light brown.

Pattern: Straight grain to slightly interlocked; medium texture.

Characteristics: Light and soft; low resistance to decay and insects.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.47	36	Excellent	Good	700	1.68	10,790

DOUGLAS–FIR
[Pseudotsuga menziesii]

Common names: Douglas–fir veneer is sold under the trade name "Oregon pine."

Source: Northwestern USA, Southwestern Canada.

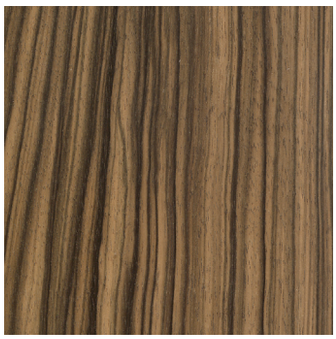
Color: Yellowish to orange–red to light red, with narrow band of white sapwood.

Pattern: Generally straight grained; medium to coarse textured.

Characteristics: Moderately light and hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.48	30	Poor	Good	710	1.95	12,400



EBONY, MACASSAR
[Diospyros celebica]

Common names: Indian ebony.

Source: The Celebes Islands.

Color: Heartwood dark brown to black, streaked with bands of grayish–brown, yellow–brown or pale–brown.

Pattern: Straight grain to wavy or irregular; fine uniform texture.

Characteristics: Heavy, hard, dense.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
1.10	68	Poor	Good	1,630	1.44	11,125

ELM, AMERICAN
[Ulmus americana]

Common names: White elm, gray elm; sold as soft elm.

Source: USA and Canada. Supplies are limited because of Dutch Elm disease.

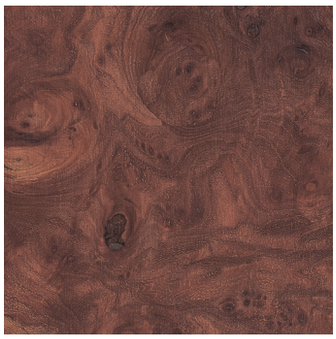
Color: Sapwood grayish–white to light brown; heartwood light–brown to brown with reddish tinge.

Pattern: Straight grain, sometimes interlocked; coarse textured.

Characteristics: Moderately heavy, moderately hard, weak.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.56	35	Good	Good	1,023	1.60	12,894



ELM, CARPATHIAN [BURL]

[Ulmus campestris]

Source: Carpathian Mountain Range in Europe.

Color: Light tan to brick red.

Pattern: Medium to fine burl.

Characteristics: Moderately heavy, moderately hard, weak.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.55	34	Good	Fair	982	1.58	12,641

ELM, RED

[Ulmus rubra]

Common names: Slippery elm; also sold as soft elm.

Source: USA and Canada. Supplies limited because of Dutch Elm disease.

Color: Sapwood grayish–white to light brown; heartwood brown to dark–brown, with shades of red.

Pattern: Straight grain, sometimes interlocked; coarse textured.

Characteristics: Moderately heavy, moderately hard, weak.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.53	37	Fair	Excellent	860	1.49	13,000

ETIMOE

[Copaifera salikounda]

Source: West Africa.

Color: Heartwood reddish–brown to gray–brown with pinkish hue often veined with reddish stripe.

Pattern: Straight grain, sometimes inter–locked; fine textured.

Characteristics: Heavy, hard, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.77	48	Good	Good	2094	1.97	18,303

EUCALYPTUS
[Eucalyptus spp.]

Common names: Lyptus.

Source: Australia.

Color: Many species, extensive variety of colors, from light yellowish–brown to dark yellowish–brown to dark reddish–brown to deep red to purplish cast, occasionally dark brown.

Pattern: Variable, straight to ropy grain; medium to coarse textured.

Characteristics: Heavy, moderately hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.70	44	Good	Good	1690	1.85	16,482

FAVEIRA
[Vatairea spp.]

Common names: Angelim.

Source: Central America.

Color: Heartwood yellow, darkening on exposure; sapwood whitish grey.

Pattern: Straight grain; coarse texture; oily appearance.

Characteristics: Moderately good machining, but frequent torn and raised grain.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.55	42	Good	Good	1,080	1.79	14,600

FREIJO
[Cordia goeldiana]

Source: Brazil.

Color: Heartwood golden brown to dark brown.

Pattern: Straight grain, medium textured, wood rays produce interesting figure when quartered.

Characteristics: Moderately heavy, moderately hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.44	34	Good	Excellent	1,000	1.51	12,180

GEDU NOHOR
[Entandrophragma angolense]

Common names: Edinam, tiama.

Source: West, Central, and East Africa.

Color: Heartwood reddish–brown to pinkish–brown.

Pattern: Interlocked grain; medium–coarse texture.

Characteristics: Medium weight and density.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.45	34	Good	Good	940	1.25	11,200

GOIBAO
[Chrysophyllum lucentifolium]

Common names: Goiambao.

Source: South America.

Color: Light yellow, indistinct sapwood.

Pattern: Fine texture, straight to interlocked grain.

Characteristics: Medium weight and density, not naturally durable.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.90	58	Fair	Good	2,974	2.99	21,730

GONCALO ALVES
[Astronium fraxinifolium and A. graveolens]

Common names: Muircatiara.

Source: Brazil to Mexico.

Color: Heartwood reddish–brown with dark brown streaks.

Pattern: Irregular grain; medium texture.

Characteristics: Heavy, hard, dense.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.80	60	Excellent	Excellent	2,160	2.23	16,600

HACKBERRY
[Celtis occidentalis]

Common names: Sugarberry.

Source: Eastern USA and Southern Canada. A member of the Elm family.

Color: Yellow–gray to light brown with yellow streaks.

Pattern: Straight to irregular grain; fine textured.

Characteristics: Moderately heavy, moderately hard; good bending qualities.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.53	37	Good	Good	880	1.19	11,000

HEMLOCK, WESTERN
[Tsuga heterophylla]

Source: Western Canada and USA.

Color: Sapwood nearly white; heartwood light yellow–brown.

Pattern: Straight grained, fine texture.

Characteristics: Wood is lightweight and works easily; has similar workability characteristics to pine.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.45	28	Excellent	Excellent	540	1.63	11,300

HICKORY
[Carya spp.]

Common names: The six commercial hickories are: shagbark, shellbark, pecan, mockernut, pignut, and bitternut.

Source: Eastern USA.

Color: Sapwood nearly white; Heartwood creamy to pinkish–brown, with dark streaks.

Pattern: Straight, close–grained; fine textured.

Characteristics: Moderately heavy, moderately hard, extremely tough and resilient.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.75	51	Poor	Fair	1,574	2.20	19,800

HOLLY, AMERICAN
[Ilex opaca]

Source: Eastern coast of USA to Gulf and Mississippi valley.

Color: White to ivory–white, with bluish streaks.

Pattern: Fine textured.

Characteristics: Hard, moderately strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.50	40	Excellent	Excellent	793	1.48	11,383

ILOMBA
[Pycnanthus angolensis]

Source: West Africa.

Color: Whitish to pinkish wood with occasional yellow tinges.

Pattern: Straight grained, course texture, no luster.

Characteristics: Works easily and peels well. Glues well. May have unpleasant odor when fresh.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.40	31	Excellent	Excellent	480	1.21	10,400

IMBUIA
[Phoebe porosa]

Common names: Imbuya, “Brazilian walnut.”

Source: Brazil.

Color: Heartwood a rich brown, with some streaks and stripes.

Pattern: Straight grained, often wavy or curly; fine textured.

Characteristics: Fairly hard and heavy; durable. Available in burl form.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.66	41	Excellent	Excellent	950	1.41	12,100

IROKO
[Chlorophora excelsa]

Common names: Kambala, "African teak."

Source: East and West Africa.

Color: Light brown to rich golden–orange brown.

Pattern: Interlocked grain; coarse texture.

Characteristics: Moderately heavy, moderately hard; medium density.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.66	41	Fair	Good	1,260	1.46	12,400

JARRAH
[Eucalyptus marginata]

Source: West and SW Australia.

Color: Heartwood dark brownish–red, with dark brown flecks caused by fungus.

Pattern: Straight to irregular to interlocked or wavy grain; coarse textured.

Characteristics: Heavy, medium strength; difficult to work.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.68	54	Fair	Good	1,915	1.88	16,200

JATOBA
[Hymenaea courbaril]

Common names: "Brazilian cherry," courbaril.

Source: Central and South America, West Indies.

Color: Heartwood salmon red to orange–brown marked with dark brown to russet brown streaks. The wood has a golden luster.

Pattern: Grain interlocked; coarse textured.

Characteristics: Heavy, hard, tough; good bending characteristics; difficult to work.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.91	56	Poor	Excellent	2,350	2.16	19,400

JEQUITIBA
[Cariniana spp.]

Common names: Albarco, "royal mahogany," "Brazilian mahogany," "Colombian mahogany."

Source: Brazil, Colombia, Venezuela.

Color: Light brown sapwood; heartwood yellowish to pinkish to orange reddish–brown.

Pattern: Straight grained, fine to medium texture.

Characteristics: Moderately heavy, moderately hard, medium strength.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.60	37	Good	Good	1,020	1.41	13,800

KAUDAMU
[Myristica spp. and Knema spp.]

Common names: Darah darah.

Source: Indonesia and Western Pacific Islands.

Color: Heartwood reddish–brown to brownish–grey; lighter sapwood.

Pattern: Straight grain; fine textured.

Characteristics: Wood works and finishes well.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.60	45	Excellent	Good	1,194	1.67	13,911

KAURI
[Agathis spp.]

Common names: Dakua.

Source: Indonesia, Phillipines, New Zealand, Indochina.

Color: Pale cream, golden brown to dark reddish or yellowish–brown.

Pattern: Straight grain, fine and uniform texture, lustrous.

Characteristics: Works easily, peels easily, easy to glue. Finishes with a clean smooth surface.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.47	36	Excellent	Excellent	870	1.60	13,600

KAUVULA
[Endospermum spp.]

Common names: Gubas.

Source: Western Pacific Islands.

Color: Light brown, straw, or pale cream. Heartwood and sapwood same.

Pattern: Straight grain, course texture, somewhat lustrous.

Characteristics: Works easily, peels easily without heating.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.38	30	Good	Good	427	1.24	8,417

KERUING
[Dipterocarpus spp.]

Common names: Apitong, bagac, gurjun, yang, others according to origin.

Source: Malaysia, Sarawak, Sabah, Indonesia, Thailand.

Color: Heartwood pinkish–brown to dark brown with purple tint; sapwood well defined, gray or buff.

Pattern: Straight to shallow interlocked grain; moderately coarse textured.

Characteristics: Evergreen species; hard and heavy; difficult to dry, high silica and resin.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.57	45	Good	Fair	1,520	2.08	19,900

KINGWOOD
[Dalbergia cearensis]

Source: Mainly Brazil.

Color: Heartwood violet–brown to black with dark streaks of violet–brown, black, and sometimes golden yellow.

Pattern: Straight grained; fine textured.

Characteristics: Heavy, strong, tough.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
1.20	75	Good	Good	5682	2.62	29,819

KOA
[Acacia koa]

Source: Hawaii.

Color: Golden reddish–brown with dark–brown streaks and zones.

Pattern: Interlocked to wavy or curly; medium textured; lustrous.

Characteristics: Moderately heavy, moderately hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.83	50	Excellent	Excellent	1,956	2.19	21,611

KOTO
[Pterygota spp.]

Common names: African chestnut, African pterygota.

Source: West Africa.

Color: Dull yellowish–white to creamy white.

Pattern: Straight grained to interlocked; coarse textured.

Characteristics: Moderately heavy.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.56	43	Fair	Fair	970	1.34	12,300

LACEWOOD
[Cardwellia sublimis]

Common names: “Silky oak,” selano.

Source: Australia.

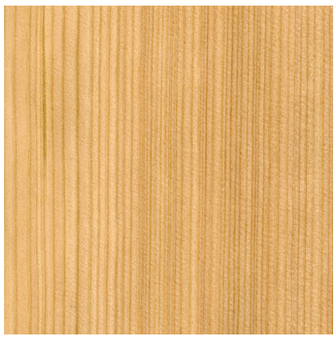
Color: Light pink with silvery–pink sheen.

Pattern: Straight grained; coarse textured; quarter–sliced to yield flaky grain look.

Characteristics: Moderately heavy, moderately hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.51	38	Excellent	Excellent	840	1.11	8,460



LARCH, EUROPEAN
[Larix decidua]

Source: Mountainous areas of Europe.

Color: Heartwood pale reddish–brown to brick red.

Pattern: Straight grain, some knots.

Characteristics: Moderately strong, hard, and heavy, splits when nailed; fine textured.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.59	37	Good	Excellent	1,150	1.95	14,711

LAUAN
[Shorea spp. The genera Pentacme and Parashorea are often included in the lauan group]

Common names: Meranti, seraya, almon, bagtikan, "Philippine mahogany," mela-pi. The wood is often separated and sold by color as light red, dark red, white, red, yellow, etc.

Source: Philippines.

Color: Heartwood gray with a pinkish–tinge.

Pattern: Interlocked to crossed grain; moderately coarse textured.

Characteristics: Moderately heavy, moderately hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.71	44	Good	Fair	780	1.77	12,700

"LAUREL, EAST INDIAN"
[Terminalia alata]

Common names: "East Indian walnut."

Source: Indian, Burma, Sri Lanka, Pakistan, Bangladesh.

Color: Heartwood light brown to dark brown, with irregular dark streaks.

Pattern: Straight grained to interlocked; coarse textured.

Characteristics: Heavy, hard, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.84	52	Fair	Good	2,220	1.91	15,380

LENGA
[Nothofagus spp.]

Common names: "Chilean beech," "Chilean cherry," lengua. Wood has similar uses for beech, birch, and occasionally cherry.

Source: Chile and Argentina.

Color: Heartwood varies from creamy off–white to creamy red to pale brown with pinkish cast.

Pattern: Straight grain; fine textured.

Characteristics: Light to moderately heavy, medium to tough.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.70	43	Fair	Good	1,690	1.85	16,482

LIMBA
[Terminalia superba]

Common names: Afara, frake, korina, offram. The wood is often separated by color into light and dark.

Source: West Africa.

Color: Pale yellow to light brown.

Pattern: Straight grained; coarse textured.

Characteristics: Moderately heavy, moderately hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.45	34	Excellent	Excellent	490	1.01	8,800

LOURO PRETO
[Nectandra mollis]

Source: Brazil.

Color: Heartwood light grayish–brown to dark grayish–brown, with frequent long darker streaks.

Pattern: Straight grained to irregular; medium texture; slight luster.

Characteristics: Heavy, hard, medium strength.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.51	39	Good	Good	1,060	1.65	14,230

Inset Photo: Madrona Burl

MADRONA
[Arbutus menziesii]

Common names: Manzanita, Pacific madrone.

Source: Pacific Coast of USA and Canada.

Color: Pale reddish–brown.

Pattern: Straight grained to irregular; smooth, even textured.

Characteristics: Heavy, compact, tough.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.80	49	Good	Excellent	2,282	2.02	19,089

MAHOGANY, AFRICAN
[Khaya ivorensis]

Common names: Khaya.

Source: Tropical West, Central, and East Africa.

Color: Heartwood varies from light to deep reddish–brown.

Pattern: Grain straight to interlocked; medium to moderately coarse textured.

Characteristics: Moderately heavy, moderately hard; works very well. Available as crotch figure.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.55	34	Good	Excellent	830	1.40	10,700

MAHOGANY, CUBAN
[Swietenia mahagoni]

Common names: Spanish mahogany.

Source: Cuba, Dominican Republic.

Color: Heartwood varies from light to deep reddish–brown.

Pattern: Grain straight to interlocked; medium to moderately coarse textured; highly figured when sliced into veneer.

Characteristics: Moderately heavy, moderately hard; works very well.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.64	40	Excellent	Excellent	1,120	1.74	14,934

MAHOGANY, TROPICAL AMERICAN
[Swietenia macrophylla]

Common names: Honduras mahogany.

Source: Central and South America.

Color: Heartwood varies from light to dark reddish–brown to deep red.

Pattern: Grain straight to interlocked; medium to moderately coarse textured; highly figured when sliced into veneer.

Characteristics: Moderately heavy, moderately hard; can be worked easily with hand or power tools.

Recent trade problems and the move of S. macrophylla to CITES Appendix II have significantly limited the availability of Tropical American mahogany in the US.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.56	35	Excellent	Excellent	800	1.50	11,500

MAKORE
[Tieghemella heckelii]

Common names: "African cherry," "cherry mahogany."

Source: West Africa.

Color: Heartwood varies from pinkish–red, to bright red to red–brown.

Pattern: Grain straight; fine textured.

Characteristics: Heavy, hard, fairly dense. Sometimes available with a blister figure (known as Pommele).

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.64	40	Poor	Good	1,110	1.46	16,000

MANSONIA
[Mansonia altissima]

Common names: "African black walnut."

Source: West Africa.

Color: Heartwood varies from gray–brown to red purplish brown; sapwood whitish.

Pattern: Straight grained; fine textured; can resemble walnut.

Characteristics: Moderately heavy, moderately hard; can be worked easily with hand or power tools.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.59	45	Excellent	Good	1,150	1.65	13,656

MAPLE, EUROPEAN
[Acer campestre]

Common names: Ahorn.

Source: Europe, U.K., Asia Minor, Russia.

Color: Light tan.

Pattern: Grain straight to wavy or curly; fine textured.

Characteristics: Heavy and hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.69	43	Good	Excellent	1,636	1.83	16,223

MAPLE, HARD
[Acer spp.]

Common names: The hard maple group is comprised of sugar maple [Acer saccharum] and black maple [Acer nigrum] (rock maple, hard rock maple).

Source: Eastern USA and Canada.

Color: Sapwood white to creamy–white; heartwood creamy–white to pinkish tinge to light reddish–brown.

Pattern: Straight, close grained; sometimes wavy or curly; fine textured; can be highly figured.

Characteristics: Heavy, hard, tough.

Select hard maple logs produce the familiar bird's–eye maple figure type.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.63	43	Good	Excellent	1,450	1.83	15,800

MAPLE, SOFT
[Acer spp.]

Common names: The soft maple group is comprised of red maple [Acer rubrum], silver maple [Acer saccharinum], and Oregon maple [Acer macrophyllum] (bigleaf maple).

Source: USA and Canada.

Color: Sapwood white; heartwood gray–white to pinkish tinge to light reddish–brown; some mineral streaks likely.

Pattern: Straight grained; fine textured.

Characteristics: Heavy, hard, fairly tough. Available in burl form.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.54	38	Good	Excellent	950	1.64	13,400

MERSAWA
[Anisoptera spp.]

Common names: Bella rosa, krabak, palosapis.

Source: Malaysia and SE Asia.

Color: Heartwood yellowish–brown with pinkish tinge, changes to straw upon exposure.

Pattern: Interlocked grain; coarse textured.

Characteristics: Moderately heavy and hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.46	34	Fair	Good	875	1.72	18,100

MOABI
[Baillonella toxisperma]

Common names: Djave; widely substituted for makore.

Source: West Africa.

Color: Heartwood varies from light reddish–brown to reddish–brown, with grayish tinge.

Pattern: Straight grain; fine textured; silky appearance.

Characteristics: Moderately heavy and hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.77	60	Fair	Good	2,094	2.20	25,300

MOVINGUI
[Distemonanthus benthamianus]

Common names: Ayan, Nigerian satinwood.

Source: West Africa.

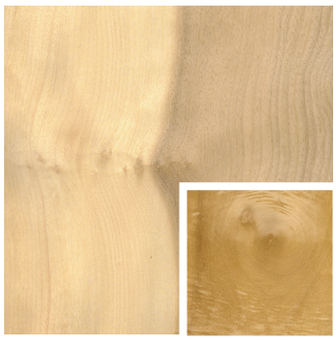
Color: Sapwood white or straw colored; heartwood yellowish to yellowish–brown, some dark streaking.

Pattern: Interlocked grain, sometimes wavy; fine texture.

Characteristics: Fairly easy to work; some silica and gum may blunt tools; peels easily.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.58	45	Poor	Good	1230	1.65	15,700



Inset Photo: Myrtle Burl

MYRTLE
[Umbellularia californica]

Common names: "California laurel," Pacific myrtle, Oregon myrtle, pepperwood.

Source: Oregon and California in USA.

Color: Heartwood golden–brown to greenish–yellow, with a large paler sapwood.

Pattern: Straight to wavy grain; smooth, fine textured.

Characteristics: Heavy and hard. Available in burl form.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.55	34	Excellent	Excellent	982	1.58	12,641

NYATOH
[Palaquium maingayi]

Source: Malaysia and SE Asia.

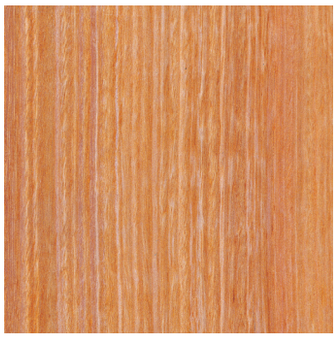
Color: Heartwood varies from pale–pink to reddish–brown, sometimes with darker streaks.

Pattern: Straight grain; moderately fine textured.

Characteristics: Heavy and hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.50	38	Excellent	Good	1,195	1.97	14,445



"OAK, CHILEAN"
[Eucalyptus globulus]

Common names: Bluegum.

Source: An Australian species planted extensively throughout the subtropical regions of the world.

Color: Heartwood pale yellowish–brown; sapwood grayish white.

Pattern: Grain straight to interlocked, sometimes ropy; moderately coarse textured.

Characteristics: Moderately hard and heavy.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.80	61	Good	Good	2,580	2.95	21,200

Inset Photo: English Brown Oak

OAK, EUROPEAN WHITE
[Quercus petraea, Q. robur]

Common names: Spessart oak, sessile oak, German, French, English, according to origin.

Source: U.K., Europe, Asia Minor, North Africa.

Color: Sapwood white to tanish–white; heartwood light tan to biscuit color.

Pattern: Straight grained; coarse textured.

Characteristics: Heavy, hard, strong. Available in burl form.

- English brown oak is wood produced from European white oak trees that have been infected with a fungus while growing that changes the color of the wood to a rich deep brown.
- Bog oak is a name given to European white oak logs that exhibit color changes from being buried for centuries in peat bogs or other underwater circumstances.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.72	45	Good	Excellent	1,800	1.88	17,000

OAK, RED
[Quercus spp.]

Common names: Northern red oak [Quercus rubra]. Other species which make up the eastern red oak group include: black oak [Quercus velutina], Shumard oak [Quercus shumardii], Southern red oak [Quercus falcata] (cherrybark oak, swamp red oak), pin oak [Quercus palustris], and scarlet oak [Quercus coccinea].

Source: Eastern USA and SE Canada.

Color: Sapwood grayish–white to pale reddish–brown; heartwood flesh–colored to pinkish to light reddish–brown.

Pattern: Straight grained; coarse textured.

Characteristics: Heavy, hard, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.63	43	Excellent	Excellent	1,290	1.82	14,300

"OAK, TASMANIAN"
[Eucalyptus spp.]

Common names: "Tasmanian oak" is an export trade name given to three eucalyptus species from Australia: mountain ash [Eucalyptus regnans], Alpine ash [Eucalyptus delegatensis], and messmate stringybark [Eucalyptus oblique].

Source: Australia.

Color: Heartwood light–yellowish tan, often with pinkish cast.

Pattern: Straight to wavy or curly grain; medium textured.

Characteristics: Heavy, hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.52	40	Good	Good	866	1.52	11,885

OAK, WHITE
[Quercus spp.]

Common names: White oak [Quercus alba]. Other species which make up the eastern white oak group include: bur oak [Quercus macrocarpa], overcup oak [Quercus lyrata], chinkapin oak [Quercus muehlenbergii], swamp chestnut oak [Quercus michauxii], chestnut oak [Quercus prinus], swamp white oak [Quercus bicolor], and post oak [Quercus stellata].

Source: Eastern USA and SE Canada.

Color: Sapwood whitish to light–brown; heartwood rich light–brown to dark brown.

Pattern: Straight grained; coarse textured.

Characteristics: Heavy, hard, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.68	47	Excellent	Excellent	1,360	1.78	15,200

OBECHE
[Triplochiton scleroxylon]

Common names: Abachi, arere, ayous.

Source: Tropical West Africa.

Color: Creamy–white to pale yellow.

Pattern: Interlocked grain; fine textured.

Characteristics: Light, medium soft, weak.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.40	25	Good	Good	430	.86	7,400

OKOUME
[Aucoumea klaineana]

Common names: Angouma, gaboon.

Source: West Africa.

Color: Pale pink to reddish–brown.

Pattern: Straight grain, sometimes interlocked or slightly wavy; medium texture.

Characteristics: Lightweight, weak.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.43	27	Fair	Good	240	1.15	12,600

OLIVE, EAST AFRICAN
[Olea hochstetteri]

Source: East Africa.

Color: Pale to mid–brown, with irregular gray, brown, and black streaks.

Pattern: Interlocked grain; fine textured.

Characteristics: Heavy and hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.72	55	Fair	Excellent	2,740	2.53	25,300

OVANGKOL
[Guibourtia ehie]

Common names: Amazakoue, amazoue, ehie, mozambique.

Source: Ivory Coast, Ghana, southern Nigeria, Gaboon.

Color: Heartwood golden brown to dark brown with grayish–black stripes.

Pattern: Interlocked grain; moderately coarse textured.

Characteristics: Heavy, hard.

Some authorities prefer to lump benge [G. arnoldiana], ovangkol [G. ehie], and bubinga [G. tessmannii] together.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.85	52	Fair	Good	2,615	2.56	16,900

PADAUK, AFRICAN
[Pterocarpus soyauxii]

Common names: Vermillion.

Source: Central and West Tropical Africa.

Color: Heartwood blood red changing to dark purple–brown, with red streaks upon exposure.

Pattern: Straight to interlocked grain; medium to coarse textured.

Characteristics: Heavy, hard, moderately strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.72	44	Excellent	Good	1,800	1.65	16,500

PALDAO
[Dracontomelum dao]

Common names: New Guineawood.

Source: Philippines.

Color: Heartwood gray–brown with greenish tinge and brown to black streaks.

Pattern: Straight to interlocked to wavy grain; medium textured.

Characteristics: Heavy, hard, moderately strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.74	46	Good	Excellent	1,130	1.75	13,200

PAU MARFIM
[Balfourodendron riedelianum]

Common names: Guatambu. Considered a maple substitute.

Source: Portions of Brazil to Paraguay and northern Argentina.

Color: White to creamy white to lightly pinkish to slightly light brownish white. No distinction between heartwood and sapwood.

Pattern: Straight grained; fine, uniform textured.

Characteristics: Somewhat like maple and birch.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.80	49	Good	Excellent	2,282	2.02	18,900

PEAR, SWISS
[Pyrus communis]

Common names: European pear, pearwood.

Source: Europe, U.K., Western Asia.

Color: Heartwood pinkish–brown.

Pattern: Straight grained; fine textured.

Characteristics: Heavy, hard, moderately strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.77	48	Good	Excellent	2,094	1.97	18,303

PEROBA, WHITE
[Paratecoma peroba]

Common names: Amarella, peroba branca, peroba de campos.

Source: Brazil.

Color: Heartwood light olive–brown with yellow, green, or reddish shades or streaks or stripes.

Pattern: Irregular to wavy grain, producing nice quarter figure; fine textured.

Characteristics: Heavy, hard, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.60	46	Good	Good	1,600	1.65	16,200

PERSIMMON
[Diospyros virginiana]

Source: Eastern USA.

Color: Large sapwood band that is straw to light brown; heartwood narrow band of dark brown or black.

Pattern: Straight grain; fine textured.

Characteristics: Heavy, hard, tough.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.74	46	Fair	Fair	1,641	2.00	15,954

PINE, EASTERN WHITE
[Pinus strobus]

Common names: White pine.

Source: Eastern USA and Canada.

Color: Wide ring of nearly white to pale–white sapwood; heartwood, smaller portion, cream to slightly darker light to reddish brown.

Pattern: Straight grained, not contrasty; fine textured.

Characteristics: Light; moderately strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.39	24	Excellent	Excellent	453	1.34	9,525

PINE, PONDEROSA
[Pinus ponderosa]

Common names: Western yellow pine, California white pine.

Source: Western USA and Canada.

Color: Pale yellow with deep yellow to reddish–brown heartwood.

Pattern: Straight grained; uniform texture..

Characteristics: Light; soft; works easily but resin exudation can be problematic.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.51	32	Excellent	Good	829	1.71	12,624

PINE, RADIATA
[Pinus radiata]

Common names: Monterey pine.

Source: Southern California in USA. Widely planted in New Zealand, Australia, South Africa, Spain, and Chile.

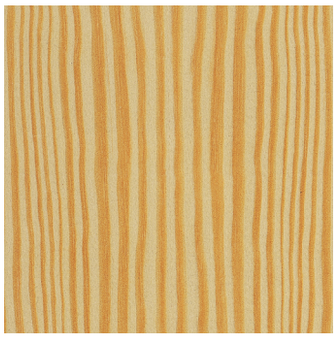
Color: Wide ring of pale–colored sapwood; heartwood small pinkish–brown portion.

Pattern: Fast grown, mild growth rings; medium textured.

Characteristics: Light to medium weight, hardness.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.48	30	Excellent	Good	723	1.62	11,845



PINE, SOUTHERN YELLOW
[Pinus spp.]

Common names: Four softwood species are sold under the name southern yellow pine: Longleaf pine [Pinus palustris], shortleaf pine [Pinus echinata], loblolly pine [Pinus taeda], slash pine [Pinus elliottii]. Southern yellow pine veneer, chiefly Pinus echinata and Pinus taeda, is sold under the trade name Carolina pine.

Source: Southeastern USA.

Color: Wide ring of yellowish–white sapwood; heartwood small reddish–brown portion.

Pattern: Fast grown, contrasty growth rings; coarse textured.

Characteristics: Heavy, hard, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.51	32	Excellent	Excellent	690	1.79	12,800

PINE, WESTERN WHITE
[Pinus monticola]

Common names: Idaho pine. Character–marked veneer is sold under the trade name knotty pine.

Source: Western USA and Canada.

Color: Wide ring of pale–white sapwood; heartwood, smaller portion, slightly darker.

Pattern: Straight grained, not contrasty; fine textured.

Characteristics: Light; moderately strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.42	22	Excellent	Excellent	535	1.43	10,296

PLANE, EUROPEAN
[Platanus hybrida]

Common names: London, French, etc., according to origin.

Source: Europe and U.K.

Color: Heartwood light reddish–brown, broad rays when quartered.

Pattern: Straight grained; fine to medium textured.

Characteristics: Moderately heavy, hard, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.62	39	Good	Excellent	1,286	1.71	14,422

Inset Photo: Mappa Burl

POPLAR
[Populus spp.]

Common names: European poplar, European black poplar, European aspen, popple, French, Finnish, etc. according to origin. The burl of European black poplar is sold under the name mappa burl.

Source: Europe and U.K.

Color: Heartwood creamy–white to gray to pale brown to pinkish–brown.

Pattern: Straight grained; fine textured.

Characteristics: Light to moderate in weight.

✎ Traditionally, wood from Populus spp. trees harvested in the US and Canada is sold as aspen, while wood from Populus spp. trees harvested in Europe and the UK is sold as poplar.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.45	28	Good	Fair	625	1.39	10,137

POPLAR, WHITE
[Populus alba]

Source: Europe, Western Asia, Eastern USA.
Color: Pure white to whitish–yellow or gray.
Pattern: Grain not distinct, sometimes brown–streaked; attractive crotches and swirls.
Characteristics: Soft, light, natural sheen.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.48	31	Good	Fair	723	1.45	10,883

PRIMAVERA
[Cybistax donnell–smithii]

Source: Central America, Mexico, Nicaragua.
Color: Heartwood light rose–yellow with streaks of red, orange, and brown.
Pattern: Straight grained to interlocked and wavy; medium to coarse texture.
Characteristics: Moderately heavy, hard, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.40	29	Excellent	Excellent	660	1.04	9,500

PURPLEHEART
[Peltogyne spp.]

Common names: Amaranth, violetwood.
Source: Central America, tropical South America.
Color: Heartwood deep purple–violet, maturing to dark–brown.
Pattern: Straight grained to irregular and wavy; fine to moderate texture.
Characteristics: Heavy, hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.85	52	Fair	Fair	1,860	2.27	19,200

Inset Photo:Vavona Burl

REDWOOD
[Sequoia sempervirens]

Common names: Sequoia. Redwood burl veneer is sold as vavona burl.

Source: Western USA.

Color: Sapwood nearly white; heartwood light red to deep reddish–brown.

Pattern: Straight grained; coarse textured.

Characteristics: Light to moderately light, soft.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.35	22	Excellent	Excellent	420	1.10	7,900

ROSEWOOD, EAST INDIAN
[Dalbergia latifolia, Dalbergia spp.]

Source: India.

Color: Heartwood rose to dark purple–brown, with darker purple–black lines.

Pattern: Straight grained to interlocked; moderately coarse textured.

Characteristics: Heavy, hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.87	54	Fair	Excellent	3,170	1.78	16,900

"ROSEWOOD, SANTOS"
[Machaerium spp.]

Common names: Caviuna, jacaranda pardo, pau ferro, jacaranda amarello, caroba.

Source: Brazil.

Color: Heartwood brown to dark violet–brown, often streaked.

Pattern: Straight to irregular grain; medium fine to coarse textured.

Characteristics: Heavy, hard, moderately strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.70	54	Good	Good	1690	1.85	16,482

SANDE
[Brosimum spp.]

Common names: Capomo.

Source: Central America.

Color: Cream to nearly white to pale yellowish–brown.

Pattern: Straight to interlocked grain, can be slightly ropy; medium fine to coarse textured.

Characteristics: Hard, heavy, high tension.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.54	38	Excellent	Good	942	1.56	12,389

SAPELE
[Entandrophragma cylindricum]

Common names: Aboudikrou, sapelli, sassandra.

Source: West and East Africa.

Color: Heartwood medium to dark reddish–brown, well defined ribbon stripe when quartered.

Pattern: Straight grained to wavy; fine textured.

Characteristics: Moderately heavy, hard, dense. Often available with a blister figure (known as Pommele).

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.62	39	Excellent	Excellent	1,510	1.82	15,300

SASSAFRAS
[Sassafras albidum]

Common names: Golden elm. Lumber sometimes mixed in with black ash.

Source: Eastern USA.

Color: Sapwood light yellow; heartwood dull grayish–brown to darkish–brown, sometimes with slight greenish cast.

Pattern: Straight grained; medium textured.

Characteristics: Moderately heavy and hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.46	31	Excellent	Fair	630	1.12	9,000

SATINE
[Brosimum paraense]

Common names: Muirapiranga, bloodwood.

Source: Tropical America.

Color: Heartwood varies from gray–red to deep rich red, with variegated yellow and red stripes.

Pattern: Straight grained; fine textured.

Characteristics: Heavy, hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
1.01	63	Good	Excellent	3,855	2.35	24,669

SATINWOOD, EAST INDIAN
[Chloroxylon swietenia]

Common names: Ceylon satinwood.

Source: Central and Southern India, Sri Lanka.

Color: Heartwood golden yellow, maturing to golden brown with darker streaks.

Pattern: Interlocked grain; fine textured. Quartered veneer yields beautiful mottled, ropy, and ribbon–striped figure.

Characteristics: Heavy, hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.92	57	Good	Excellent	2,600	2.02	16,500

SEN
[Acanthopanax ricinifolius]

Common names: Haragiri.

Source: Japan, China, Sri Lanka.

Color: Heartwood yellow to greenish–brown.

Pattern: Straight grain; moderately coarse textured.

Characteristics: Moderately heavy and hard.

[Kalopanax pictus] is a related wood species.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.56	35	Good	Good	1,023	1.60	12,894

SPRUCE
[Picea spp.]

Common names: The commercial spruces include: sitka spruce [P. sitchensis], black spruce [P. mariana], red spruce [P. rubens], white spruce [P. canadensis], and Englemann spruce [P. engelmannii]. Due to the similarity of the wood, the spruces are often marketed together.

Source: USA and Canada.

Color: Creamy–white sapwood with light pink–brown heartwood.

Pattern: Very straight grain, with even medium texture.

Characteristics: High strength to weight ratio, easy to work, finishes well.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.43	27	Excellent	Excellent	564	1.46	10,553

SUCUPIRA
[Bowdichia nitida]

Source: South America, Brazil.

Color: Heartwood dull reddish–brown to dark chocolate–brown with light yellow markings.

Pattern: Interlocked or slightly wavy grain; moderately coarse textured.

Characteristics: Heavy, hard, tough.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.97	60	Poor	Fair	2,140	2.87	20,600

SWEETGUM
[Liquidambar styraciflua]

Common names: Red gum, sap gum.

Source: SE USA.

Color: Heartwood is a dull pinkish–brown, with dark streaks; sapwood is creamy–white.

Pattern: Irregular grain; fine textured.

Characteristics: Moderately heavy, moderately hard, not exceedingly strong.

Heartwood is sold as red gum; sapwood is sold as sap gum. Supplies of figured red gum may be limited.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.52	34	Good	Excellent	850	1.64	12,500

SYCAMORE, AMERICAN
[Platanus occidentalis]

Common names: American plane, buttonwood.

Source: Eastern USA.

Color: Sapwood nearly white to yellowish–white to reddish–brown. Heartwood from light to dark brown or reddish–brown.

Pattern: Interlocked to irregular grain; medium to fine textured.

Characteristics: Moderately heavy and hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.49	34	Good	Good	770	1.42	10,000

SYCAMORE, ENGLISH
[Acer pseudoplatanus]

Common names: In U.K. and Europe, sold as sycamore, sycamore plane, great maple, sycamore maple.

Source: Central Europe and the UK.

Color: Sapwood white; heartwood white to creamy–white.

Pattern: Straight grained, sometimes wavy or curly; fine textured; can be highly figured.

Characteristics: Heavy, hard, medium density.

Wood is sold as harewood when chemically treated into shades of silver grey. When steamed or treated to change color to pink or mid–brown, sold as weathered sycamore.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.61	38	Good	Excellent	1,240	1.69	14,166

TAUARI
[Couratari spp.]

Common names: Mahot, tauary.

Source: Central and South America.

Color: Cream colored with a pink or yellow tinge.

Pattern: Straight grained, medium to course texture, medium luster.

Characteristics: Fair to good machining; high silica content in some species. Some species exhibit a fetid odor.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.50	37	Fair	Good	880	1.80	13,520

TEAK
[Tectona grandis]

Source: Burma, India, SE Asia, planted in other parts of the world.

Color: Golden–brown to rich brown, with dark chocolate streaks.

Pattern: Straight grained, sometimes interlocked or slightly wavy; coarse textured.

Characteristics: Moderately heavy and hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.65	40	Good	Good	1,000	1.55	14,600

THUYA [BURL]
[Tetraclinis articulata]

Source: A softwood species from North Africa.

Color: Rich golden–brown to orange–red.

Pattern: Interlocked grain; fine textured.

Characteristics: Moderately heavy and hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.64	40	Fair	Excellent	1,381	2.09	16,022

TIGERWOOD
[Lovoa spp.]

Common names: “African walnut,” congowood.

Source: Tropical West Africa.

Color: Sapwood grayish–brown; heartwood yellowish to golden–brown with black streaks.

Pattern: Interlocked grain; fine textured.

Characteristics: Moderately heavy and hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.45	34	Good	Good	940	1.34	12,200

TINEO
[Weinmannia trichosperma]

Common names: "Indian apple."

Source: South America.

Color: Rose to brownish with some striping, sapwood lighter.

Pattern: Straight grain; fine, uniform texture.

Characteristics: Easy to work, finishes well.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.58	39	Good	Good	1,150	1.95	14,711

TULIPWOOD, AMERICAN
[Liriodendron tulipifera]

Common names: Tuliptree, yellow–poplar, poplar.

Source: Eastern USA.

Color: Sapwood nearly white; heartwood yellow to tan to greenish–brown, frequently marked with streaks of purple, dark green, blue, and black.

Pattern: Straight grained; fine to medium textured.

Characteristics: Moderately heavy and hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.42	28	Excellent	Excellent	540	1.58	10,100

TULIPWOOD, BRAZILIAN
[Dalbergia frutescens]

Common names: Pinkwood.

Source: Tropical South America, Brazil.

Color: Heartwood pinkish–yellow with a stripe in shades of salmon pink to rose red to violet.

Pattern: Straight to irregular grain; moderately fine textured.

Characteristics: Heavy and hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.96	60	Poor	Excellent	3,349	2.27	23,329

TUPELO
[Nyssa spp.]

Common names: The principal species are black tupelo [N. sylvatica] (black gum) and tupelo gum [N. aquatica].

Source: Eastern USA.

Color: Sapwood white to grayish white; heartwood greenish to brownish gray.

Pattern: Interlocked grain.

Characteristics: Moderately heavy, moderately hard and strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.46	35	Fair	Good	657	1.41	10,385

UTILE
[Entandrophragma utile]

Common names: Sipo. Sometimes sold as “African mahogany” or sapele.

Source: West and East Africa.

Color: Heartwood matures from a pinkish–brown to a deep red–brown.

Pattern: Interlocked grain; medium textured.

Characteristics: Heavy and hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.53	41	Good	Good	1,260	1.56	15,000

WALNUT, AMERICAN
[Juglans nigra]

Common names: Black walnut.

Source: Eastern USA and Southern Canada.

Color: Sapwood whitish to yellowish–brown, will darken when steamed; heartwood light gray–brown to rich chocolate–brown to deep purplish–brown.

Pattern: Straight to interlocked or curly, wavy grained; medium to coarse textured.

Characteristics: Moderately heavy, hard, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.55	38	Excellent	Excellent	1,010	1.68	14,600

WALNUT, CLARO

Common names: California walnut. There is considerable confusion about Claro walnut. It is generally accepted that Claro walnut is wood taken from a grafted tree, with the top being Juglans regia and the root stock from black walnut [Juglans nigra] or from California walnut [either Juglans hindsii or Juglans californica]. The union of the graft in later years produces a beautifully figured wood that contains characteristics of both a burl figure and a stump figure.

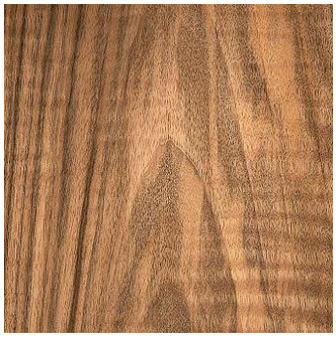
Color: Sapwood whitish to yellowish–brown. The heartwood is a light gray–brown to rich chocolate–brown to deep purplish–brown, with light yellowish stripes or markings.

Pattern: Combinations of straight to interlocked to curly to wavy to rippled to burl grains are common. The wood varies from medium to coarse textured.

Characteristics: Moderately heavy, hard, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.55	38	Excellent	Excellent	1,010	1.68	14,600



WALNUT, EUROPEAN
[Juglans regia]

Common names: English, Circassian, Persian, or other by country of origin.

Source: Europe, U.K., Asia Minor, SW Asia.

Color: Sapwood whitish to yellowish–brown; heartwood gray–brown, with irregular streaks of darker brown.

Pattern: Straight to interlocked to wavy grained; medium coarse textured.

Characteristics: Moderately heavy, hard, strong. Available in burl form.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.64	40	Excellent	Excellent	1,381	1.74	14,934

WENGE
[Millettia laurentii]

Source: Zaire, Cameroon Republic, Gaboon.

Color: Heartwood dark brown, with fine almost black veins.

Pattern: Straight grained; coarse textured.

Characteristics: Heavy, hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.88	54	Good	Fair	1,630	1.97	16,200

WILLOW, BLACK
[Salix nigra]

Source: Eastern USA, Southern Canada.

Color: Heartwood light–brown to pale reddish to grayish–brown, frequently with darker streaks.

Pattern: Straight grained; fine textured.

Characteristics: Light, moderately soft.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.39	26	Good	Excellent	630	1.01	7,800

WILLOW, EUROPEAN
[Salix alba]

Common names: White willow.

Source: Europe, U.K., Western Asia, North Africa.

Color: Heartwood whitish–pink.

Pattern: Straight grained; fine textured.

Characteristics: Light, moderately soft.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.45	28	Excellent	Excellent	625	1.39	10,137

YEW, AMERICAN
[Taxus brevifolia]

Common names: Pacific yew.

Source: Northwestern USA.

Color: Sapwood light–yellow; heartwood bright orange to rose–red.

Pattern: Even grained; fine textured.

Characteristics: Heavy, hard, strong.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.60	46	Good	Good	1,194	1.98	14,973

YEW, ENGLISH
[Taxus baccata]

Source: Europe, U.K., Scandinavia, Western Russia, Asia Minor, North Africa, Burma, Himalayas.

Color: Sapwood light–yellow; heartwood golden orange–brown with dark purple and brown patches and veins.

Pattern: Straight to irregular to wavy grained; medium textured.

Characteristics: Moderately heavy, hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.67	41	Fair	Good	1,531	2.18	16,812

ZEBRAWOOD
[Microberlinia brazzavillensis]

Common names: Zebrano.

Source: West Africa, Cameroon Republic, Gaboon.

Color: Heartwood light golden–yellow, with dark brown to almost black veins. A zebra–stripe results from quarter–sliced veneers.

Pattern: Interlocked to wavy grain; coarse textured; lustrous.

Characteristics: Heavy, hard.

Physical Properties

Specific Gravity	Weight (lbs/ft^3)	Machining	Finishing	Hardness (psi)	MOE (million psi)	MOR (psi)
.77	48	Good	Fair	2,094	2.34	22,800

COMMON FIGURE TYPES IN VENEER

Angel Step

Bee's Wing

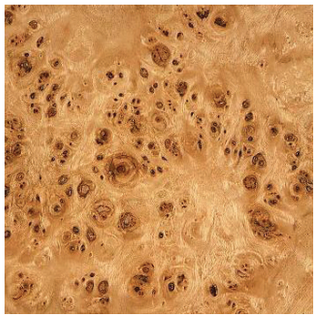
Bird's Eye

Blister

Block Mottle

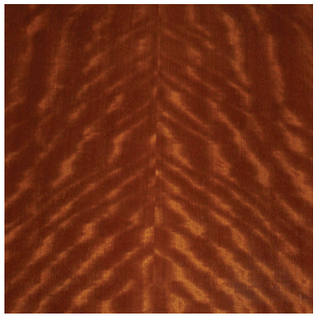
Broken Fiddleback

Broken Stripe



Burl

Butt



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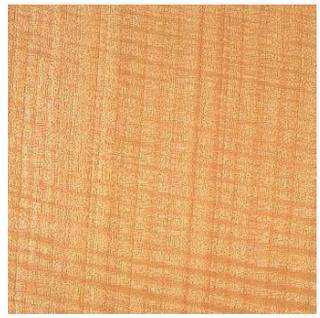
Cluster

Crotch

Curly

Drape



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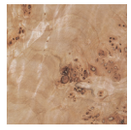
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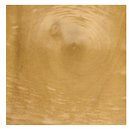
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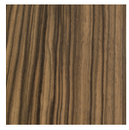
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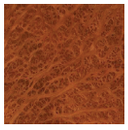
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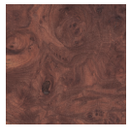
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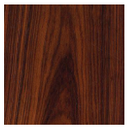
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