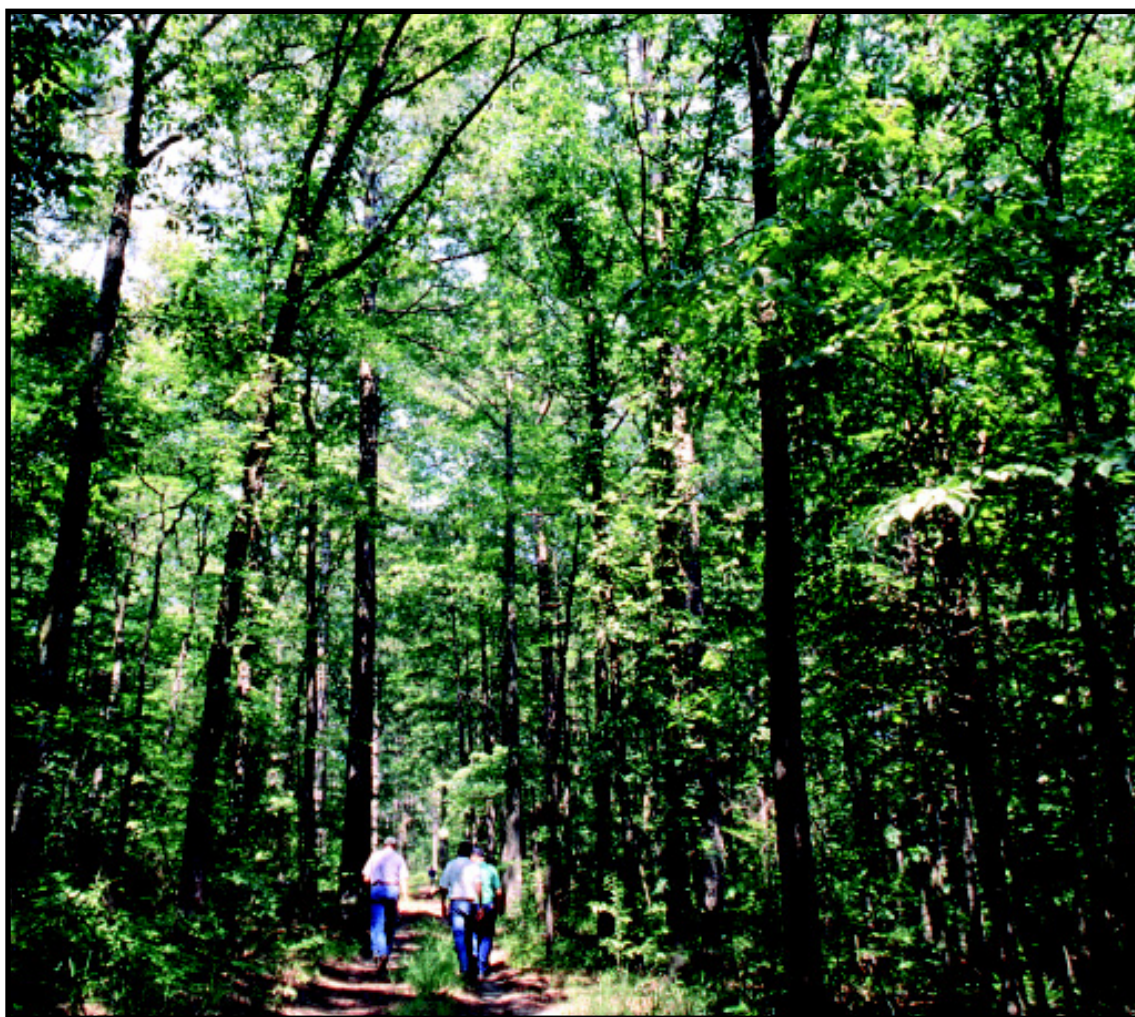


Woods of Louisiana





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Woods of Louisiana

Introduction

Greetings! Thank you for your interest in learning more about the wood properties of some of the timber species of Louisiana. The first version of Woods of Louisiana was extremely well received by personnel in the primary and secondary forest products industries as well as hobbyists. We are pleased to revise Woods of Louisiana and provide it to the citizens of Louisiana.

Our state is blessed with a tremendous timber resource of approximately half hardwoods and half softwoods. These species are becoming increasingly important throughout the 64 Louisiana parishes and also in our global market place. We need to work with them and add value through further processing. The first step of value-added for a secondary processor or hobbyist is proper species selection.

The forest products industry is well established throughout Louisiana. This publication summarizes the properties of 40 native Louisiana timber species. We recognize that not all of these species presently have commercial importance to the forest products industry, but hobbyists and craftsmen often enjoy working with lesser-known species and have difficulty in locating information for such species. In addition, more of these species may become commercially viable in the near future.

It is imperative to understand the properties of a particular wood species before selecting it for any application. The woods of Louisiana vary considerably in density and hardness, so the workability of species in terms of machining, nailing, gluing and carving will also vary. This publication is designed as a reference to assist in learning about the properties of our native Louisiana woods. Use it to make a more informed choice for your wood working project, no matter how big or small. We hope you'll find it useful.

Please contact us with your input so we may improve future versions. To receive additional copies of this reference or other Louisiana Cooperative Extension Service forest products literature, please contact your parish Cooperative Extension Service office.

Todd F. Shupe
Associate Professor

Key to the Woods of Louisiana

Availability:

L: available in lumber form.

V: available in veneer form.

Readily: Available at most supply stores.

Uncommon: Special order only.

Rare: Generally from manufacturer only.

Cost: The same designations as in availability (L, V) are used for each species. The costs are for 4/4, FAS/IF green lumber. For the veneer, the listed price is for 1/36-inch sliced veneer, unless otherwise noted on an individual species. An **R** after the price indicates it is available only in rotary cut.

		Lumber	Veneer
\$	very inexpensive	< \$500 per MBF	< \$3.20 per 32 SF
\$\$	inexpensive	\$500 - \$1000 per MBF	\$3.20 - \$3.84 per 32 SF
\$\$\$	fairly expensive	\$1000 - \$1500 per MBF	\$3.85 - \$4.80 per 32 SF
\$\$\$\$	expensive	>\$1500 per MBF	> \$4.81 per 32 SF

Machining characteristics are determined by the smoothness of the surfaces after machining (planing, jointing, shaping, turning or boring).

Poor: Surfaces are not smooth; care is needed to get a good surface.

Fair: Surface smoothness is below average.

Average: Surface smoothness is average of all woods.

Good: Surface smoothness is above average.

Excellent: Extremely smooth surface.

Nail / screw holding indicates how well the wood holds fasteners when a force is applied to the fastener.

Poor: Nails/screws easily pulled out.

Fair: Nails/screws somewhat easy to pull out.

Average: Nails/screws hold well.

Fine: Nails/screws somewhat difficult to pull out.

Excellent: Nails/screws extremely difficult to pull out.

Split resistance measures how well the wood resists splitting from nailing. (Pilot holes can reduce the *splitting*.)

Poor: Splits very easily.

Fair: Somewhat easy to split.

Average: Average.

Fine: Somewhat difficult to split.

Excellent: Extremely difficult to split.

Ease of gluing measures how well glue bonds the pieces of wood together.

Poor: Difficult to glue; requires close control.

Fair: Requires control.

Good: Glues well.

Excellent: Glues extremely well.

Finishing indicates how well the wood accepts a clear finish. Open-grained woods generally finish better than woods with large gum or resin deposits.

Poor: Does not finish well, some conditioning needed.

Fair: Average finishing qualities.

Good: Fairly easy to finish.

Excellent: Extremely easy to finish.

Specific gravity is a measure of the density of wood. Density is a ratio of weight per unit volume. The weight is always measured when the wood is oven-dry. Its volume can be measured at specified moisture contents, usually either fully swollen (green) or at 12% moisture content (MC). Values will be provided for volumes at 12% MC and green. Specific gravity is the ratio between the wood's density in relation to the density of an equal volume of water. As a reference, the average specific gravity for hardwoods is 0.60 and for softwoods it is 0.52.

Key to the Woods of Louisiana

Hardness is how well wood resists being compressed, dented, scratched or nicked. Generally, the higher the density, the harder the wood. Also related to the hardness is the ease that nails or screws can be driven into the wood.

- Very soft:** Very easily dented.
- Soft:** Somewhat easy to dent.
- Average:** Average.
- Hard:** Somewhat difficult to dent.
- Very hard:** Extremely difficult to dent.

Modulus of rupture (MOR) is a measure of the breaking strength of the wood. The higher the MOR, the greater the force required to break it.

- Very weak:** Very easily broken.
- Weak:** Somewhat easy to break.
- Average:** Average.
- Strong:** Somewhat difficult to break.
- Very strong:** Extremely difficult to break.

Modulus of elasticity (MOE) measures how stiff the wood is. This measures how much force is required to bend a small, clear, straight-grained specimen at a span ratio of 14/1 according to American Society of Testing Materials standard D 255-70.

- Very pliant:** Very easily bent.
- Pliant:** Somewhat easy to bend.
- Average:** Average.
- Stiff:** Somewhat difficult to bend.
- Very stiff:** Extremely difficult to bend.

Weight is measured in pounds per cubic foot at 12 percent moisture content. The denser the wood, the heavier it is. Weight is important when considering transportation costs and difficulty in handling.

Dimensional stability is a measure of how well the wood stays in place once it is assembled and with humidity changes in the environment.

- Very unstable:** Can be a large change.
- Unstable:** Fairly large change.
- Stable:** Small change.
- Very stable:** Very little change.

Carving measures the ease which a species can be carved. This is directly related to the hardness.

- Poor:** Extremely difficult to carve.
- Average:** Somewhat difficult to carve.
- Good:** Somewhat easy to carve.
- Excellent:** Extremely easy to carve.

Shrinkage is the percentage reduction in size of wood when it goes from green to dry. Wood shrinks differently in all directions, and specific shrinkage values can be obtained from the Louisiana Cooperative Extension Service, Louisiana Forest Products Laboratory or from the Wood Handbook (2). The values listed represent general relationships. This measure can also be used to estimate swelling when moisture is added.

		Volumetric	Tangential	Radial
High:	High shrinkage and swelling	>17%	> 11%	>8%
Medium:	Average shrinkage properties	13% to 17%	9% to 11%	6% to 8%
Low:	Shrinkage and swelling are minimal	9% to 13%	5% to 9%	3% to 5%
Very low:	Shrinkage and swelling are ideal	< 9%	< 5%	< 3%

The top half of the photographs of wood samples are unfinished and the lower half is finished with clear semi-gloss polyurethane.

Table 1. Relative characteristics and properties of different woods of Louisiana.

Species	Machining	Nail/screw holding	Split resistance	Gluing	Finishing	Specific gravity(1,2) ¹		Hardness
Hardwoods						dry	green	
Ash, White	Good	Fine	Fine	Fair	Fair	.60	.55	Very hard
Basswood, American	Average	Fair	Fair	Good	Excellent	.37	.32	Very soft
Beech, American	Excellent	Fine	Fine	Poor	Good	.64	.56	Very hard
Birch, River	Average	Poor	Fair	Good	Good	.62	.55	Very hard
Blackgum	Poor	Fine	Average	Fair	Good	.50	.46	Average
Boxelder	Average	Fair	Fair	Fair	Fair	.39	.37	Average
Catalpa	Average	Fair	Fair	Fair	Fair	.41	.38	Soft
Cherry, Black	Excellent	Average	Average	Fair	Excellent	.50	.46	Hard
Chinkapin	Average	Fair	Average	Fair	Poor	.46	.42	Soft
Cottonwood, Eastern	Poor	Fair	Fair	Excellent	Poor	.40	.37	Soft
Dogwood	Average	Excellent	Average	Fair	Fair	.73	.64	Very hard
Elm, American	Poor	Fine	Fine	Good	Fair	.50	.46	Average
Elm, Hard	Poor	Fine	Fine	Good	Fair	.66	.57	Average
Hackberry	Good	Fine	Fine	Good	Fair	.53	.49	Average
Hickory, Shagbark	Good	Fine	Fine	Poor	Fair	.72	.64	Very hard
Holly	Good	Fine	Fine	Fair	Excellent	.57	.50	Average
Honeylocust	Average	Fine	Excellent	Fair	Fair	.67	.60	Very hard
Linden	Average	Fair	Fair	Good	Excellent	.37	.35	Very soft
Locust, Black	Average	Excellent	Fine	Poor	Fair	.69	.66	Very hard
Magnolia, Southern	Average	Average	Average	Fine	Good	.50	.46	Hard
Maple, Red	Average	Fine	Average	Fair	Good	.54	.49	Hard

Species	Modulus of rupture (2) ³	Modulus of elasticity (2) ³	Weight (lbs/ft ³) 12% MC (1) ³	Shrinkage (2)	Stability (1)	Lumber Cost (3)	Carving
Hardwoods							
Ash, White	Very strong	Very stiff	42	Medium	Unstable	\$\$	Fair
Basswood, American	Average	Stiff	26	Medium	Unstable	\$\$	Excellent
Beech, American	Very strong	Very stiff	45	High	Unstable	\$	Fair
Birch, River	Very strong	Very stiff	43	Medium	Unstable	\$\$	Fair
Blackgum	Average	Average	35	Medium	Unstable	\$	Average
Boxelder	Weak	Average	27	n/a	Stable	n/a	Good
Catalpa	Weak	Pliant	29	Very low	Stable	n/a	Average
Cherry, Black	Very strong	Stiff	35	Low	Unstable	\$\$\$	Average
Chinkapin	Average	Average	32	Medium	n/a	n/a	Good
Cottonwood, Eastern	Average	Stiff	28	Medium	Very Unstable	\$\$	Good
Dogwood	Strong	Average	51	High	Very stable	n/a	Poor
Elm, American	Strong	Stiff	35	Medium	Very stable	\$	Average
Elm, Hard	Very strong	Stiff	37	Medium	Very Unstable	\$	Average
Hackberry	Strong	Average	37	Medium	Unstable	\$	Average
Hickory, Shagbark	Very strong	Very stiff	50	Medium	Very Unstable	\$\$	Poor
Holly	Weak	Pliant	40	Medium	Stable	n/a	Average
Honeylocust	Very strong	Very stiff	47	Low	Stable	n/a	Poor
Linden	Average	Stiff	26	Medium	Unstable	n/a	Excellent
Locust, Black	Very strong	Very stiff	48	Low	Stable	n/a	Poor
Magnolia, Southern	Strong	Stiff	35	Low	Stable	\$	Average
Maple, Red	Very strong	Very stiff	38	Low	Stable	\$	Average

Table 1. Relative characteristics and properties of different woods of Louisiana (continued).

Species	Machining	Nail/screw holding	Split resistance	Gluing	Finishing	Specific gravity (1, 2) ¹		Hardness
						dry	green	
Mulberry	Average	Average	Fair	Fair	Fair	.59	.54	Hard
Oak, Live	Poor	Excellent	Excellent	Poor	Fair	.88	.80	Very hard
Oak, Red	Good	Fine	Fine	Fair	Fair	.68	.61	Very hard
Oak, White	Good	Fine	Fine	Fair	Fair	.68	.60	Very hard
Osage Orange	Average	Excellent	Excellent	Poor	Fair	.84	.76	Very hard
Pecan	Good	Fine	Fine	Poor	Fair	.66	.60	Very hard
Persimmon	Average	Excellent	Fine	Poor	Good	.74	.64	Very hard
Redbay	Average	Average	Average	Poor	Fair	n/a	n/a	Hard
Redbud	Average	Average	Average	Good	Good	.58	.53	Hard
Sassafras	Average	Average	Average	Fair	Good	.46	.42	Soft
Sweetgum	Average	Average	Average	Fair	Fair	.52	.46	Average
Sycamore, American	Poor	Average	Average	Good	Good	.49	.46	Average
Tupelogum	Poor	Fine	Average	Fair	Good	.50	.46	Average
Walnut, Black	Good	Fine	Fine	Fair	Fair	.55	.51	Hard
Willow, Black	Poor	Fair	Fair	Excellent	Fair	.39	.36	Very soft
Yellow-Poplar	Average	Fair	Fair	Excellent	Good	.42	.40	Soft
Softwoods								
Baldcypress	Average	Average	Fair	Fair	Poor	.46	.42	Average
Pine, S.	Average	Fine	Fair	Good	Fair	.51	.47	Average
Redcedar, Eastern	Good	Average	Fair	Good	Good	.47	.44	Average

Species	Modulus of rupture (2) ³	Modulus of elasticity (2) ³	Weight (lbs/ft ³) 12% MC (1) ³	Shrinkage (2)	Stability (1)	Lumber Cost (3)	Carving
Mulberry	Weak	Pliant	41	n/a	n/a	n/a	Average
Oak, live	Very strong	Very stiff	62	Medium	Unstable	n/a	Poor
Oak, red	Very strong	Very stiff	48	Medium	Unstable	\$\$	Average
Oak, white	Very strong	Very stiff	48	Medium	Unstable	\$\$	Average
Osage Orange	Strong	Stiff	56	Low	Unstable	n/a	Poor
Pecan	Very strong	Very stiff	46	Medium	Stable	\$\$	Poor
Persimmon	Strong	Stiff	52	High	Very Unstable	n/a	Poor
Redbay	n/a	n/a	n/a	n/a	n/a	n/a	Average
Redbud	Weak	Average	40	n/a	n/a	n/a	Average
Sassafras	Average	Average	32	Low	Stable	n/a	Average
Sweetgum	Very strong	Very stiff	36	Medium	Very Unstable	\$	Average
Sycamore, American	Strong	Stiff	34	Medium	Stable	\$	Average
Tupelogum	Average	Average	35	Medium	Stable	\$	Average
Walnut, black	Very strong	Very stiff	38	Low	Stable	\$\$\$	Average
Willow, Black	Average	Pliant	27	Medium	Unstable	\$	Good
Yellow-poplar	Strong	Stiff	30	Low	Stable	\$\$	Average
Softwoods							
Baldcypress	Strong	Stiff	32	Low	Stable	\$\$	Average
Pine, S.	Very strong	Very stiff	36	Low	Stable	\$\$	Average
Redcedar, Eastern	Average	Pliant	33	Very low	Very stable	\$\$	Average

1 Dry values are at oven-dry weight and volume at 12% MC. Green values are at oven-dry weight and green volume.

2 Based on 4/4 green FAS/1F lumber prices May 1998.

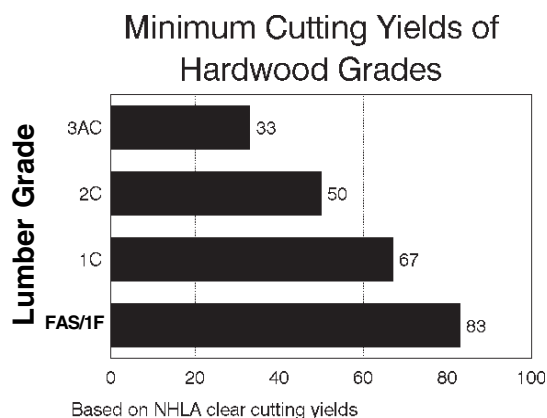
3 Numbers in parentheses are references located on inside of back cover.

Hardwood Lumber Grades

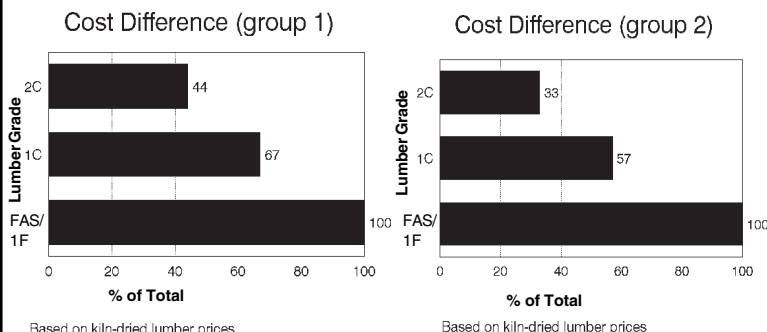
All hardwood lumber is sold by grade and volume. The highest grade of lumber is FAS, which is the abbreviation for First and Seconds. By virtue of its design, this is the most expensive grade of lumber to purchase. FAS-1 Face is a grade immediately under FAS, both in terms of value and quality. This term essentially means only one face of the board can meet FAS specifications. Generally, these two grades are grouped together and sold as Face & Better/or Selects. Number 1 Common (1C) is the next most valuable grade and is generally the average grade of lumber sold. Number 2 Common (2C) is the third, and Number 3A Common (3AC) is the final grade. Each of these grades has different requirements that must be satisfied to make that particular grade. The National Hardwood Lumber Association (NHLA) in Memphis has determined that to meet any given grade, certain size cuttings must be present on the worst side of the board. There are limits to how many cuttings can be made. (For the FAS-1 Face, this restriction applies to the best face.) Although these cuttings are fixed for grading purposes, a furniture or cabinet shop might require different cutting sizes, and the yield they get will probably be different from the yields established by the NHLA. These sizes are standard for grading hardwood lumber. The following table illustrates the requirements for each of the lumber grades.

Grade	Minimum board Length	Minimum board Width	Minimum cutting size	Min. Area of clear cuttings required
FAS/1F	8'	6"	4" x 5' or 3" x 7'	83%
1C	4'	3"	4" x 2' or 3" x 3'	67%
2C	4'	3"	3" x 2'	50%
3AC	4'	3"	3" x 2'	33%

The following illustration shows the relationship between grade and the expected yield of the specific size cuttings to meet the grade.



The higher grades of lumber are more expensive than the lower grades, as might be expected. This relationship is expressed in the following charts which show the cost ranges for the various grades of lumber. The ratio of the average value of 1C and 2C to FAS is shown for each group in both charts. Group 1 includes ash, cottonwood, hackberry, white oak and hickory. Group 2 includes red oak, poplar, cherry and walnut.



If you would like more information on lumber grades and grading lumber, contact the Cooperative Extension Service and request a copy of the Grading Hardwood Lumber booklet.

Moisture Content

When you are making furniture, cabinets, millwork or anything else out of wood, the moisture content of the wood must be controlled. Wood items for interior use need to be 6-8 percent moisture. The moisture content may range from 12 percent to 18 percent for outdoor use, depending on the region of the country. Dry moisture content is easily measured using an electronic moisture meter which can be purchased from many supply stores. Controlling the moisture content is of vital importance to producing a high quality product or wooden projects which can be enjoyed for many years. More information can be obtained by contacting the Louisiana Cooperative Extension Service and requesting the booklet: *“Wood: its nature and properties.”*

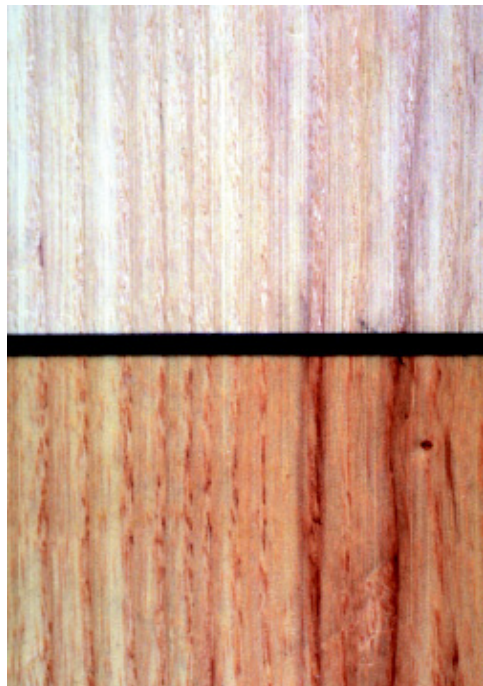
The back cover of this publication lists other publications that are available through the Louisiana Cooperative Extension Service and the Louisiana Forest Products Laboratory. To receive one or more of these publications, or for further assistance, use the phone numbers or addresses on the back page.


Hardwoods

1 Ash

(*Fraxinus* spp)

The ash group is composed of two principal species in Louisiana, white ash (*F. americana*) and green ash (*F. pennsylvanica*). White ash is shown here. The wood of these two species is difficult to distinguish, and all are marketed as ash or white ash. The sapwood of ash is very light in color, while the heartwood is brown. Typically has a high resistance to shock. Ash is somewhat lustrous, heavy and straight-grained.




Uses:		Availability	Cost:
Cabinets, furniture, handles, bats, boxes.		L: Readily V: Readily	L: \$\$ V: \$\$
Machining: Good	Hardness: Very hard	Splitting: Fine 	Finishing: Fair
Nailing: Fine	Screwing: Fine	Gluing: Fair	Carving: Fair
Specific gravity: Dry =.60 Green=.55	Shrinkage: Medium	Weight: 42	Stability: Unstable

2 American Basswood

(*Tilia americana*)

Sapwood whitish to creamy white or pale brown, the heartwood pale brown, with reddish tinge. Straight-grained, light, soft. Very resistant to checking and warping.

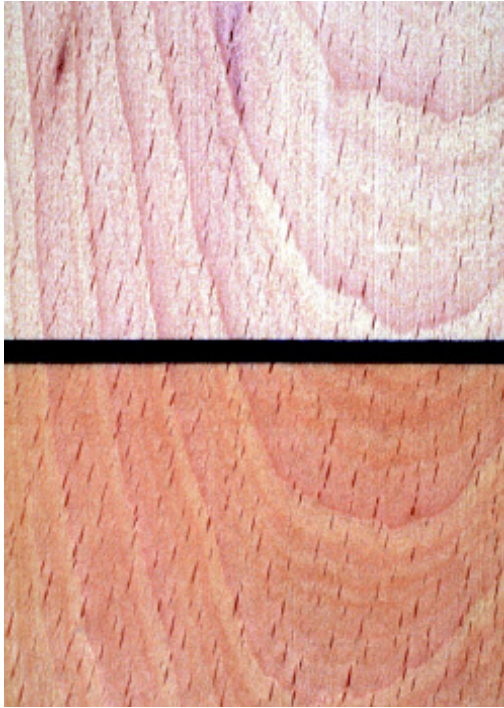



Uses:		Availability	Cost:
Plywood for drawer panels, backings and concealed furniture parts. Cooperage, excelsior, boxes, crates, caskets, slats.		L: Readily V: Readily	L: \$\$ V: \$\$
Machining: Average	Hardness: Very soft	Splitting: Fair 	Finishing: Excellent
Nailing: Fair	Screwing: Fair	Gluing: Good	Carving: Excellent
Specific gravity: Dry =.37 Green=.32	Shrinkage: Medium	Weight: 26	Stability: Unstable

3 Beech, American

(*Fagus grandifolia*)

Whitish sapwood, heartwood whitish with reddish tinge to reddish brown. Straight- to interlocked-grain, heavy, hard. Highly resistant to shock, and good for steam bending.

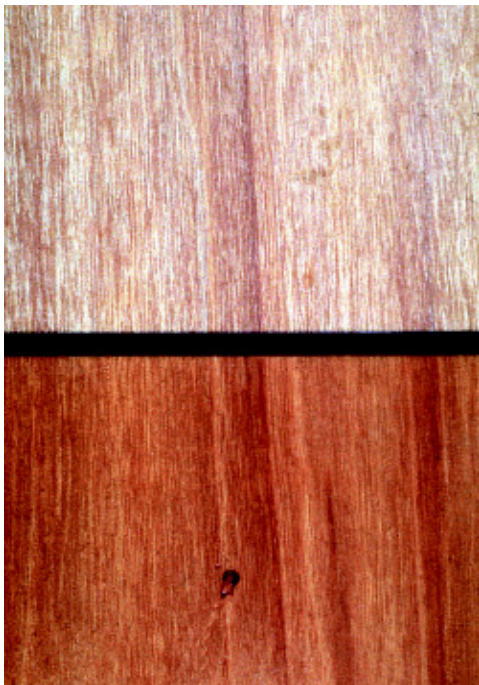



Uses		Availability		Cost
Flooring, furniture, charcoal, handles, some ties, pallets.		L: Readily V: Uncommon		L: \$ V: \$\$
Machining: Excellent	Hardness: Very hard	Splitting: Fine 	Finishing: Good	
Nailing: Fine	Screwing: Fine	Gluing: Poor	Carving: Fair	
Specific gravity: Dry = .64 Green = .56	Shrinkage: High	Weight: 45	Stability: Unstable	

4 Birch, river (red birch, water birch)

(*Betula nigra*)

Whitish, pale yellow or light brownish sapwood, with light to dark-brown heartwood. Straight-grained, heavy, hard.

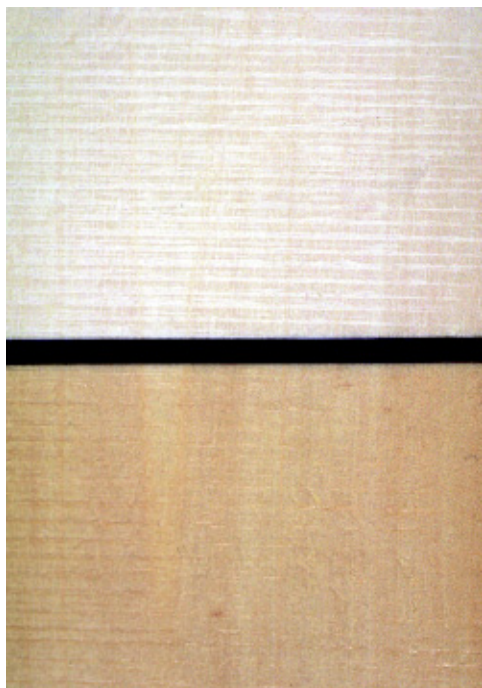



Uses		Availability		Cost
Veneer, furniture, ties, boxes, crates, dowels		L: Readily V: Readily		L: \$\$ V: \$\$
Machining: Average	Hardness: Very hard	Splitting: Fair 	Finishing: Good	
Nailing: Poor	Screwing: Poor	Gluing: Good	Carving: Fair	
Specific gravity: Dry = .62 Green = .55	Shrinkage: Medium	Weight: 43	Stability: Unstable	

5 Blackgum (black tupelo, tupelogum, pepperidge)

(*Nyssa sylvatica*)

White to grayish-white sapwood, and greenish or brownish-gray heartwood. Interlocked grain, fairly heavy and hard. Uniform texture, high in shock resistance.




Uses		Availability		Cost
Pallets, boxes, furniture, baskets, cabinets.		L: Rare V: Rare		L: \$ V: \$
Machining: Poor	Hardness: Average	Splitting: Average 	Finishing: Good	
Nailing: Fine	Screwing: Fine	Gluing: Fair	Carving: Average	
Specific gravity: Dry =.50 Green=.46	Shrinkage: Medium	Weight: 35	Stability: Unstable	

6 Boxelder (three-leaved maple, ash-leaved maple)

(*Acer negundo*)

Wood creamy white, soft, light.



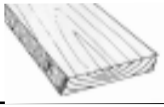
Uses		Availability		Cost
Fuel, speciality turnings, carving.		L: Readily V: Readily		L: n/a V: n/a
Machining: Average	Hardness: Average	Splitting: Fair 	Finishing: Fair	
Nailing: Fair	Screwing: Fair	Gluing: Fair	Carving: Good	
Specific gravity: Dry =.39 Green=.37	Shrinkage: N/A	Weight: 27	Stability: Stable	

7 Catalpa

(*Catalpa speciosa*)

Pale gray sapwood, with grayish-brown heartwood, sometimes with a lavender tinge. Faintly aromatic smell, straight-grained, moderately light and soft.




Uses		Availability		Cost
Fence posts, rails, interior finish, cabinets.		L: Uncommon V: n/a		L: n/a V: n/a
Machining: Average	Hardness: Soft	Splitting: Fair 	Finishing: Fair	
Nailing: Fair	Screwing: Fair	Gluing: Fair	Carving: Average	
Specific gravity: Dry =.41 Green=.38	Shrinkage: Very Low	Weight: 29	Stability: Stable	

8 Cherry, Black (Wild cherry)

(*Prunus serotina*)

Whitish to light reddish-brown sapwood, with reddish-brown heartwood. Straight-grained, moderately heavy and hard. Highly lustrous when finished properly. Fairly stiff and highly resistant to shock.




Uses		Availability		Cost
Cabinets, furniture, caskets, gun stocks.		L: Readily V: Readily		L: \$\$\$ V: \$\$\$
Machining: Excellent	Hardness: Hard	Splitting: Average 	Finishing: Excellent	
Nailing: Average	Screwing: Average	Gluing: Fair	Carving: Average	
Specific gravity: Dry =.50 Green=.46	Shrinkage: Low	Weight: 35	Stability: Unstable	

9 Chinkapin

(*Castanopsis chrysophylla*)

Light brown sapwood with a reddish tinge, very difficult to distinguish from the heartwood. Moderately heavy and fairly hard. Very durable and resistant to decay.



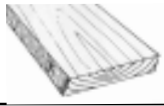
Uses		Availability		Cost
Poles, posts, ties.		L: Uncommon V: n/a		L: n/a V: n/a
Machining: Average	Hardness: Soft	Splitting: Average 	Finishing: Poor	
Nailing: Fair	Screwing: Fair	Gluing: Fair	Carving: Good	
Specific gravity: Dry =.46 Green=.42	Shrinkage: Medium	Weight: 32	Stability: n/a	

10 Cottonwood (Eastern cottonwood)

(*Populus deltoides*)

Whitish sapwood which merges into the grayish-white heartwood. Faint odor when wet, usually straight-grained. Medium-light to light and moderately soft. Not very resistant to shock. Very susceptible to fuzzy grain.




Uses		Availability		Cost
Excelsior, boxes, pallets, caskets, upholstered furniture.		L: Readily V: Readily		L: \$\$ V: \$\$
Machining: Poor	Hardness: Soft	Splitting: Fair 	Finishing: Poor	
Nailing: Fair	Screwing: Fair	Gluing: Excellent	Carving: Good	
Specific gravity: Dry =.40 Green=.37	Shrinkage: Medium	Weight: 28	Stability: Very Unstable	

11 Dogwood (flowering dogwood, arrow wood)

(*Cornus florida*)

Pinkish to pinkish-brown sapwood, with dark brown heartwood.
Heartwood is not very common. Very heavy and hard.



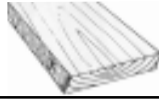
Uses		Availability		Cost
Shuttles, puleys, mallet heads, turnings, bobbins.		L: Local V: n/a		L: n/a V: n/a
Machining: Average	Hardness: Very hard	Splitting: Average 	Finishing: Fair	
Nailing: Excellent	Screwing: Excellent	Gluing: Fair	Carving: Poor	
Specific gravity: Dry =.73 Green=.64	Shrinkage: High	Weight: 51	Stability: Very Stable	

12 Elm, American (white elm)

(*Ulmus americana*)

Grayish-white to light brown sapwood, with light brown to brown heartwood. Straight or interlocked grain. Moderately heavy and hard. Considered to be a soft elm. The soft elm group is composed of two species, American elm and slippery elm (*U. rubra*).
Highly resistant to shock. Good bending properties.

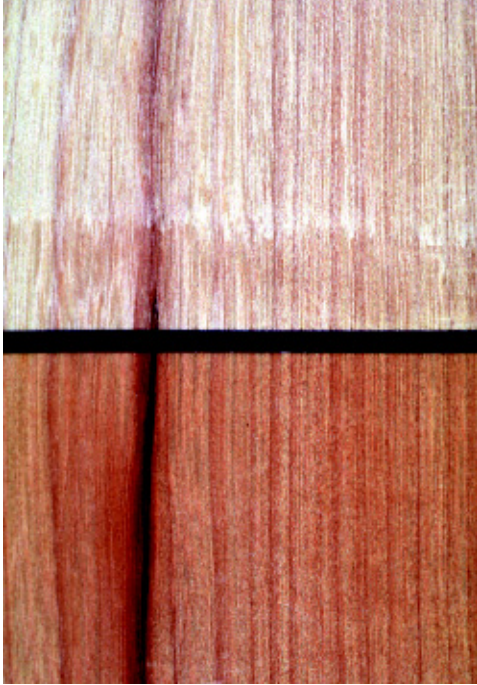



Uses		Availability		Cost
Containers, furniture, pallets, boxes, baskets.		L: Readily V: Readily		L: \$ V: \$\$
Machining: Poor	Hardness: Average	Splitting: Fine 	Finishing: Fair	
Nailing: Fine	Screwing: Fine	Gluing: Good	Carving: Average	
Specific gravity: Dry =.50 Green=.46	Shrinkage: Medium	Weight: 35	Stability: Very Stable	

13 Elm, Hard (red elm, winged elm)

(*Ulmus alata*)

Light brown to brown sapwood with same colors in the heartwood, but sometimes a pinkish tint is present. Straight-grained, heavy and hard. Stronger than soft elm. Marketed as hard elm. Highly resistant to shock.

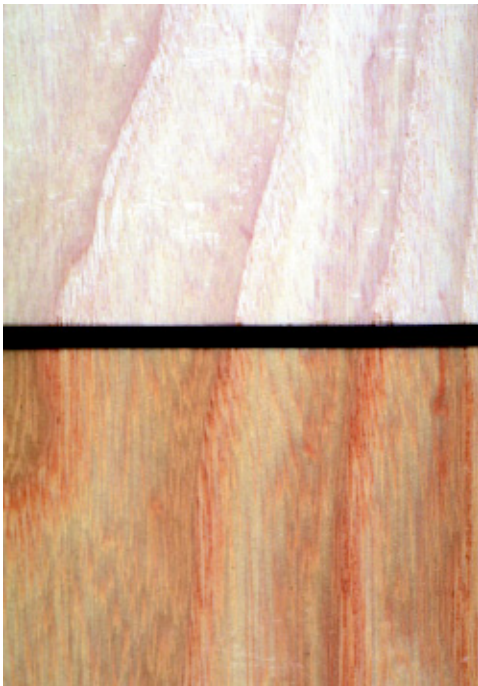



Uses		Availability		Cost
Containers, boxes, furniture, baskets.		L: Readily V: Uncommon		L: \$ V: \$\$
Machining: Poor	Hardness: Average	Splitting: Fine 	Finishing: Fair	
Nailing: Fine	Screwing: Fine	Gluing: Good	Carving: Average	
Specific gravity: Dry =.66 Green=.57		Shrinkage: Medium	Weight: 37	Stability: Very unstable

14 Hackberry

(*Celtis occidentalis*)

Actually, in Louisiana, the hackberry is sugarberry (*C. laevigata*) but the two woods are virtually indistinguishable. Pale yellow to greenish-yellow sapwood, heartwood very similar to sapwood, and very narrow in the log. Sapwood very susceptible to gray stain or blue sap stain. Straight-grained, moderately heavy and hard. Highly shock resistant.

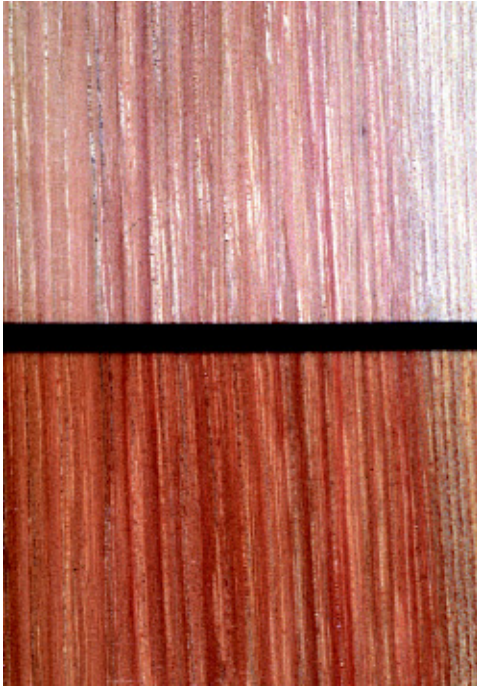



Uses		Availability		Cost
Furniture, containers.		L: Readily V: Readily		L: \$ V: \$\$
Machining: Good	Hardness: Average	Splitting: Fine 	Finishing: Fair	
Nailing: Fine	Screwing: Fine	Gluing: Good	Carving: Average	
Specific gravity: Dry =.53 Green=.49		Shrinkage: Medium	Weight: 37	Stability: Unstable

15 Hickory, Shagbark

(*Carya ovata*)

A number of different species are in the true hickory group, including shagbark (*C. ovata*), shellbark (*C. laciniata*), pignut (*C. glabra*), mockernut (*C. tomentosa*) and black (*C. texana*) hickories, and the different woods are not easily distinguished. Shagbark hickory is shown here. Whitish to pale yellow brown sapwood, with pale brown to brown heartwood. Straight-grained, very heavy and hard. Very tough, strong and highly shock resistant.

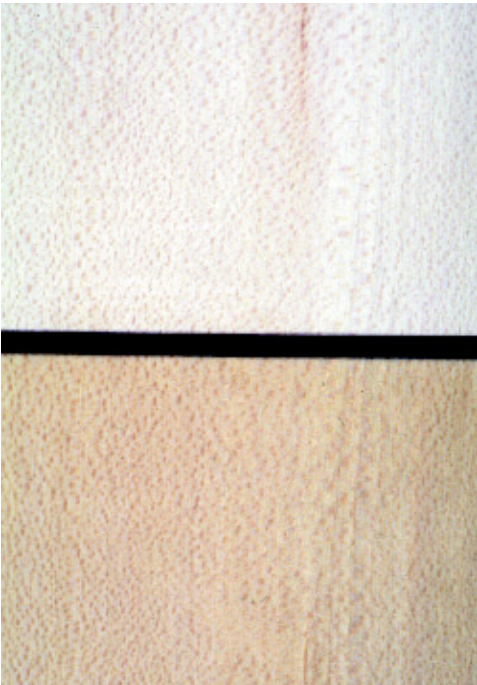



Uses		Availability		Cost
Handles, dowels, poles, furniture, pallets.		L: Readily V: Readily		L: \$\$ V: \$\$\$
Machining: Good	Hardness: Very hard	Splitting: Fine 	Finishing: Fair	
Nailing: Fine	Screwing: Fine	Gluing: Poor	Carving: Poor	
Specific gravity: Dry =.72 Green=.64		Shrinkage: Medium	Weight: 50	Stability: Very unstable

16 Holly

(*Ilex opaca*)

White sapwood with ivory-white heartwood, sometimes with bluish streaks or cast. Heavy and hard. Can be stained black to resemble ebony (for piano keys)

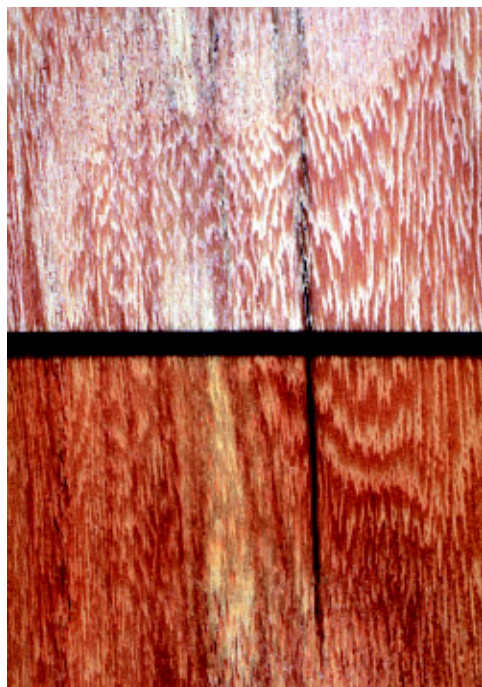


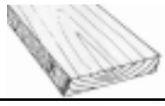
Uses		Availability		Cost
Inlay work, handles, turnings, carvings.		L: Rare V: n/a		L: n/a V: n/a
Machining: Good	Hardness: Average	Splitting: Fine 	Finishing: Excellent	
Nailing: Fine	Screwing: Fine	Gluing: Fair	Carving: Average	
Specific gravity: Dry =.57 Green=.50		Shrinkage: Medium	Weight: 40	Stability: Stable

17 Honeylocust (thorn locust, sweet locust)

(*Gleditsia triacanthos*)

Yellowish sapwood with light red to reddish-brown heartwood. Straight-grained, very heavy and hard. Fairly resistant to decay. Very resistant to shock.

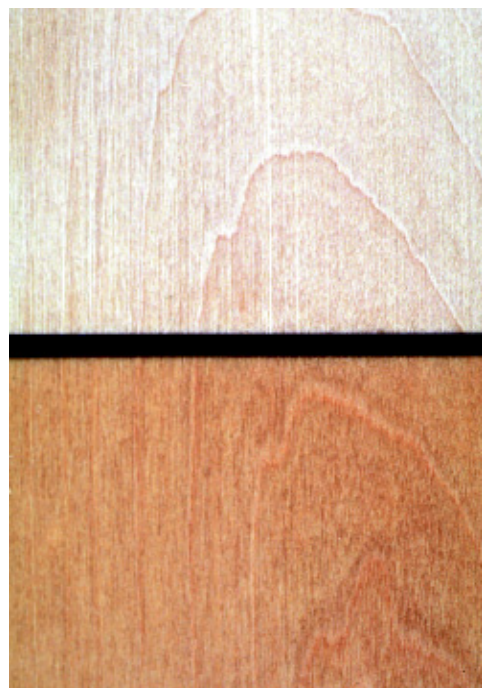



Uses		Availability		Cost
Fence posts, furniture, interior trim, pallets.		L: Uncommon V: n/a		L: n/a V: n/a
Machining: Average	Hardness: Very hard	Splitting: Excellent 	Finishing: Fair	
Nailing: Fine	Screwing: Fine	Gluing: Fair	Carving: Poor	
Specific gravity: Dry =.67 Green=.60	Shrinkage: Low	Weight: 47	Stability: Stable	

18 Linden, American

(*Tilia americana*)

Sapwood whitish to creamy white or pale brown, the heartwood pale brown, with reddish tinge. Straight-grained, light, soft. Very resistant to checking and warping.

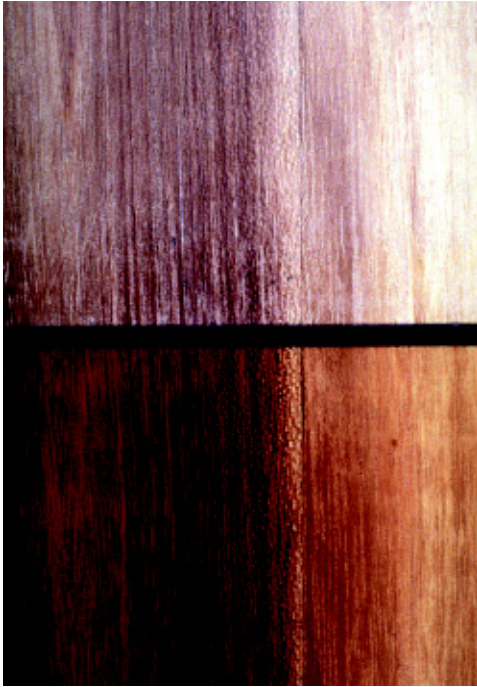



Uses		Availability		Cost
Cooperage, excelsior, boxes, crates, caskets, slats.		L: Uncommon V: n/a		L: n/a V: n/a
Machining: Average	Hardness: Very soft	Splitting: Fair 	Finishing: Excellent	
Nailing: Fair	Screwing: Fair	Gluing: Good	Carving: Excellent	
Specific gravity: Dry =.37 Green=.35	Shrinkage: Medium	Weight: 26	Stability: Unstable	

19 Locust, Black (false acacia, locust)

(*Robinia pseudoacacia*)

Yellowish sapwood, with greenish-yellow to dark yellowish heartwood. Very heavy and hard. Sometimes confused with wood of Bois D'Arc. Highly resistant to shock. Highly resistant to decay.




Uses		Availability		Cost
Mine timbers, fence posts, ties, stakes.		L: Rare V: n/a		L: n/a V: n/a
Machining: Average	Hardness: Very hard	Splitting: Fine 	Finishing: Fair	
Nailing: Excellent	Screwing: Excellent	Gluing: Poor	Carving: Poor	
Specific gravity: Dry =.69 Green=.66	Shrinkage: Low	Weight: 48	Stability: Stable	

20 Magnolia (big laurel, bull bay, laurel bay)

(*Magnolia grandiflora*)

Whitish sapwood, with yellow or greenish-yellow to brown heartwood. Straight-grained, fairly heavy and hard. Fairly high resistance to shock.

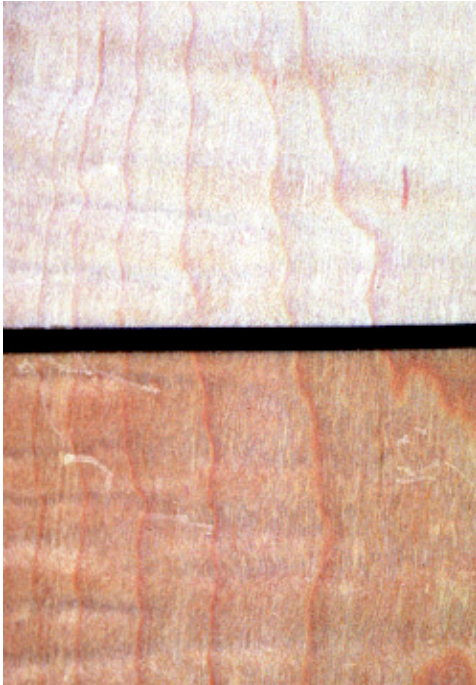



Uses		Availability		Cost
Furniture, boxes, pallets, slats, sashwork, doors.		L: Readily V: Uncommon		L: \$ V: \$\$
Machining: Average	Hardness: Hard	Splitting: Average 	Finishing: Good	
Nailing: Average	Screwing: Average	Gluing: Fine	Carving: Average	
Specific gravity: Dry =.50 Green=.46	Shrinkage: Low	Weight: 35	Stability: Stable	

21 Maple, Red

(*Acer rubrum*)

White sapwood, with light brown heartwood, sometimes with a purplish cast. Straight-grained or curly-grained, moderately heavy and hard. Red maple is sold as soft maple.




Uses		Availability		Cost
Furniture, pallets, cabinets, core stock.		L: Readily V: Rare		L: \$ V: \$
Machining: Average	Hardness: Hard	Splitting: Average 	Finishing: Good	
Nailing: Fine	Screwing: Fine	Gluing: Fair	Carving: Average	
Specific gravity: Dry =.54 Green=.49	Shrinkage: Low	Weight: 38	Stability: Stable	

22 Mulberry

Yellowish sapwood with orange-yellow to golden brown heartwood, turning russet brown on exposure to air. Straight-grained, heavy and hard.




Uses		Availability		Cost
Fence posts, furniture, caskets, interior finish.		L: Local V: n/a		L: n/a V: n/a
Machining: Average	Hardness: Hard	Splitting: Fair 	Finishing: Fair	
Nailing: Average	Screwing: Average	Gluing: Fair	Carving: Average	
Specific gravity: Dry =.59 Green=.54	Shrinkage: N/A	Weight: 41	Stability: N/A	

23 Oak, Live

(*Quercus virginiana*) Whitish to gray brown sapwood with dull brown to gray brown heartwood. Irregular grained, very heavy and hard. Extremely strong and tough.

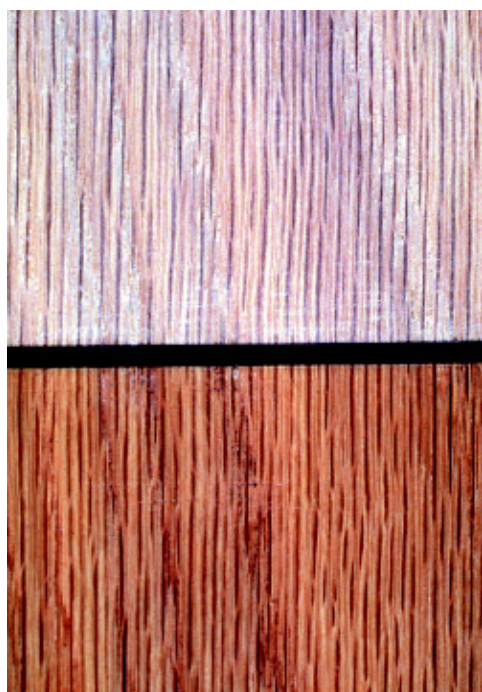



Uses		Availability	Cost
Shipbuilding, miscellaneous projects.		L: Rare V: n/a	L: n/a V: n/a
Machining: Poor	Hardness: Very Hard	Splitting: Excellent 	Finishing: Fair
Nailing: Excellent	Screwing: Excellent	Gluing: Poor	Carving: Poor
Specific gravity: Dry =.88 Green=.61	Shrinkage: Medium	Weight: 62	Stability: Unstable

24 Oak, Red

(*Quercus spp.*)

Nearly impossible to distinguish between the wood of the red oaks which include Shumard (*Q. shumardii*), southern red (*Q. falcata*), cherrybark (*Q. falcata* var. *pagodaefolia*), black (*Q. velutina*), willow (*Q. phellos*) and water (*Q. nigra*). Cherrybark oak, shown here, is generally the more common lumber in Louisiana. Whitish to grayish, reddish-brown sapwood with pinkish to light reddish-brown heartwood. Flesh-colored heartwood is very common. Straight-grained, heavy and hard.




Uses		Availability	Cost
Furniture, cabinets, ties, timbers, flooring, millwork, caskets.		L: Readily V: Readily	L: \$\$ V: \$\$
Machining: Good	Hardness: Very Hard	Splitting: Fine 	Finishing: Fair
Nailing: Fine	Screwing: Fine	Gluing: Fair	Carving: Average
Specific gravity: Dry =.68 Green=.61	Shrinkage: Medium	Weight: 48	Stability: Unstable

25 Oak, white

(*Quercus spp.*)

There are 5 species of white oak in this group, including the one shown here: white oak (*Q. alba*). Bur (*Q. macrocarpa*), overcup (*Q. lyrata*) and cow (*Q. michauxii*) are the other species in this group. Post oak (*Q. stellata*) is also a white oak, but is generally not accepted because of the large number of knots found on the tree. Whitish to light brown sapwood with rich light brown to dark brown heartwood. Straight-grained, very heavy and very hard.




Uses		Availability		Cost
Furniture, ties, timbers, cooperage, flooring, cabinets, pallets.		L: Readily V: Readily		L: \$\$ V: \$\$
Machining: Good	Hardness: Very Hard	Splitting: Fine 	Finishing: Fair	
Nailing: Fine	Screwing: Fine	Gluing: Fair	Carving: Average	
Specific gravity: Dry =.68 Green=.61	Shrinkage: Medium	Weight: 48	Stability: Unstable	

26 Osage-orange (bois d'arc, hedge apple, horse apple)

(*Maclura pomifera*)

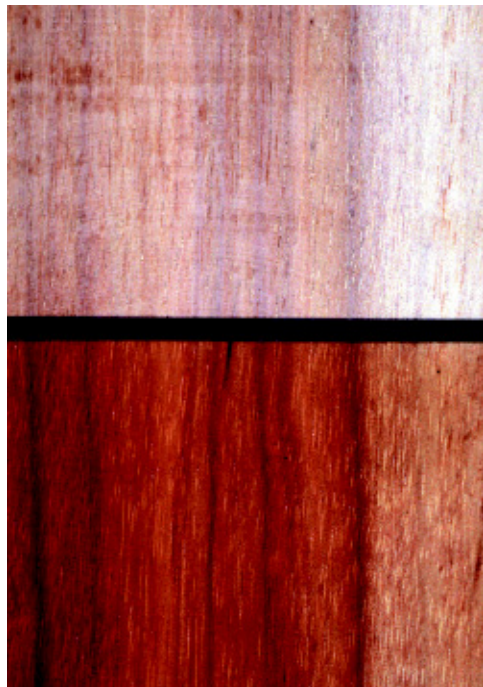
Light yellow sapwood, with golden-yellow to bright orange heartwood that darkens upon exposure to air. Straight-grained, very heavy and very hard. Very resistant to decay. Very durable and strong.




Uses		Availability		Cost
Fence posts, long bows, machinery parts.		L: Rare V: n/a		L: n/a V: n/a
Machining: Average	Hardness: Very Hard	Splitting: Excellent 	Finishing: Fair	
Nailing: Excellent	Screwing: Excellent	Gluing: Poor	Carving: Poor	
Specific gravity: Dry =.84 Green=.76	Shrinkage: Low	Weight: 56	Stability: Unstable	

27 Pecan

A number of species are included in the pecan hickory group and marketed as pecan lumber. These include pecan (*C. illinoensis*), bitter pecan (*C. aquatica*) and nutmeg hickory (*C. myristiciformis*). White or nearly white sapwood and reddish-brown heartwood, sometimes with dark streaks. Straight-grained, heavy and hard. Highly shock resistant.




Uses		Availability		Cost
Handles, furniture, cabinets, sporting goods, flooring.		L: Readily V: Readily		L: \$\$ V: \$\$
Machining: Good	Hardness: Very Hard	Splitting: Fine 	Finishing: Fair	
Nailing: Fine	Screwing: Fine	Gluing: Poor	Carving: Poor	
Specific gravity: Dry =.66 Green=.60		Shrinkage: Medium	Weight: 46	Stability: Stable

28 Persimmon (possum wood)

(*Diospyros virginiana*) White to creamy-white sapwood (when freshly cut) darkening to light yellowish-brown with blackish-brown to black heartwood (which comprises very little of the wood sold). Very heavy, very hard. Stays smooth under friction, very tough.




Uses		Availability		Cost
Shuttles, golf clubs, spools, handles.		L: Rare V: Rare		L: n/a V: n/a
Machining: Average	Hardness: Very Hard	Splitting: Fine 	Finishing: Good	
Nailing: Excellent	Screwing: Excellent	Gluing: Poor	Carving: Poor	
Specific gravity: Dry =.74 Green=.64		Shrinkage: High	Weight: 52	Stability: Very unstable

29 Redbay

(*Persea borbonia*)

Light- to reddish- colored wood which is heavy, hard and strong, but can be brittle.




Uses		Availability		Cost
Boats, cabinets, interior finish.		L: Local V: n/a		L: n/a V: n/a
Machining: Average	Hardness: Hard	Splitting: Average 	Finishing: Fair	
Nailing: Average	Screwing: Average	Gluing: Poor	Carving: Average	
Specific gravity: n/a	Shrinkage: n/a	Weight: n/a	Stability: n/a	

30 Redbud (Judas tree)

(*Cercis canadensis*)

Light-colored sapwood, with dark rich brown heartwood tinged with red. Moderately heavy (about 40 pounds per cubic foot). Close-grained.




Uses		Availability		Cost
Turnings, carving.		L: Local V: n/a		L: n/a V: n/a
Machining: Average	Hardness: Hard	Splitting: Average 	Finishing: Good	
Nailing: Average	Screwing: Average	Gluing: Good	Carving: Average	
Specific gravity: Dry =.58 Green=.53	Shrinkage: n/a	Weight: 40	Stability: n/a	

31 Sassafras

(*Sassafras albidum*)

Light yellow sapwood with dull grayish-brown to orange-brown or dark brown heartwood. Aromatic on fresh cut or wet surfaces. Straight-grained, moderately heavy and hard. Quite high in shock resistance, but at times very brittle. Easily confused with black ash; sometimes sold as black ash.




Uses		Availability		Cost
Small boats, fence posts, millwork, cabinets.		L: Rare V: Rare		L: n/a V: n/a
Machining: Average	Hardness: Soft	Splitting: Average 	Finishing: Good	
Nailing: Average	Screwing: Average	Gluing: Fair	Carving: Average	
Specific gravity: Dry =.46 Green=.42	Shrinkage: Low	Weight: 32	Stability: Stable	

32 Sweetgum (red gum, sap gum)

(*Liquidambar styraciflua*)

White sapwood with pinkish tinge (sold as sap gum). Heartwood pinkish-gray to shades of reddish brown sometimes with pigment streaks (sold as redgum). Interlocked-grain, moderately heavy, fairly hard.

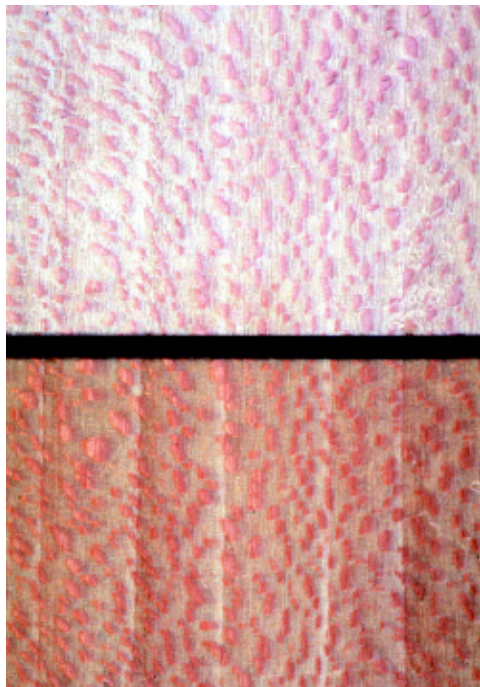



Uses		Availability		Cost
Furniture, cabinets, millwork, ties, baskets.		L: Readily V: Readily		L: \$ V: \$\$\$
Machining: Average	Hardness: Average	Splitting: Average 	Finishing: Fair	
Nailing: Average	Screwing: Average	Gluing: Fair	Carving: Average	
Specific gravity: Dry =.52 Green=.46	Shrinkage: Medium	Weight: 36	Stability: Very unstable	

33 Sycamore, American (button wood, plane tree)

(*Platanus occidentalis*)

Whitish to light yellowish or reddish-brown sapwood with light to dark brown or reddish-brown heartwood. Heartwood not easily distinguished from sapwood. Irregularly interlocked-grain, very fine texture, moderately heavy and hard. Good shock resistance.




Uses		Availability		Cost
Furniture, boxes, pallets, flooring, butchers' blocks.		L: Readily V: Readily		L: \$ V: \$\$
Machining: Poor	Hardness: Average	Splitting: Average 	Finishing: Good	
Nailing: Average	Screwing: Average	Gluing: Good	Carving: Average	
Specific gravity: Dry =.49 Green=.46	Shrinkage: Medium	Weight: 34	Stability: Stable	

34 Tupelogum (water tupelo, sour gum)

(*Nyssa aquatica*)

White to grayish-white sapwood, and greenish or brownish-gray heartwood. Interlocked grain, fairly heavy and hard. Much softer than blackgum. Uniform texture, high in shock resistance.

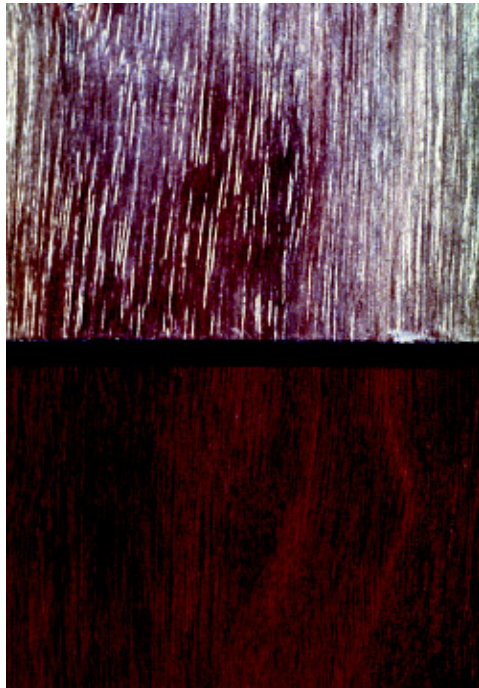



Uses		Availability		Cost
Pallets, boxes, furniture, baskets, cabinets.		L: Rare V: Rare		L: \$\$ V: \$\$R
Machining: Poor	Hardness: Average	Splitting: Average 	Finishing: Good	
Nailing: Fine	Screwing: Fine	Gluing: Fair	Carving: Average	
Specific gravity: Dry =.50 Green=.46	Shrinkage: Medium	Weight: 35	Stability: Stable	

35 Walnut, black

(*Juglans nigra*)

Whitish to yellowish-brown sapwood with light brown to rich chocolate or purplish-brown heartwood. Dull luster. Slight odor when worked, straight- or irregular-grained, heavy and hard. Sapwood often steamed to get darker color. Good shock resistance.




Uses		Availability		Cost
Furniture, gunstocks, caskets, cabinets, millwork.		L: Readily V: Readily		L: \$\$\$ V: \$\$\$
Machining: Good	Hardness: Hard	Splitting: Fine 	Finishing: Fair	
Nailing: Fine	Screwing: Fine	Gluing: Fair	Carving: Average	
Specific gravity: Dry =.55 Green=.51	Shrinkage: Low	Weight: 38	Stability: Stable	

36 Willow, Black

(*Salix nigra*)

Whitish sapwood with light brown to pale reddish or grayish-brown heartwood, with darker streaks along the grain. Straight-grained, moderately light and soft.




Uses		Availability		Cost
Boxes, crates, furniture (core stock), excelsior, caskets.		L: Readily V: n/a		L: \$ V: n/a
Machining: Poor	Hardness: Very Soft	Splitting: Fair 	Finishing: Fair	
Nailing: Fair	Screwing: Fair	Gluing: Excellent	Carving: Good	
Specific gravity: Dry =.39 Green=.36	Shrinkage: Medium	Weight: 27	Stability: Unstable	

37 Yellow-poplar (tulip tree, tulip poplar)

(*Liriodendron tulipifera*)

Whitish, sometimes striped sapwood with heartwood ranging in color from clear yellow to tan or greenish-brown, marked sometimes with purplish, dark green, blue or black shades. Straight-grained, moderately light and soft.



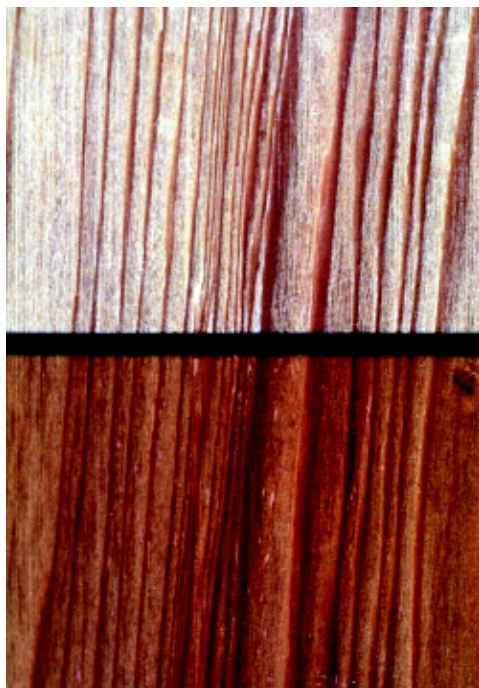
Uses		Availability	Cost
Millwork, furniture, interior plywood cores, cabinets, caskets.		L: Readily V: Readily	L: \$\$ V: \$
Machining: Average	Hardness: Soft	Splitting: Fair 	Finishing: Good
Nailing: Fair	Screwing: Fair	Gluing: Excellent	Carving: Average
Specific gravity: Dry =.42 Green=.40	Shrinkage: Low	Weight: 30	Stability: Stable


Softwoods

38 Baldcypress (red, yellow and tidewater cypress)

(*Taxodium distichum*)

Pale yellowish-white sapwood, merging into heartwood which is variable in color ranging from yellowish to light or dark brown, reddish-brown or near black. Greasy feel to wood, sometimes with sour odor, straight-, even-, or uneven-grained, coarse textured, moderately heavy and hard. Prone to localized fungus attack ("pecky" cypress). Old-growth very resistant to decay.

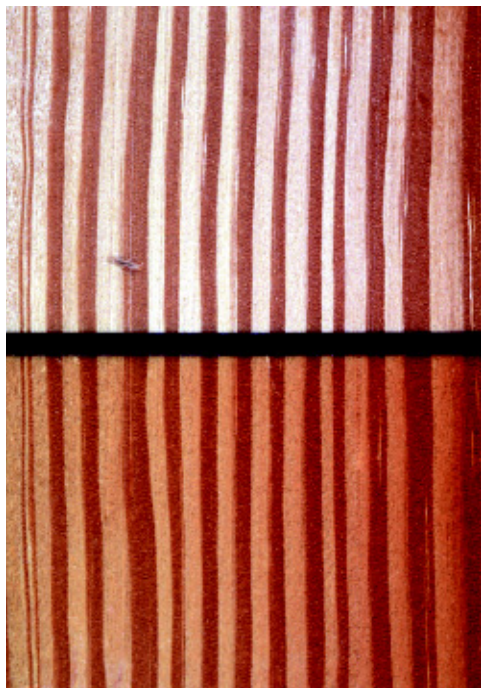



Uses		Availability	Cost
Paneling, furniture, cabinets, siding, trim, poles, pilings, ties.		L: Readily V: Readily	L: \$\$ V: \$\$
Machining: Average	Hardness: Average	Splitting: Fair 	Finishing: Poor
Nailing: Average	Screwing: Average	Gluing: Fair	Carving: Average
Specific gravity: Dry =.46 Green=.42	Shrinkage: Low	Weight: 32	Stability: Stable

39 Pine, Southern

(*Pinus spp.*)

Group composed of 5 species of pine very difficult to separate. Nearly white to yellowish or orange-white sapwood with yellow to orange to reddish-brown or light brown heartwood. Very resinous, slight odor, straight-grained, but sometimes uneven-grained, moderately heavy and hard.

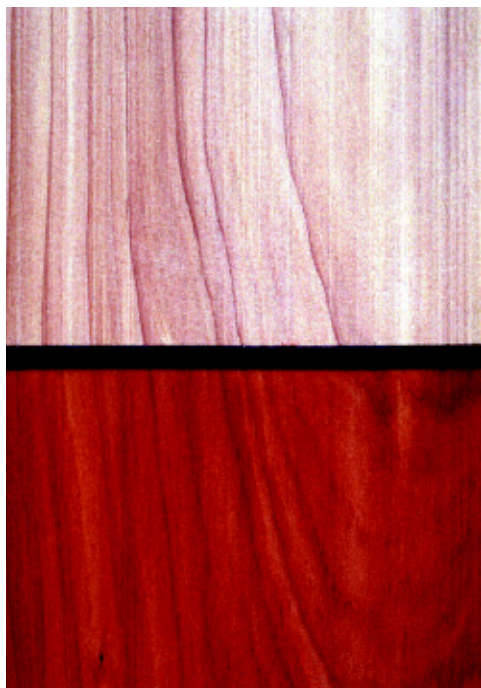



Uses		Availability		Cost
Poles, timbers, piling, construction, interior finish, pallets, excelsior.		L: Readily V: Readily		L: \$\$ V: \$\$
Machining: Average	Hardness: Average	Splitting: Fair 	Finishing: Fair	
Nailing: Fine	Screwing: Fine	Gluing: Good	Carving: Average	
Specific gravity: Dry =.51 Green=.47	Shrinkage: Low	Weight: 36	Stability: Stable	

40 Redcedar, Eastern

(*Juniperus virginiana*)

White sapwood, with purplish or rose-red heartwood, aging to dull red or reddish-brown. Aromatic when worked, even-grained, fine textured, moderately heavy, hard.



Uses		Availability		Cost
Fence posts, chests, wardrobes, millwork, pencil slats, flooring.		L: Rare V: Rare		L: \$\$ V: \$\$\$
Machining: Good	Hardness: Average	Splitting: Fair 	Finishing: Good	
Nailing: Average	Screwing: Average	Gluing: Good	Carving: Average	
Specific gravity: Dry =.47 Green=.44	Shrinkage: Very Low	Weight: 33	Stability: Very Stable	



References

- (1)Panshin, A.J. and C.deZeeuw. 1970. Textbook of wood technology. Vol. 1. 3rd ed. McGraw-Hill Book Co. New York. 705 p.
- (2)Forest Products Laboratory. 1987 (rev). Wood handbook: Wood as an engineering material. Ag. Handbook 72. U.S. Dept. of Agriculture. Washington, D.C.
- (3)Hardwood Market Report. May 1988. Memphis, TN.

Other titles available from the Louisiana Forest Products Development Center

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Glues and Gluing Wood, Pub. 2587

Wood: Its Nature and Properties for Woodworking, Pub. 2582

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Louisiana Dry Kiln Club Newsletter

A Planning Guide for Small and Medium Size Wood Products Companies (USDA publication)

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Electronic Directory of Primary and Secondary Wood Industry in Louisiana

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