



American White Oak (Quercus Stellata)

Botanical Name:	Quercus stellata
Other Common Names:	Cucharillo, Encino, Encino negro, Mamecillo, Oak, Post oak, Roble, Roble amarillo, Roble colorado, Roble encino, Roblecito, White oak
Common Uses:	Cooperages, Flooring, Fuelwood, Mine timbers, Piling, Poles, Posts, Railroad ties, Veneer, Core Stock, Crossties, Decorative veneer, Domestic flooring, Factory flooring, Figured veneer, Foundation posts, Parquet flooring, Pile-driver cushions, Plain veneer, Stakes, Sub-flooring, Utility poles
Region:	North America
Country:	United States

Numerical Values for: Quercus stellata

<u>Category</u>	<u>Green</u>	<u>Dry</u>	<u>Unit</u>
Bending Strength	8100	13200	psi
Crushing Strength (Perp.)	860	1430	psi
Max. Crushing Strength	3480	6600	psi
Impact Strength	44	46	inches
Stiffness	1090	1510	1000 psi
Work to Maximum Load	11	13	in-lbs/in ³
Hardness		1360	lbs
Shearing Strength		1840	psi
Specific Gravity	0.60	0.67	
Weight	63	45	lbs/cu.ft.
Radial Shrinkage (G->OD)		5	%
Tangential Shrink. (G->OD)		9	%

Tree & Wood Descriptions for: *Quercus stellata*

Product Sources	<p>It is not known at present whether some material from this species is obtainable from sustainably managed, salvaged, recycled, or other environmentally responsible sources.</p> <p>Various species in the white oak group are mixed and marketed together. Supplies are reported to be abundant, especially in the form of veneers, at moderate prices.</p>
Tree Data	<p>The tree grows to a height of about 30 to 70 feet (9 to 21 m) and a diameter of 12 to 24 inches (30 to 60 cm). Trees growing in the lower Mississippi Valley are reported to be larger, and are known as 'Delta Post Oak'.</p>
Sapwood Color	<p>The sapwood is whitish to light brown in color, and is variable in width.</p>
Heartwood Color	<p>Heartwood color varies from light tan or pale yellow brown to pale or dark brown. The wood may also have a pinkish tinge.</p>
Grain	<p>Grain is typically straight.</p>
Texture	<p>The wood is medium to coarse textured.</p>
Odor	<p>There is no distinctive odor or taste.</p>
Movement in Service	<p>Seasoned Post oak timber is reported to have moderate dimensional stability, and exhibits medium movement after manufacture.</p>
Natural Durability	<p>White oak heartwood is reported to have very high natural resistance to decay in general and can be used outdoors without chemical protection. Logs are reported to be highly vulnerable to attack by the ambrosia beetle, and standing trees and logs are also readily attacked by the forest longhorn or Buprestid beetle.</p> <p>Resistance to Impregnation Heartwood is reported to be impossible to treat with preservatives, and the sapwood is difficult to treat, but the wood is naturally durable.</p>
Resistance to Abrasion	<p>White oak timbers are reported to have exceptional resistance to wear in general which makes them highly suitable for applications such as flooring in heavy</p>

	traffic areas.
Chemical Staining	Tannin in white oak is reported to react with iron and iron compounds in the presence of moisture to produce blue-black stains in the wood.
Effect on Metals	Metals used with white oak timber should be painted or galvanized to prevent corrosion. White oak is somewhat acidic and is reported to promote corrosion in iron and steel under damp conditions. Vapors from timber in the green condition may also corrode other metals, such as lead.
Veneering Qualities	Selected white oak logs are reported to be converted into veneers. Quartering is reported to produce a flaked figured, while the very popular straight line figure is primarily produced by rift cutting.
Strength Properties	White oaks are reported to be generally low in stiffness and moderate in crushing and bending strengths. Working properties are reported to be dictated by the rate of growth of the trees: slow grown trees are generally easier to work with hand and machine tools.

Working Properties for: *Quercus stellata*

Blunting Effect	The wood has moderate blunting effect on cutting tools.
Cutting Resistance	Cutting resistance is reported to be generally medium but is variable. Cross-cutting and narrow-bandsawing are reported to be satisfactory.
Planing	Machining characteristics of white oak timbers are reported to vary with species and rate of growth. Softer timbers from slow-growth trees are reported to be generally easier to work. Planing properties are rated as good, but a cutting angle of 20 degrees has been recommended.
Turning	The wood responds readily to ordinary machine tools in turning operations, to yield clean surfaces.
Boring	Boring operations are reported to be relatively easy, and results are usually very good.
Mortising	The wood responds readily to mortising operations to yield smooth surfaces.

Gluing	The wood has satisfactory gluing qualities.
Nailing	Pre-boring is recommended in nailing operations.
Screwing	Screwing qualities are reported to be good.
Sanding	The material is reported to respond well to sanding to produce clean surfaces.
Staining	Liquid from some finishing products, especially those with high water content such as bleach and water-based stains, react with tannins in white oak to turn the wood green or brown.
Steam Bending	White oak timbers are reported to be highly regarded for their steam bending qualities, and material free from defects such as surface checks are reported to bend to very small radius of curvature. Proper precautions should be taken to prevent chemical staining of steamed wood in contact with iron or steel.
Response to Hand Tools	Softer wood produced by slow-growth white oak trees is reported to be generally easier to work with hand tools.

Drying for: *Quercus stellata*

Ease of Drying	The material is reported to be generally difficult to dry.
Drying Defects	Drying defects that may occur in this species include end- and surface-checks, iron stains, ring failure, collapse, gray sapwood stain, and honeycomb.
Kiln Schedules	Upland T4 - C2 (4/4); T3 - C1 (8/4) US Lowland T2 - C1 (4/4) US
T/R Ratio	1.77 This indicator is more meaningful if it is used together with other drying information and actual shrinkage data in the tangential and radial directions. (Refer to the Numerical Values window).