

FOREIGN WOOD SERIES



**MARUPA**

**(Símarouba amara Aubl.)**

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FOREST PRODUCTS LABORATORY  
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UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE

In Cooperation with the University of Wisconsin

MARUPA  
Simarouba amara Aubl.  
Simaroubaceae

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Distribution and Habitat

The genus Simarouba consists of six species and several varieties, ranging in size from shrubs to small, medium, and large trees widely distributed in tropical America. The principal species, Simarouba amara, occurs in Brazil, Bolivia, and Peru northward to British Honduras in Central America and Antigua in the West Indies (1).<sup>2</sup> It attains its best development in Brazil and northern South America, while in Central America it occurs infrequently and in smaller size. The trees are most commonly encountered in the seasonal forest on sandy soils and occasionally in the rain forest.

The Tree

The trees are unbuttressed and reach a diameter of 30 inches and a height of 140 feet. The trees show good bole form and may be free of limbs from 70 to 90 feet. Common diameters vary from 20 to 24 inches. The most common Central American species is Simarouba glauca DC., which may attain a height of 60 feet and a diameter of about 12 inches (1).

The Wood

The wood is whitish or cream-colored, sometimes with a yellowish cast, and shows no distinction between heartwood and sapwood. The wood is without odor, but has a mild to decidedly bitter taste. Of medium texture, the wood is straight-grained without figure and possesses a high luster.

Specific Gravity and Weight

The average specific gravity of marupa, calculated from two logs tested at Yale University (3), was 0.38, based on the oven-dry weight and green volume with a range of 0.34 to 0.41. The wood weighs approximately 27 pounds per cubic foot when air dry and 40 pounds per cubic foot in the green condition.

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<sup>1</sup>Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

<sup>2</sup>Underlined numbers in parentheses refer to Literature Cited at the end of the report.

### Seasoning and Shrinkage

Marupa reportedly is easy to air dry, but precautions must be taken to avoid staining of the sapwood during the drying process. Shrinkage data obtained at Yale University (3) gave values of 2.3 percent radially, 5.0 percent tangentially, and 8.0 percent volumetrically. The shrinkage of marupa appears to be slightly less than that of Central American mahogany (Swietenia macrophylla). No kiln-drying schedules are available at this time.

### Mechanical Properties

Average values for mechanical properties based on two trees tested from Surinam (3) are given in table 1. These values are quite similar to those of eastern white pine (Pinus strobus), although this species is slightly lighter than marupa.

### Durability

The results of decay-resistance investigations of marupa show that the wood can be rated as moderately resistant to a representative white rot fungus and resistant to the brown rot group (3).

Wolcott (4) gives marupa a rating of 2<sup>4</sup> with regard to resistance of the wood to attack by the West Indian drywood termite and places it with the woods most susceptible to attack.

The wood is readily receptive to treatment with preservatives.

### Working Characteristics

Marupa is easily worked by both hand and machine tools. It nails readily without splitting. The wood takes stains and other types of finishes without difficulty.

### Uses

Although generally regarded as a wood for interior application, it can be used to advantage for exterior purposes if properly treated. The wood is used locally as a general utility species, although its properties suggest that it can be used also in furniture and cabinet work, instruments, millwork, patterns, and core stock. Because of its light color, it is an ideal wood for boxes and crates that require stenciling.

### Identification

The pores are plainly visible on longitudinal surfaces and barely visible on smoothly cut cross sections. Parenchyma occurs as very narrow light-colored lines joining the pores and pore groups. Ripple marks are usually distinct and regular.

Literature Cited

1. Cronquist, Arthur  
1944. Studies in the Simaroubaceae. II. The genus Simarouba. Bull. Torrey Bot. Club Vol. 71, No. 3, pp. 226-234.
2. Fanshawe, D. B.  
1954. Forest Products of British Guiana, Part I, Principal Timbers. Forestry Bulletin No. 1 (New Series), Second Edition, Forest Department, British Guiana.
3. Wangaard, Frederick F. and Muschler, Arthur F.  
1952. Properties and Uses of Tropical Woods III. Tropical Woods No. 98, Yale University School of Forestry, New Haven.
4. Wolcott, George H.  
1957. Inherent Natural Resistance of Woods to the Attack of the West Indian Dry-wood Termite (Cryptotermes brevis Walker). Jour. Agriculture of the University of Puerto Rico, Vol. XLI, No. 4.

Table 1.--Mechanical properties of marupa (3)

Property	
Moisture content.....	percent: 12
Specific gravity -- Volume when green and weight when ovendry.....	: 0.38
Static bending	
Fiber stress at proportional limit.....	p.s.i.: 6,280
Modulus of rupture.....	p.s.i.: 8,930
Modulus of elasticity.....	1,000 p.s.i.: 1,240
Work to proportional limit.....	in.-lb./cu. in.: 1.78
Work to maximum load.....	in.-lb./cu. in.: 5.8
Compression parallel to grain	
Fiber stress at proportional limit.....	p.s.i.: 3,690
Maximum crushing strength.....	p.s.i.: 4,840
Compression perpendicular to grain -- Fiber stress at	
proportional limit.....	p.s.i.: 600
Shear parallel to grain -- Maximum shearing	
strength.....	p.s.i.: 1,160
Tension perpendicular to grain -- Maximum tensile	
strength.....	p.s.i.: 390
Hardness	
End.....	lb.: 690
Side.....	lb.: 440