technology transfer *fact sheet*

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Guaiacum spp.
Family: Zygophyllaceae
Lignumvitae

Other Common Names: Guayacan, Palo santo (Mexico, Central America, West Indies, Venezuela, and Colombia).

Distribution: West Indies, coastal region of tropical Mexico, west coast of Central America, and northern fringe of Colombia and adjacent areas in Venezuela. Largely confined to dry exposed sites and does well on shallow soils.

The Tree: A small tree usually 20 to 30 ft in height; often 10 to 12 in. in diameter, occasionally 18 to 30 in.

The Wood:
General Characteristics: Heartwood is dark greenish brown to almost black and sharply demarcated from the narrow pale yellow or cream-colored sapwood. Texture very fine; grain is strongly interlocked; a slight scent is evident when warmed or rubbed. It has a characteristic oily feel due to the resin content that may be as high as one-fourth of the air-dry weight.

Weight: Basic specific gravity (ovendry weight/green volume) 1.05; air-dry density 80 pcf.

Mechanical Properties: (2-in. standard)

Moisture content (%)	Bending strength (Psi)	Modulus of elasticity (1,000 psi)	Maximum crushing strength (Psi)
12% (46)	NA	NA	11,400

Janka side hardness 4,500 lb at 12% moisture content. Forest Products Laboratory toughness 165 in.-lb at 9% moisture content (5/8-in. specimen).

Drying and shrinkage: The wood is difficult to dry and considerable care is require to avoid shakes and end splits. Kiln schedule T2-C2 is suggested for 4/4 stock and T2-C1 for 8/4. No data available on shrinkage characteristics.

Working Properties: Very difficult to work with hand or machine tools; a cutting angle of 15 or less is suggested in planing. The wood turns and shapes well and takes a high polish. Because of oily resins, requires special surface treatments for satisfactory gluing.

Durability: The heartwood is very resistant to attack by decay fungi, termites, and marine borers.

Preservation: No data available, but because of the high guaiac resin content and high density, treatability should be nil.

Uses: Bearings, bushing blocks, pulley sheaves, mallet heads, and turnery. Most noted use is in bearings and bushing blocks for propeller shafts of ships because of its self-lubrication and hardness.

Additional Reading: (29), (46), (56)

29. Greene, S. 1959. An investigation of certain physical and mechanical properties of lignum-vitae. Forest Prod. J. 9(9):303-307.
46. Longwood, F. R. 1962. Present and potential commercial timbers of the Caribbean. Agriculture Handbook No. 207. U.S. Department of Agriculture.
56. Record, S. J., and R. W. Hess. 1949. Timbers of the new world. Yale University Press, New Haven, Conn.

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