

GARAPA



Family: FABACEAE CAESALPINIOIDEAE (angiosperm)

Scientific name(s): *Apuleia leiocarpa*

Commercial restriction: no commercial restriction

Note: The variety "molaris" is found in the Amazonian forest, mainly in flooded areas. The main species, *Apuleia leiocarpa* is found mainly in the South of Brazil, in the Atlantic coast forests, easily colonizing cleared areas.

WOOD DESCRIPTION

Color: yellow
Sapwood: clearly demarcated
Texture: medium
Grain: straight or interlocked
Interlocked Grain: marked

Note:

Lemon-yellow becoming light brown with age. Slight ribbon like aspect, a bit moire. Irregular interlocked grain.

LOG DESCRIPTION

Diameter: 23.6 – 35.4 inches
Thickness of Sapwood: 2 – 4.3 inches
Floats: no
Log Durability: good

PHYSICAL PROPERTIES

Physical and mechanical properties are based on mature heartwood specimens. These properties can vary greatly depending on origin and growth conditions.

	<u>Mean</u>	<u>Std. Dev.</u>
Specific Gravity*:	0.79	0.06
Janka Hardness (lbs):	1,650	
Volumetric Shrinkage:	0.52%	0.05%
Total Tangential Shrinkage (TS):	7.5%	1.4%
Total Radial Shrinkage (RS):	4.2%	0.9%
TS/RS Ratio:	1.8	
Fiber Saturation Point:	22%	
Stability:	Moderately stable to stable	

MECHANICAL/ACOUSTIC

	<u>Mean</u>
Crushing Strength*:	9,137.38 lbf
Static Bending Strength*:	16,824.4 lbf
Modulus of Elasticity*:	2,303,199.3 lbf

**At 12% moisture content.*

Musical Quality Factor: 133.7 measured at 2403 Hz

NATURAL DURABILITY AND TREATABILITY

Fungi and termite resistance refers to end-uses under temperate climate. Except for special comments on sapwood, natural durability is based on mature heartwood. Sapwood must always be considered as non-durable against wood degrading agents. E.N. = Euro Norm

Funghi (According to E.N. standards):	class 3 - moderately durable
Dry Wood Borers:	durable - sapwood demarcated, (risk limited to sapwood)
Termites (According to E.N. standards):	class M - moderately durable
Treatability (according to E.N. standards):	class 3 - poorly permeable
Use class ensured by natural durability:	class 2 – inside or under cover (dampness possible)
Species covering the use class 5:	yes

Note: The natural durability of Garapa is very variable. In some cases, this variability can be observed inside the same piece of wood. This species cannot be used without appropriate preservative treatment for others (entrance doors, shutters, etc.) This species naturally covers the use class 5 (end-uses in marine environment or in brackish water) due to its high silica content. However, it is not recommended to use it in case of strong structural constraints due to its medium mechanical properties; is most suitable for end-uses like shipbuilding.

REQUIREMENT OF A PRESERVATIVE TREATMENT

Against dry wood borer attacks:	does not require any preservative treatment
In case of risk of temporary humidification:	requires appropriate preservative treatment
In case of risk of permanent humidification:	use not recommended

DRYING

Drying Rate:	slow
Risk of Distortion:	slight risk
Risk of Casehardening:	no
Risk of Checking:	slight risk
Risk of Collapse:	no

M.C. (%)	Dry-Bulb	Wet-Bulb	Air Humidity (%)
Green	98.6	116.6	84
40	98.6	113	75
30	131	116.6	67
20	158	131	47
15	167	136.4	44

Temperature (°F)

This schedule is given for information only and is applicable to thickness lower or equal to 1.5 in. It must be used in compliance with the code of practice. For thickness from 1.5 to 3 in, the air relative humidity should be increased by 5% at each step. For thickness over 3 in, a 10% increase should be considered.

SAWING AND MACHINING

Blunting Effect:	high
Sawteeth Recommended:	stellite-tipped
Cutting Tools:	tungsten carbide
Peeling:	not recommended or without interest
Slicing:	Not recommended or without interest

Note: Slicing is very difficult due to the high silica content. In machining, due to the irregular interlocked grain, it is recommended to reduce the feed rate and the cutting angle.

ASSEMBLING

Nailing / screwing:	good but pre-boring necessary
Gluing:	correct

END-USES

Exterior/Interior joinery
 Heavy carpentry
 Ship building (ribs)
 Turned goods
 Wood frame house
 Industrial or heavy flooring
 Shipbuilding
 Vehicle or container flooring
 Tool handles (resilient woods)
 Boxes and crates
 Light carpentry
 Hydraulic works (seawater)
 Copperage
 Current furniture or furniture components
 Flooring
 Stairs (inside)
 Cabinetwork (high class furniture)
 Formwork
 Wood-ware
 Note: Finishing is easy, but filling is recommended.

Works Cited:

CIRAD'S *Biomass, Wood, Energy, Bioproducts Research (BioWooEB)*
 Meier, E. (2015), Wood, United States of America

MAIN LOCAL NAMES

<u>Country</u>	<u>Local Name</u>
Argentina	Ibira pere
Bolivia	Amarillo
Brazil	Barajuba
Brazil	Garapa
Brazil	Grapia
Brazil	Muirajuba
Brazil	Amarelaço
Brazil	Ferro
Brazil	Gema-De-Ovo
Brazil	Jatai-Amarelo
Peru	Ana
Paraguay	Grapia
Colombia	Cobre
Paraguay	Yvira-Pere
Venezuela	Gateado, Mapurite
Bolivia	Almendrillo