Garapa

Flat sawn

Quarter sawn

Family. Leguminosae (Caesalpiniaceae)

Botanical Name(s).

Apuleia leiocarpa
Apuleia molaris (synonymous)

Continent. Latin America

CITES. This species is not listed in the CITES Appendices (Washington Convention 2023).

Notes. The species Apuleia leiocarpa var. 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.

Description of logs

Diameter. From 60 to 90 cm

Thickness of sapwood. From 5 to 11 cm

Floats. No

Log durability. Good

Description of wood

Colour reference. Orange - yellow

Sapwood. Clearly demarcated

Texture. Medium

Grain. Straight or interlocked

Interlocked grain. Marked

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

Physics and mechanics

The properties indicated are for mature wood. These properties may vary significantly depending on the origin and growing conditions of the wood.

Property	Average value
Specific gravity[1]	0.79
Monnin hardness[1]	6.7
Coefficient of volumetric shrinkage	0.52 % per %
Total tangential shrinkage (St)	7.5 %
Total radial shrinkage (Sr)	4.2 %
Ratio St/Sr	1.8
Fibre saturation point	22 %
Thermal conductivity (λ)	0.26 W/(m.K)
Lower heating value	
Crushing strength[1]	63 MPa
Static bending strength[1]	116 MPa

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Modulus of elasticity[1]	15,880 MPa

[1] *At 12 % moisture content, with 1 MPa = 1 N/mm*

Natural durability and preservation

Resistance to fungi. Class 3 - moderately durable

Resistance to dry wood borers. Class D - durable (sapwood demarcated, risk limited to sapwood)

Resistance to termites. Class M - moderately durable

Treatability. Class 3 - poorly permeable

Use class ensured by natural durability.

Class 3 - not in ground contact, outside

Notes. Garapa is listed in the NF EN 350 standard. The natural durability of this species is very variable. In some cases, this variability can be observed inside the same piece of wood. This species cannot be used without appropriate preservation treatment for end-uses under use class 4. This species naturally covers the use class 5 (wood permanently or regularly submerged in salt water, sea water or brackish water) due to its high silica content. However, its use is not recommended in the case of strong structural constraints, due to its medium mechanical properties. It is best suited for end uses like shipbuilding.

Requirement of a preservative treatment

Against dry wood borer. Does not require any preservative treatment

In case of temporary humidification. Does not require any preservative treatment

In case of permanent humidification. Requires appropriate preservative treatment

Drying

Drying rate. Slow

Risk of distorsion. High risk

Risk of casehardening. No known specific risk

Risk of checking. Slight risk

Risk of collapse. No known specific risk

Notes.

Suggested drying program.

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Phases	Duration (H)	MC (%) probes	T (°C)	Rh (%)	UGL (%)
Prewarm 1		> 50	50	87	17.0
Prewarm 2	4	> 50	50	86	16.5
Drying		> 50	53	85	15.7
		50 - 40	53	82.0	14.6
		40 - 35	54	78.0	13.4
		35 - 30	55	77.0	12.9
		30 - 27	57	73.0	11.9
		27 - 24	58	68.0	10.7
		24 - 21	60	61.0	9.3
		21 - 18	62	52.0	7.9
		18 - 15	64	43.0	6.6
		15 - 12	65	39.0	6.0
		12 - 9	65	31.0	5.0
		9 - 6	65	28.0	4.5
Conditioning	8		58	(3)	(2)
Cooling	(1)		Stop	(3)	(2)

(1)) Cooling: until the temperature inside the kiln no longer exceeds external temperature by more than 30 °C.
(2) UGL = final H% x 0,8 to 0,9.
(3) Subtract RH from the UGL determined in (2) and temperature, using the Hailwood-Horrobin equation.

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

Notes. 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 and screwing. Good but pre-boring necessary

Commercial grading

Appearance grading for sawn timbers.

According to ATIBT grading rules, possible grade: FAS (First And Second), n°1 Common and select, n°2 Common

Visual grading for structural applications

No visual grading for structural applications

Fire safety

Conventional French grading.

Thickness > 14 mm: M3 (moderately inflammable)
Thickness < 14 mm: M4 (easily inflammable)

Euroclasses grading. D-s2, d0

Default grading for solid wood, according to requirements of European standard EN 14081-1+A1 (August 2019). It concerns structural graded timber in vertical uses and ceiling with mean density upper 0.35 and thickness upper 22 mm.

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End-uses

- Boxes and crates
- Cabinetwork (high class furniture)
- Cooperage
- Current furniture or furniture components
- Exterior joinery
- Flooring
- Formwork
- Heavy carpentry
- Hydraulic works (seawater)
- Indoor staircases
- Industrial or heavy flooring
- Interior joinery
- Light carpentry
- Ship building
- Ship building (ribs)
- Tool handles (resilient woods)
- Turned goods
- Vehicle or container flooring
- Wood frame house
- Wood-ware

Notes. Finishing is easy but filling is recommended.

Veneer on desks and flooring in Garapa, meeting room at City Hall, Montpellier (France).
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Main local names

Country	Local name
Argentina	Ibira pere
Bolivia	Almendrillo
Bolivia	Amarillo
Brazil	Amarelao
Brazil	Barajuba
Brazil	Ferro
Brazil	Garapa
Brazil	Gema-de-ovo
Brazil	Grapia

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Brazil	Jatai-amarelo
Brazil	Muirajuba
Brazil	Muirataua
Colombia	Cobre
Paraguay	Grapia
Paraguay	Yvira-pere
Peru	Ana
Venezuela	Gateado
Venezuela	Mapurite

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