Common name:	GRAPIA
Family:	CAESALPINIACEAE
Scientific name(s):	Apuleia leiocarpa
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.

LOG DESCRIPTION

Diameter:	from 60 to 90 cm
Thickness of sapwood:	from 5 to 11 cm
Floats:	no
Durability in forest :	Good

WOOD DESCRIPTION

Colour:	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 moiré. Irregular interlocked grain.

PHYSICAL PROPERTIES

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

	mean	standard deviation
Density *:	0.79 g/cm3	0.06
Monnin hardness*:	6.7	1.8
Coef of volumetric shrinkage:	0.52 %	0.05
Total tangential shrinkage:	7.5 %	1.4
Total radial shrinkage:	4.2 %	0.9
Fibre saturation point:	22 %	
Stability:	Moderately stable to stable	

MECHANICAL PROPERTIES

	mean	standard deviation
Crushing strength *:	63 MPa	8
Static bending strength *:	116 MPa	21
Modulus of elasticity *:	15880 MPa	1850

(* : at 12 % moisture content ; 1 MPa = 1 N/mm2)

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.

Fungi:	Class 3 - moderately durable
Dry wood borers:	Durable; sapwood demarcated (risk limited to sapwood)
Termites:	Class M - Moderately durable
Treatability:	3 - poorly permeable
Biological hazard class*:	2 - not in ground contact, under cover (dampness possible)

* ensured by natural durability (according EN standards).

Note: The natural durability of Grapia 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 end-uses under biological hazard class 3 except for some parts of a work such as windows, less exposed than others (entrance doors, shutters …).
Due to its high silica content, this species naturally covers the biological hazard class 5 (end-uses in marine environment or in brackish water). However, due to its medium mechanical properties, it is not recommended to use it in case of strong structural constraints; it is most suitable for end-uses like shipbuilding.

COUNTRIES - LOCAL NAMES

Countries	Local names
Argentina	IBIRA PERE
Bolivia	ALMENDRILLO
Bolivia	AMARILLO
Brazil	AMARELAO
Brazil	BARAJUBA
Brazil	FERRO
Brazil	GARAPA
Brazil	GEMA-DE-OVO
Brazil	GRAPIA
Brazil	JATAI-AMARELO
Brazil	MUIRAJUBA
Brazil	MUIRATAUA
Colombia	COBRE
Paraguay	GRAPIA
Paraguay	YVIRA-PERE
Peru	ANA
Venezuela	GATEADO
Venezuela	MAPURITE

GRAPIA

REQUIREMENT OF A PRESERVATIVE TREATMENT

Against dry wood borer attacks:	Does not require any preservative treatment
In case of temporary humidification risk:	Requires appropriate preservative treatment
In case of permanent humidification risk:	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

Possible drying schedule

M.C. (%)	Temperature (°C) dry-bulb	wet-bulb	Air humidity (%)
Green	50	47	84
40	50	45	75
30	55	47	67
20	70	55	47
15	75	58	44

This shedule is given for information only and is applicable to thickness < 38 mm.
It must be used in compliance with the code of practice.
For thickness from 38 to 75 mm , the air relative humidity should be increased by 5 % at each step.
For thickness over 75 mm , 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

Main known end-uses; they must to be implemented according to the code of practice.
Important remark: some end-uses are mentionned for information (traditional, regional or ancient end-uses).

Note: Finishing is easy but filling is recommended.

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