

## Makoré

Family. Sapotaceae

Botanical Name(s).

*Tieghemella heckelii*

Continent. Africa

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

### Description of logs

Diameter. From 90 to 110 cm

Thickness of sapwood. From 4 to 8 cm

Floats. Yes

Log durability. Good

### Description of wood

Colour reference. Red brown

Sapwood. Clearly demarcated

Texture. Medium

Grain. Straight or interlocked

Interlocked grain. Marked but not frequent

Notes. Sapwood whitish to pinkish. Heartwood dark pinkish brown to dark reddish brown with sometimes purplish glints and/or pale veins that are not very distinct. Wood often moiré.

### 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 <sup>1</sup>	0.67
Monnin hardness <sup>1</sup>	3.9
Coefficient of volumetric shrinkage	0.40 % per %
Total tangential shrinkage (St)	7.5 %
Total radial shrinkage (Sr)	5.8 %
Ratio St/Sr	1.3
Fibre saturation point	28 %
Thermal conductivity (λ)	0.22 W/(m.K)
Lower heating value	17,460 kJ/kg
Crushing strength <sup>1</sup>	56 MPa
Static bending strength <sup>1</sup>	92 MPa
Modulus of elasticity <sup>1</sup>	13,450 MPa

<sup>1</sup> At 12 % moisture content, with 1 MPa = 1 N/mm



Flat sawn



Quarter sawn

### Natural durability and preservation

Resistance to fungi. Class 1 - very durable

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

Resistance to termites. Class D - durable

Treatability. Class 4 - not permeable

Use class ensured by natural durability.

Class 4 - in ground or fresh water contact

**Notes.** This species is listed in the European standard NF EN 350 (2016). It 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. According to the European standard NF EN 335 (2013), performance length might be modified by the intensity of end-use exposition.

### 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. Does not require any preservative treatment

### Drying

Drying rate. Normal

Risk of distorsion. Slight risk

Risk of casehardening. No known specific risk

Risk of checking. Slight risk

Risk of collapse. No known specific risk

Notes.

Suggested drying program.

Phases	Duration (H)	MC (%) probes	T (°C)	Rh (%)	UGL (%)
<b>Prewarm 1</b>		> 50	50	86	16.5
<b>Prewarm 2</b>	3	> 50	52	85	16.0
<b>Drying</b>		> 50	55	82	14.7
		50 - 40	55	80.0	13.8
		40 - 35	55	75.0	12.6
		35 - 30	56	73.0	12.0
		30 - 27	58	67.0	10.5
		27 - 24	60	58.0	8.9
		24 - 21	62	50.0	7.5
		21 - 18	64	45.0	6.8
		18 - 15	65	37.0	5.7
		15 - 12	65	34.0	5.3
		12 - 9	65	28.0	4.5
		9 - 6	65	24.0	4.0
<b>Conditioning</b>	6		58	(3)	(2)
<b>Cooling</b>	(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. Good

Slicing. Good

Notes. Very irritant sawdust. Sometimes clogging of sawblades.

## Assembling

Nailing and screwing. Good but pre-boring necessary

Notes. Tends to split when nailing.

## Commercial grading

Appearance grading for sawn timbers.

According to the ATIBT grading rules (2017), the main choices are: FAS (First And Second), n°1 Common and select, n°2 Common (see details of these rules on the ATIBT website).

Visual grading for structural applications

According to French standard NF B 52-001-1 (2018), strength class D30 can be provided by visual grading.

## 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.

## End-uses

- Bridges (parts in contact with water or ground)
- Bridges (parts not in contact with water or ground)
- Cabinetwork (high class furniture)
- Current furniture or furniture components
- Decking
- Exterior joinery
- Exterior panelling
- Flooring
- Indoor staircases
- Interior joinery
- Interior panelling
- Light carpentry
- Sculpture
- Ship building (planking and deck)
- Ship building (ribs)
- Sliced veneer
- Turned goods
- Vehicle or container flooring
- Veneer for back or face of plywood
- Veneer for interior of plywood

**Main local names**

<b>Country</b>	<b>Local name</b>
Côte d'Ivoire	Makoré
France (importated tropical timber)	Douka
France (importated tropical timber)	Makoré
Ghana	Abacu
Ghana	Baku