Cumaru / Tonka*

Family. Fabaceae

Botanical Name(s).
Dipteryx alata
Dipteryx micrantha
Dipteryx odorata
Coumarouna odorata (synonymous)
Dipteryx polyphylla
Dipteryx p.p.

Continent. Latin America

CITES.
The species in the genus *Dipteryx* are listed in Appendix II of CITES (Washington Convention 2023) with an effective date of 25 November 2024. The products concerned are logs, sawn wood, veneer, plywood and engineered wood.
Notes. * Common commercial name


Flat sawn

Quarter sawn

Description of logs

Diameter. From 50 to 90 cm

Thickness of sapwood. From 2 to 3 cm

Floats. No

Log durability. Good

Description of wood

Colour reference. Red brown

Sapwood. Clearly demarcated

Texture. Medium

Grain. Interlocked

Interlocked grain. Marked

Notes. Unpleasant odour when green. The color of heartwood varies from yellow brown (*Dipteryx odorata*) to reddish brown (*Dipteryx alata*) with darker thin veins.

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]	1.07
Monnin hardness[1]	13.1
Coefficient of volumetric shrinkage	0.73 % per %
Total tangential shrinkage (St)	7.7 %
Total radial shrinkage (Sr)	5.5 %
Ratio St/Sr	1.4
Fibre saturation point	22 %
Thermal conductivity (λ)	0.34 W/(m.K)
Lower heating value	19,760 kJ/kg

Crushing strength[1]	103 MPa
Static bending strength[1]	170 MPa
Modulus of elasticity[1]	26,610 MPa

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

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). 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. Slow

Risk of distorsion. Slight risk

Risk of casehardening. Yes

Risk of checking. High risk

Risk of collapse. No known specific risk

Suggested drying program.

Phases	Duration (H)	MC (%) probes	T (°C)	Rh (%)	UGL (%)
Prewarm 1		> 40	35	87	18.0
Prewarm 2	6	> 40	38	85	17.0
Drying		> 40	41	82	15.7
		40 - 35	44	81.0	15.0
		35 - 30	46	80.0	14.5
		30 - 25	48	77.0	13.5
		25 - 20	50	72.0	12.0
		20 - 18	52	63.0	10.0
		18 - 16	54	54.0	8.5
		16 - 14	56	47.0	7.4
		14 - 12	58	41.0	6.5
		12 - 9	60	34.0	5.6
Conditioning	8		55	(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. Fairly high

Sawteeth recommended. Stellite-tipped

Cutting tools. Tungsten carbide

Peeling. Not recommended or without interest

Slicing. Good

Notes. Sawing and machining are difficult due to hardness and interlocked grain.

Assembling

Nailing and screwing. Good but pre-boring necessary

Notes. Very high specific gravity: gluing must be especially performed in compliance with the code of practice.

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 European standard EN 1912 (2012) and associated national standards, strength class D60 can be provided by visual grading. Strength class D50 can also be provided by visual grading according to French standard NF B 52-001-1 (2018).

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)
- Cooperage
- Decking
- Heavy carpentry
- Hydraulic works (fresh water)
- Hydraulic works (seawater)
- Industrial or heavy flooring
- Poles
- Ship building (planking and deck)
- Sleepers
- Sliced veneer
- Stakes
- Tool handles (resilient woods)
- Turned goods
- Wood frame house

Notes. Slicing: only with the best shaped timber, to obtain very decorative veneers.

Outdoor staircase in Gaiac de Cayenne, Rémire- Montjoly, French Guiana (© Nicolas Quendez)

Main local names

Country	Local name
Bolivia	Almendrillo
Brazil	Champanha
Brazil	Cumaru
Brazil	Cumaru ferro
Brazil	Cumarurana
Colombia	Sarrapia
Costa Rica	Almendro
French Guiana	Gaïac de cayenne
French Guiana	Tonka
Guyana	Kumaru
Guyana	Tonka bean
Honduras	Ebo
Peru	Charapilla
Peru	Shihuahuaco amarillo
Suriname	Koemaroe
Suriname	Tonka
Venezuela	Sarrapia