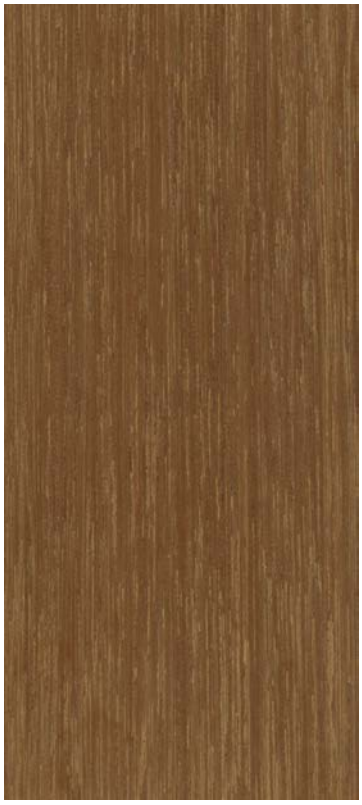
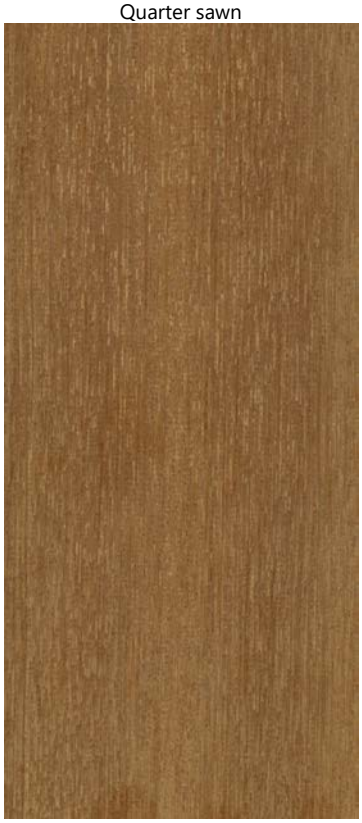
Kapur



Flat sawn

Quarter sawn



Family. Dipterocarpaceae

Botanical Name(s).

Dryobalanops beccarii
Dryobalanops oocarpa (synonymous)
Dryobalanops fusca
Dryobalanops lanceolata
Dryobalanops oblongifolia
Dryobalanops rappa
Dryobalanops sumatrensis
Dryobalanops aromatica (synonymous)
Dryobalanops p.p.

Continent. Asia-Oceania

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

Description of logs

Diameter. From 50 to 100 cm

Thickness of sapwood. From 4 to 8 cm

Floats. No

Log durability. Good

Description of wood

Colour reference. Red brown

Sapwood. Clearly demarcated

Texture. Medium

Grain. Straight or interlocked

Interlocked grain. Slight

Notes. Brittleheart. The colour varies from red brown to pink brown. Camphor smell. Presence of thin resin 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]	0.74
Monnin hardness[1]	4.1
Coefficient of volumetric shrinkage	0.52 % per %
Total tangential shrinkage (St)	9.1 %
Total radial shrinkage (Sr)	4.5 %
Ratio St/Sr	2.0
Fibre saturation point	26 %
Thermal conductivity (λ)	0.24 W/(m.K)
Lower heating value	18,640 kJ/kg
Crushing strength[1]	60 MPa

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Static bending strength[1]	110 MPa
Modulus of elasticity[1]	16,150 MPa

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

Natural durability and preservation

Resistance to fungi. Class 1-2 - very durable to durable

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

Resistance to termites. Class M - moderately 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). After felling, logs are very sensible to black holes. Under tropical climate, resistance to decay is moderate. 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. No known specific risk

Risk of checking. High risk

Risk of collapse. No known specific risk

Notes. Possible resin exsudation during kiln drying.

Suggested drying program.

Phases	Duration (H)	MC (%) probes	T (°C)	Rh (%)	UGL (%)
Prewarm 1		> 50	50	86	16.5
Prewarm 2	3	> 50	52	85	16.0
Drying		> 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
Conditioning	6		58	(3)	(2)
Cooling	(1)		Stop	(3)	(2)

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(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. Good

Slicing. Not recommended or without interest

Notes. Normal to high blunting effect.

Assembling

Nailing and screwing. Good but pre-boring necessary

Notes. Possible oxydation in contact with iron. Resin exudations to be taken into account when gluing.

Commercial grading

Appearance grading for sawn timbers.

According to MGR grading rules (2009) Possible grading: Prime, Select, Standard, Serviceable, Utility

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.

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

- Boxes and crates
- Bridges (parts not in contact with water or ground)
- Current furniture or furniture components
- Decking
- Exterior joinery
- Exterior panelling
- Flooring
- Formwork
- Heavy carpentry
- Indoor staircases
- Interior joinery
- Shingles
- Tool handles (resilient woods)
- Turned goods
- Vehicle or container flooring
- Veneer for back or face of plywood
- Veneer for interior of plywood
- Wood frame house

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Notes. Risk of dripping due to tannin-type colored chemical compounds in the wood, which can cause aesthetic damage to nearby structures.

Flooring in the Salle des Rencontres of the city council building, Montpellier, (France).
© D. Guibal

Main local names

Country	Local name
Indonesia	Kapur
Indonesia	Kapur empedu
Indonesia	Kapur kayatan
Indonesia	Kapur singkel
Indonesia	Kapur sintuk
Indonesia	Kapur tanduk
Indonesia	Petanang
Malaysia	Borneo camphorwood
Malaysia	Kapur kejatan
Malaysia	Keladan
Malaysia	Paigie
Malaysia	Swamp kapur

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