

Family: DIPTEROCARPACEAE (angiosperm)

Scientific name(s): Shorea guiso\* (voir note)

Shorea kunstleri\* (voir note)

Shorea spp.\* (voir note)

Commercial restriction: no commercial restriction

Note: \* Shorea sub-genus Rubroshorea with specific gravity between 0,78 and 0,95.

## WOOD DESCRIPTION

Color: red brown  
Sapwood: clearly demarcated  
Texture: medium  
Grain: interlocked  
Interlocked grain: slight

Note: Wood light to dark red brown or purplish red brown to grey brown. Canals filled with white resin.

## LOG DESCRIPTION

Diameter: from 80 to 120 cm  
Thickness of sapwood: from 3 to 8 cm  
Floats: no  
Log durability: moderate (treatment recommended)

## PHYSICAL PROPERTIES

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

	<u>Mean</u>	<u>Std dev.</u>
Specific gravity *:	0.87	
Monnin hardness *:	7.0	
Coeff. of volumetric shrinkage:	0.69 %	
Total tangential shrinkage (TS):	8.8 %	
Total radial shrinkage (RS):	4.8 %	
TS/RS ratio:	1.8	
Fiber saturation point:	27 %	

Stability: moderately stable

Note: Specific gravity varies from 0,78 to 0,95. Hardness varies from fairly hard to hard.

## MECHANICAL AND ACOUSTIC PROPERTIES

	<u>Mean</u>	<u>Std dev.</u>
Crushing strength *:	80 MPa	
Static bending strength *:	119 MPa	
Modulus of elasticity *:	16670 MPa	

(\*: at 12% moisture content, with 1 MPa = 1 N/mm<sup>2</sup>)

Musical quality factor: 111.9 measured at 2441 Hz

## 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.

E.N. = Euro Norm

Funghi (according to E.N. standards): class 3-4 - moderately to poorly durable

Dry wood borers: class D - durable (sapwood demarcated, risk limited to sapwood)

Termites (according to E.N. standards): class M - moderately durable

Treatability (according to E.N. standards): class 4 - not permeable

Use class ensured by natural durability: class 2 - inside or under cover (dampness possible)

Species covering the use class 5: no

Note: This species is listed in the European standard NF EN 350-2.  
Variable treatability.

## REQUIREMENT OF A PRESERVATIVE TREATMENT

Against dry wood borer attacks: does not require any preservative treatment

In case of risk of temporary humidification: requires appropriate preservative treatment

In case of risk of permanent humidification: use not recommended

## DRYING

Drying rate: slow  
 Risk of distortion: high risk  
 Risk of casehardening: no  
 Risk of checking: high risk  
 Risk of collapse: no

Possible drying schedule: 4

M.C. (%)	Temperature (°C)		Air humidity (%)
	dry-bulb	wet-bulb	
Green	42	39	82
50	48	43	74
40	48	43	74
30	48	43	74
15	54	46	63

Note: Must be dried carefully in order to reduce defects in particular warps on backsawn and end checks.

This schedule is given for information only and is applicable to thickness lower or equal to 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: fairly high  
 Sawteeth recommended: stellite-tipped  
 Cutting tools: tungsten carbide

Peeling: not recommended or without interest  
 Slicing: not recommended or without interest

Note: Requires power. Planed surfaces present a variable lustre. Sometimes, difficulties due to highly interlocked grain.

## ASSEMBLING

Nailing / screwing: good but pre-boring necessary  
 Gluing: correct (for interior only)  
 Note: Risks of splits.

## COMMERCIAL GRADING

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

## 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 annex C (April 2009). It concerns structural graded timber in vertical uses with mean density upper 0.35 and thickness upper 22 mm.

## END-USES

Vehicle or container flooring  
 Industrial or heavy flooring  
 Heavy carpentry  
 Ship building (ribs)  
 Exterior joinery  
 Musical instruments  
 Boxes and crates

Stairs (inside)  
 Flooring  
 Ship building (planking and deck)  
 Bridges (parts not in contact with water or ground)  
 Current furniture or furniture components  
 Cooperage

Note: Filling is recommended to obtain a good finish.

## MAIN LOCAL NAMES

<u>Country</u>	<u>Local name</u>	<u>Country</u>	<u>Local name</u>
Indonesia	BALANGERAN	Indonesia	BALAU MERAH
Peninsular Malaysia	EMPENIT-MERAKA	Peninsular Malaysia	SELANGAN BATU MERAH
Peninsular Malaysia	SEMAYUR	Peninsular Malaysia	SENGAWAN
Peninsular Malaysia	SERAYA SIRUP	Peninsular Malaysia	SERI
Malaysia (islands)	BALAU LAUT MERAH	Malaysia (islands)	BALAU MEMBATU
Malaysia (islands)	DAMAR LAUT MERAH	Malaysia (islands)	MEMBATU
Malaysia (islands)	RED BALAU	Malaysia (islands)	RED SELANGAN BATU
Malaysia (islands)	SELIMBAR	Philippines	GISOK
Philippines	GUIJO	Thailand	CHAN KHAH
Thailand	MAKATA		



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