

Common name:	BALAU RED
Family:	DIPTEROCARPACEAE
Scientific name(s):	Shorea guiso* (note) Shorea kunstleri* (note) Shorea spp.* (note)
Note:	* Shorea sub-genus Rubroshorea with specific gravity between 0,78 and 0,95.

LOG DESCRIPTION	WOOD DESCRIPTION		
Diameter:	from 80 to 120 cm	Colour:	Red brown
Thickness of sapwood:	from 3 to 8 cm	Sapwood:	Clearly demarcated
Floats:	no	Texture:	Medium
Durability in forest :	Moderate (treatment recommended)	Grain:	Interlocked
Note:	Wood light to dark red brown or purplish red brown to grey brown. Canals filled with white resin.	Interlocked grain:	Slight

PHYSICAL PROPERTIES	MECHANICAL 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	mean	standard deviation
Density *:	0.87 g/cm <sup>3</sup>			
Monnin hardness*:	7.0		Crushing strength *:	80 MPa
Coef of volumetric shrinkage:	0.69 %		Static bending strength *:	119 MPa
Total tangential shrinkage:	8.8 %		Modulus of elasticity *:	16670 MPa
Total radial shrinkage:	4.8 %			
Fibre saturation point:	27 %			
Stability:	Moderately stable	(* : at 12 % moisture content ; 1 MPa = 1 N/mm <sup>2</sup> )		
Note:	Specific gravity varies from 0.78 to 0.95. Hardness varies from fairly hard to hard.			

#### 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 3-4 moderately to poorly durable	* ensured by natural durability (according EN standards).
Dry wood borers:	Durable; sapwood demarcated (risk limited to sapwood)	
Termites:	Class M - Moderately durable	
Treatability:	4 - not permeable	
Use class*:	2 - inside or under cover (dampness possible)	
Note:	This species is listed in the European standard NF EN 350-2. Variable treatability.	

#### MAIN LOCAL NAMES

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

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## BALAU RED

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### REQUIREMENT OF A PRESERVATIVE TREATMENT

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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

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### DRYING

#### Possible drying schedule

Drying rate:	Slow	Temperature (°C)			Air humidity (%)
		M.C. (%)	dry-bulb	wet-bulb	
Risk of distortion:	High risk				
Risk of casehardening:	No				
Risk of checking:	High risk	Green	42	39	82
Risk of collapse:	No	50	48	43	74
		40	48	43	74
		30	48	43	74
		15	54	46	63

This schedule 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.

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

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### SAWING AND MACHINING

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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.

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### ASSEMBLING

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Nailing / Screwing:	Good but pre-boring necessary
Gluing:	Correct (for interior only)
Note:	Risks of splits.

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### 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).

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Note: Filling is recommended to obtain a good finish.

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Vehicle or container flooring  
Stairs (inside)  
Industrial or heavy flooring  
Flooring  
Heavy carpentry  
Ship building (planking and deck)  
Ship building (ribs)  
Bridges (parts not in contact with water or ground)  
Exterior joinery  
Current furniture or furniture components  
Musical instruments  
Cooperage  
Boxes and crates

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