Common name:	BANGKIRAI
Family:	DIPTEROCARPACEAE
Scientific name(s):	Shorea glauca* (note) Shorea laevis* (note) Shorea spp.* (note)
Note:	* Shorea sub-genus Eushorea. YELLOW BALAU is usually used for woods imported from Malaysia, BANGKIRAI for woods from Indonesia.

LOG DESCRIPTION

Diameter:	from 70 to 90 cm
Thickness of sapwood:	from 2 to 8 cm
Floats:	no
Durability in forest :	Good

WOOD DESCRIPTION

Colour:	Yellow brown
Sapwood:	Not clearly demarcated
Texture:	Medium
Grain:	Straight or interlocked
Interlocked grain:	Slight

Note: Yellow brown to reddish brown more or less dark. White resin canals. Sawnwoods may present black holes. This defect is acceptable if it remains limited and not frequent.

PHYSICAL 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
Density *:	0.91 g/cm3	
Monnin hardness*:	7.3	
Coef of volumetric shrinkage:	0.68 %	
Total tangential shrinkage:	9.5 %	
Total radial shrinkage:	4.2 %	
Fibre saturation point:	23 %	
Stability:	Moderately stable	

MECHANICAL PROPERTIES

	mean	standard deviation
Crushing strength *:	85 MPa	
Static bending strength *:	150 MPa	
Modulus of elasticity *:	22940 MPa	

(* : at 12 % moisture content ; 1 MPa = 1 N/mm2)

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 2 - durable
Dry wood borers:	Heartwood durable but sapwood not clearly demarcated
Termites:	Class D - Durable
Treatability:	4 - not permeable
Biological hazard class*:	4 - in ground or fresh water contact or hight dampness
Note:	Shorea laevis is listed in the European standard NF EN 350-2. The possible presence of few demarcated sapwood in sawnwood may have an influence on the expected durability. Only Shorea laevis, due to its high specific gravity and high silica content, has a natural durability good enough to allow end-uses under biological hazard class 5 (end-uses in marine environment or in brackish water).

* ensured by natural durability (according EN standards).

COUNTRIES - LOCAL NAMES

Countries	Local names
Indonesia	BALAU
Indonesia	BANGKIRAI
Indonesia	KEDAWANG
Indonesia	SELANGAN BATU KUMUS
Indonesia (Sulawesi)	POOTI
Malaysia (islands)	SELANGAN BATU
Peninsular Malaysia	BALAU
Peninsular Malaysia	BALAU KUMUS
Peninsular Malaysia	DAMAR LAUT
Peninsular Malaysia	SENGKAWANG

Countries	Local names
Myanmar	THITYA
Philippines	GISOK
Philippines	YAKAL
Thailand	CHAN

BANGKIRAI

REQUIREMENT OF A PRESERVATIVE TREATMENT

Against dry wood borer attacks:	Requires appropriate preservative treatment
In case of temporary humidification risk:	Does not require any preservative treatment
In case of permanent humidification risk:	Does not require any preservative treatment

DRYING

Drying rate:	Slow
Risk of distortion:	Slight risk
Risk of casehardening:	No
Risk of checking:	High risk
Risk of collapse:	No

Possible drying schedule

M.C. (%)	Temperature (°C) dry-bulb	wet-bulb	Air humidity (%)
30	42	41	94
25	42	39	82
20	48	43	74
15	48	43	74

This shedule 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: Initial surface drying is recommended prior to kiln drying.

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. Some difficulties due to interlocked grain during planing.

ASSEMBLING

Nailing / Screwing:	Good but pre-boring necessary
Gluing:	Correct (for interior only)
Note:	Tendency to split.

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).

Note: Other possible end-uses: garden furniture.

Sleepers
Ship building (planking and deck)
Bridges (parts in contact with water or ground)
Industrial or heavy flooring
Flooring
Vehicle or container flooring
Heavy carpentry
Bridges (parts not in contact with water or ground)
Cooperage
Hydraulic works (fresh water)
Posts
Exterior joinery
Boxes and crates