MERBAU

Family: FABACEAE-CAESALPINIOIDEAE (angiosperm)

Scientific name(s): Intsia bijuga
Afzelia bijuga (synonymous)
Intsia palembanica

Commercial restriction: no commercial restriction

WOOD DESCRIPTION

Color: brown
Sapwood: clearly demarcated
Texture: coarse
Grain: straight or interlocked
Interlocked grain: slight

LOG DESCRIPTION

Diameter: from 60 to 120 cm
Thickness of sapwood: from 5 to 8 cm
Floats: no
Log durability: no information available

Note: Heartwood orangey brown becoming dark red brown or dark brown with light. Presence of yellow sulphur deposits.

PHYSICAL PROPERTIES

MECHANICAL AND ACOUSTIC PROPERTIES

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

	Mean	Std dev.
Specific gravity *:	0,83	0,05
Monnin hardness *:	8,8	2,3
Coeff. of volumetric shrinkage:	0,39 %	0,06 %
Total tangential shrinkage (TS):	4,4 %	0,9 %
Total radial shrinkage (RS):	2,7 %	0,7 %
TS/RS ratio:	1,6	
Fiber saturation point:	24 %	

Stability: stable

	Mean	Std dev.
Crushing strength *:	74 MPa	6 MPa
Static bending strength *:	115 MPa	13 MPa
Modulus of elasticity *:	15440 MPa	2269 MPa

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

Musical quality factor: 133,9 measured at 2397 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 1-2 - very durable to durable
Dry wood borers: 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 4 - in ground or fresh water contact
Species covering the use class 5: No

Note: This species is listed in the European standard NF EN 350-2.
It covers the use class 4, but presents a variable durability towards marine borers; its use under sea water is not recommended. Resistance to termites varies from "moderately durable" to "durable".
According to the European standard NF EN 335, performance length might be modified by the intensity of end-use exposition.

REQUIREMENT OF A PRESERVATIVE TREATMENT

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

DRYING

Drying rate: slow
Risk of distortion: slight risk
Risk of casehardening: no
Risk of checking: slight risk
Risk of collapse: no
Note: Requires care in order to avoid surface cracks for thick boards.

Possible drying schedule: 5

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

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: no information available
Slicing: nood
Note: Sawblades tend to clog. Tendency to tearing on quartersawns. Variable silica content.

ASSEMBLING

Nailing / screwing: good but pre-boring necessary
Gluing: correct
Note: Tends to split when nailing.

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 : M.3 (moderately inflammable)
Thickness < 14 mm : M.4 (easily inflammable)

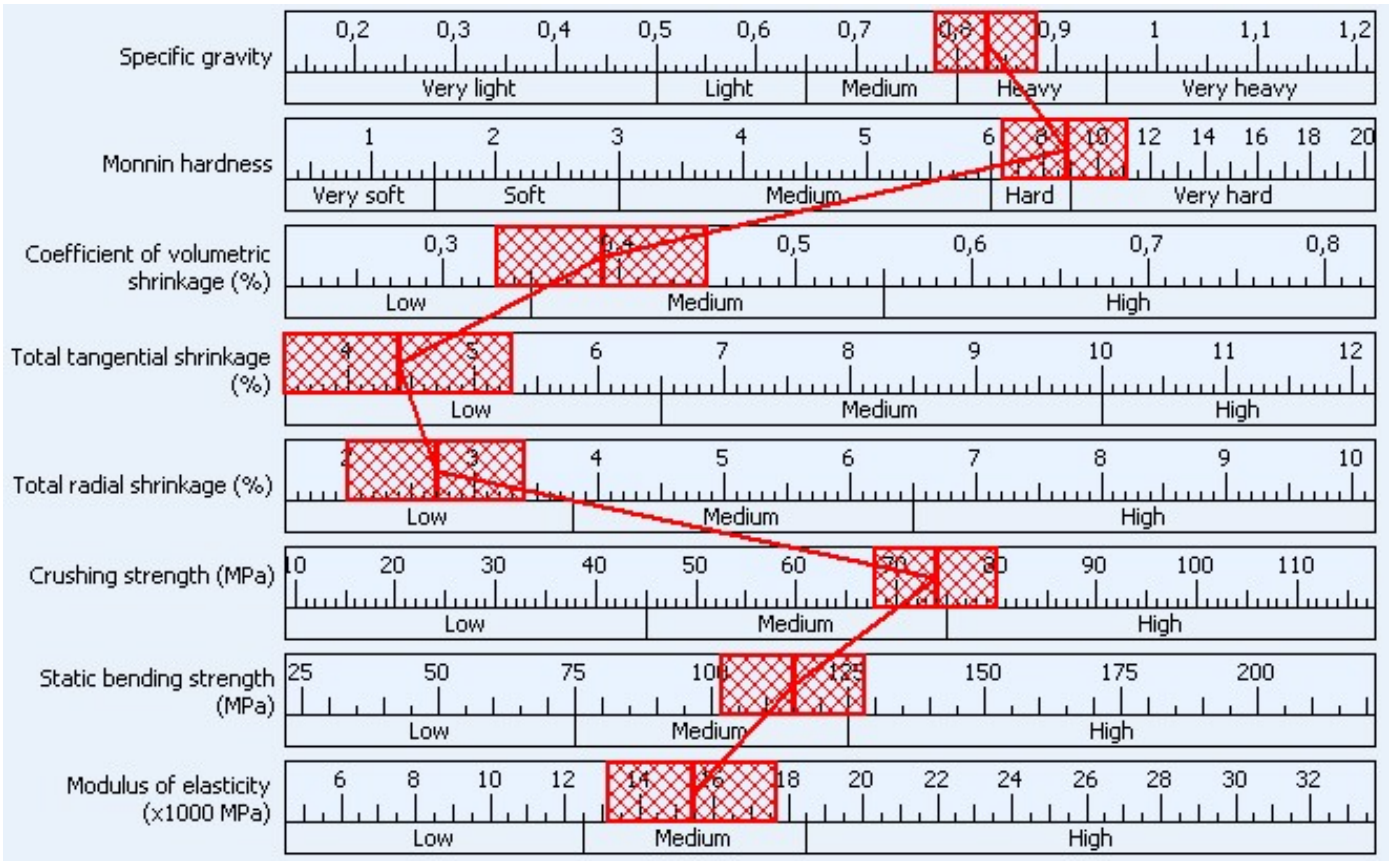
Euroclasses grading: D s2 d0
Default grading for solid wood, according to requirements of European standard EN 14081-1 annex C (April 2009). It concerns structural graded timber in vertical uses with mean density upper 0.35 and thickness upper 22 mm.

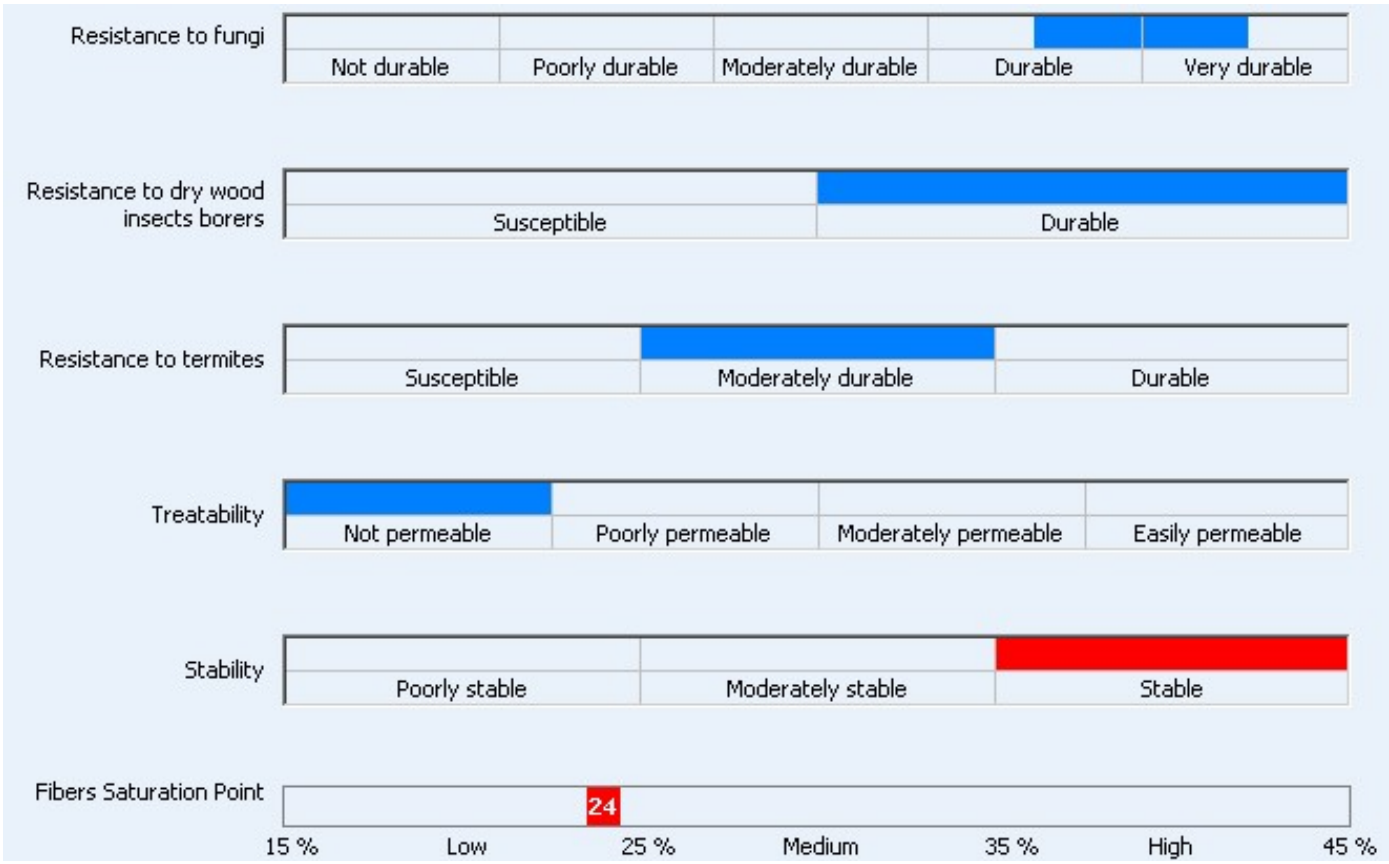
END-USES

Current furniture or furniture components
Interior panelling
Interior joinery
Heavy carpentry
Cabinetwork (high class furniture)
Turned goods
Tool handles (resilient woods)
Bridges (parts in contact with water or ground)
Stairs (inside)
Sleepers
Sculpture
Ship building (planking and deck)
Flooring
Exterior joinery
Industrial or heavy flooring
Sliced veneer
Poles
Wood-ware
Hydraulic works (fresh water)
Bridges (parts not in contact with water or ground)
Musical instruments
Vehicle or container flooring
Cooperage
Boxes and crates

MAIN LOCAL NAMES

Country	Local name	Country	Local name
Australia	KWILAU	China	KALABAU
Fiji	VESI	Indonesia	MERBAU
Magadascar	HINTSY	Peninsular Malaysia	MIRABOW
Malaysia (islands)	MERBAU	New Caledonia	KOHU
Papua New Guinea	KWILA	Philippines	IPIL
Philippines	IPIL LAUT	Thailand	LUM-PAW
Vietnam	GONUOC		


Specific gravity
0,2 0,3 0,4 0,5 0,6 0,7 0,8 0,9 1 1,1 1,2
Very light
Light
Medium
Heavy
Very heavy
Monnin hardness
1 2 3 4 5 6 8 10 12 14 16 18 20
Very soft
Soft
Medium
Hard
Very hard
Coefficient of volumetric shrinkage (%)
0,3 0,4 0,5 0,6 0,7 0,8
Low
Medium
High
Total tangential shrinkage (%)
4 5 6 7 8 9 10 11 12
Low
Medium
High
Total radial shrinkage (%)
2 3 4 5 6 7 8 9 10
Low
Medium
High
Crushing strength (MPa)
10 20 30 40 50 60 90 100 110
Low
Medium
High
Static bending strength (MPa)
25 50 75 100 125 150 175 200
Low
Medium
High
Modulus of elasticity (x1000 MPa)
6 8 10 12 14 16 18 20 22 24 26 28 30 32
Low
Medium
High


Resistance to fungi
Not durable
Poorly durable
Moderately durable
Durable
Very durable
Resistance to dry wood insects borers
Susceptible
Durable
Resistance to termites
Susceptible
Moderately durable
Durable
Treatability
Not permeable
Poorly permeable
Moderately permeable
Easily permeable
Stability
Poorly stable
Moderately stable
Stable
Fibers Saturation Point
24
15 %
Low
25 %
Medium
35 %
High
45 %