KEMPAS

Family: FABACEAE-CAESALPINIOIDEAE (angiosperm)
Scientific name(s): Koompassia malaccencis
Commercial restriction: no commercial restriction

WOOD DESCRIPTION

Color: red brown
Sapwood: clearly demarcated
Texture: coarse
Grain: straight or interlocked
Interlocked grain: marked
Note: Pink when freshly sawn, weathering to orange-red or yellow-brown. Frequent concentric layers of phloem.

LOG DESCRIPTION

Diameter: from 60 to 210 cm
Thickness of sapwood:
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.

	Mean	Std dev.
Specific gravity *:	0,88	0,05
Monnin hardness *:		
Coeff. of volumetric shrinkage:	%	
Total tangential shrinkage (TS):	6,6 %	
Total radial shrinkage (RS):	4,8 %	
TS/RS ratio:	1,4	
Fiber saturation point:	27 %	

Stability: stable
Note: Medium hardness.

MECHANICAL AND ACOUSTIC PROPERTIES

	Mean	Std dev.
Crushing strength *:	66 MPa	
Static bending strength *:	113 MPa	
Modulus of elasticity *:	23000 MPa	

(*: at 12% moisture content, with 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.
E.N. = Euro Norm

Funghi (according to E.N. standards): class 2 - durable
Dry wood borers: susceptible
Termites (according to E.N. standards): class S - susceptible
Treatability (according to E.N. standards): class 3 - poorly permeable
Use class ensured by natural durability: class 3 - not in ground contact, outside
Species covering the use class 5: No
Note: This species is listed in the European standard NF EN 350-2.
According to this standard, KEMPAS treatability is considered as low. However, according to some literature references, it would be easy to treat.
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: requires appropriate 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
Note: Frequent concentric layers of phloem induces drying heterogeneousness and may cause wood damages.

Possible drying schedule: 2

M.C. (%)	Temperature (°C) dry-bulb	wet-bulb	Air humidity (%)
Green	50	47	84
40	50	45	75
30	55	47	67
20	70	55	47
15	75	58	44

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: nood
Note: As for drying, concentric layers of phloem may lead to sawing damages.

ASSEMBLING

Nailing / screwing: good but pre-boring necessary
Gluing: correct

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)

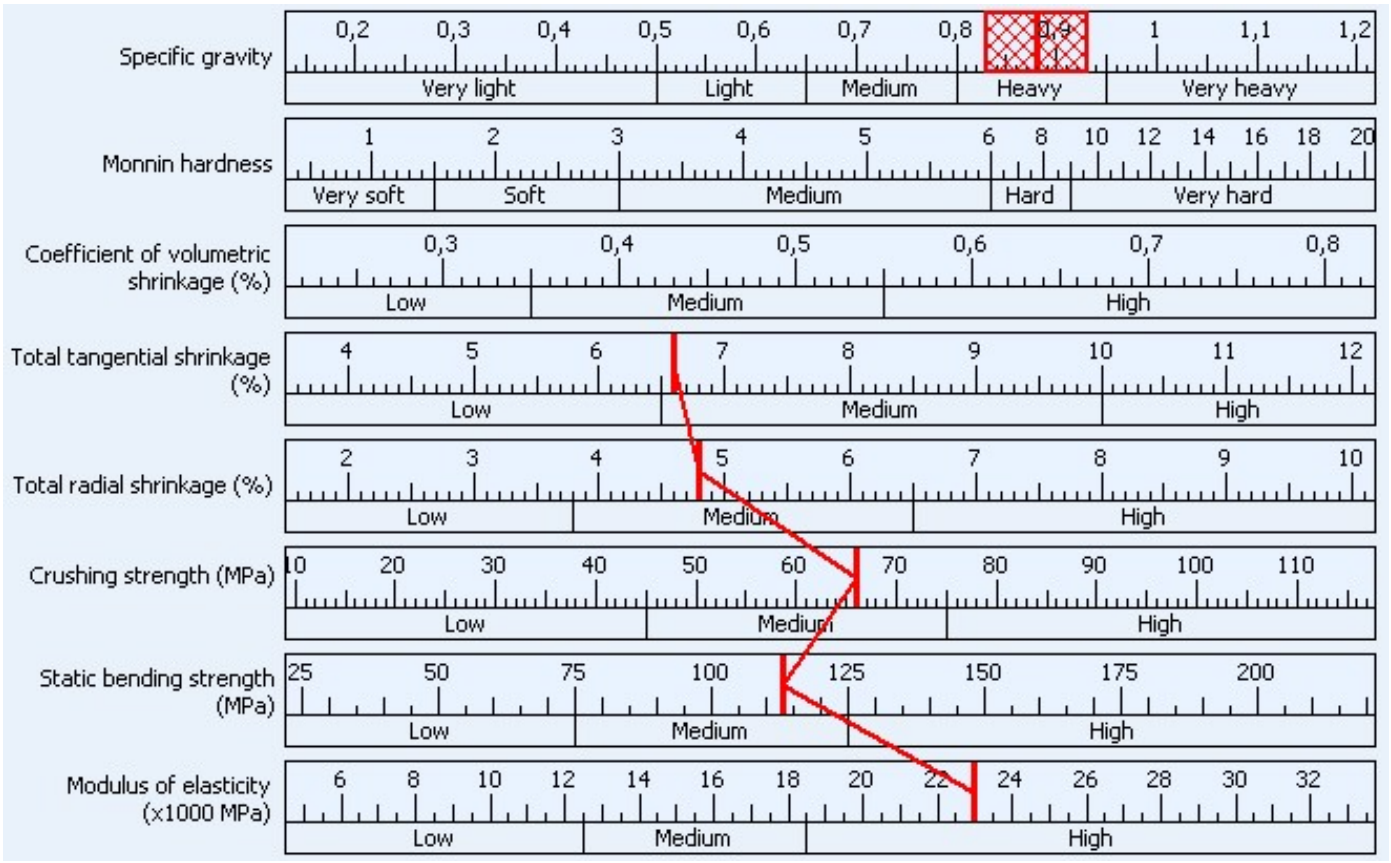
Euroclasses grading: D s2 d0
Default grading for solid wood, according to requirements of European standard EN 14081-1 annex C (April 2009). It concerns structural graded timber in vertical uses with mean density upper 0.35 and thickness upper 22 mm.

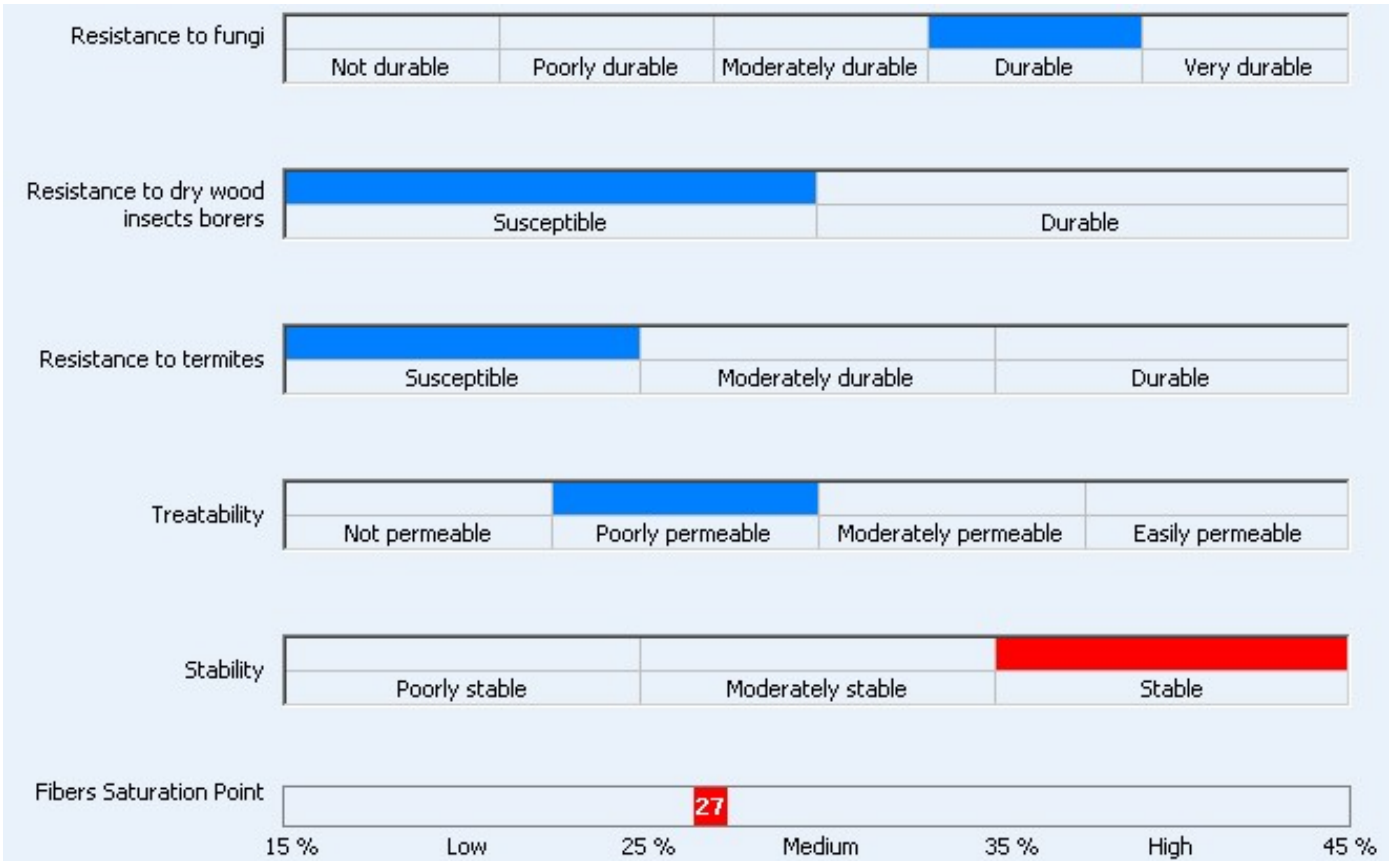
END-USES

Industrial or heavy flooring
Sleepers
Vehicle or container flooring
Turned goods
Cooperage
Flooring
Heavy carpentry
Exterior joinery
Sliced veneer

MAIN LOCAL NAMES

Country	Local name	Country	Local name
Indonesia	MENGGERIS	Indonesia	TOEMALING
Peninsular Malaysia	IMPAS	Peninsular Malaysia	KEMPAS
Peninsular Malaysia	MENGRIS	Papua New Guinea	KEMPAS
Thailand	YUAN		


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 70 80 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
27
15 %
Low
25 %
Medium
35 %
High
45 %