SIPO

Family: MELIACEAE (angiosperm)
Scientific name(s): Entandrophragma utile
Commercial restriction: no commercial restriction

WOOD DESCRIPTION

Color: red brown
Sapwood: clearly demarcated
Texture: medium
Grain: interlocked
Interlocked grain: slight
Note: Some logs are not floatable.
Wood pinkish brown to red brown slightly purplish, with moiré shades. Ribbon like aspect on quartersawn. Irregular grain.

LOG DESCRIPTION

Diameter: from 60 to 120 cm
Thickness of sapwood: from 2 to 6 cm
Floats: yes
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 *:	0,62	0,04
Monnin hardness *:	3,0	0,4
Coeff. of volumetric shrinkage:	0,42 %	0,06 %
Total tangential shrinkage (TS):	6,4 %	0,7 %
Total radial shrinkage (RS):	4,6 %	0,7 %
TS/RS ratio:	1,4	
Fiber saturation point:	30 %	

Stability: moderately stable to stable
Note: Hardness varies from soft to fairly hard.

MECHANICAL AND ACOUSTIC PROPERTIES

	Mean	Std dev.
Crushing strength *:	56 MPa	6 MPa
Static bending strength *:	91 MPa	11 MPa
Modulus of elasticity *:	13240 MPa	2547 MPa

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

Musical quality factor: 112,6 measured at 2663 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 2-3 - durable to moderately 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 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.

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: normal
Risk of distortion: slight risk
Risk of casehardening: no
Risk of checking: slight risk
Risk of collapse: no
Note: The risks of distortion increase in presence of highly interlocked grain especially during kiln drying. Original shakes tend to extend.

Possible drying schedule: 2

	Temperature (°C)		
M.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: normal
Sawteeth recommended: ordinary or alloy steel
Cutting tools: ordinary
Peeling: good
Slicing: nood
Note: Tendency to tearing due to interlocked grain.

ASSEMBLING

Nailing / screwing: good
Gluing: correct
Note: Gluing requires care: it can stain wood.

COMMERCIAL GRADING

Appearance grading for sawn timbers: According to SATA grading rules (1996)
For the "General Purpose Market":
Possible grading for square edged timbers: choix I, choix II, choix III, choix IV
Possible grading for short length lumbers: choix I, choix II
Possible grading for short length rafters: choix I, choix II, choix III
For the "Special Market":
Possible grading for strips and small boards (ou battens): choix I, choix II, choix III
Possible grading for rafters: choix I, choix II, choix III

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.

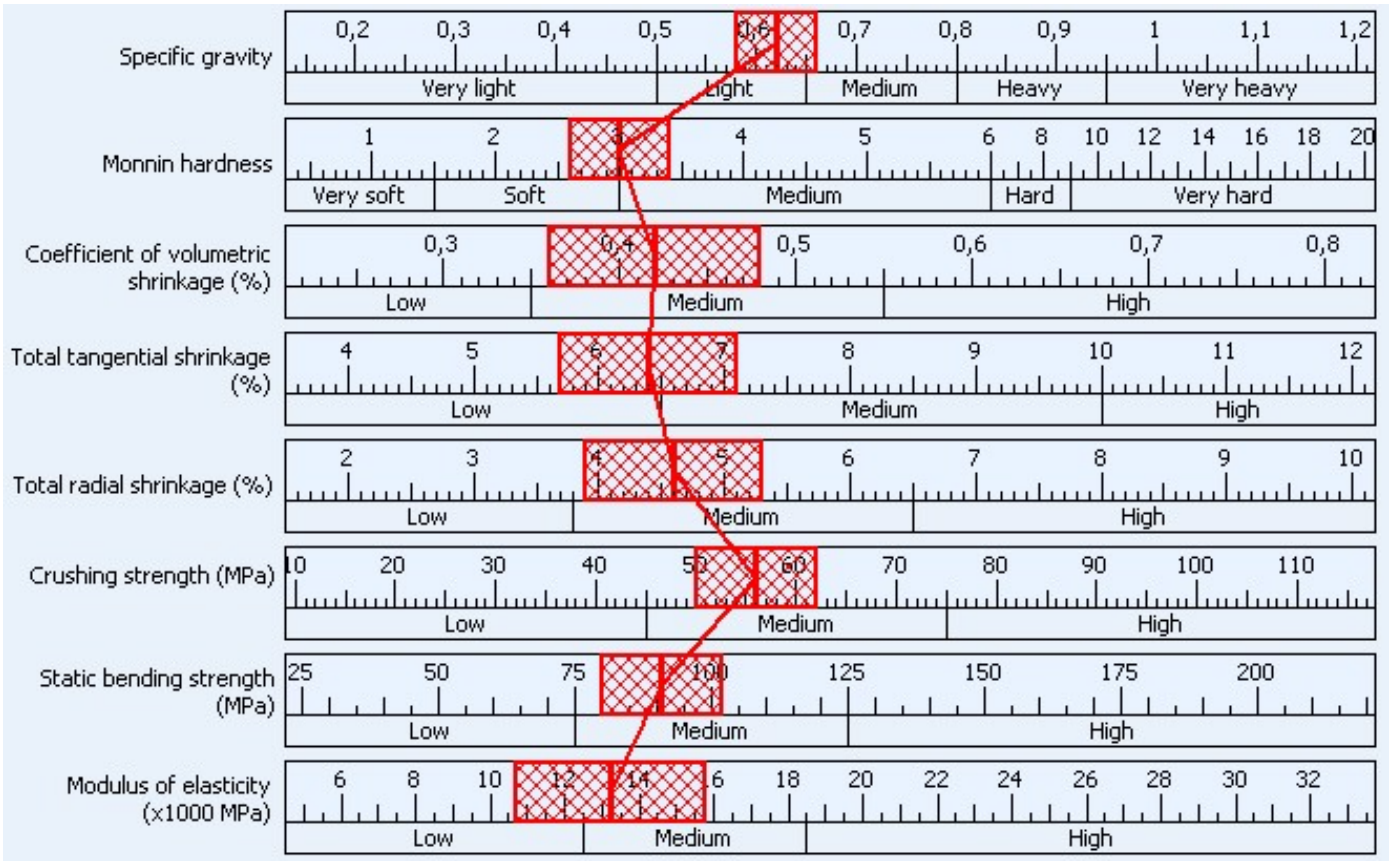
END-USES

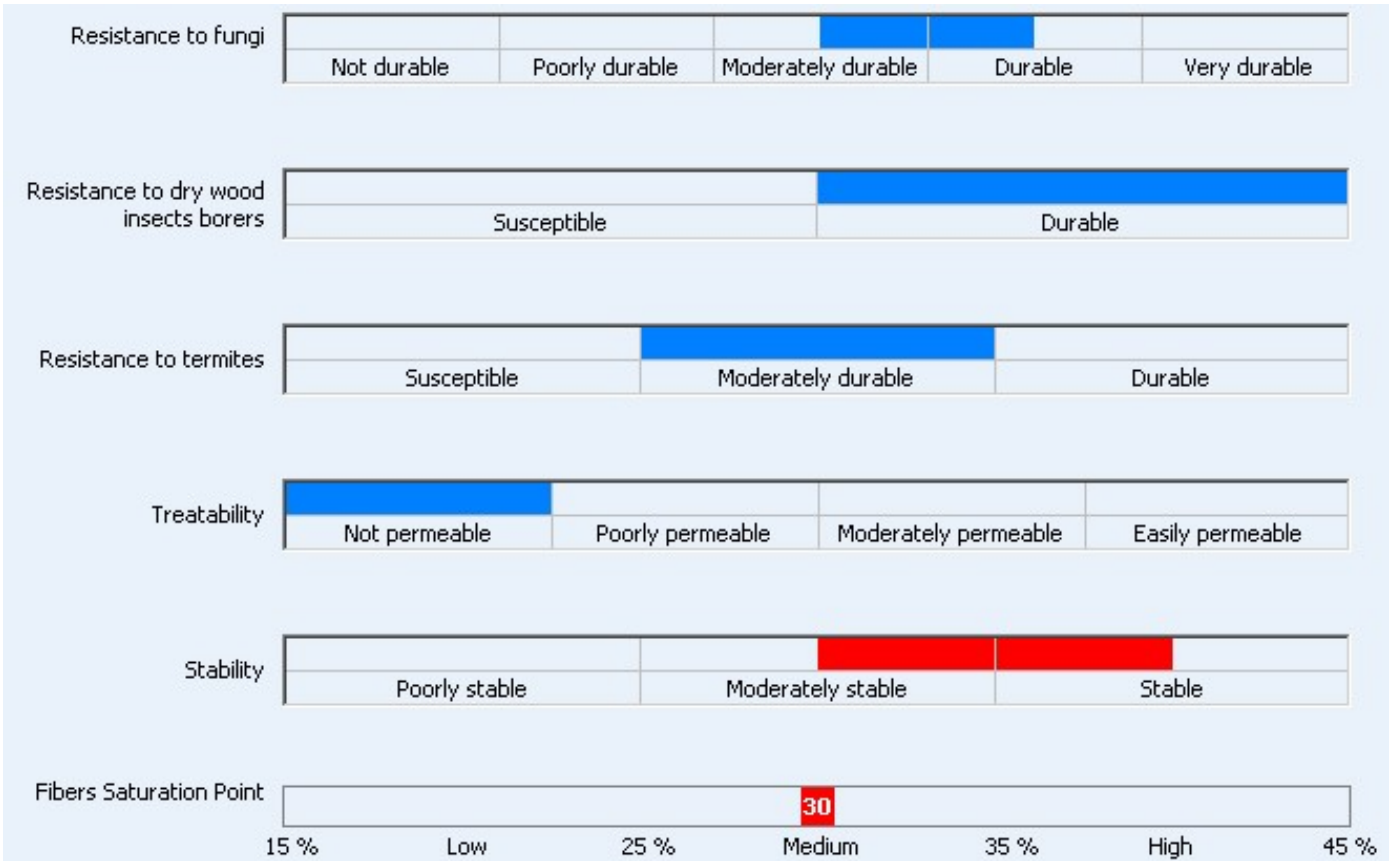
Sliced veneer
Cabinetwork (high class furniture)
Interior joinery
Veneer for back or face of plywood
Open boats
Stairs (inside)
Light carpentry
Current furniture or furniture components
Exterior joinery
Interior panelling
Moulding
Flooring
Rolling shutters
Glued laminated

Note: Filling is recommended in order to obtain a better finish.

MAIN LOCAL NAMES

Country	Local name	Country	Local name
Angola	KALUNGI	Cameroon	ASSENG-ASSIE
Congo	KALUNGI	Ivory Coast	SIPO
Gabon	ASSI	Ghana	UTILE
Equatorial Guinea	ABEBAY	Nigeria	UTILE
Uganda	MUFUMBI	Central African Republic	BOKOI
Democratic Republic of the Congo	KALUNGI	Democratic Republic of the Congo	LIBOYO
Germany	SIPO-MAHOGANY	United Kingdom	UTILE


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
30
15 % Low 25 % Medium 35 % High 45 %