

Family: Lamiaceae (angiosperm)

Scientific name(s): Tectona grandis

Commercial restriction: no commercial restriction

WOOD DESCRIPTION

Color: yellow brown
 Sapwood: clearly demarcated
 Texture: coarse
 Grain: straight
 Interlocked grain: absent

Note: The wood darkens and presents golden glints with age. Sometimes black brown veins. Oily to the touch.

LOG DESCRIPTION

Diameter: from 50 to 100 cm
 Thickness of sapwood: from 2 to 6 cm
 Floats: no
 Log durability: good

PHYSICAL PROPERTIES

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

	<u>Mean</u>	<u>Std dev.</u>
Specific gravity *:	0.67	0.06
Monnin hardness *:	4.2	1.3
Coeff. of volumetric shrinkage:	0.34 %	0.07 %
Total tangential shrinkage (TS):	4.7 %	0.8 %
Total radial shrinkage (RS):	2.6 %	0.4 %
TS/RS ratio:	1.8	
Fiber saturation point:	24 %	
Stability: stable		

Note: The properties of timbers grown in plantation or in naturel forest are often similar, except for durability.

MECHANICAL AND ACOUSTIC PROPERTIES

	<u>Mean</u>	<u>Std dev.</u>
Crushing strength *:	56 MPa	6 MPa
Static bending strength *:	98 MPa	13 MPa
Modulus of elasticity *:	13740 MPa	2749 MPa

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

Musical quality factor: 128.2 measured at 2656 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

Fungi (according to E.N. standards): class 1 - very durable

Dry wood borers: class D - 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: yes

Note: The natural durability of plantation teak wood depends on its age, and can be significantly lower than natural forest teak wood when the wood is young. In this case, the woods are moderately resistant to decay fungi, and classified as sensible to durable against termites.

This species is listed in the standard NF EN 350 which makes a difference between the Teak from Asia (meaning natural forest) and the teak planted in Asia and other countries; the first one is classified in the natural durability class 1 towards fungi and in natural durability class M towards termites; the second is in the natural durability class 1-3 towards fungi and in natural durability class M-S towards termites.

The use class mentioned in Tropix is given for teak from natural forest.

According to the European standard NF EN 335, performance length might be modified by the intensity of end-use exposition.

This species naturally covers the use class 5 (wood permanently or regularly submerged in salt water, sea water or brackish water) due to its high silica content.

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: no risk or very slight risk

Risk of casehardening: no known specific risk

Risk of checking: no risk or very slight risk

Risk of collapse: no known specific risk

Note: The drying rate may vary from one board to other by reason of the specific gravity and the important differences of moisture content when green.

POSSIBLE DRYING SCHEDULE

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



This drying 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: high

Sawteeth recommended: stellite-tipped

Cutting tools: tungsten carbide

Peeling: not recommended or without interest

Slicing: good

Note: Variable silica content. Sawdust may cause skin irritations.

ASSEMBLING

Nailing / screwing: good but pre-boring necessary

Gluing: correct

Note: Pre-boring recommended due to a slight tendency to split when nailing. Satisfactory gluing on surfaces freshly machined or sanded just before application of the adhesive (the wood contains oleoresins).

COMMERCIAL GRADING

Appearance grading for sawn timbers: Grading depending on origin of woods and final uses.

Grading rules for Teak from Myanmar depend on quality and geometric criteria for logs, sawn products and veneers. Four grades of log are defined for sliced veneers and six grades for sawn products, from SG1 to SG6 according to the number of defects.

Visual grading for structural applications: According to European standard EN 1912 (2012) and associated national standards (see explanatory note), strength class D40 can be provided by visual grading. Strength class D30 can be provided by visual grading according to French standard NF B 52-001-1 (2011).

FIRE SAFETY

Conventional French grading: Thickness > 14 mm : M3 (moderately inflammable)
Thickness < 14 mm : M4 (easily inflammable)

Euroclasses grading: D-s2, d0

Default grading for solid wood, according to requirements of European standard EN 14081-1 (April 2016). It concerns structural graded timber in vertical uses and ceiling with mean density upper 0.35 and thickness upper 22 mm.

END-USES

Ship building (planking and deck)	Interior joinery
Interior panelling	Open boats
Cabinetwork (high class furniture)	Sliced veneer
Flooring	Stairs (inside)
Cooperage	Turned goods
Exterior joinery	Exterior panelling
Light carpentry	Rolling shutters
Bridges (parts in contact with water or ground)	Bridges (parts not in contact with water or ground)
Poles	Stakes
Arched goods	Decking



*This list presents main known end-uses; they must be implemented according to the code of practice.
Important remark: some end-uses are mentioned for information (traditional, regional or ancient end-uses).*

MAIN LOCAL NAMES

<u>Country</u>	<u>Local name</u>	<u>Country</u>	<u>Local name</u>
India	SAGWAN	India	TEAK
Indonesia	JATI	Indonesia	TEK
Laos	MAY SAK	Myanmar	KYUN
Thailand	MAY SAK	Thailand	TEAK
Viet Nam	GIATI	Germany	JAVA TEAK
Germany	TEAK	France	TECK
Italia	TECK	Netherlands	TEAK
United Kingdom	TEAK		

