Ipe

Flat sawn

Quarter sawn

Family. Bignoniaceae

Botanical Name(s).

Handroanthus heptaphylla
Tabebuia heptaphylla (synonymous)
Handroanthus impetiginosa
Tabebuia impetiginosa (synonymous)
Handroanthus serratifolia
Tabebuia serratifolia (synonymous)
Handroanthus p.p.
Tabebuia p.p. (synonymous)

Continent. Latin America

CITES. The species Handroanthus spp. and Tabebuia spp. are listed in Appendix II of CITES (Washington Convention 2025). The products concerned are logs, sawn wood, veneer, plywood and engineered wood.

Notes. Woods called IPE belong actually to Handroanthus genus. Previously, they belong to Tabebuia genus (heavy species only).

Description of logs

Diameter. From 60 to 100 cm

Thickness of sapwood. From 3 to 9 cm

Floats. No

Log durability. Good

Description of wood

Colour reference. Brown

Sapwood. Clearly demarcated

Texture. Fine

Grain. Interlocked

Interlocked grain. Marked

Notes. Somes species have a medium texture. Heartwood is yellowish brown to dark olive brown, sometimes with thin veins. Canals contain a greenish yellow deposit (lapachol).

Physics and mechanics

The properties indicated are for mature wood. These properties may vary significantly depending on the origin and growing conditions of the wood.

Property	Average value
Specific gravity[1]	1.04
Monnin hardness[1]	14.6
Coefficient of volumetric shrinkage	0.68 % per %
Total tangential shrinkage (St)	6.4 %
Total radial shrinkage (Sr)	5.1 %
Ratio St/Sr	1.3
Fibre saturation point	20 %

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Thermal conductivity (λ)	0.33 W/(m.K)
Lower heating value	20,300 kJ/kg
Stability	Stable wood
Crushing strength[1]	95 MPa
Static bending strength[1]	166 MPa
Modulus of elasticity[1]	22,760 MPa

[1] At 12 % moisture content, with 1 MPa = 1 N/mm²

Natural durability and heartwood treatability

Resistance of heartwood to xylophagous fungi. Durability class 1 - very durable

Resistance of heartwood to xylophagous dry wood borers. Class D - durable (sapwood demarcated, risk limited to sapwood)

Resistance of heartwood to termites. Class D - durable

Heartwood treatability. Class 4 - not permeable

Use class ensured by natural durability of heartwood.

Class 4 - in ground or fresh water contact

Notes. This species is listed in the European standard NF EN 350 (2016). 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 specific gravity and hardness. According to the European standard NF EN 335 (2013), performance length might be modified by the intensity of end-use exposition.

Requirement of a preservative treatment

Against dry wood borer. Does not require any preservative treatment

In case of temporary humidification. Does not require any preservative treatment

In case of permanent humidification. Does not require any preservative treatment

Drying

Drying rate. Slow

Risk of distorsion. Slight risk

Risk of casehardening. No known specific risk

Risk of checking. Slight risk

Risk of collapse. No known specific risk

Notes. A slow kiln drying is recommended in order to reduce defects, especially with thick boards.

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Suggested drying program.

Phases	Duration (H)	MC (%) probes	T (°C)	Rh (%)	UGL (%)
Prewarm 1		> 40	35	87	18.0
Prewarm 2	6	> 40	38	85	17.0
Drying		> 40	41	82	15.7
		40 - 35	44	81.0	15.0
		35 - 30	46	80.0	14.5
		30 - 25	48	77.0	13.5
		25 - 20	50	72.0	12.0
		20 - 18	52	63.0	10.0
		18 - 16	54	54.0	8.5
		16 - 14	56	47.0	7.4
		14 - 12	58	41.0	6.5
		12 - 9	60	34.0	5.6
Conditioning	8		55	(3)	(2)
Cooling	(1)		Stop	(3)	(2)

(1) Cooling: until the temperature inside the kiln no longer exceeds external temperature by more than 30 °C.
(2) UGL = final H% x 0,8 to 0,9.
(3) Subtract RH from the UGL determined in (2) and temperature, using the Hailwood-Horrobin equation.

Sawing and machining

Blunting effect. Fairly high

Sawteeth recommended. Stellite-tipped

Cutting tools. Tungsten carbide

Peeling. Not recommended or without interest

Slicing. Good

Notes. Sawdust may cause dermatosis. Some difficulties due to interlocked grain.

Assembling

Nailing and screwing. Good but pre-boring necessary

Notes. Very high specific gravity: gluing must be especially performed in compliance with the code of practice.

Commercial grading

Appearance grading for sawn timbers.

According to the ATIBT grading rules (2017), the main choices are: FAS (First And Second), n°1 Common and select, n°2 Common (see on the ATIBT website: https://www.atibt.org/files/upload/technical-publications/Contrats-et-usages-Bois-tropicaux/PAMPHLET-3-MAIN-GRADING-RULES-FOR-SAWN-TROPICAL-TIMBER.pdf).

Visual grading for structural applications

According to French standard NF B 52-001-1 (2018), strength class D50 is provided by visual grading type HSR (Annex B of the standard). For French Guiana IPE, locally called Ébène verte, the strength class D70 is provided by visual grading type HS STI (Annex A of the standard).

Fire safety

Conventional French grading.

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

Euroclasses grading. D-s2, d0

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Grading for solid wood, according to requirements of European standard EN 14081-1+A1 (August 2019). It concerns structural graded timber in vertical uses and ceiling with mean density upper 0.35 and thickness upper 22 mm.
Assigned according to procedures of the European standard EN 13501-1 (décembre 2018).
Relevant European grading report N°RA05-0238B prepared by CSTB.

End-uses

- Bridges (parts in contact with water or ground)
- Bridges (parts not in contact with water or ground)
- Cabinetwork (high class furniture)
- Current furniture or furniture components
- Decking
- Heavy carpentry
- Hydraulic works (fresh water)
- Hydraulic works (seawater)
- Indoor staircases
- Industrial or heavy flooring
- Moulding
- Musical instruments
- Poles
- Ship building (planking and deck)
- Sleepers
- Sliced veneer
- Stakes
- Tool handles (resilient woods)
- Turned goods
- Vehicle or container flooring

Notes. Filling is recommended to obtain a good finish.

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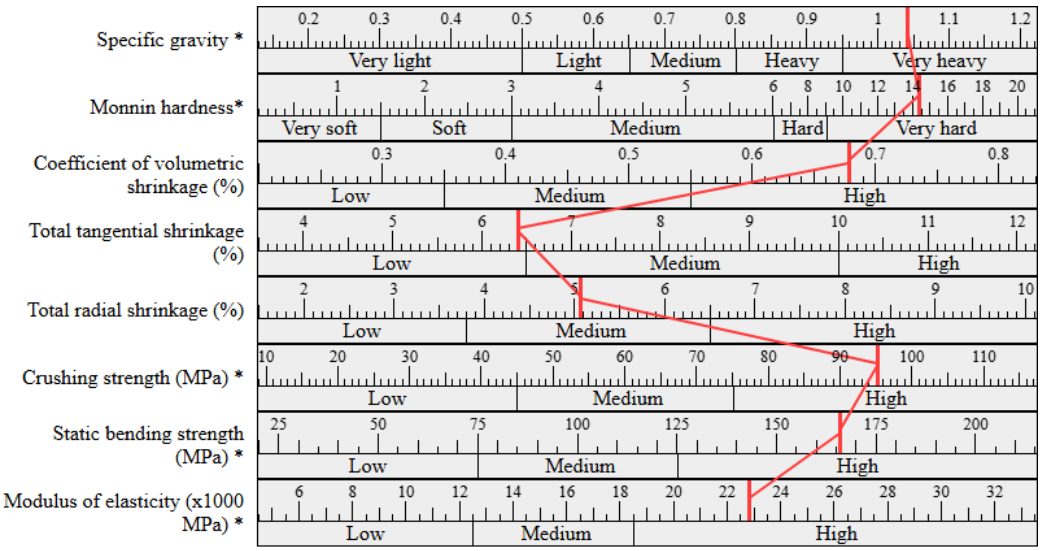
Main local names

Country	Local name
Argentina	Lapacho
Bolivia	Ipe
Bolivia	Lapacho
Bolivia	Tajibo
Brazil	Ipe
Brazil	Ipe roxo
Brazil	Pau d'arco
Colombia	Canaguate
Colombia	Polvillo
Colombia	Roble morado
French Guiana	Ébène verte
Guyana	Hakia
Guyana	Ironwood
Paraguay	Lapacho negro
Peru	Ebano verde
Peru	Tahuari
Suriname	Groenhart
Trinidad and Tobago	Puy
Trinidad and Tobago	Yellow poui
Venezuela	Acapro
Venezuela	Araguaney
Venezuela	Puy

Physical and mechanical properties chart



*: at 12% moisture content

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Decking - Tramway track - Montpellier, France

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