CUMARU

Family: FABACEAE (angiosperm)

Scientific name(s): Dipteryx spp.
Coumarouna spp. (synonymous)

Commercial restriction: no commercial restriction

WOOD DESCRIPTION

Color: red brown
Sapwood: clearly demarcated
Texture: medium
Grain: interlocked
Interlocked grain: marked

LOG DESCRIPTION

Diameter: from 50 to 90 cm
Thickness of sapwood: from 2 to 3 cm
Floats: no
Log durability: good

Note: Unpleasant odour when green. Heartwood varies from yellow brown to reddish brown with darker thin veins.

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 *:	1,07	0,05
Monnin hardness *:	13,1	2,5
Coeff. of volumetric shrinkage:	0,73 %	0,09 %
Total tangential shrinkage (TS):	7,7 %	1,2 %
Total radial shrinkage (RS):	5,5 %	0,9 %
TS/RS ratio:	1,4	
Fiber saturation point:	22 %	

Stability: moderately stable to stable

MECHANICAL AND ACOUSTIC PROPERTIES

	Mean	Std dev.
Crushing strength *:	103 MPa	8 MPa
Static bending strength *:	170 MPa	23 MPa
Modulus of elasticity *:	26610 MPa	3224 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 1 - very durable
Dry wood borers: durable - sapwood demarcated (risk limited to sapwood)
Termites (according to E.N. standards): class D - 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: 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: high risk
Risk of collapse: no
Note: Drying must be done with care and slowly. Risks of casehardening for thick boards.

Possible drying schedule: 1

M.C. (%)	Temperature (°C) dry-bulb	wet-bulb	Air humidity (%)
Green	40	37	82
40	44	38	68
30	44	36	59
20	46	36	52
15	49	37	46

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: Sawing and machining are difficult due to hardness and interlocked grain. Requires power.

ASSEMBLING

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

COMMERCIAL GRADING

Appearance grading for sawn timbers: According to NHLA grading rules (January 2007)
Possible grading: FAS, Select, Common 1, Common 2, Common 4
In French Guiana, the local name of this species is "GAIAC DE CAYENNE". Grading is done according to local rules "Bois guyanais classés".
Possible grading: Choix 1, choix 2, choix 3, choix 4

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.

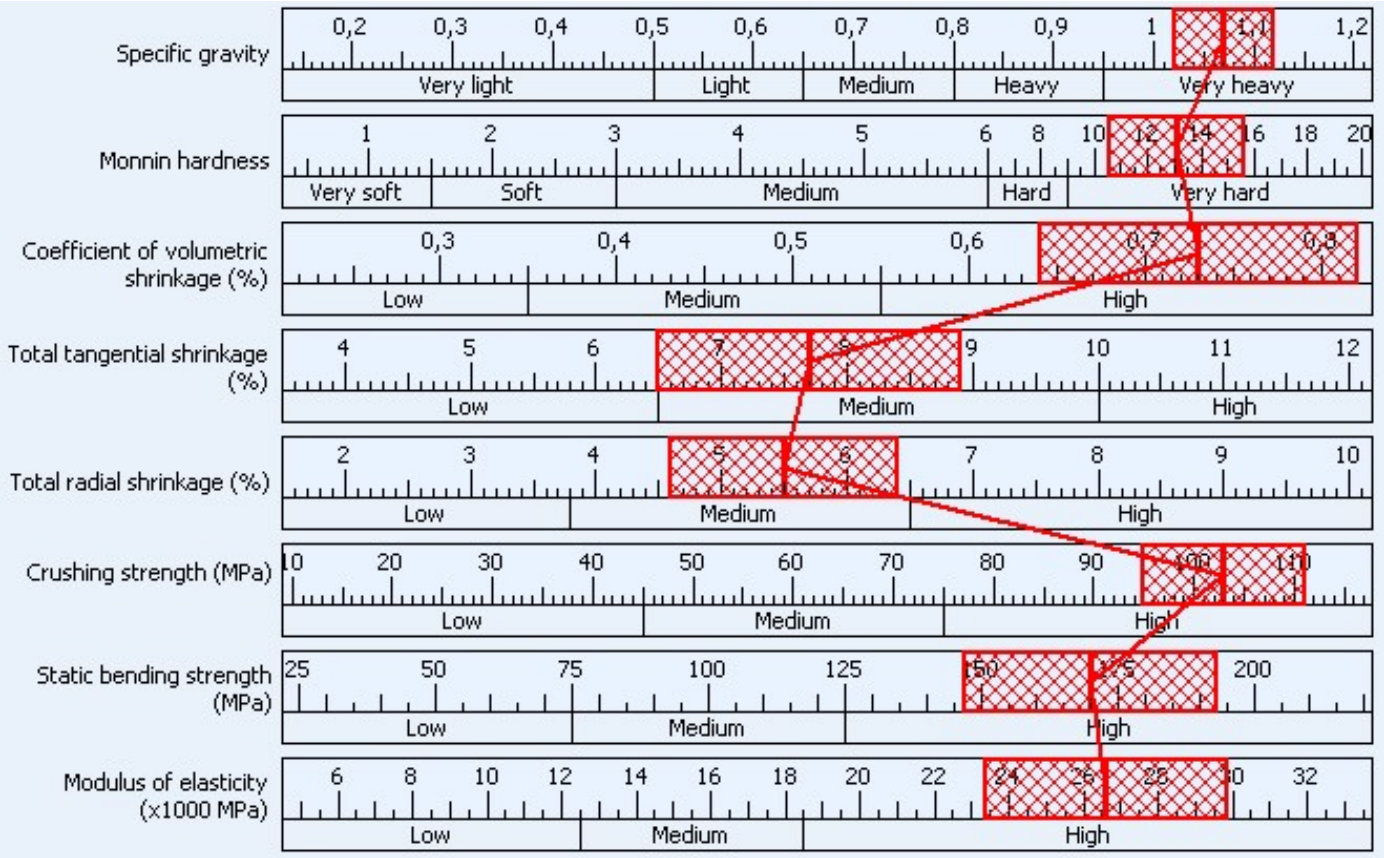
END-USES

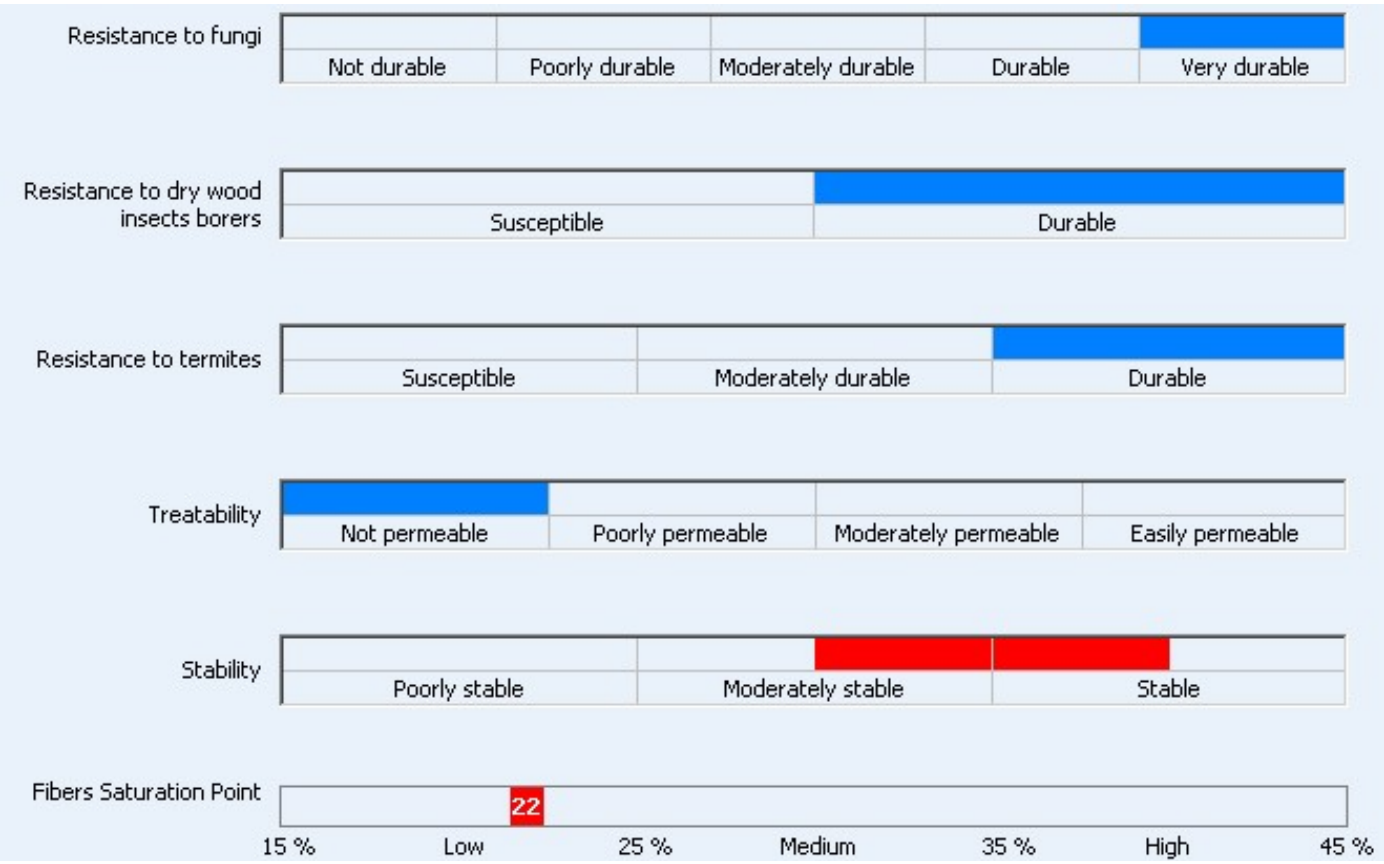
Sleepers
Bridges (parts not in contact with water or ground)
Industrial or heavy flooring
Poles
Ship building (planking and deck)
Heavy carpentry
Tool handles (resilient woods)
Hydraulic works (seawater)
Bridges (parts in contact with water or ground)
Hydraulic works (fresh water)
Wood frame house
Stakes
Cooperage
Sliced veneer
Turned goods

Note: Slicing: only for decorative veneer.

MAIN LOCAL NAMES

Country	Local name	Country	Local name
Bolivia	ALMENDRILLO	Brazil	CHAMPANHA
Brazil	CUMARU	Brazil	CUMARU FERRO
Brazil	CUMARURANA	Colombia	SARRAPIA
Guyana	KUMARU	Guyana	TONKA BEAN
French Guiana	GAIAC DE CAYENNE	French Guiana	TONKA
Honduras	EBO	Peru	CHARAPILLA
Peru	SHIHUAHUACO AMARILLO	Suriname	KOEMAROE
Suriname	TONKA	Venezuela	SARRAPIA


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
22
15 % Low 25 % Medium 35 % High 45 %