Family: FABACEAE-CAESALPINIOIDEAE (angiosperm)
Scientific name(s): Hymenaea courbaril
Hymenaea intermedia
Hymenaea martiana
Hymenaea oblomfifolia
Hymenaea parvifolia
Commercial restriction: no commercial restriction

WOOD DESCRIPTION

Color: red brown
Sapwood: clearly demarcated
Texture: medium
Grain: straight or interlocked
Interlocked grain: slight

LOG DESCRIPTION

Diameter: from 50 to 80 cm
Thickness of sapwood: from 3 to 12 cm
Networks: 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.

<table>
<thead>
<tr>
<th>Property</th>
<th>Mean</th>
<th>Std dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific gravity *:</td>
<td>0.94</td>
<td>0.13</td>
</tr>
<tr>
<td>Monnin hardness *:</td>
<td>10.5</td>
<td>2.6</td>
</tr>
<tr>
<td>Coeff. of volumetric shrinkage:</td>
<td>0.59</td>
<td>0.11</td>
</tr>
<tr>
<td>Total tangential shrinkage (TS):</td>
<td>7.5</td>
<td>1.2</td>
</tr>
<tr>
<td>Total radial shrinkage (RS):</td>
<td>3.9</td>
<td>1.4</td>
</tr>
<tr>
<td>TS/RS ratio:</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>Fiber saturation point:</td>
<td>23</td>
<td></td>
</tr>
</tbody>
</table>

MECHANICAL AND ACOUSTIC PROPERTIES

Crushing strength *: 97 MPa 15 MPa
Static bending strength *: 160 MPa 31 MPa
Modulus of elasticity *: 23460 MPa 6002 MPa
Musical quality factor: 148.5 measured at 2888 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 3 - not in ground contact, outside
Species covering the use class 5: No

Note: Resistance to fungi and to termites is variable according to the species.
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: 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: Initial air drying under cover prior to kiln drying is recommended. Risks of cracks more or less important according to specific gravity.

Possible drying schedule: 4

<table>
<thead>
<tr>
<th>M.C. (%)</th>
<th>Temperature (°C)</th>
<th>Air humidity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>dry-bulb</td>
<td>wet-bulb</td>
</tr>
<tr>
<td>42</td>
<td>39</td>
<td>82</td>
</tr>
<tr>
<td>50</td>
<td>48</td>
<td>74</td>
</tr>
<tr>
<td>40</td>
<td>48</td>
<td>74</td>
</tr>
<tr>
<td>30</td>
<td>48</td>
<td>74</td>
</tr>
<tr>
<td>15</td>
<td>54</td>
<td>63</td>
</tr>
</tbody>
</table>

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: nod

Note: Due to hardness, the use of stellite is recommended for industrial production.

ASSEMBLING

Nailing / screwing: good but pre-boring necessary
Gluing: correct (for interior only)

Note: Gluing must be done with care (very dense wood).

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 “COURBARIL”. 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 ≤ 0
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

Cabinetwork (high class furniture) Current furniture or furniture components
Sliced veneer Industrial or heavy flooring
Flooring Stairs (inside)
Wood frame house Exterior joinery
Exterior panelling Interior panelling
Tool handles (resilient woods) Turned goods
Ship building (ribs) Vehicle or container flooring
Musical instruments Arched goods
Wood-ware Sculpture
Moulding Cooperage

Note: End-uses under permanent humidification (contact with water or with ground) are possible with the species presenting a very good durability.
### MAIN LOCAL NAMES

<table>
<thead>
<tr>
<th>Country</th>
<th>Local name</th>
<th>Country</th>
<th>Local name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>JATAI</td>
<td>Brazil</td>
<td>JATOBA</td>
</tr>
<tr>
<td>Brazil</td>
<td>JUTAI</td>
<td>Brazil</td>
<td>JUTAI Açú</td>
</tr>
<tr>
<td>Brazil</td>
<td>JUTAI ROXO</td>
<td>Colombia</td>
<td>ALGARROBO</td>
</tr>
<tr>
<td>Guyana</td>
<td>LOCUST</td>
<td>French Guiana</td>
<td>COURBARIL</td>
</tr>
<tr>
<td>Peru</td>
<td>AZUCAR-HUAYO</td>
<td>Suriname</td>
<td>RODE LOKUS</td>
</tr>
<tr>
<td>Venezuela</td>
<td>ALGARROBO</td>
<td>France</td>
<td>COURBARIL</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>LOCUST</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### JATOBAN

<table>
<thead>
<tr>
<th>Specific gravity</th>
<th>Very light</th>
<th>Light</th>
<th>Medium</th>
<th>Heavy</th>
<th>Very heavy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monnin hardness</td>
<td>Very soft</td>
<td>Soft</td>
<td>Medium</td>
<td>Hard</td>
<td>Very hard</td>
</tr>
<tr>
<td>Coefficient of volumetric shrinkage (%)</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total tangential shrinkage (%)</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total radial shrinkage (%)</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crushing strength (MPa)</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Static bending strength (MPa)</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modulus of elasticity (≤1000 MPa)</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 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

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