## Family: Boraginaceae (angiosperm)

**Scientific name(s):** Cordia goeldiana  
**Commercial restriction:** no commercial restriction

### Wood Description

- **Color:** light brown  
- **Sapwood:** clearly demarcated  
- **Texture:** medium  
- **Grain:** straight or interlocked  
- **Interlocked grain:** slight

**Note:** Wood grey yellow to grey brown or golden brown sometimes with darker veins. Large silver figure.

### Log Description

- **Diameter:** from 50 to 90 cm  
- **Thickness of sapwood:** from 2 to 4 cm  
- **Floats:** yes  
- **Log durability:** moderate (treatment recommended)

### Physical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Mean</th>
<th>Std dev.</th>
<th>Property</th>
<th>Mean</th>
<th>Std dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific gravity *:</td>
<td>0,58</td>
<td>0,03</td>
<td>Crushing strength *:</td>
<td>48 MPa</td>
<td>7 MPa</td>
</tr>
<tr>
<td>Monnin hardness *:</td>
<td>2,3</td>
<td>0,3</td>
<td>Static bending strength *:</td>
<td>86 MPa</td>
<td>7 MPa</td>
</tr>
<tr>
<td>Coeff. of volumetric shrinkage:</td>
<td>0,55%</td>
<td>0,08%</td>
<td>Modulus of elasticity *:</td>
<td>17270 MPa</td>
<td>2500 MPa</td>
</tr>
<tr>
<td>Total tangential shrinkage (TS):</td>
<td>6,3%</td>
<td>1,1%</td>
<td>(*: at 12% moisture content, with 1 MPa = 1 N/mm²)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total radial shrinkage (RS):</td>
<td>4,3%</td>
<td>1,0%</td>
<td>Stability: moderately stable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TS/RS ratio:</td>
<td>1,5</td>
<td></td>
<td>Musical quality factor:</td>
<td>119,1 measured at 2836 Hz</td>
<td></td>
</tr>
<tr>
<td>Fiber saturation point:</td>
<td>22%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Mechanical and Acoustic Properties

- **Fiber saturation point:** 22%
- **Stability:** moderately stable
- **Musical quality factor:** 119.1 measured at 2836 Hz

### Natural Durability and Treatability

- **Fungi (according to E.N. standards):** class 2 - 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 3 - poorly permeable
- **Use class ensured by natural durability:** class 3 - not in ground contact, outside
- **Species covering the use class 5:** No

**Note:** This species is listed in the European standard NF EN 350-2. 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: rapid
Risk of distortion: slight risk
Risk of casehardening: no
Risk of checking: slight risk
Risk of collapse: no
Note: Slight tendency to end checks.

Possible drying schedule: 2

<table>
<thead>
<tr>
<th>M.C. (%)</th>
<th>Temperature (°C)</th>
<th>Air humidity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>50</td>
<td>47</td>
</tr>
<tr>
<td>40</td>
<td>50</td>
<td>45</td>
</tr>
<tr>
<td>30</td>
<td>55</td>
<td>47</td>
</tr>
<tr>
<td>20</td>
<td>70</td>
<td>55</td>
</tr>
<tr>
<td>15</td>
<td>75</td>
<td>58</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: normal
Sawteeth recommended: ordinary or alloy steel
Cutting tools: ordinary
Peeling: good
Slicing: nood
Note: Sometimes, grain tearing. Sharp tools are necessary to avoid woolliness.

ASSEMBLING

Nailing / screwing: good but pre-boring necessary
Gluing: correct
Note: Tends to split when nailing.

COMMERCIAL GRADING

Appearance grading for sawn timbers: According to NHLA grading rules (January 2007)
Possible grading: FAS, Select, Common 1, Common 2, Common 3

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

Cabinetwork (high class furniture)  Sliced veneer
Veneer for back or face of plywood  Exterior joinery
Interior joinery  Interior panelling
Exterior panelling  Current furniture or furniture components
Light carpentry  Glued laminated
Ship building (planking and deck)  Vehicle or container flooring
<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>FREIJO</td>
<td>Brazil</td>
<td>FREI-JORGE</td>
</tr>
<tr>
<td>United States of America</td>
<td>CORDIA WOOD</td>
<td>United States of America</td>
<td>JENNY WOOD</td>
</tr>
</tbody>
</table>
## Specific gravity

- **Very light**
- **Light**
- **Medium**
- **Heavy**
- **Very heavy**

<table>
<thead>
<tr>
<th>Specific gravity</th>
<th>0.2</th>
<th>0.3</th>
<th>0.4</th>
<th>0.5</th>
<th>0.6</th>
<th>0.7</th>
<th>0.8</th>
<th>0.9</th>
<th>1</th>
<th>1.1</th>
<th>1.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monnin hardness</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>18</td>
</tr>
</tbody>
</table>

## Coefficient of volumetric shrinkage (%)

- **Low**
- **Medium**
- **High**

<table>
<thead>
<tr>
<th>Coefficient of volumetric shrinkage (%)</th>
<th>0.3</th>
<th>0.4</th>
<th>0.5</th>
<th>0.6</th>
<th>0.7</th>
<th>0.8</th>
</tr>
</thead>
</table>

## Total tangential shrinkage (%)

- **Low**
- **Medium**
- **High**

<table>
<thead>
<tr>
<th>Total tangential shrinkage (%)</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
</table>

## Total radial shrinkage (%)

- **Low**
- **Medium**
- **High**

<table>
<thead>
<tr>
<th>Total radial shrinkage (%)</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
</table>

## Crushing strength (MPa)

- **Low**
- **Medium**
- **High**

<table>
<thead>
<tr>
<th>Crushing strength (MPa)</th>
<th>0</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
<th>110</th>
</tr>
</thead>
</table>

## Static bending strength (MPa)

- **Low**
- **Medium**
- **High**

<table>
<thead>
<tr>
<th>Static bending strength (MPa)</th>
<th>25</th>
<th>75</th>
<th>100</th>
<th>125</th>
<th>150</th>
<th>175</th>
<th>200</th>
</tr>
</thead>
</table>

## Modulus of elasticity (≤1000 MPa)

- **Low**
- **Medium**
- **High**

<table>
<thead>
<tr>
<th>Modulus of elasticity (≤1000 MPa)</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
<th>16</th>
<th>18</th>
<th>20</th>
<th>22</th>
<th>24</th>
<th>26</th>
<th>28</th>
<th>30</th>
<th>32</th>
</tr>
</thead>
</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

<table>
<thead>
<tr>
<th>Fibers Saturation Point</th>
<th>15%</th>
<th>25%</th>
<th>35%</th>
<th>45%</th>
</tr>
</thead>
</table>