**Family:** FABACEAE-CAESALPINIOIDEAE (angiosperm)

**Scientific name(s):**
- Copaifera duckei
- Copaifera guianensis
- Copaifera langsdorffii
- Copaifera multijuga
- Copaifera reticulata

**Commercial restriction:** no commercial restriction

Note: Other species are commercialized under the name COPAIBA.

### WOOD DESCRIPTION

<table>
<thead>
<tr>
<th>Color:</th>
<th>red brown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sapwood:</td>
<td>clearly demarcated</td>
</tr>
<tr>
<td>Texture:</td>
<td>medium</td>
</tr>
<tr>
<td>Grain:</td>
<td>straight or interlocked</td>
</tr>
<tr>
<td>Interlocked grain:</td>
<td>slight</td>
</tr>
</tbody>
</table>

**Log Description**

- Diameter: from 45 to 80 cm
- Thickness of sapwood: from 2 to 3 cm
- Floats: no
- Log durability: low (must be treated)

Note: Heartwood varies from pink to red brown with copper-coloured veins. Resin exudation. Grain sometimes wavy.

### 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>Mean</th>
<th>Std dev.</th>
<th>Mean</th>
<th>Std dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific gravity *:</td>
<td>0.50</td>
<td>0.03</td>
<td>Crushing strength *:</td>
</tr>
<tr>
<td>Monnin hardness *:</td>
<td>2.6</td>
<td>1.4</td>
<td>Static bending strength *:</td>
</tr>
<tr>
<td>Coeff. of volumetric shrinkage:</td>
<td>0.40 %</td>
<td>0.03 %</td>
<td>Modulus of elasticity *:</td>
</tr>
<tr>
<td>Total tangential shrinkage (TS):</td>
<td>5.9 %</td>
<td>0.5 %</td>
<td><em>(at 12% moisture content, with 1 MPa = 1 N/mm²)</em></td>
</tr>
<tr>
<td>Total radial shrinkage (RS):</td>
<td>3.1 %</td>
<td>0.2 %</td>
<td>Stability: moderately stable to stable</td>
</tr>
<tr>
<td>TS/RS ratio:</td>
<td>1.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiber saturation point:</td>
<td>26 %</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MECHANICAL AND ACOUSTIC PROPERTIES

<table>
<thead>
<tr>
<th>Mean</th>
<th>Std dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crushing strength *:</td>
<td>38 MPa</td>
</tr>
<tr>
<td>Static bending strength *:</td>
<td>85 MPa</td>
</tr>
<tr>
<td>Modulus of elasticity *:</td>
<td>12450 MPa</td>
</tr>
</tbody>
</table>

*(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**

- **Fungi (according to E.N. standards):** class 5 - not durable
  
  - Dry wood borers: durable - sapwood demarcated (risk limited to sapwood)
  
  **Termites (according to E.N. standards):** class 5 - susceptible

  **Treatability (according to E.N. standards):** class 3 - poorly permeable

  **Use class ensured by natural durability:** class 1 - inside (no dampness)

- **Species covering the use class 5:** No

### REQUIREMENT OF A PRESERVATIVE TREATMENT

- **Against dry wood borer attacks:** does not require any preservative treatment

  In case of risk of temporary humidification: use not recommended

  In case of risk of permanent humidification: use not recommended
Drying rate: rapid
Risk of distortion: no risk or very slight risk
Risk of casehardening: yes
Risk of checking: no risk or very slight risk
Risk of collapse: no

Possible drying schedule: 3

<table>
<thead>
<tr>
<th>M.C. (%)</th>
<th>Temperature (°C)</th>
<th>Air humidity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>dry-bulb</td>
<td>wet-bulb</td>
</tr>
<tr>
<td>Green</td>
<td>60</td>
<td>56</td>
</tr>
<tr>
<td>30</td>
<td>68</td>
<td>58</td>
</tr>
<tr>
<td>20</td>
<td>74</td>
<td>60</td>
</tr>
<tr>
<td>15</td>
<td>80</td>
<td>61</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: good
Note: Fuzzy surface. Keep sharp tools.

ASSEMBLING

Nailing / screwing: poor
Gluing: correct
Note: Variable nails holding according to the species.

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 < 2 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

Interior joinery
Flooring
Turned goods
Veneer for interior of plywood
Light carpentry
Sliced veneer
Fiber or particle boards
Formwork

Interior panelling
Moulding
Boxes and crates
Veneer for back or face of plywood
Current furniture or furniture components
Seats
Blockboard
## 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>Belize</td>
<td>COPAI BA</td>
<td>Bolivia</td>
<td>COPAI BO</td>
</tr>
<tr>
<td>Brazil</td>
<td>COPAI BA</td>
<td>Brazil</td>
<td>PAU-D'OLEO</td>
</tr>
<tr>
<td>Colombia</td>
<td>CANIME</td>
<td>Guyana</td>
<td>BALSAM</td>
</tr>
<tr>
<td>Guyana</td>
<td>MARAM</td>
<td>French Guiana</td>
<td>PANCHIMOUTI</td>
</tr>
<tr>
<td>Panama</td>
<td>CANIVA</td>
<td>Panama</td>
<td>CUPAY</td>
</tr>
<tr>
<td>Peru</td>
<td>COPAI BA</td>
<td>Suriname</td>
<td>HOEPELHOUT</td>
</tr>
<tr>
<td>Suriname</td>
<td>KOEPAJ OEW A</td>
<td>Venezuela</td>
<td>ACEITE</td>
</tr>
<tr>
<td>Venezuela</td>
<td>CABIMO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COPAIBA</td>
<td>Page 4/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Physical Properties

#### Specific Gravity

- 0.2: Very light
- 0.3: Light
- 0.4: Medium
- 0.5: Heavy
- 0.6: Very heavy

#### Monnin Hardness

- 1: Very soft
- 2: Soft
- 3: Medium
- 4: Hard
- 5: Very hard

#### Coefficient of Volumetric Shrinkage (%)

- 0.3: Low
- 0.5: Medium
- 0.7: High

#### Total Tangential Shrinkage (%)

- 4: Low
- 5: Medium
- 6: High

#### Total Radial Shrinkage (%)

- 2: Low
- 4: Medium
- 5: High

#### Crushing Strength (MPa)

- 10: Low
- 30: Medium
- 50: High

#### Static Bending Strength (MPa)

- 25: Low
- 50: Medium
- 75: High

#### Modulus of Elasticity (≤1000 MPa)

- 6: Low
- 8: Medium
- 10: High

### Resistance Properties

#### Resistance to Fungi

- Not durable
- Poorly durable
- Moderately durable
- Durable
- Very durable

#### Resistance to Dry Wood Insects Borer

- 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 %: High

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