Family: FABACEAE-CAESALPINIOIDEAE (angiosperm)
Scientific name(s): Copalfera mildbraedii
Copaifera salikounda
Commercial restriction: no commercial restriction

WOOD DESCRIPTION

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

Note: Logs are almost floatable. Presence of resin. Wood often moiré.

LOG DESCRIPTION

Diameter: from 80 to 120 cm
Thickens of sapwood: from 5 to 10 cm
Floats: 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 (g/cm³)</th>
<th>Std dev. (g/cm³)</th>
<th>Crushing strength (MPa)</th>
<th>Mean (MPa)</th>
<th>Std dev. (MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific gravity *</td>
<td>0.71</td>
<td>0.09</td>
<td>68</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Monnin hardness *</td>
<td>5.0</td>
<td>1.4</td>
<td>115</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Coeff. of volumetric shrinkage</td>
<td>0.53%</td>
<td>0.03%</td>
<td></td>
<td></td>
<td>14560</td>
</tr>
<tr>
<td>Total tangential shrinkage (TS)</td>
<td>7.5%</td>
<td></td>
<td></td>
<td></td>
<td>165</td>
</tr>
<tr>
<td>Total radial shrinkage (RS)</td>
<td>4.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TS/RS ratio</td>
<td>1.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiber saturation point</td>
<td>26%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Stability: moderately stable

Note: C. mildbraedii seems to have lower properties than C. salikounda.

MECHANICAL AND ACOUSTIC PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Mean (MPa)</th>
<th>Std dev. (MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crushing strength *</td>
<td>68</td>
<td>9</td>
</tr>
<tr>
<td>Static bending strength *</td>
<td>115</td>
<td>18</td>
</tr>
<tr>
<td>Modulus of elasticity *</td>
<td>14560</td>
<td>165</td>
</tr>
</tbody>
</table>

Musical quality factor: 115 measured at 2508 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

<table>
<thead>
<tr>
<th>Fungi (according to E.N. standards):</th>
<th>class 3 - moderately durable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry wood borers:</td>
<td>durable - sapwood demarcated (risk limited to sapwood)</td>
</tr>
<tr>
<td>Termites (according to E.N. standards):</td>
<td>class M - moderately durable</td>
</tr>
<tr>
<td>Treatability (according to E.N. standards):</td>
<td>class 3 - poorly permeable</td>
</tr>
<tr>
<td>Use class ensured by natural durability:</td>
<td>class 2 - inside or under cover (dampness possible)</td>
</tr>
<tr>
<td>Species covering the use class 5:</td>
<td>No</td>
</tr>
</tbody>
</table>

REQUIREMENT OF A PRESERVATIVE TREATMENT

Against dry wood borer attacks: does not require any preservative treatment
In case of risk of temporary humidification: requires appropriate 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

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>dry-bulb 50</td>
<td>wet-bulb 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: good

Note: Sometimes, resin may clog tools.

**ASSEMBLING**

Nailing / screwing: good
Gluing: correct

**COMMERCIAL GRADING**

Appearance grading for sawn timbers: According to SATA grading rules (1996)
   For the "General Purpose Market":
   Possible grading for square edged timbers: choix I, choix II, choix III, choix IV
   Possible grading for short length lumbers: choix I, choix II
   Possible grading for short length rafters: choix I, choix II, choix III
   For the "Special Market":
   Possible grading for strips and small boards (ou battens): choix I, choix II, choix III
   Possible grading for rafters: choix I, choix II, choix III

**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**

Veneer for interior of plywood
Sliced veneer
Cabinetwork (high class furniture)
Flooring
Light carpentry
Wood frame house
Exterior joinery
Exterior panelling

Veneer for back or face of plywood
Current furniture or furniture components
Interior joinery
Stairs (inside)
Glued laminated
Moulding
Interior panelling
Shingles
## 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>Benin</td>
<td>AKPAFLO</td>
<td>Cameroon</td>
<td>ESSAK</td>
</tr>
<tr>
<td>Congo</td>
<td>YAMA</td>
<td>Ivory Coast</td>
<td>ETIMOE</td>
</tr>
<tr>
<td>Gabon</td>
<td>ANDEM-EVINE</td>
<td>Ghana</td>
<td>ENTEDUA</td>
</tr>
<tr>
<td>Nigeria</td>
<td>OVBIALEKE</td>
<td>Central African Republic</td>
<td>BILOMBI</td>
</tr>
<tr>
<td>Central African Republic</td>
<td>YAMA</td>
<td>Democratic Republic of the Congo</td>
<td>BOFELELE</td>
</tr>
</tbody>
</table>
### Specific Gravity

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

### Mohrin Hardness

- **Very soft**
- **Soft**
- **Medium**
- **Hard**
- **Very hard**

### Coefficient of Volumetric Shrinkage (%)

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

### Total Tangential Shrinkage (%)

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

### Total Radial Shrinkage (%)

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

### Crushing Strength (MPa)

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

### Static Bending Strength (MPa)

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

### Modulus of Elasticity (≤1000 MPa)

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

### 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%**
- **25%**
- **Medium**
- **35%**
- **High**
- **45%**