Family: FABACEAE-CAESALPINIOIDEAE (angiosperm)
Scientific name(s): Julbernardia pellegriniana
Paraberlinia bifoliolata (synonymous)
Commercial restriction: no commercial restriction

WOOD DESCRIPTION

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

Log description:
- Diameter: from 80 to 100 cm
- Thickness of sapwood: from 10 to 15 cm
- Floats: no
- Log durability: moderate (treatment recommended)

Note: Wood highly veined with alternate dark and light coloured streaks. Grain sometimes oblique.

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>
<th>Mean</th>
<th>Std dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific gravity *:</td>
<td>0.77</td>
<td>0.06</td>
<td>Crushing strength *:</td>
<td>68 MPa</td>
</tr>
<tr>
<td>Monnin hardness *:</td>
<td>5.6</td>
<td>1.3</td>
<td>Static bending strength *:</td>
<td>128 MPa</td>
</tr>
<tr>
<td>Coeff. of volumetric shrinkage:</td>
<td>0.60 %</td>
<td>0.07 %</td>
<td>Modulus of elasticity *:</td>
<td>17840 MPa</td>
</tr>
<tr>
<td>Total tangential shrinkage (TS):</td>
<td>8.9 %</td>
<td>1.0 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total radial shrinkage (RS):</td>
<td>4.3 %</td>
<td>0.6 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiber saturation point:</td>
<td>27 %</td>
<td></td>
<td>Musical quality factor:</td>
<td>115,7 measured at 2871 Hz</td>
</tr>
<tr>
<td>Stability:</td>
<td>moderately stable</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MECHANICAL AND ACOUSTIC PROPERTIES

- TS/RS ratio: 2.1
- Fiber saturation point: 27 %

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 3 - 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 3 - poorly permeable
- Use class ensured by natural durability: class 2 - inside or under cover (dampness possible)
- 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: requires appropriate preservative treatment
- In case of risk of permanent humidification: use not recommended
Drying

Drying rate: normal to slow
Risk of distortion: slight risk
Risk of casehardening: no
Risk of checking: slight risk
Risk of collapse: no

Note: Possibility of discoloration during drying.

Possible drying schedule: 4

<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>42</td>
<td>39</td>
</tr>
<tr>
<td>50</td>
<td>48</td>
<td>43</td>
</tr>
<tr>
<td>40</td>
<td>48</td>
<td>43</td>
</tr>
<tr>
<td>30</td>
<td>48</td>
<td>43</td>
</tr>
<tr>
<td>15</td>
<td>54</td>
<td>46</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: no information available
Slicing: nood

Note: Risks of distortion in machining (especially in planing).

Assembling

Nailing / screwing: good but pre-boring necessary
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

Cabinetwork (high class furniture) Sliced veneer
Heavy carpentry Wood frame house
Current furniture or furniture components Interior joinery
Interior panelling Flooring
Vehicle or container flooring Stairs (inside)

Note: End-uses for this species are limited because of its low yield due to the possible presence of defects.
<table>
<thead>
<tr>
<th>Country</th>
<th>Local name</th>
<th>Country</th>
<th>Local name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cameroon</td>
<td>EKOP-BELI</td>
<td>Gabon</td>
<td>AWOURA</td>
</tr>
<tr>
<td></td>
<td>BELI</td>
<td>Germany</td>
<td>ZEBRALI</td>
</tr>
<tr>
<td>France</td>
<td>ZEBRALI</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### AWOURA

<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>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></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>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>0.6</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total tangential shrinkage (%)</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total radial shrinkage (%)</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crushing strength (MPa)</td>
<td>0</td>
<td>20</td>
<td>40</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Static bending strength (MPa)</td>
<td>25</td>
<td>75</td>
<td>100</td>
<td>125</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modulus of elasticity (&lt;1000 MPa)</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td></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**
- 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 %