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

**Scientific name(s):**
- Dialium bipidense
- Dialium dinklagei
- Dialium aubrevillei
- Dialium pachyphyllum

**Commercial restriction:** no commercial restriction

### WOOD DESCRIPTION

**Color:** red brown  
**Sapwood:** clearly demarcated  
**Texture:** medium  
**Grain:** straight to entangled  
**Interlocked grain:** marked  
**Note:** Light pinkish brown to brown or red brown, sometimes very dark.

### LOG DESCRIPTION

<table>
<thead>
<tr>
<th>Diameter: from</th>
<th>60 to 100 cm</th>
<th>Thickness of sapwood: from</th>
<th>4 to 8 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floats:</td>
<td>no</td>
<td>Log durability: good</td>
<td></td>
</tr>
</tbody>
</table>

### PHYSICAL PROPERTIES

Physical and mechanical properties are based on mature heartwood specimens. These properties can vary greatly depending on origin and growth conditions.

- **Specific gravity**: 0.94 (Mean) 0.09 (Std dev.)
- **Monnin hardness**: 10.3 (Mean) 2.8 (Std dev.)
- **Coeff. of volumetric shrinkage**: 0.50% (Mean) 0.11% (Std dev.)
- **Total tangential shrinkage (TS)**: 8.7% (Mean) 1.0% (Std dev.)
- **Total radial shrinkage (RS)**: 4.9% (Mean) 0.4% (Std dev.)
- **TS/RS ratio**: 1.8
- **Fiber saturation point**: 28%
- **Stability**: poorly stable

### MECHANICAL AND ACOUSTIC PROPERTIES

<table>
<thead>
<tr>
<th>Crushing strength *:</th>
<th>90 MPa (Mean) 18 MPa (Std dev.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static bending strength *:</td>
<td>162 MPa (Mean) 24 MPa (Std dev.)</td>
</tr>
<tr>
<td>Modulus of elasticity *:</td>
<td>22700 MPa (Mean) 3500 MPa (Std dev.)</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**

- **Funghi (according to E.N. standards):** class 1 - very durable  
- **Dry wood borers:** durable - sapwood demarcated (risk limited to sapwood)  
- **Termites (according to E.N. standards):** class D - durable  
- **Treatability (according to E.N. standards):** class 4 - not permeable  
- **Use class ensured by natural durability:** class 4 - in ground or fresh water contact

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

**Note:** Informations given in the "Natural durability" and "Requirement of a preservative treatment" parts are relative to the behaviours of most species of the genus. Some origins of some species, in particular Dialium pachyphyllum and Dialium aubrevillei, could show less durable (durability class 3 or 4).

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:** does not require any preservative treatment
DRYING

Drying rate: slow
Risk of distortion: high risk
Risk of casehardening: no
Risk of checking: high risk
Risk of collapse: no

Possible drying schedule: 1

<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>40</td>
<td>40</td>
<td>37</td>
</tr>
<tr>
<td>40</td>
<td>44</td>
<td>38</td>
</tr>
<tr>
<td>30</td>
<td>44</td>
<td>36</td>
</tr>
<tr>
<td>20</td>
<td>46</td>
<td>36</td>
</tr>
<tr>
<td>15</td>
<td>49</td>
<td>37</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: high
Sawteeth recommended: stellite-tipped
Cutting tools: tungsten carbide
Peeling: not recommended or without interest
Slicing: need

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

Hydraulic works (fresh water) Bridges (parts in contact with water or ground)
Wood frame house Exterior joinery
Exterior paneling Sliced veneer
Flooring Industrial or heavy flooring
Vehicle or container flooring Sleepers
Turned goods

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.
<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>MFANG</td>
<td>Cameroon</td>
<td>MFAN</td>
</tr>
<tr>
<td>Congo</td>
<td>PENZI</td>
<td>Ivory Coast</td>
<td>AFAMBEOU</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>KOFINA</td>
<td>Liberia</td>
<td>CIANIA</td>
</tr>
<tr>
<td>Liberia</td>
<td>GBELLE-FLU</td>
<td>Liberia</td>
<td>GIA KABA</td>
</tr>
<tr>
<td>Gabon</td>
<td>EYOUM</td>
<td>Gabon</td>
<td>OMVONG</td>
</tr>
<tr>
<td>Guinea-Bissau</td>
<td>PAU VELUDO</td>
<td>Mozambique</td>
<td>ZIBA</td>
</tr>
<tr>
<td>Democratic Republic of the Congo</td>
<td>BONGOLA</td>
<td>Democratic Republic of the Congo</td>
<td>KASUDU</td>
</tr>
</tbody>
</table>
### Properties of the Material

<table>
<thead>
<tr>
<th>Property</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific gravity</td>
<td>0.2 - 1.2</td>
</tr>
<tr>
<td>Monnin hardness</td>
<td>1 - 20</td>
</tr>
<tr>
<td>Coefficient of volumetric shrinkage (%)</td>
<td>0.3 - 0.8</td>
</tr>
<tr>
<td>Total tangential shrinkage (%)</td>
<td>4 - 12</td>
</tr>
<tr>
<td>Total radial shrinkage (%)</td>
<td>2 - 10</td>
</tr>
<tr>
<td>Crushing strength (MPa)</td>
<td>0 - 110</td>
</tr>
<tr>
<td>Static bending strength (MPa)</td>
<td>25 - 200</td>
</tr>
<tr>
<td>Modulus of elasticity (≤1000 MPa)</td>
<td>6 - 32</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%**
- **25%**
- **35%**
- **45%**