Swartzia spp.
Family: Leguminosae
Wamara

Bannia

Other Common Names: Naranjillo (Mexico, Honduras, Panama), Parakusan (Guyana), Gandoe, Ijzerhart (Surinam), Alma negra (Colombia), Orura barrialera (Venezuela), Icoje (Peru), Pau ferro, Mututy (Brazil).

Distribution: Southern Mexico, through Central America, the West Indies and southward to northern South America; especially abundant in the Guianas and the Amazon region.

The Tree: Size varies considerably with species, some reaching heights of 110 ft with trunk diameters commonly to 24 in., but reaching 36 in.

The Wood:
General Characteristics: Heartwood dark brown, reddish brown, or nearly black, in solid color or somewhat variegated; sharply demarcated from the nearly white to yellowish sapwood. Texture very fine to medium; luster usually medium; grain straight to irregular; without distinctive odor or taste. Dust irritating to some workers.

Weight: Basic specific gravity (ovendry weight/green volume) 0.87 to 1.02; air-dry density 65 to 75 pcf.

Mechanical Properties: (First and third sets of data based on the 2-in. standard, the second set on the 2-cm standard.)

<table>
<thead>
<tr>
<th>Moisture content</th>
<th>Bending strength (Psi)</th>
<th>Modulus of elasticity (1,000 psi)</th>
<th>Maximum crushing strength (Psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green (75)</td>
<td>22,870</td>
<td>3,000</td>
<td>12,930</td>
</tr>
<tr>
<td>12%</td>
<td>26,370</td>
<td>3,630</td>
<td>15,440</td>
</tr>
<tr>
<td>Green (42)</td>
<td>21,400</td>
<td>2,480</td>
<td>10,500</td>
</tr>
<tr>
<td>12%</td>
<td>32,600</td>
<td>3,220</td>
<td>16,500</td>
</tr>
<tr>
<td>15% (34)</td>
<td>23,460</td>
<td>2,620</td>
<td>12,900</td>
</tr>
</tbody>
</table>
Janka side hardness 3,325 to 4,060 lb for dry material. Forest Products Laboratory toughness average for green and dry material is 260 in.-lb (5/8-in. specimen).

**Drying and Shrinkage:** Generally reported to be moderately difficult to air-dry because of checking and warp. Kiln schedule T2-C2 is suggested for 4/4 stock and T2-C1 for 8/4. Shrinkage green to ovendry: radial 3.9%; tangential 7.6%; volumetric 11.2%. Movement after manufacture of some species is reported high.

**Working Properties:** The woods are difficult to work because of their high density, but finish very smoothly and takes a high polish. Workers should be protected from the irritating dust of some species (*S. bannia*).

**Durability:** Heartwood is very resistant to attack by decay fungi and resistant to dry-wood termites. Not resistant to marine borers.

**Preservation:** No information available.

**Uses:** inlay, parquet flooring, turnery, furniture, cabinetwork, violin bows, specialty items, suggested as a substitute for ebony.

**Additional Reading:** (34), (42), (46), (75)