**Anacardium excelsum**  
*Family: Anacardiaceae*  
Espave

**Other Common Names:** Espavel (Nicaragua), Caracoli (Venezuela, Colombia), Caju assu, Caju da matta (Brazil), Maranon (Ecuador).

**Distribution:** Costa Rica south through Panama to Colombia, Venezuela, and Ecuador. Frequently found in coastal areas on well-drained soils. Almost pure stands report in the Darien Province of Panama.

**The Tree:** Commonly attains diameters of 3 to 5 ft, total height frequently ranges from 75 to 150 ft. Forest-grown trees often have clear boles 30 to 60 ft. Some basal swelling but no well-developed buttress.

**The Wood:**

**General Characteristics:** Heartwood on exposure becomes a fairly uniform russet brown with a golden or reddish cast; sapwood is 6 to 10 in. thick, grayish white with more or less pinkish tinge, sharply demarcated from heartwood. Wood has a fairly high luster and is attractively marked by prominent vessel lines; medium to coarse textured and typically has an interlocked grain with a pronounced stripe. Distinctive odor and taste are lacking.

**Weight:** Basic specific gravity (ovendry weight/green volume) 0.41; air-dry density pcf.

**Mechanical Properties:** (2-in. 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 (74)</td>
<td>5,320</td>
<td>1,060</td>
<td>2,460</td>
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<tr>
<td>12%</td>
<td>7,960</td>
<td>1,280</td>
<td>4,530</td>
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</tbody>
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Janka side hardness 400 lb green and 470 lb for air-dry wood. Forest Products Laboratory toughness is 57 in.-lb average for green and air-dry material (5/8- in. specimen).

**Drying and Shrinkage:** Espave is described as moderately difficult to air-dry. It has a somewhat variable drying rate, and pieces that dry quickly tend to warp and check. Kiln schedule T6-D2 is suggested for 4/4 stock and schedule T3-D1 for 8/4. Shrinkage green to ovendry: radial 2.8%; tangential 5.2%; volumetric 8.4%.

**Working Properties:** Espave is rated poor in planing and sanding properties, good in shaping and mortising, and fair in turning and boring. Chipped grain and fuzzy surfaces are the most common machining defects. A silica content of only 0.09% is reported.
**Durability:** Laboratory tests indicate the heartwood is durable upon exposure to both white-rot and brown-rot fungi. Other evaluations have indicated the wood is vulnerable to attack by fungi and insects. The wood has been classified as resistant to dry-wood termite attack.

**Preservation:** Though heartwood penetration is irregular, absorptions of 8 pcf have been obtained using pressure-vacuum treatments in Venezuela. Wood from Panama is considered very difficult to preserve though complete penetration was observed in the sapwood.

**Uses:** General construction both interior and exterior (heartwood) has been suggested Furniture, veneer and plywood, boxes and crates, and pulp and paper products have also been recommended.

**Additional Reading:** (44), (56), (71), (74)
