

## Macaranduba

Scientific name: *Manilkara* spp., Sapotaceae.

Note: Macaranduba wood belongs to the group of species of the genus *Manilkara* that produce heavy, hard, reddish-brown woods. These species include *Manilkara amazonica* (Huber) Chevalier (synonym *M. bidentata* subsp. *Surinamensis* (Miq.) Penning .; *M. cavalcantei* Pires & Barb. Rodr. Ex Penning .; *M. huberi* (Ducke) Chevalier; *M. inundata* (Ducke) Ducke These Woods are given common names typical in their regions of occurrence, such as *aparaíú*, *marapajuba-da-varzea*, *maçaranduba*, *marapajuba*, *maçaranduba* and *maçarandubinha*, in the Amazon; from Bahia to the South and Southeast, as these Woods are similar in their characteristics and have the same value in trade, this sheet is treated together, and the species mentioned, when relevant.

Other popular names: *aparaíú*, *balata true*, *corncob*, *corncob*, *corncob*, *maparajuba*, *lowland marapajuba*, *paraju*.

International names: *balata*, *bullet wood*, *maçaranduba* (ATIBT, 1982), *massaranduba* (BSI, 1991), *sapodilla*.

Occurrence:

- Brazil: Acre, Amapá, Amazonas, Bahia, Espírito Santo, Maranhão, Mato Grosso, Pará, Paraná, Rio de Janeiro, Rondonia, Santa Catarina.
- Other countries: Central America, Colombia, Guyana, Peru, Suriname.

### GENERAL FEATURES

Sensory characteristics: heartwood and sapwood distinguished by color, heartwood light red becoming dark red over time; lackluster; imperceptible smell and taste; high density; hard to cut; right grain; Fine texture.

Macroscopic Anatomical Description:

- Axial parenchyma: visible only under lens, in numerous, sometimes broken lines.
- Rays: visible only under top lens, tangential face invisible even under lens; few to numerous.
- Vessels: visible only under lens, small to medium; few; diffuse porosity; in radial arrangement; loners, multiples; clogged by tylos.
- Growth layers: distinct, individualized by darker tangential fibrous zones.

Source: (IPT, 1983; IPT, 1989a)

### DURABILITY / TREATMENT

Natural Durability: Macaranduba Wood is resistant to attack by rotting fungi and subterranean termites. It has moderate resistance to dry wood termites and low resistance to marine xylophages. (Chudnoff, 1979) The species *Manilkara amazonica* has been described as very resistant to attack by fungi and termites, but susceptible to marine borers. (Berni et al., 1979) The species *Manilkara huberi* has been found to be highly durable in contact with soil, with a shelf life of more than eight years. (Jesus et al., 1998) *Manilkara longifolia* and *Manilkara elata* in laboratory tests have been shown to have moderate to high resistance to rot. (IPT 1989a)

Treatability: The heartwood is impervious to water-soluble preservative solutions (CCA-A), even under pressure treatment. (IBAMA, 1997a)

### PROCESSING CHARACTERISTICS

Workability: Macaranduba wood is moderately difficult to cut and flatten, but easy to turn and glue. Tends to crack if nailed or screwed without prior drilling. Receives good workmanship, paint and varnish. (Jankowsky, 1990)

Drying: Air drying is difficult, with cracking, warping and severe surface hardening. Oven drying should be slow and carefully controlled. (Jankowsky, 1990)

Drying programs can be obtained from (IBAMA, 1997a; Jankowsky, 1990)

### PHYSICAL PROPERTIES

Mass Density ( $\rho$ ):

- Apparent at 15% humidity ( $\rho_{ap, 15}$ ): 1000 kg / m<sup>3</sup>
- Basic (basic): 833 kg / m<sup>3</sup>

Contraction:

- Radial: 6.8%
- Tangential: 11.0%
- Volumetric: 19.0%

Results obtained according to ABNT Standard MB26 / 53 (NBR 6230/85).

Source: (IPT, 1989a)

Note: information for species *Manilkara longifolia* (A. DC.) Dub.

### MECHANICAL PROPERTIES

Flexion:

- Resistance (fM):
  - Green wood: 117.0 MPa
  - Wood at 15% humidity: 162.6 MPa
- Proportionality Limit - Green Wood: 57.5 MPa
- Elasticity Module - Green Wood: 14769 MPa

Results obtained according to ABNT Standard MB26 / 53 (NBR 6230/85).

Source: (IPT, 1989a)

Note: information for species *Manilkara longifolia* (A. DC.) Dub.

Parallel Fiber Compression:

- Resistance (fc0):
  - Green wood: 59.8 MPa
  - Wood at 15% humidity: 73.9 MPa
- Moisture influence coefficient: 4.1%
- Proportionality Limit - Green Wood: 41.9 MPa
- Elasticity Module - Green Wood: 16583 MPa

Results obtained according to ABNT Standard MB26 / 53 (NBR 6230/85).

Source: (IPT, 1989a)

Note: information for species *Manilkara longifolia* (A. DC.) Dub.

Other properties:

- Flexural impact strength - 15% wood (shock): 33.0
- Shear - Green Wood: 13.2 MPa
- Parallel janka hardness - Green wood: 9611 N
- Normal fiber traction - Green wood: 8.2 MPa
- Cracking - Green Wood: 0.9 MPa

Results obtained according to ABNT Standard MB26 / 53 (NBR 6230/85).

Source: (IPT, 1989a)

Note: information for species *Manilkara longifolia* (A. DC.) Dub.

## USES

### Construction:

- External heavy:
  - railway sleepers
  - bridges
  - crosspieces
  - piles
- Internal Heavy:
  - scissors
  - rafters
  - rafters

### Floors:

- tacos
- parquet

### Furniture:

- High quality:
  - decorative parts of furniture (handles, notches)

### Other Uses:

- turned parts
- musical instruments (violin bows)
- transport
- blades
- pool cues