KITARU
LUMBERYARD BALI

KAPUR PROPERTIES

BOTANICAL NAME:
Dryobalanops aromatica Gaertn. f., family Dipterocarpaceae.

LOCAL NAMES:
Kapur, kapur barus, camphor tree.

OTHER NAMES:
Borneo camphor, Sumatra camphor.

GEOGRAPHICAL DISTRIBUTION:
Native to Southeast Asia, particularly found in Indonesia (Sumatra and Borneo), Malaysia, and southern Thailand.

HABITUS

Kapur trees are large emergent species, reaching heights up to 65–75 meters. The trunk is straight and cylindrical, often branchless for 30–40 meters, with diameters reaching up to 145 cm. The trees develop well-formed buttresses extending up to 4 meters high. Kapur exhibits a phenomenon known as "crown shyness," where the crowns of mature trees do not touch each other, creating distinct gaps in the canopy.

GENERAL CHARACTERISTICS

- **Color:** The heartwood is red to reddish-brown, while the sapwood is almost white to light yellowish-brown and clearly demarcated from the heartwood.
- **Texture:** Moderately coarse to coarse.
- **Grain:** Straight, interlocked, or spiral.
- **Touch:** The surface is smooth but can be slightly rough due to interlocked grain.
- **Gloss:** Natural wood surface exhibits a moderate luster.
- **Figures:** Radial sections show light-colored streaks.

STRUCTURE

- **Vessels:** Mostly solitary, some in radial groups of 2 to 4, round to oval, 100–300 µm in diameter, containing tyloses.
- **Parenchyma:** Paratracheal, forming complete or incomplete borders around vessels; apotracheal parenchyma appear in short, tangential bands and diffuse patterns.

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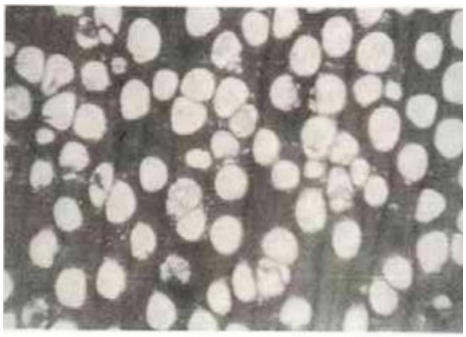
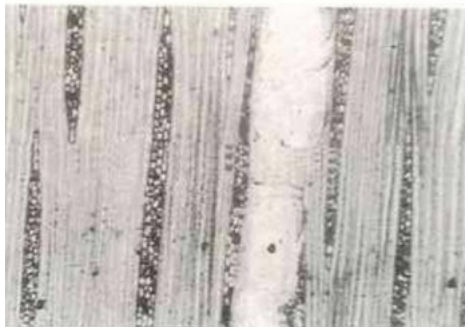
- **Rays:** Homogeneous, fine and short, with a frequency of 6 to 8 per mm. Some rays contain brown deposits.
- **Intercellular Canals:** Smaller than vessels, arranged in long series, containing white resin.
- **Fibers:** Length 1,200–1,400 µm, diameter 19–22 µm, with thick walls and small lumens.



Transversal view (x26)

Radial view (x75)



Tangential view (x75)

PHYSICAL PROPERTIES

- **Specific Gravity:** 0.62 – 0.85 (average 0.75)
- **Density:** Approx. 800 kg/m³ at 12% moisture content
- **Shrinkage:**
    - Radial: 3.5 – 3.6%
    - Tangential: 7.5 – 8.0%
- **Natural Durability:**
    - Above-ground: Class 2 (15–40 years)

- In-ground: Class 3 (5–15 years)

MECHANICAL PROPERTIES

Property	Value (kg/cm²)
Ultimate Bending Strength	850 – 1,200
Modulus of Elasticity	110,000 – 125,000
Crushing Strength	650 – 800
Shear Strength	90 – 120

CHEMICAL PROPERTIES

- **Cellulose:** 60–65%
- **Lignin:** 23–25%
- **Pentosan:** 16–18%
- **Ash Content:** 1.0 – 1.5%
- **Silica Content:** 0.3 – 0.5%

DURABILITY AND TREATABILITY

- Kapur belongs to **durability class II – III**, offering moderate resistance to decay and termites.
- The wood is **moderately resistant** to dry wood termites but can be attacked by subterranean termites in humid environments.
- It is **moderately difficult to treat** with preservatives due to its dense structure.

DRYING PROPERTIES

- Kapur is **moderately difficult to dry**, prone to surface checking and end splitting.
- **Kiln drying** for 25 mm and 50 mm boards takes approximately 6–12 days at temperatures of 40–70°C and relative humidity between 85% and 40%.

WORKING PROPERTIES

- **Sawing & Machining:** Kapur wood machines well but can cause moderate blunting of cutting tools due to silica content.
- **Nailing & Screwing:** Good holding properties; pre-drilling is recommended near edges.
- **Finishing:** Takes stain, paint, and polish well.

USES

- **Construction:** Flooring, stairways, beams, posts, heavy-duty structures.
- **Marine Applications:** Boat planking, dock construction.
- **Furniture & Interior:** Plywood, joinery, interior lining, low-cost furniture.
- **Miscellaneous:** Tool handles, pallets, packing cases, vehicle bodies.

SILVICULTURE

- **Habitat:** Found in lowland tropical rainforests on well-drained sandy or loamy soils at altitudes up to 400 m.
- **Regeneration:** Natural regeneration is moderate but uneven; enrichment planting is recommended.
- **Fruiting:** Irregular fruiting cycle, typically every 3–7 years.
- **Pests & Diseases:** Young seedlings are susceptible to damage by wild boars and fungal attacks in humid conditions.

Kapur is a versatile, moderately durable hardwood with good strength properties, making it ideal for various structural and decorative applications. Its natural resistance to decay and workability make it a valuable timber in construction and manufacturing.