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IPE PEROBA  
PEROBA DO CAMPO  
Paratecoma peroba (Record) Kuhlmann  
Family: Bignoniaceae

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Paratecoma peroba is considered one of the most important timbers in the market of Rio de Janeiro (3, 12).<sup>2</sup> It has been confused with various species to which common names containing the word peroba have also been applied commercially.<sup>3</sup>

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<sup>1</sup>Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

<sup>2</sup>Numbers in parentheses refer to the numbered list of references at the end of the report.

<sup>3</sup>The name peroba amarella is applied to wood of the genus Aspidosperma (Family Apocynaceae). Paratecoma differs from Aspidosperma in minute anatomy and because it contains small amounts of yellow lapachol. Paratecoma was for a time classed as a Tecoma (= Tabebuia), but in 1931 it was assigned to the then new genus Paratecoma by Kuhlmann. The species was first called Paratecoma diandra Kuhlmann, but was found to be synonymous with Tecoma peroba Record and so became Paratecoma peroba (Record) Kuhlmann. (8, 11). It is the only known species of the genus.

### Common Names

The following common names are those frequently applied to Paratecoma peroba in Brazil:

Ipe peroba  
Ipe de Bahia  
Peroba amarella (also applied to Aspidosperma spp.)  
Peroba branco  
Peroba de campos  
Peroba do campo  
Peroba manchado  
Peroba reseca  
Peroba tigrinha  
Peroba tremida  
Peroba verdadeira  
Perobinha  
Edelteak  
Moah wood  
Pau peroba  
White peroba (because paler than other perobas)

### Distribution and Habitat

Peroba do campo comes mainly from Eastern Brazil where it occurs in the coastal type of forest in the states of Rio de Janeiro, Espirito Santa, and Bahia (2, 3).

### The Tree

#### Size and Shape

Paratecoma is a large and important tree; it may attain a height of 130 feet. The bole is usually well-shaped, symmetrical, and almost cylindrical up to 95 feet in length and 60 inches in diameter (2, 10, 12). Commercially, logs 30 inches in diameter have been received in the New York market.

#### Bark

The bark is distinctly ridged and yellowish.

## Leaves

The leaves are opposite, leathery, smooth, and digitately compound, somewhat resembling those of the well-known Virginia creeper, with three to seven serrate leaflets, mostly five. The leaflets are long pointed, and the middle one is about 4 inches long and 1-1/2 inches wide.

## Flowers and Fruit

The long-tubed flowers are borne in pyramidal clusters at the ends of branches.

The fruit may be as much as a foot in length and is a flattened woody capsule packed with numerous flat, winged seeds (2, 12).

## The Wood

### Color

The sapwood is a pale yellowish-gray, clearly demarcated from the heartwood, which is described as light olive brown, with varying shades of yellow, green, brown, or red (2, 10, 14). One New York cabinetmaker describes it as of "about the color of greenheart" with "a texture suggesting Santo Domingo satinwood." It is sometimes distinctly striped. A sulphur-yellow deposit, lapachol, may be present sparingly in some of the pores of the heartwood, although it is not as abundant as in certain species of the closely related genus Tabebuia. Lapachol ( $C_{15}H_{14}O_3$ )<sup>4</sup> is a crystalline golden-yellow substance (an amylene derivative of 8-hydroxy-a-naphthaquinone). On the application of ammonia, dilute sodium carbonate, or 1 percent caustic soda lapachol turns a pink to deep wine-red color. A white crystalline substance has also been observed on the surfaces of the planed wood. This has been identified as lapachonone (1, 9). Some have considered dust from the wood to be a possible cause of dermatitis, but positive evidence is lacking (1, 9). Wood containing lapachol is used locally for dyeing.

### Luster

Ipe peroba is rated as fairly lustrous (12, 13).

### Odor and Taste

Odor and taste are generally absent or not distinctive, but a bitter taste is sometimes noted if the wood is chewed.

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<sup>4</sup>Lapachol is also reported to occur in Tecoma (Tabebuia), Cotema, Godmania (12), Phyllarthron (from Madagascar) of the Bignoniaceae, and in Avicennia of the Verbenaceae (Avicenniaceae) (8, 10).

## Texture, Grain, and Figure

Texture is rated medium (10, 13).

The grain of peroba is variable, sometimes straight to finely roey and interlocked, often inclined as in sapele so that a stripe figure is produced in quarter-sawed material. Wavy or curly grain may also be present, giving some beautifully figured material (2, 13). Ripple marks occur but are not constant or uniform in distribution (12).

## Weight

Peroba is rated as moderately hard and heavy, weighing 43 to 52 pounds, average 47, per cubic foot when seasoned. Specific gravity (air dry) is 0.70 to 0.83 (9, 10, 12, 13). Teak (air dry) weighs about 40 pounds per cubic foot, and mahogany (air dry) from 35 to 40 pounds.

## Mechanical Properties

Peroba is said to be strong and tough (10), moderately hard and heavy (4, 12). Tests of its screw-holding power have been made in comparison with other cabinet woods (5). They indicate that Paratecoma does not rate as high as hard maple but is higher than Khaya and considerably higher than yellow-poplar or teak (from Java, specific gravity 0.54). Paratecoma, therefore, is in the intermediate group along with most mahogany and walnut. Howard (7) rates Paratecoma as "stronger than teak (Tectona grandis)" and says it "agrees well with iron and has been used in the constructional work on Brazilian iron clads." Woods (14) finds it practically identical with teak in strength except in hardness and shear, in which it is superior. Its hardness was determined as 82 percent compared with black walnut as 100 percent (4).

## Durability

It is considered highly durable (13).

## Seasoning

Some difficulty in seasoning results from the variations in grain commonly present. Checking often occurs if special care is not exercised in the later stages of drying. A series of tests (6) indicate that Paratecoma shows the following percentages of directional and volumetric shrinkage from green to oven-dry condition, as compared with mahogany and teak.

<u>Species</u>	<u>Radial</u>	<u>Tangential</u>	<u>Volumetric</u>
Ipe peroba ( <u>Paratecoma</u> )	3.41	6.20	9.82
Mahogany ( <u>Swietenia macrophylla</u> )	3.50	4.80	7.70
Teak (Java) ( <u>Tectona grandis</u> )	6.36	9.55	16.34

Ipe'peroba has been kiln dried in England using British Forest Products Research Laboratory Kiln Schedule 4. The U. S. Forest Products Laboratory schedule that appears most appropriate for 4/4 stock, for example, is T4-D2 as outlined in table 1, U. S. Forest Products Laboratory Report DL791 (1951).

### Working Qualities

Ipe'peroba is not difficult to work, but care is required to avoid "picking up" when interlocked grain is present (2, 13, 14). The yellow deposit of lapachol is reported to dull tools somewhat. The wood takes a smooth finish and stains fairly well. It shows comparatively little tendency to split, check, or warp.

### Uses

Ipe'peroba is employed for interior fittings in public buildings, shops, and private houses, for joinery in general, flooring, decking (14), veneer, plywood (3), and for high-grade furniture (13). Before laminating procedures had been perfected, making glued-laminated ship timbers available, the U. S. Navy used some Paratecoma in keels and shaft logs. A 26-foot motor whaleboat was also built, using this species in various parts, and the boat was tested by the New York Naval Shipyard. The use of the species by the Navy was said to have been discontinued, however, when laminated ship timbers became available. Some of the men who worked with the Paratecoma then available compared its working qualities unfavorably with white oak. It has been suggested as a substitute for teak in vat construction because of its acid-resisting qualities (14).

Paratecoma is said to be in use by commercial boat builders on the Pacific coast. One of the uses reported is for decking in place of teak.

Information (unconfirmed) indicates that British, Brazilian, and Italian navies have used Paratecoma and that it was considerably cheaper than Indian teak. It is said to be available from foreign wood dealers in the United States. It is reported to have been available in large logs.

### Veneer

Figured ipe'peroba is cut into veneer for use in panelling and other decorative work (2).

### Export

Ipe'peroba is rated as an excellent wood with export possibilities (13).

## Anatomical Structure

Growth rings are present and fairly distinct due to some differences in color and density (12).

Pores are small, near limit of visibility unmagnified; numerous to very numerous; occurring singly or more often in short radial groups, tending to form inconspicuous diagonal and wavy lines (12).

Tyloses are abundant. (12).

Wood fibers have thick, often gelatinous walls (12).

Rays are very fine but visible on the cross section when magnified. They are 1 to 3, mostly 2 cells wide, up to 35, but generally less than 25 cells high, and are homogeneous or nearly so (12).

Wood parenchyma may sometimes define growth rings. It is also associated with the pores but is not distinct (10).

Ripple marks are sometimes present but irregular and barely visible without magnification; number per inch 90 to 95. All elements are more or less in seriation (10, 12).

Gum ducts were not found, but oily deposits are common (12).

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