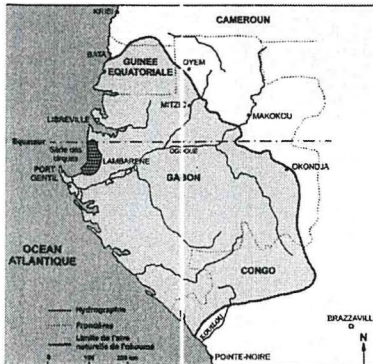


Okume solid wood

Well-known technical characteristics,
a wide range of applications



A WELL DEMARCATED DISTRIBUTION AREA



Okume is found in the forests from South Cameroon to North Mayombe and Chaillu Massif in Congo. It is found abundantly in the major parts of Equatorial Guinea and in Gabon, which is the main Okume producer in the Congo Basin.

A COLONIZING AND PIONEER TIMBER SPECIES

Okume is a pioneer species, which has an ability to rapidly and easily colonize open areas: fallow farm lands, open spaces in forests (1/4 hectare minimum), and savannah edges protected against fire. Okume is consequently a sustainable timber species in its main production areas.

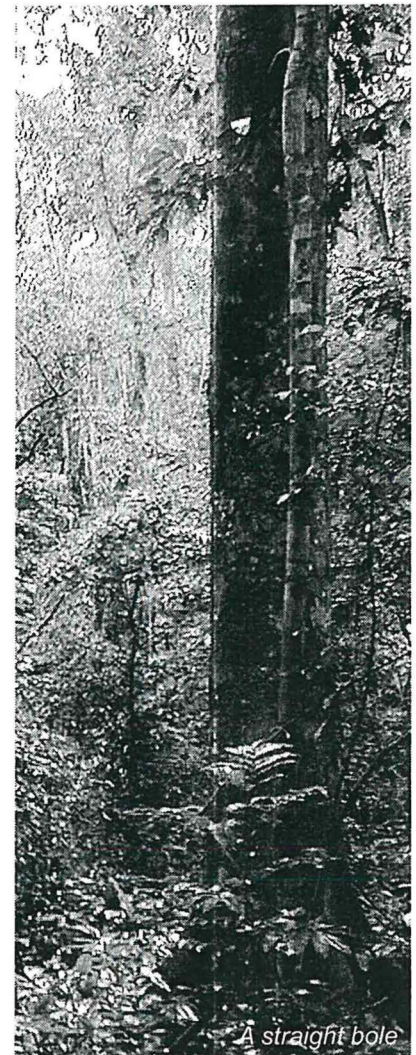
Trees grow either densely or in clumps as well as it has a population distribution of the same age. This species is gregarious and has a social behaviour.

Okume is found from sea level to 1000 m high and adapts itself to all types of soils.

FAST-GROWING SPECIES

Okume is a fast-growing species. The average increment per year in diameter is 10 mm for the trees having a diameter up to 60 cm in the coastal area of Gabon while

it is 6 mm for the trees having a diameter up to 70 cm in Inlands. The increment in volume is constant in between 20 to 55 years of age.



A straight bole

OKUME EXPLOITATION IN A SUSTAINABLE MANAGEMENT FRAMEWORK

Okume is mainly exploited in Gabon. This country covers 26 millions hectares of which 12 millions are allocated as logging concessions to forest companies.

A major part of these concessions, 6.5 millions hectares i.e. more than 50%, is involved in a sustainable management process.

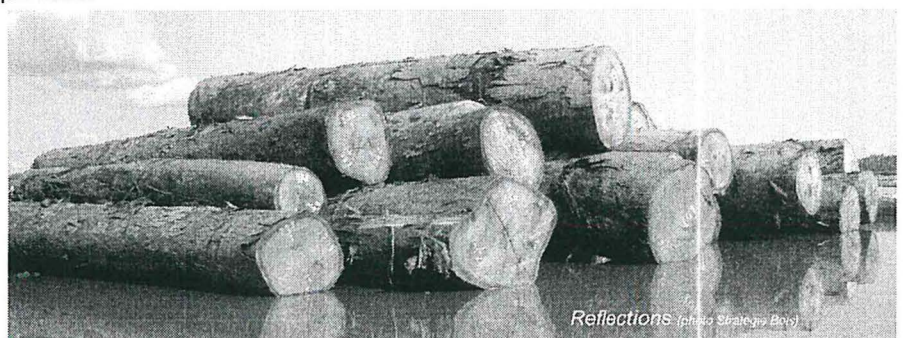
Nearly 2 millions hectares are held under registered and approved sustainable management plans.

Forest certification and environmental management systems are in stage of development in Gabon:

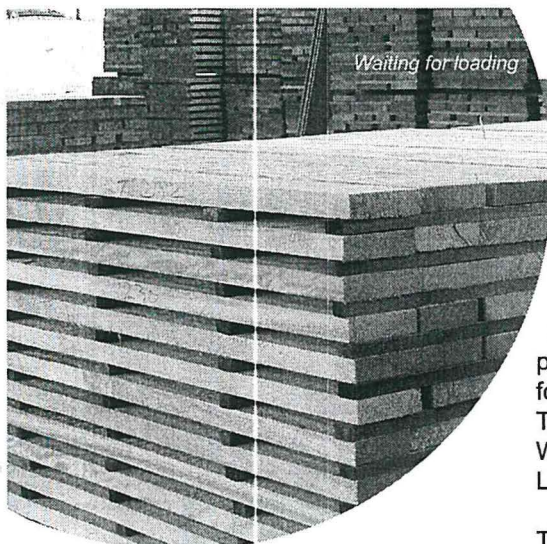
Keurhout, wood certification system for sustainably and responsibly exploited forests.

ISO 14001 standard, which specifies the actual requirements for an environmental management system. Some actions have been launched to help small & medium companies to embark on sustainable management plans process.

In Gabon, minimum exploitable diameter (MED) is 70 cm. Logging is selective, i.e. only some trees are cut (minimum diameters, satisfactory shape, very few defects).



Reflections (photo: Serge J. Boix)



Waiting for loading

OKUME SOLIDE WOOD IN EUROPE

green or kiln dried (MC from 10 to 18% depends on demand), in the form of rough squared edged lumbers, S4S lumbers, ready made lumbers or profiled lumbers.

A wide range of dimensions is proposed for squared edged lumbers as follows :

Thickness : from 40 to 100 mm and over

Width : 150 mm and over

Length : frequently from 3 to 5 m

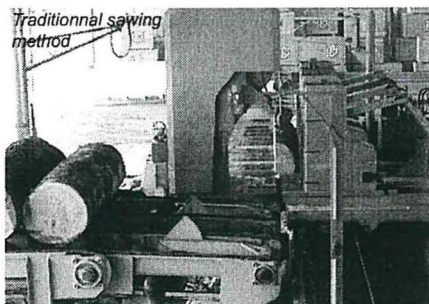
Two grades are commonly commercialized : FAS and AIC

Around 10,000 to 15,000 m³ Okume sawn wood are exported from Gabon per month and mainly marketed in Asia, South Africa and Europe.

Italy procures almost all the Okume sawn wood imported in Europe.

Okume solid wood utilization is increasing in France, Spain, Portugal, Netherlands, Belgium, and Great Britain...

Imported Okume sawn timber is either



Traditional sawing method

Leaving for export



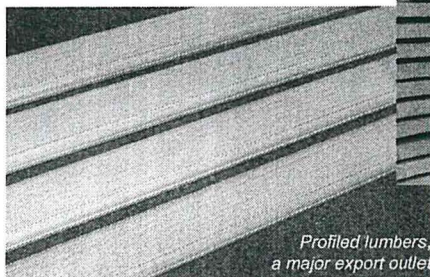
Many users tend to substitute Okume solid wood for Meranti, which presents a lot of comparative advantages as follows :

- supply is more easily organized and secured,
- origin of wood is well known and well demarcated,
- good homogeneity in respect of colour, quality and technological characteristics is observed in wood (Okume corresponds to only one botanical species unlike Meranti).

USES OF OKUME SOLID WOOD

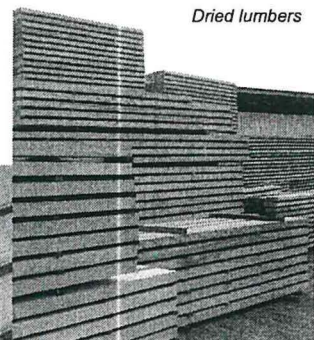
Technological characteristics of Okume timber make it a species that is well suited for a wide range of applications as follows :

- ❖ **Interior wood works and fittings:** doors, doorframes.
- ❖ **Window frames, front doors, exterior wall panelling** (subject to appropriate preservative treatment).
- ❖ **Light constructions.**
- ❖ **Profiled lumbers, mouldings, skirting boards, and baseboards.**
- ❖ **Coffins.**
- ❖ **Interior fittings, parquets and flooring.**
- ❖ **Furniture.**
- ❖ **Block boards, glued-laminated timber, ready made finger-jointed lumbers.**



Profiled lumbers, a major export outlet

Dried lumbers



IDENTITY CARDS FOR OKUME

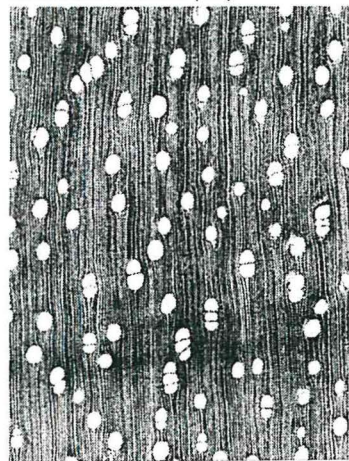
BOTANY

| | |
|---------|-------------|
| Family | Burseraceae |
| Genus | Aucoumea |
| Species | klaineana |

ANATOMY

| | |
|---------------------|---|
| Pores | disseminated, isolated and in short (2-4) radially multiplied, not very abundant (7 to 9 per mm ²) but large (150 to 200 µ) |
| Inter-vascular pits | form slanting lines, rather large (11-14 µ) |
| Parenchyma | rare, limited to some juxta-vascular cells |
| Rays | not very frequent (4 to 5 per mm ²), generally 2-(3) cells wide, sub-homogeneous structure |
| Fibres | frequently partitioned, in average 1200 to 1400 µ length and 25 to 30 µ wide |

Wood anatomical slice (x14)



CIRAD-Dist
UNITÉ BIBLIOTHÈQUE
Baillarquet



LOCAL NAMES

| | |
|--------------------------|-----------------------------------|
| Cameroun | MFumu |
| Congo | N'Kumi |
| Gabon | Okoumé, Angouma, Moukoui, N'Koumi |
| Equatorial Guinea | N'Goumi, Okume |

SOME WELL-KNOWN AESTHETIC CHARACTERISTICS

Okume is uniformly salmon pink, more or less dark, with a pearly and glossy shade.

Heartwood is well demarcated from the white-greyish sapwood.

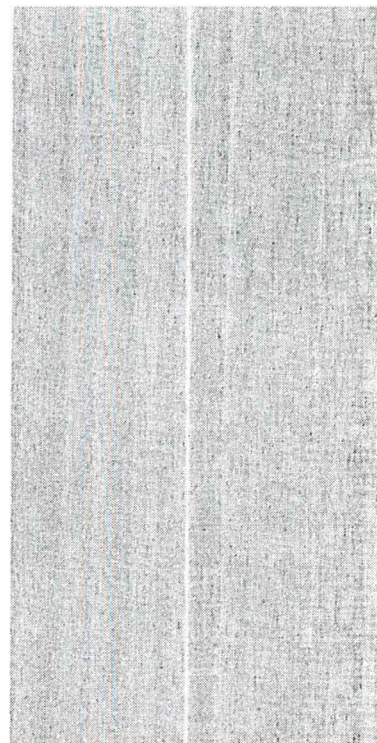
Texture is medium.

Interlocked grain is regular but not very pronounced: hence wood appearance is homogeneous.

Wood from certain regions have more or less wavy grain coupled with interlocked grain which give it an aesthetic effect by conferring mottled or curly appearance to the wood products.



Back sawn specimen



Quarter sawn specimen

MAIN TECHNOLOGICAL PROPERTIES

PHYSICS

| Density* | Total radial shrinkage | Total tangential shrinkage |
|-----------------------|------------------------|----------------------------|
| 450 kg/m ³ | 4.6% | 6.9% |

MECHANICS

| Parallel crushing strength* | Bending strength* | Longitudinal modulus of elasticity* |
|-----------------------------|-------------------|-------------------------------------|
| 36 MPa | 62 MPa | 9700 MPa |

* : at 12% MC

NATURAL DURABILITY

Durability of Okume is poor as it is susceptible to fungi and termites as well as it is poorly permeable. Its use is not recommended where it is exposed permanently or for a long time to moist/humid environment.

Comments: these characteristics, which are average values, can vary according to wood origins.

AN EASY PROCESSING



Kiln drying

❖ RAPID KILN DRYING

Okume dries easily and rapidly. Risks of cracks development and distortions are low. Okume is not sensitive to casehardening.

This schedule is given as a rough guide thicknesses of 60 mm. It must be used in compliance with the code of practice.

| | MC (%) | T (°C) | EMC (%) |
|---------------|--------|--------|---------|
| Pre-heating 1 | | 40 | |
| Pre-heating 2 | | 50 | 17 |
| Drying | 54 | 52 | 16 |
| | 50 | 53 | 15 |
| | 44 | 53 | 14 |
| | 40 | 55 | 12 |
| | 35 | 55 | 11 |
| | 30 | 56 | 10 |
| | 25 | 56 | 9 |
| | 20 | 57 | 8 |
| | 18 | 61 | 7 |
| | 15 | 63 | 6 |
| | 13 | 64 | 5 |
| | 12 | 68 | 4 |
| | 10 | 70 | 3,5 |
| Balancing | | 65 | |
| Cooling | | 35 | |

❖ EASY MACHINABILITY

Tungsten carbide tools with reduced rake angle (20° for planning, 10 to 15° for moulding) are recommended in order to obtain smooth surfaces (blunting effect of Okume has to be taken into account).

❖ SOME INTERESTING DEVELOPMENT POSSIBILITIES USING BONDING TECHNIQUES

Okume bonding for glued-laminated products and block boards manufac

turing gives satisfactory results with all the mainly used glues in wood industry, subject to implementation according to the code of practice and glue manufacturer specifications (ambient temperature and humidity in the gluing workshop, wood moisture content, wood surface quality before gluing and spread rate).

Some de-lamination tests and shearing tests performed on Okume glued-laminated beams have given results complying with current standards (de-lamination ratio and shearing strength).

❖ WIDE RANGE OF FINISHING SOLUTIONS

Okume has a good compatibility with all the widely marketed finishing products: stains, varnishes, paints and timber preservatives.

Okume tints well which enables marketing of products with a wide range of appearances.



Block board

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