

COMPENDIUM
OF SOME
GHANAIAIAN
TIMBER SPECIES



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KUMASI WOOD CLUSTER ASSOCIATION (KWC)
OCTOBER 2021



DISCLAIMER

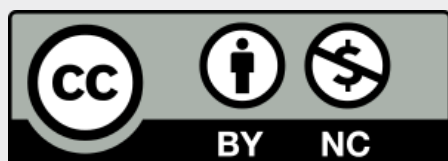
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INSTITUTIONAL PROFILES



(KWC), a not-for-profit organization is an association of small-medium forest enterprises formed in 2004 with the objectives of accessing adequate supply of raw material for the member's use; developing new products using secondary species and non-timber forest resources for existing and new customers in traditional and new markets; adjusting production capacities in line with human resource skills, ensuring raw material and equipment availability in partner firms; developing markets for traditional and new products; and undertake forest management and chain of custody certification. It has a huge store of experience with working with the timber industry stakeholders, private plantation developers especially the small-medium sized ones in forest and environmental related activities and forest fringe communities geared towards sustainable forest management and environmental protection. KWC, under one of its projects, is promoting the consumption of lesser-used and lesser-known species among high volume timber consumers and providing them the necessary information to comply with legality requirements when sourcing for any of these species.

For more information visit <http://kwcgh.org>



The Forestry Research Institute of Ghana of the Council for Scientific and Industrial Research (CSIR-FORIG) is one of the 13 institutes of CSIR. The mission of the Institute is to undertake demand-driven research, build capacity and promote the application of technologies for sustainable management of forest resources for the benefit of society. CSIR-FORIG has identified some lesser-used and lesser-known timber species on the market without adequate technical information for their efficient use. Their technological properties, according to FORIG, are not known and may be used improperly and generate a lot of waste. They seek to collaborate with key stakeholders for the efficient use of these timber species. For more information visit <https://csir-forig.org.gh/>

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LIST OF ACRONYMS

AAC	Annual Allowable Cut
AAMUSTED	Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development
CSIR	Council for Scientific and Industrial Research
DBH	Diameter at Breast Height
FC	Forestry Commission
FORIG	Forestry Research Institute of Ghana
HVTCs	High Volume Timber Consumers
KWC	Kumasi Wood Cluster Association
LKS	Lesser-Known Timber Species
LUS	Lesser-Used Timber Species
MoE	Modulus of Elasticity
MoR	Modulus of Rupture



ACKNOWLEDGEMENTS

The Kumasi Wood Cluster Association (KWC) acknowledges the Foreign Commonwealth and Development Office (FCDO) for providing funds to develop this compendium under the project “Building Capacities of Small-Medium Forest Enterprises to produce and Trade in legal timber in Ghana and Liberia –Phase II”.

Special appreciation goes to Mr. Gustav Adu, Mrs. Betty Boante Abeyie and Mr. Stanley Boakye-Achampong of KWC, who were instrumental in the development of concepts for visualising the layout of the wood properties and uses, general review, editing and publishing of the compendium.

KWC also acknowledges the assistance given by CSIR-FORIG in providing all the technical information in this compendium. KWC is specifically grateful to Mr. Francis Wilson Owusu of CSIR-FORIG and Dr. Emmanuel Appiah-Kubi of AAMUSTED as consultants who compiled the data for the compendium and also introduced members of the Ghana Chamber of Construction Industry (GhCCI) who were the primary beneficiaries of the compendium.

Acknowledgement also goes to the Scientific Editor, Dr. Mrs. Margaret Sraku-Lartey of CSIR-FORIG for editing the compendium and the Graphic Designer, Mr. Vincent Gross Hope of University Relations Office (KNUST) for developing the infographics and layout design of this book.



FOREWORD

Ghana has committed under the Voluntary Partnership Agreement (VPA) with the European Union (EU) to ensure that only legal timber is traded on the EU market, other export markets and on the domestic market of Ghana. The use of legal timber is designed to offset the over 60% of illegal timber that is presumed to be present on the domestic market in Ghana.

To achieve this, a policy was crafted in 2011 by the Government of Ghana through the Timber Industry Development Division (TIDD) of the Forestry Commission and the Ministry of Lands and Natural Resources (MLNR). The objective of the policy was to “ensure the supply of legal timber on a sustainable basis, promote good governance and provide a framework that facilitates production and trade in legal timber on the domestic market.” In order to realize this intention, a Public Procurement Policy (PPP) was drafted for enactment so that state institutions together with their contractors and sub-contractors working on public projects would procure only timber and timber products derived from legal sources.

The supply of timber species onto the domestic market has also evolved. According to the Resource Management Support Centre (RMSC) of the Forestry Commission, one hundred and three (103) timber species were harvested in 2015. Reports estimate that about thirty (30) new species have been introduced onto the market in the last two decades. This reflects the dynamic nature of species’ availability in the forests and their supply onto the market.

Timber traders have introduced several species onto the domestic market of Ghana which are often deliberately or wrongly named to appear to be the same or seen as alternatives to known and popular and economic timber species such as Mahogany, Entandrophragma and Celtis among others. This is in spite of the fact that, their properties, preservation requirements and right uses are not really known.

Two consultants from CSIR-FORIG were engaged to research into the properties of 33 selected lesser known and lesser used species in order to promote their uses among high-volume timber consumers. This compendium gives concise and detailed information on the wood characteristics, their technical and working properties as well as their uses. This information will be made available to High Volume Timber Consumers (HVTCs) to help them identify and acquire legal timber fit for purpose; and to comply with the Ghana Standard Authority standards, requirements and quality control in respect of wood and wood products for construction and furniture; and to conform to the building and construction codes of Ghana that specify the use of wood and wood products.



COMPENDIUM OF THIRTY-THREE GHANAIAN TIMBER SPECIES

INTRODUCTION

The aim of this compendium is to provide technical information to help utilisers of Ghanaian timber species to select appropriate wood species that will suit their purposes and to have them processed in the most efficient manner with respect to the properties of each timber species. Thirty-three (33) timber species, some of which are classified as lesser-known (LKS) and lesser-used (LUS), and available for high volume timber consumers have been selected for this book.

For ease of accessibility of information, uniform arrangements of headings and sub-headings have been used in the description of all the selected timber species. Most of the technical information that have been compiled on the selected timber species were obtained from tests that have been undertaken at the Forestry Research Institute of Ghana (FORIG) of the Council for Scientific and Industrial Research (CSIR).

Although care was taken, as much as

possible, to obtain representative materials for the tests, it should be noted that the properties of any timber species are liable to considerable variation.

SELECTION OF THE TIMBER SPECIES

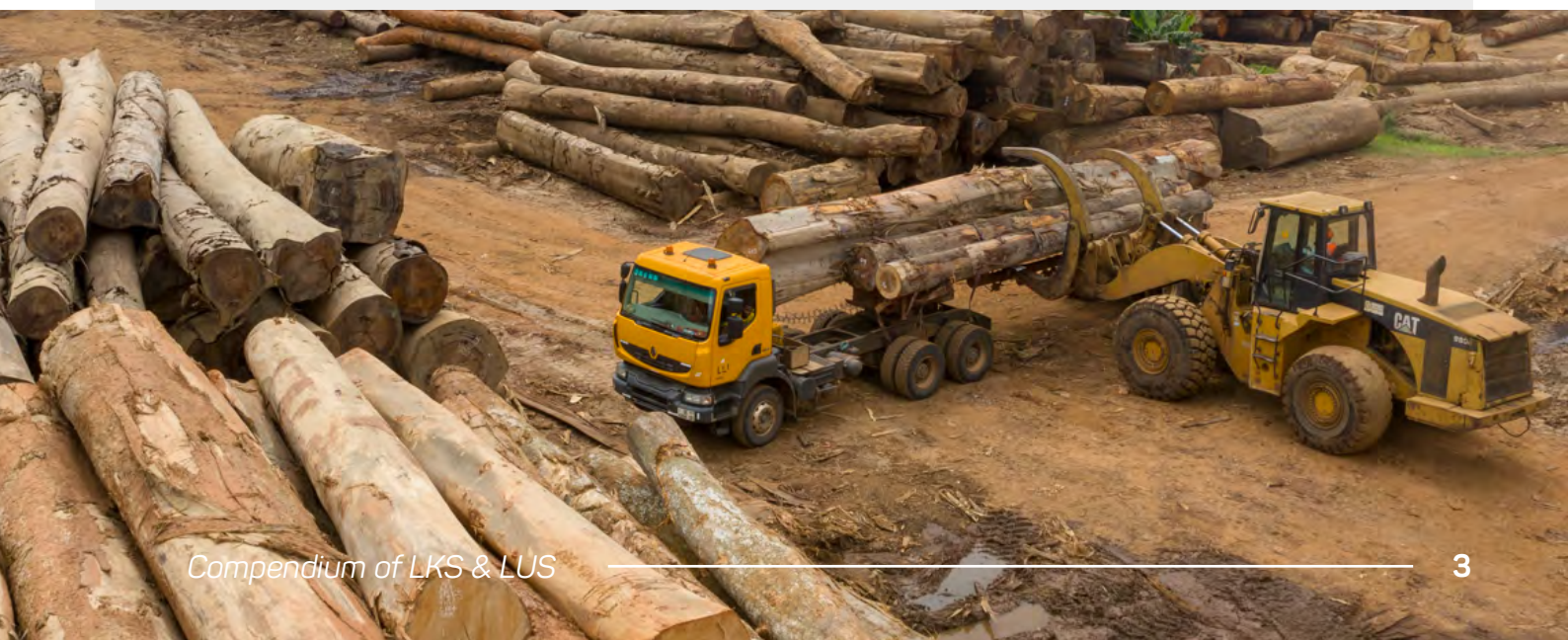
The selection of the thirty-three (33) timber species (Table 1), was based on Resource Management Support Centre of the Forestry Commission's 2015-2018 national timber allocation yield data and the domestic timber market surveys that had been undertaken by CSIR-FORIG from 2012 to 2018.

After a thorough gap analyses of the timber species from these sources, those that are suitable for construction were validated by stakeholders for local promotion and utilisation to support consumers, especially the HVTCs in Ghana. The selection was purposely made to include lesser used, lesser known and emerging timber species on the Ghanaian market.

Table 1: LIST OF 33-SELECTED TIMBER SPECIES

	Local Name	Scientific Name	Trade Name(s)	Common / Local Names
1	Akasaa	<i>Chrysophyllum albidum</i>	Chrysophyllum	Akasaa
2	Akata	<i>Rhodognaphalon buonopozense</i>	Kapokier, Bombax	Akata, Akonkodie, Voondaa / Vabga / Vonga / Yabaga, Wudese / Agudese
3	Asanfena	<i>Aningeria altissima</i>	Asanfena	Asanfena
4	Asoma	<i>Parkia bicolor</i>	Parkia, Essang	Asoma
5	Bompagya	<i>Mammea africana</i>	African Apple, Oboto	Bompagya
6	Dahoma	<i>Piptadeniastrum africanum</i>	Dahoma	Dahoma
7	Danta	<i>Nesogordonia papaverifera</i>	Danta, Kotibe	Danta
8	Denya	<i>Cylicodiscus gabunensis</i>	Okan, Denya	Denya
9	Dubinibiri	<i>Lovoa trichilioides</i>	African Walnut	Dubinibiri
10	Edinam	<i>Entandrophragma angolense</i>	Edinam, Tiama	Edinam
11	Emire	<i>Terminalia ivorensis</i>	Emeri, Emire	Emire, Dzogbedodo
12	Esa	<i>Celtis spp</i>	Celtis, Ohia	Esa
13	Essia	<i>Petersianthus macrocarpus</i>	Petersianthus, Essia	Essia
14	Hotrohotro	<i>Hannoa klaineana</i>	Hannoa, Effeu, Fotie	Fotie, Hotrohotro
15	Hyedua	<i>Daniellia ogea</i>	Ogea, Faro,	Hyedua, Ehyedua
16	Krayie	<i>Pterocarpus erinaceus</i>	Rosewood	Krayie, Rosewood, Nelik, Nia, Tfentenga, Jugusi, Nayi, Doti, Kalayu, Etoti
17	Kroma	<i>Klainedoxa gabonensis</i>	Kroma, Eveuss	Kroma / Kruma
18	Kwabohoro	<i>Guarea cedrata</i>	Bossé, Scented Guarea	Kwabohoro
19	Kyenkyen	<i>Antiaris toxicaria</i>	Chenchen, Antiaris	Kyenkyen, Logoti / Logotsi, Logo
20	Kyere	<i>Pterygota macrocarpa</i>	Koto, Pterygota	Kyere / Kyereye / Koto
21	Nyankom	<i>Heritiera utilis</i>	Niangon	Nyankom, Niangon

	Local Name	Scientific Name	Trade Name(s)	Common / Local Names
22	Ofram	<i>Terminalia superba</i>	Limba, Ofram, Frake	Ofram, Kegblale / Frang
23	Ohaa	<i>Sterculia oblonga</i>	Sterculia, Eyong, Ohaa	Ohaa, Pumpung, Pulumpung, Akple, Danve, Loloie
24	Okoro	<i>Albizia zygia</i>	Albezia, Okoro	Okoro Kulo / Xeyi, Ziwor
25	Onyina	<i>Ceiba pentandra</i>	Ceiba, Fuma	Onyina, Guug / Gomga / Gungu/ Gbang, Rimi, Kakre, Vuti, Atepre, L e, Ofua, Vule, Ehuti
26	Onyinakoben	<i>Rhodognaphalon brevicuspe</i>	Bombax, Alone	Onyinakoben
27	Otie	<i>Pycnanthus angolensis</i>	Illomba, Otie	Otie
28	Papao	<i>Afzelia africana</i>	Afzelia, Papao	Papao, Kpikalic/ Kpaliga/Kolo. Kakala, Wokpa
29	Potrodom	<i>Erythrophleum ivorense</i>	Potrodom, Tali	Potrodom, Bupunga, Elagji, Atsa, Etsati
30	Senya	<i>Daniellia oliveri</i>	Senya	Senya, Nyaa, Kacheilo, Maje, Nyoo, Kunyan
31	Watapuo	<i>Cola gigantea</i>	Colawood, Watapuo	Watapuo, Dodowa, Uwu
32	Wawabima	<i>Sterculia rhinopetala</i>	Sterculia brown, Wawabima	Wawabima
33	Yaya	<i>Amphimas pterocarpoides</i>	Lati, Amphimas	Yaya





EXPLANATORY NOTES

This section gives the definitions of terms used to describe the timber species and explanations to the timber properties that are considered in this compendium.

The factors and properties considered include: Ecology and Distribution, Species Rating, Lumber Description, Movement in Service, Natural Durability / Treatability, Processing and Working Properties, Strength Properties, Uses and Wood Samples and Products.

ECOLOGICAL ZONES AND DISTRIBUTION OF TIMBER SPECIES

Ghana has been divided into different ecological zones. These are Evergreen – Wet/Moist/Upland, Moist Semi-deciduous, Dry Semi-deciduous and Savannah. Description of where the species grow, and their availability are given.

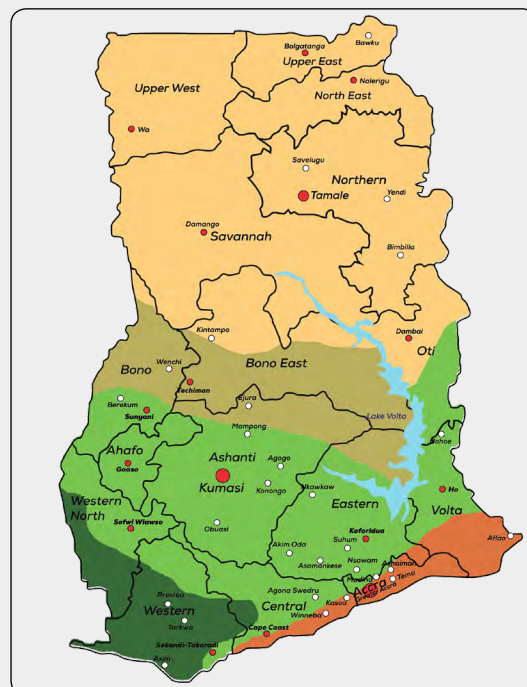


Figure 1: The Ecological zones in Ghana

- Savannah
- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Coastal Savannah
- Transitional Zone

FOREST STATUS

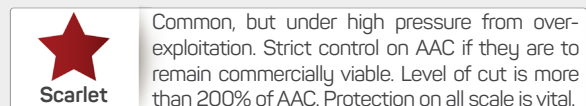
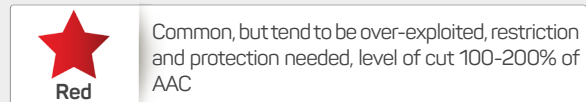
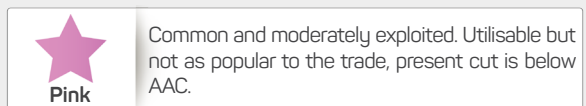
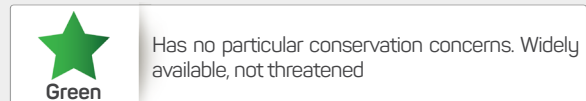
This is the availability of the species based on their quantities or volumes in terms of the harvestable stems. It indicates their status as to whether they are threatened or available for use. This classification of the species availability in the forest is with respect to estimated national annual total harvestable stems, which was the data available during the period of compiling this technical information (Table 2).

Table 2: Classification of the abundance of timber species in the forest

National Annual Harvestable Stems	Levels of abundance	Remarks
>100,000	Most abundant	Highly available or abundant for extraction
10,000 – 99,999	More Abundant	More than adequate for extraction
1,000 – 9,999	Abundant	Adequate in abundance for extraction
300 – 999	Average Abundant	Less available for extraction average in abundance
<300	Limited in abundance	Limited in abundance for extraction

STAR RATING

This is the star categories of conservation priorities for wood species (Table 3). The species available in the forest are classified into star ratings (colours), which indicate their level of extraction. The following are the ratings:



DENSITY

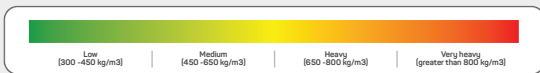
Density is the weight or mass of wood divided by the volume of the specimen at a given moisture content and the unit for density is typically expressed as kilograms per cubic meter (kg/m³). Two major factors affecting the weight of wood products are density of the basic wood structure and moisture content. A third factor, minerals and extractable substances, have a marked effect only on a limited number of species. The density of wood, exclusive of water, varies greatly both within and between species. Usually, determination of density is sufficiently accurate to permit

proper utilisation of wood products where weight is important. Specific gravity is the density of the sample normalized to the density of water.

The densities of the selected timber species ranged from minimum to maximum at 12-15% moisture content and mean density for each of the species has been used in this technical information bulletin

The density of the species fall within one of the classification by the TIDD (2012) in the categories below:

1. Low (300 - 450 kg/m³)
2. Medium (450 - 650 kg/m³)
3. Heavy (650 - 800 kg/m³) and
4. Very heavy (greater than 800 kg/m³)



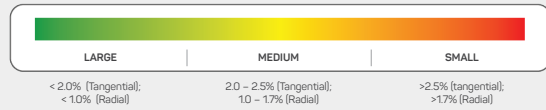
MOVEMENT IN SERVICE

It is a measure of the dimensional stability of wood material when in service.

Wood's stability is subject to variations in environmental conditions – moisture content, humidity, temperature.

Based on laboratory tests, movement in service is classified into the following:

- Small - < 2.0% (Tangential); < 1.0% (Radial)
- Medium - 2.0 – 2.5% (Tangential); 1.0 – 1.7% (Radial)
- Large - >2.5% (tangential); >1.7% (Radial)

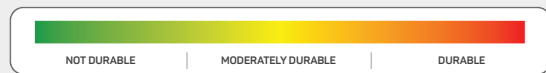


NATURAL DURABILITY / TREATABILITY

Treatability – the material's ability to absorb and retain chemicals or extracts to make it durable during treatment.

On the basis of laboratory tests, the durability and treatability have been rated as follows:

- Natural Durability – Not durable, Moderately durable, and Durable



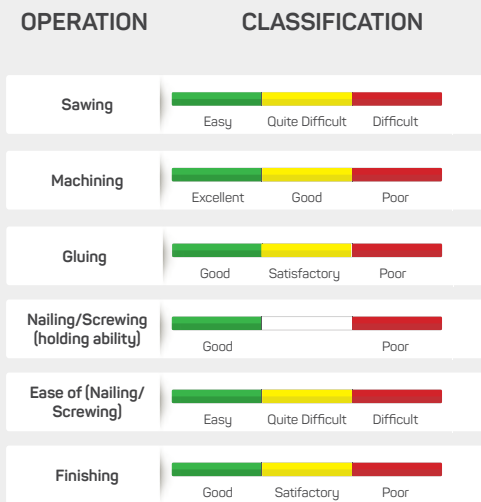
- Treatability – Easy, Difficult and Extremely difficult



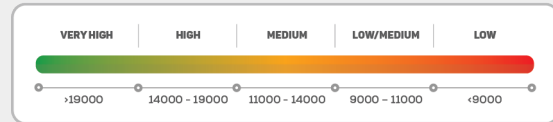
PROCESSING AND WORKING PROPERTIES

These are described as follows:

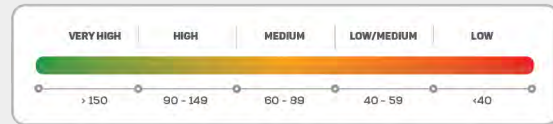
- Sawing: Easy, Quite Difficult and Difficult
- Machining: Poor, Good and Excellent
- Gluing: Poor, Satisfactory and Good
- Nailing / Screwing (holding ability): Poor and Good
- Ease of Nailing / Screwing: Easy, Quite Difficult and Difficult (pre-boring needed)
- Finishing: Poor, Satisfactory and Good



Modulus of Elasticity MoE (N/mm²)



Modulus of Rupture MoR (N/mm²)



MECHANICAL STRENGTH PROPERTIES

The strength properties of species are their ability to withstand loading without failure during its service life.

Modulus of Rupture - MoR (Bending Strength) and Modulus of Elasticity- MoE (Stiffness) are used to determine the wood's strength class.

Table 3: Classification of mechanical strength properties MoE & MoR

MoE	MoR	Class	Remarks
>19000	>150	Very High	Heavy Civil works
14000 – 19000	90 - 149	High	Major construction works
11000 – 14000	60 - 89	Medium	Minor works – low loads / furniture
9000 – 11000	40 - 59	Low/ Medium	Non-load bearing members / furniture
<9000	<40	Low	Non-load bearing members

USES

Some typical uses of each of the timber species are listed but these should not be considered as exhaustive since the timber market, both locally and internationally is dynamic with new uses always being discovered. However, it indicates the type of end-uses for which each timber species is suited.

WOOD SAMPLES AND PRODUCTS

Here, wood samples and products of each of the selected species have been given to show how they look like.



An aerial photograph of a dense, lush green forest. A large, thick tree trunk is visible, leaning diagonally across the frame. In the lower-left quadrant, a small, dark-colored vehicle is parked on a dirt path. The text is overlaid on the upper half of the image.

TECHNICAL DESCRIPTION OF 33 **GHANAIAN** LESSER-USED & LESSER-KNOWN TIMBER SPECIES

This section gives a brief technical description of the selected timber species (33).

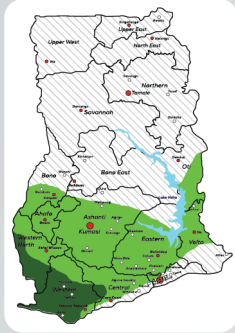
AKASAA

Scientific name: *Chrysophyllum albidum*

Local name: Akasaa

Trade name: Longhi; *Chrysophyllum*

01 Ecology and Distribution



Common in Evergreen and Moist forests of Ghana but occurs lesser in the Semi-deciduous forests.

- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Unavailable in these zones

02 Lumber Description

Heartwood: Reddish brown

Sapwood: Whitish

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

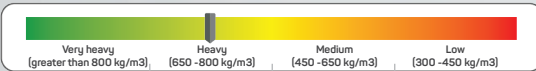


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density



Movement in Service



05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Pink

Common and moderately exploited. Utilisable but not as popular to the trade, present cut is below AAC.

07 Processing & Working Properties

Sawing		Easy
	Easy to saw	
Machining		Excellent
	Works well with hand and machine tools	
Gluing		Good
Nailing/Screwing (holding ability)		Good
Ease of (Nailing/Screwing)		Easy
Finishing		Good

08 Uses



Boxes



Pallets & Crates



Light construction



Furniture

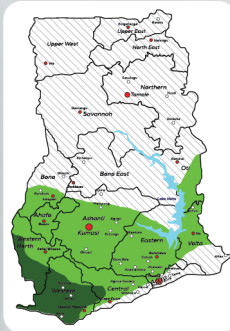


Carvings

AKATA

Scientific name: *Rhodognaphalon buonopozense*
Local name: Akata, Akonkodie, Voondaa/ Vabga / Vonga / Yabaga, Wudese / Agu-dese
Trade name: Bombax, Kapokier

01 Ecology and Distribution



Abundant in the Dry and Moist semi-deciduous to Evergreen forests, especially in secondary forests and fallow land.

- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Unavailable in these zones

02 Lumber Description

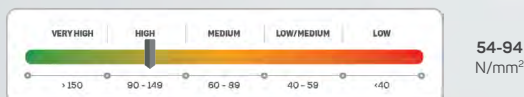
Heartwood: Pale pinkish-brown
Sapwood: Pale pinkish-brown

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

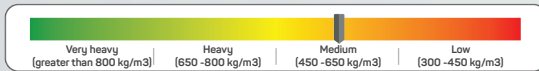


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density

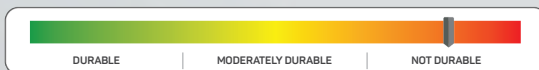


Movement in Service



05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating

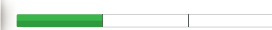


Green

Has no particular conservation concerns. Widely available, not threatened

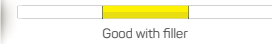
07 Processing & Working Properties

Sawing



Easy

Machining



Good

Gluing



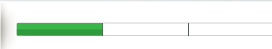
Good

Nailing/Screwing (holding ability)



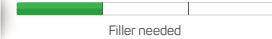
Poor

Ease of (Nailing/Screwing)



Easy

Finishing



Good

08 Uses



Plywood and veneer



Mouldings and claddings



Joinery



Furniture



Particle board



Picture frames



Pallets and crates



Carvings



Matches splints

ASANFENA

Scientific name: *Aningeria altissima*

Local name: *Asanfena*

Trade name: *Asanfena*

01 Ecology and Distribution



Found in the Dry semi-deciduous forests, sparsely in Moist deciduous and in Savannah woodlands

- Savannah
- Moist/Dry Semi-deciduous
- Transitional Zone
- Unavailable in these zones

02 Lumber Description

Heartwood: Yellowish white, pale brown

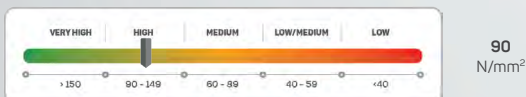
Sapwood: Pinkish brown

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

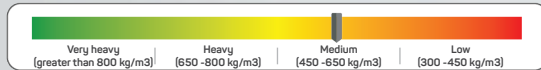


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density



Movement in Service

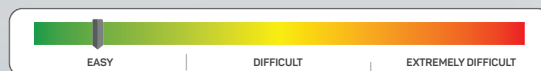


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Pink

Common and moderately exploited. Utilisable but not as popular to the trade, present cut is below AAC.

07 Processing & Working Properties

Sawing	<div style="width: 75%;"><div style="width: 75%;"></div></div> Easy to saw	Easy
Machining	<div style="width: 85%;"><div style="width: 85%;"></div></div> Works well with hand and machine tools	Excellent
Gluing	<div style="width: 60%;"><div style="width: 60%;"></div></div>	Good
Nailing/Screwing (holding ability)	<div style="width: 70%;"><div style="width: 70%;"></div></div>	Good
Ease of (Nailing/Screwing)	<div style="width: 75%;"><div style="width: 75%;"></div></div>	Easy
Finishing	<div style="width: 65%;"><div style="width: 65%;"></div></div>	Good

08 Uses



Furniture



Mouldings



Musical instruments

ASOMA

Scientific name: *Parkia bicolor*

Local name: *Asoma*

Trade name: *Essang; Parkia*

01 Ecology and Distribution



Found in the Wet and Moist Evergreen and Moist Semi-deciduous forests.

- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Unavailable in these zones

02 Lumber Description

Heartwood: Pale yellow

Sapwood: Pale yellow

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

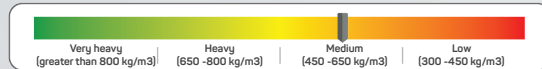


Modulus of Rupture (MoR) - Stiffness

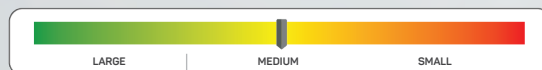


04 Physical Properties

Density

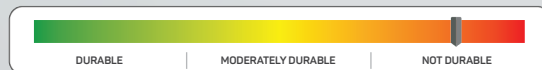


Movement in Service



05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Has no particular conservation concerns. Widely available, not threatened

07 Processing & Working Properties

Sawing	<div style="width: 75%; background-color: green;"></div>	Easy
Machining	<div style="width: 50%; background-color: yellow;"></div>	Good
Gluing	<div style="width: 75%; background-color: green;"></div>	Good
Nailing/Screwing (holding ability)	<div style="width: 75%; background-color: green;"></div>	Good
Ease of (Nailing/Screwing)	<div style="width: 75%; background-color: green;"></div>	Easy
Finishing	<div style="width: 75%; background-color: green;"></div>	Good

08 Uses



Light construction



Interior trim



Joinery



Furniture



Particleboard



Cabinet work



Shipbuilding



Pulpwood

BOMPAGYA

Scientific name: *Mammea africana*
Local name: Bompagya
Trade name: Bompagya, Oboto, African Apple

01 Ecology and Distribution



Found in Wet and Evergreen as well as the South-East subtype of the Moist Semi-deciduous forests of Ghana.

- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Unavailable in these zones

02 Lumber Description

Heartwood: Dark reddish brown to pepperish brown
Sapwood: Pinkish brown to pale brown

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

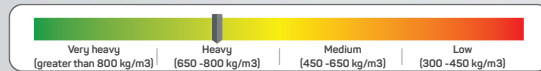


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density



Movement in Service



05 Durability Properties

Durability



Treatability

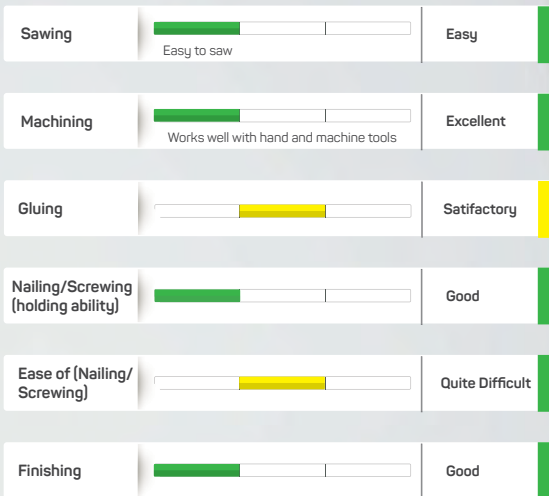


06 Forest Status / Star Rating



Common and moderately exploited. Utilisable but not as popular to the trade, present cut is below AAC.

07 Processing & Working Properties



08 Uses



Furniture



Cabinet work



Interior and exterior joinery



Frames

DAHOMA

Scientific name: *Piptadeniastrum africanum*
Local name: Dahoma
Trade name: African Greenheart, Dabema, Dahoma

01 Ecology and Distribution



Available in all the major forest types, except the Savannah forest.

- Coastal Savannah
- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Unavailable in these zones

02 Lumber Description

Heartwood: Light to golden brown
Sapwood: Grayish to pale straw

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

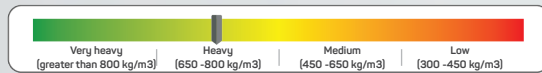


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density

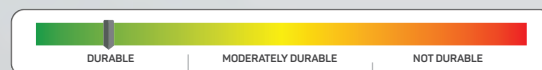


Movement in Service



05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Common and moderately exploited. Utilisable but not as popular to the trade, present cut is below AAC.

07 Processing & Working Properties

Sawing	<div style="width: 75%;"><div style="width: 75%;"></div></div>	Easy
Machining	<div style="width: 50%;"><div style="width: 50%;"></div></div>	Good
Gluing	<div style="width: 75%;"><div style="width: 75%;"></div></div>	Good
Nailing/Screwing (holding ability)	<div style="width: 75%;"><div style="width: 75%;"></div></div>	Good
Ease of (Nailing/Screwing)	<div style="width: 50%;"><div style="width: 50%;"></div></div>	Quite Difficult
Finishing	<div style="width: 75%;"><div style="width: 75%;"></div></div>	Good

08 Uses



Heavy construction



Marine construction and bridges



Railway sleepers



Mine props



Vehicle body



Interior trim



Joinery



Furniture

DANTA

Scientific name: *Nesogordonia papaverifera*

Local name: Danta, Apro

Trade name: Danta, Kotibe

01 Ecology and Distribution



Found in all the forest types except the Wet Evergreen forests.

- Moist/Dry Semi-deciduous
- Coastal Savannah
- Savannah
- Unavailable in these zones

02 Lumber Description

Heartwood: Mahogany red

Sapwood: Pale Mahogany red

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

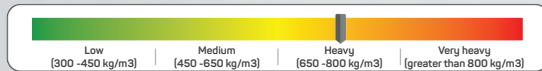


Modulus of Rupture (MoR) - Stiffness

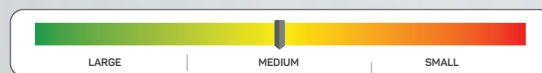


04 Physical Properties

Density

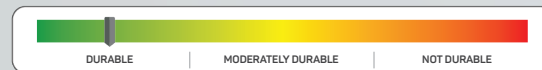


Movement in Service

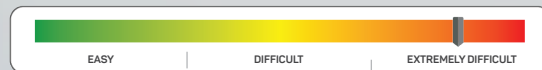


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Pink

Common and moderately exploited. Utilisable but not as popular to the trade, present cut is below AAC.

07 Processing & Working Properties

Sawing	<div style="width: 75%;"><div style="width: 75%;"></div></div> Easy to saw	Easy
Machining	<div style="width: 75%;"><div style="width: 75%;"></div></div> Works well with hand and machine tools	Excellent
Gluing	<div style="width: 50%;"><div style="width: 50%;"></div></div>	Satisfactory
Nailing/Screwing (holding ability)	<div style="width: 75%;"><div style="width: 75%;"></div></div>	Good
Ease of (Nailing/Screwing)	<div style="width: 50%;"><div style="width: 50%;"></div></div>	Quite Difficult
Finishing	<div style="width: 75%;"><div style="width: 75%;"></div></div>	Good

08 Uses



Construction



Flooring



Joinery



Paneling



Boat building



Utility cross arms



Furniture



Doors



Stairs

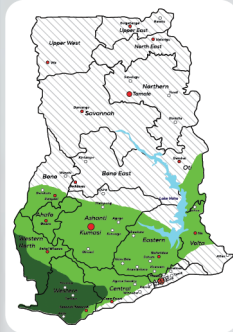
DENYA

Scientific name: *Cylicodiscus gabunensis*

Local name: *Denya*

Trade name: *Denya, Okan*

01 Ecology and Distribution



Found in the Moist Evergreen and the Moist and Dry Semi-deciduous forests.

- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Unavailable in these zones

02 Lumber Description

Heartwood: Yellowish brown

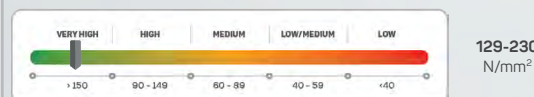
Sapwood: Pale pink

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

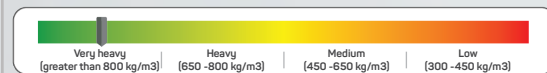


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density

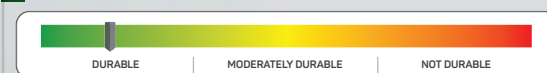


Movement in Service

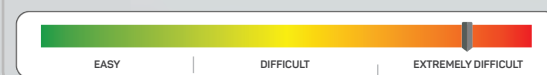


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Pink

Common and moderately exploited. Utilisable but not as popular to the trade, present cut is below AAC.

07 Processing & Working Properties

Sawing	<div style="width: 20%; background-color: red;"></div>	Difficult
Machining	<div style="width: 20%; background-color: red;"></div>	Poor
Gluing	<div style="width: 30%; background-color: green;"></div>	Good
Nailing/Screwing (holding ability)	<div style="width: 30%; background-color: green;"></div>	Good
Ease of (Nailing/Screwing)	<div style="width: 20%; background-color: red;"></div> Pre-boring needed	Difficult
Finishing	<div style="width: 30%; background-color: green;"></div>	Good

08 Uses



Heavy construction



Heavy flooring



Railway sleepers



Joinery



Vehicle body



Shipbuilding



Stairs



Implements

DUBINIBIRI

Scientific name: *Lovoa trichilioides*

Local name: Walnut / Dubinibiri

Trade name: African Walnut

01 Ecology and Distribution



Found in the Wet and Moist Evergreen and the South-East subtype of Moist Semi-deciduous forests

- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Coastal Savannah
- Unavailable in these zones

02 Lumber Description

Heartwood: Yellowish brown to greyish brown, often with golden and blackish markings.

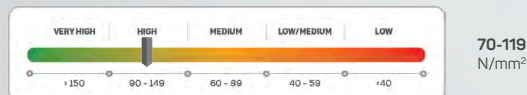
Sapwood: Pale brown to pale grey

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

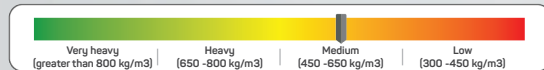


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density



Movement in Service



05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Red

Common, but tend to be over-exploited, restriction and protection needed, level of cut 100-200% of AAC

07 Processing & Working Properties

Sawing		Easy
Machining		Good
Gluing		Good
Nailing/Screwing (holding ability)		Good
Ease of (Nailing/Screwing)		Easy
Finishing		Good

08 Uses



Furniture



Cabinet work



Interior and exterior joinery



Doors



Coffins

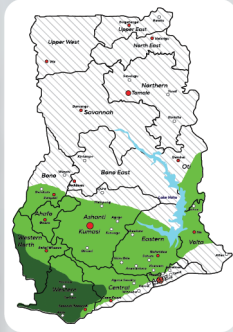
EDINAM

Scientific name: *Entandrophragma angolense*

Local name: *Edinam*

Trade name: *Edinam, Tiama*

01 Ecology and Distribution



Moderately available in the Moist Evergreen, Wet and Dry Semi-deciduous forests.

- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Unavailable in these zones

02 Lumber Description

Heartwood: Pink brown
Sapwood: Creamy white or pale pink.

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

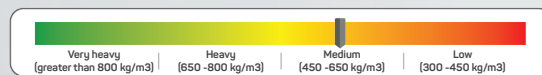


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density



Movement in Service



05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Red

Common, but tend to be over-exploited, restriction and protection needed, level of cut 100-200% of AAC

07 Processing & Working Properties

Sawing	Easy to saw	Easy
Machining		Good
Gluing		Good
Nailing/Screwing (holding ability)		Good
Ease of (Nailing/Screwing)		Easy
Finishing		Good

08 Uses



Interior joinery



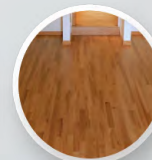
Furniture



Cabinet work



Veneer and plywood



Flooring



Panelling



Stairs



Vehicle bodies



Coffin

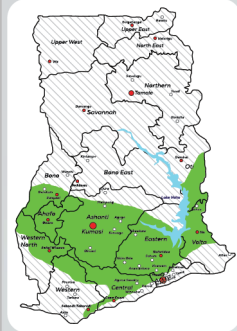
EMIRE

Scientific name: *Terminalia ivorensis*

Local name: Emire, Dzogbedodo

Trade name: Emire, Frameri

01 Ecology and Distribution



Found predominantly in Moist and Dry semi-deciduous forests.

- Moist/Dry Semi-deciduous
- Unavailable in these zones

02 Lumber Description

Heartwood: Yellowish-white to pale yellowish-brown, often greenish.

Sapwood: Same as heartwood (not clearly demarcated from the heartwood)

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

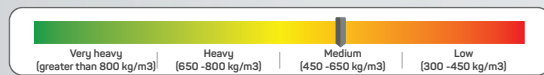


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density



Movement in Service

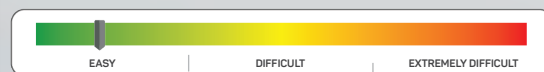


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Scarlet

Common, but under high pressure from over-exploitation. Strict control on AAC if they are to remain commercially viable. Level of cut is more than 200% of AAC. Protection on all scale is vital.

07 Processing & Working Properties

Sawing		Easy
Machining		Good
Gluing		Good
Nailing/Screwing (holding ability)		Good
Ease of (Nailing/Screwing)		Easy
Finishing		Satisfactory

08 Uses



Construction



Trims and frames



Joinery



Flooring



Vehicle bodies



Boxes



Crates



Particle board



Pulp

ESA

Scientific name: *Celtis zenkeri*, *Celtis mildbraedii* and *Celtis adolfi-friderici*
Local name: *Esa*
Trade name: *Ohia, Celtis*

01 Ecology and Distribution



Celtis zenkeri (Esa-kokoo) is abundant in all forest types in forest outliers near Savanna woodlands
Celtis mildbraedii (Esa-fufuo) is abundant in the Semi-deciduous forests but more abundant in the Moist Semi-deciduous than the Dry Semi-deciduous forests
Celtis adolfi-friderici (Esa-kosua) is moderately available in the Semi-deciduous forests

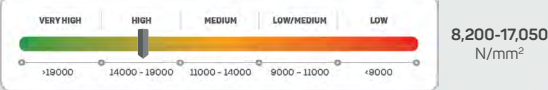
- Moist/Dry Semi-deciduous
- Transitional zone
- Unavailable in these zones

02 Lumber Description

Heartwood: Yellowish or light grey. Sometimes it's brownish
Sapwood: Yellowish or light grey

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

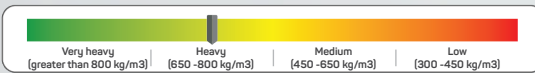


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density

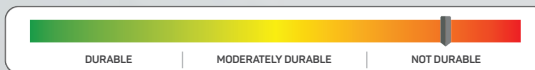


Movement in Service



05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Has no particular conservation concerns. Widely available, not threatened

07 Processing & Working Properties

Sawing	<div style="width: 75%; background-color: red;"></div>	Difficult
Machining	<div style="width: 90%; background-color: green;"></div> Works well with hand and machine tools	Excellent
Gluing	<div style="width: 60%; background-color: green;"></div>	Good
Nailing/Screwing (holding ability)	<div style="width: 60%; background-color: green;"></div>	Good
Ease of (Nailing/Screwing)	<div style="width: 30%; background-color: yellow;"></div>	Quite difficult
Finishing	<div style="width: 60%; background-color: green;"></div>	Good

08 Uses



Structural and interior joinery



Flooring



Mouldings



Plywood and veneer



Furniture



Tool handles

ESSIA

Scientific name: *Petersianthus macrocarpus*

Local name: *Essia*

Trade name: *Petersianthus, Essia*

01 Ecology and Distribution



Abundantly available in the Moist Evergreen and Moist Semi-deciduous forests.

- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Unavailable in these zones

02 Lumber Description

Heartwood: Reddish-brown

Sapwood: Thick yellowish colour

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

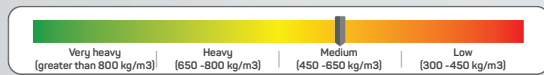


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density

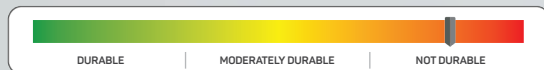


Movement in Service

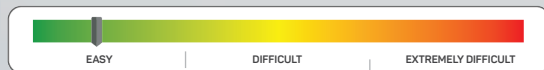


05 Durability Properties

Durability



Treatability

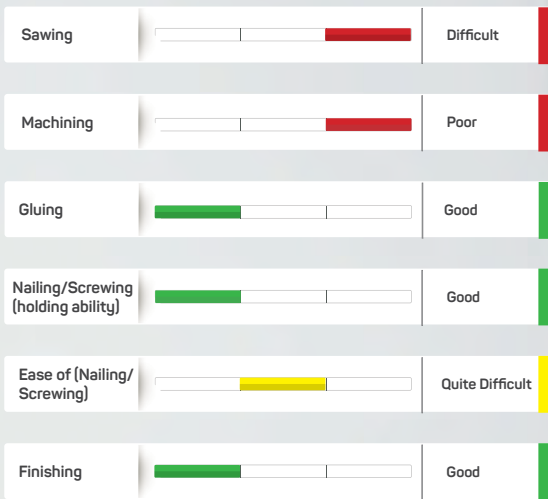


06 Forest Status / Star Rating



Has no particular conservation concerns. Widely available, not threatened

07 Processing & Working Properties



08 Uses



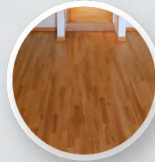
Joinery



Trims and Frames



Vehicle and truck bodies



Industrial floorings



Heavy construction



Railway sleepers



Piles



Deckings

HOTROHOTRO

Scientific name: *Hannoa klaineana*

Local name: *Fotie; Hotrohoto*

Trade name: *Hannoa, Effeu*

01 Ecology and Distribution



Moderately found in the Evergreen and Semi-deciduous forests and other forest types including secondary forest of Ghana.

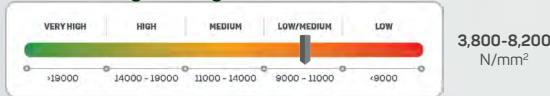
- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Unavailable in these zones

02 Lumber Description

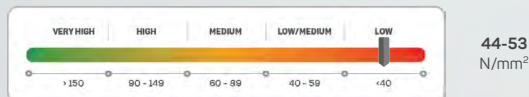
Heartwood: White or yellowish-white
Sapwood: Not differentiated from the heartwood

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

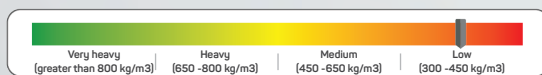


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density

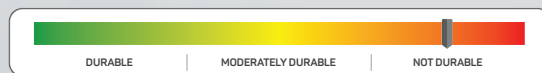


Movement in Service

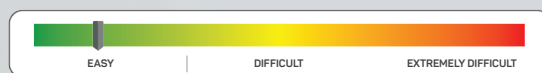


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Pink

Common and moderately exploited. Utilisable but not as popular to the trade, present cut is below AAC.

07 Processing & Working Properties

Sawing Easy

Easy to saw

Machining Good

Good with filler

Gluing Good

Nailing/Screwing (holding ability) Poor

Ease of (Nailing/Screwing) Easy

Finishing Satisfactory

Filler needed

08 Uses



Furniture



Carvings



Cabinet work



Veneer and plywood



Match box



Tools



Canoes



Splints

HYEDUA

Scientific name: *Daniellia ogea*

Local name: *Hyedua*

Trade name: *Ogea, Faro*

01 Ecology and Distribution



Sparsely found in all Evergreen and Moist Semi-deciduous forests of Ghana

- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- ▨ Unavailable in these zones

02 Lumber Description

Heartwood: Pale pinkish

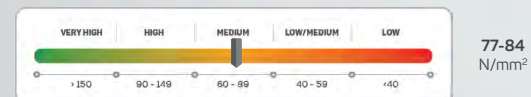
Sapwood: Whitish to straw coloured

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

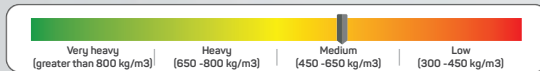


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density

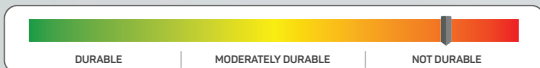


Movement in Service

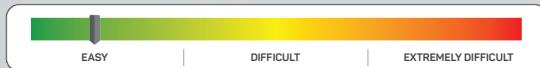


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Pink

Common and moderately exploited. Utilisable but not as popular to the trade, present cut is below AAC.

07 Processing & Working Properties

Sawing		Easy
Machining		Good
Gluing		Good
Nailing/Screwing (holding ability)		Good
Ease of (Nailing/Screwing)		Easy
Finishing		Satisfactory

08 Uses



Joinery



Plywood and veneer



Boxes



Crates



Furniture

KRAYIE

Scientific name: *Pterocarpus erinaceus*

Local name: *Krayie, Rosewood, Nelik/Nia/Tfentenga/Jugusi / Nayi, Doti / Kalayu, Etoti*

Trade name: *African rosewood, African barwood, African teak*

01 Ecology and Distribution



Widespread in the savanna zone and Transitional zone of Ghana and partially in Moist/Dry Semi-deciduous

- Savannah
- Transitional zone
- Moist/Dry Semi-deciduous
- Unavailable in these zones

02 Lumber Description

Heartwood: Yellowish brown

Sapwood: Yellowish or pale cream

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

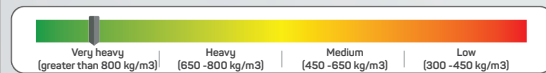


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density

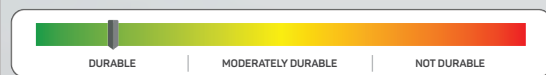


Movement in Service



05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating

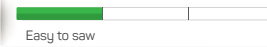


Red

Common, but tend to be over-exploited, restriction and protection needed, level of cut 100-200% of AAC

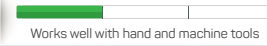
07 Processing & Working Properties

Sawing



Easy

Machining



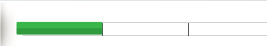
Excellent

Gluing



Satisfactory

Nailing/Screwing (holding ability)



Good

Ease of (Nailing/Screwing)



Quite Difficult

Finishing



Good

08 Uses



Heavy construction



Parquet flooring



Stairs



Implements



Turnery



Carvings



Veneer and plywood



Furniture

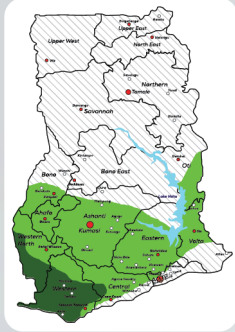
KROMA

Scientific name: *Klainedoxa gabonensis*

Local name: Kroma / Kruma

Trade name: Eveuss; Kroma

01 Ecology and Distribution



Moderately distributed in Wet and Moist Evergreen and Moist Semi-deciduous forests of Ghana.

- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Unavailable in these zones

02 Lumber Description

Heartwood: Orange-yellow

Sapwood: Orange-yellow

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

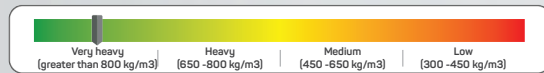


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density

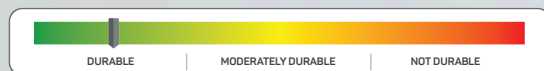


Movement in Service

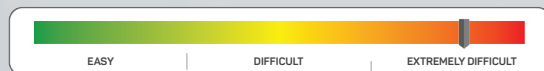


05 Durability Properties

Durability



Treatability

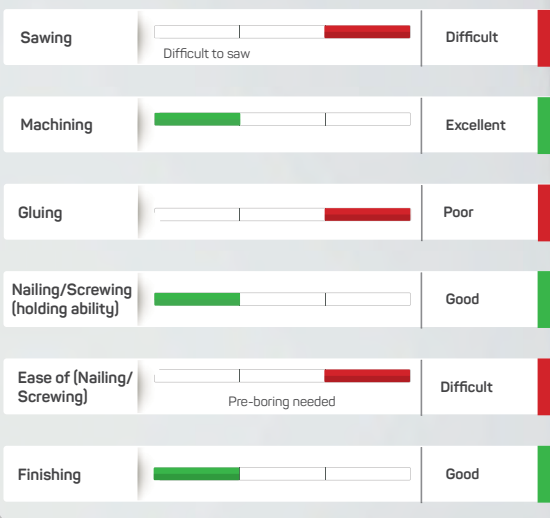


06 Forest Status / Star Rating



Has no particular conservation concerns. Widely available, not threatened

07 Processing & Working Properties



08 Uses



Railway sleepers



Heavy flooring



Poles and piles

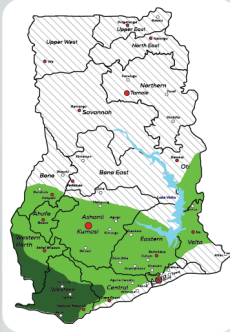


Bridges

KWABOHORO

Scientific name: *Guarea cedrata*
Local name: Kwabohoro
Trade name: Bossé, Scented Guarea

01 Ecology and Distribution



Moderately available in the Wet and Moist Evergreen as well as the Moist and Dry Semi-deciduous forests.

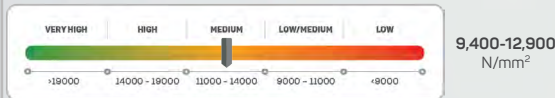
- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Unavailable in these zones

02 Lumber Description

Heartwood: Pale pinkish brown
Sapwood: Yellowish white

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

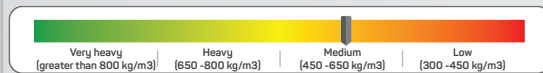


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density



Movement in Service

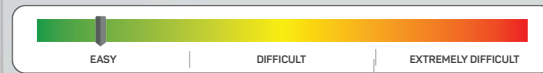


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Pink

Common and moderately exploited. Utilisable but not as popular to the trade, present cut is below AAC.

07 Processing & Working Properties

Sawing		Easy
	Easy to saw	
Machining		Excellent
	Works well with hand and machine tools	
Gluing		Good
Nailing/Screwing (holding ability)		Good
Ease of (Nailing/Screwing)		Easy
Finishing		Good

08 Uses



Flooring



Joinery



Panelling



Frames



Doors



Shipbuilding



Vehicle bodies



Furniture



Veneer and plywood

KYENKYEN

Scientific name: *Antiaris toxicaria*

Local name: *Kyenkyen, Logoti / Logotsi, Logo*

Trade name: *Chenchen, Ako, Antiaris*

01 Ecology and Distribution



Found in all forest types and transition zone, mostly in the moist semi-deciduous forests, except Savannah

- Coastal Savannah
- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Unavailable in these zones

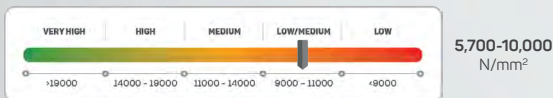
02 Lumber Description

Heartwood: Whitish to pale yellow heartwood or pale-yellow brown

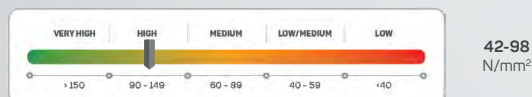
Sapwood: No distinction between heartwood and sapwood

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

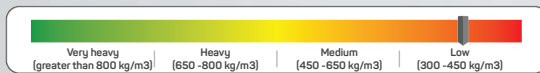


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density



Movement in Service

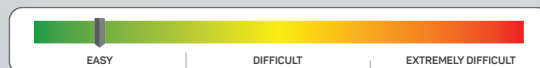


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Pink

Common and moderately exploited. Utilisable but not as popular to the trade, present cut is below AAC.

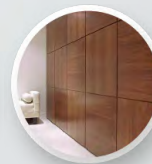
07 Processing & Working Properties

Sawing		Easy
Machining		Good
Gluing		Good
Nailing/Screwing (holding ability)		Good
Ease of (Nailing/Screwing)		Easy
Finishing		Satisfactory

08 Uses



Interior joinery



Panelling



Boxes



Mouldings



Furniture

KYERE

Scientific name: *Pterygota macrocarpa*
Local name: *Kyereye, Kyere, Koto*
Trade name: *Koto*

01 Ecology and Distribution



Found in the Transitional zone, Moist and Dry Semi-deciduous forests, but absent from the Evergreen forest

- Transitional zone
- Moist/Dry semi-deciduous
- Unavailable in these zones

02 Lumber Description

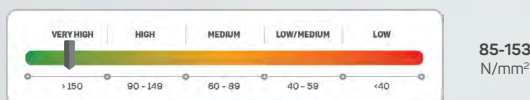
Heartwood: Creamy white
Sapwood: Creamy white

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

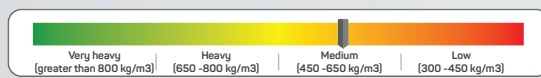


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density

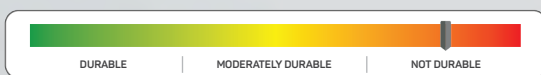


Movement in Service

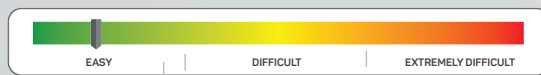


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Red

Common, but tend to be over-exploited, restriction and protection needed, level of cut 100-200% of AAC

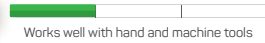
07 Processing & Working Properties

Sawing



Easy

Machining



Excellent

Gluing



Good

Nailing/Screwing (holding ability)



Good

Ease of (Nailing/Screwing)



Easy

Finishing



Good

08 Uses



Veneer and plywood



Interior panelling



Mouldings



Light carpentry

NYANKOM

Scientific name: *Heritiera utilis*

Local name: Nyankom

Trade name: Niangon

01 Ecology and Distribution



Moderately available but confined to the Wet and Moist evergreen forests of Ghana

● Evergreen - wet/moist/upland

○ Unavailable in these zones

02 Lumber Description

Heartwood: Pink brown Mahogany colour

Sapwood: Pale Mahogany colour

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

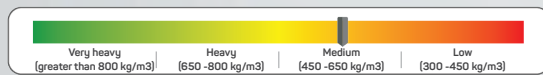


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density



Movement in Service

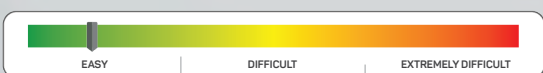


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Red

Common, but tend to be over-exploited, restriction and protection needed, level of cut 100-200% of AAC

07 Processing & Working Properties

Sawing	Easy to saw	Easy
Machining	Works well with hand and machine tools	Excellent
Gluing		Good
Nailing/Screwing (holding ability)		Good
Ease of (Nailing/Screwing)		Easy
Finishing		Good

08 Uses



Window and door frames



Doors



Panelling



Moulding



Furniture

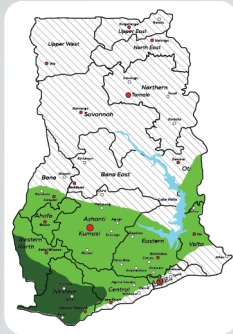


Boat construction

OFRAM

Scientific name: *Terminalia superba*
Local name: *Ofram, Kegblale / Frangc*
Trade name: *Ofram, Limba, Frake*

01 Ecology and Distribution



Predominant in the Moist Evergreen, Moist and Dry semi-deciduous forests

- Moist/Dry Semi-deciduous
- Evergreen-wet/moist/upland
- Unavailable in these zones

02 Lumber Description

Heartwood: Pale-yellowish white with blackish-brown stripes or greyish-brown. Often strongly streaked with black.

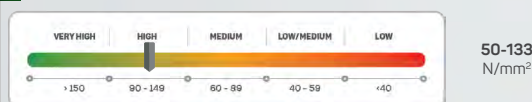
Sapwood: Same as heartwood (not clearly demarcated from the heartwood)

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

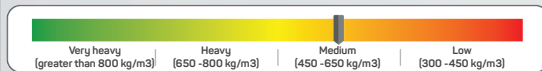


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density



Movement in Service

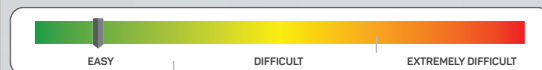


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Pink

Common and moderately exploited. Utilisable but not as popular to the trade, present cut is below AAC.

07 Processing & Working Properties

Sawing		Easy
Machining		Good
Gluing		Good
Nailing/Screwing (holding ability)		Good
Ease of (Nailing/Screwing)		Easy
Finishing		Good

08 Uses



Cabinet work



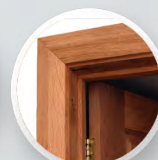
Furniture



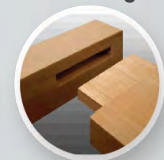
Cladding and mouldings



Panelling



Frames and trims



Interior joinery



Decorative veneer and plywood

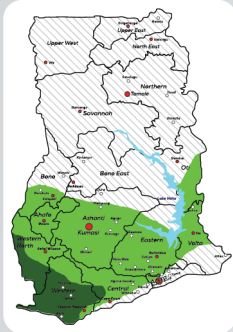
OHAA

Scientific name: *Sterculia oblonga*

Local name: · Ohaa, Pumpungo / Pulumpung, Akple / Danve / Laloe

Trade name: Ohaa

01 Ecology and Distribution



Mostly found in the Moist Evergreen and Moist Semi-deciduous and dry semi-deciduous forests.

- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Unavailable in these zones

02 Lumber Description

Heartwood: Creamy to Pale-yellowish brown with darker markings

Sapwood: Same as heartwood (not clearly demarcated from the heartwood)

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

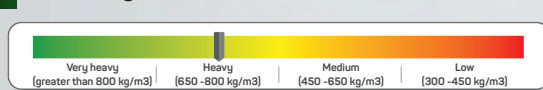


Modulus of Rupture (MoR) - Stiffness

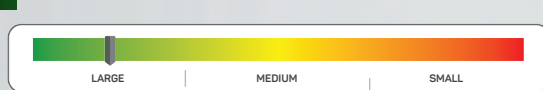


04 Physical Properties

Density

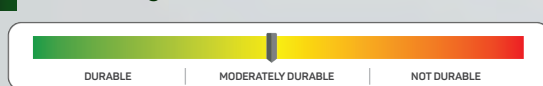


Movement in Service

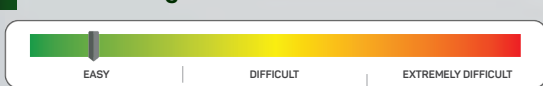


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Has no particular conservation concerns. Widely available, not threatened

07 Processing & Working Properties

Sawing		Easy
Machining		Excellent
Gluing		Good
Nailing/Screwing (holding ability)		Good
Ease of (Nailing/Screwing)		Easy
Finishing		Satisfactory

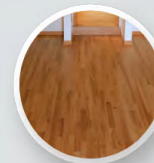
08 Uses



Panelling



Cladding and mouldings



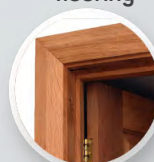
Domestic flooring



Steps and stairs



Interior joinery

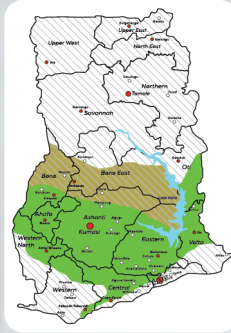


Frames and trims

OKORO

Scientific name: *Albizia zygia*
Local name: Okoro, Kulo / Xeyi, Ziwar
Trade name: Okoro

01 Ecology and Distribution



Occurs mostly in Semi-deciduous and common in fallow land except the wet evergreen, Savannah and Coastal savannah.

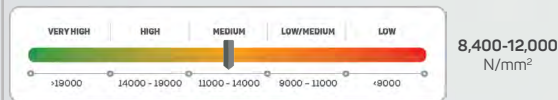
- Transitional zone
- Moist/Dry Semi-Deciduous
- Unavailable in these zones

02 Lumber Description

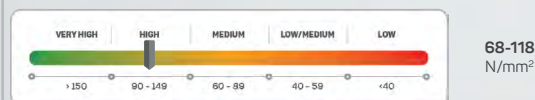
Heartwood: Yellowish-brown, sometimes with dark streaks
Sapwood: Yellowish (very little distinction between sapwood and heartwood)

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

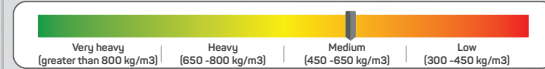


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density



Movement in Service



05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Has no particular conservation concerns. Widely available, not threatened

07 Processing & Working Properties

Sawing		Easy
Machining		Good
Gluing		Good
Nailing/Screwing (holding ability)		Good
Ease of (Nailing/Screwing)		Easy
Finishing		Good

08 Uses



Furniture



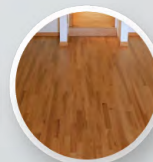
Cabinet work



Interior and exterior joinery



Ornamental fittings



Light flooring



Toys and carvings



Stairs

ONYINA

Scientific name: *Ceiba pentandra*

Local name: *Onyina, Guug/ Gomga/ Gungu/ Gbang / Rimi / Kakre, Vuti / Atepre / Lce / Ofua, Vule, Ehuti.*

Trade name: *Ceiba, Fuma, Formager*

01 Ecology and Distribution



Moist Evergreen and the Deciduous forests, as well as dry forests and common in the secondary forests except savannah and coastal

- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Transitional zone
- Unavailable in these zones

02 Lumber Description

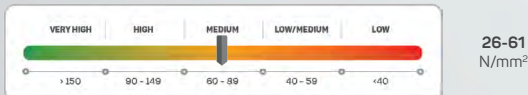
Heartwood: Creamy white, streaked with yellow and grey
Sapwood: Creamy white

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

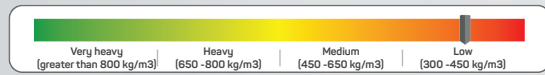


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density

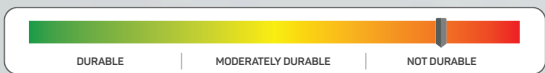


Movement in Service

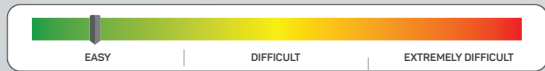


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Has no particular conservation concerns. Widely available, not threatened

07 Processing & Working Properties

Sawing		Easy
Machining		Good
Gluing		Good
Nailing/Screwing (holding ability)		Poor
Ease of (Nailing/Screwing)		Easy
Finishing		Satisfactory

08 Uses



Packaging



Plywood and veneer



Light construction



Mouldings



Furniture



Splints

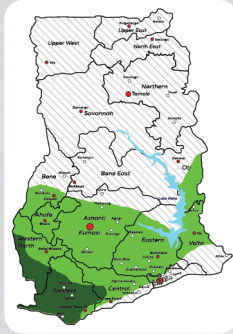


Match boxes

ONYINAKOBEN

Scientific name:
Rhodognaphalon brevicuspe
Local name: *Onyinakoben*
Trade name: *Kodroti*

01 Ecology and Distribution



Available in Dry and Moist semi-deciduous to evergreen forests of Ghana

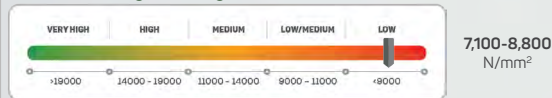
- Evergreen-wet/moist/upland
- Moist/Dry-Semi deciduous
- Unavailable in these zones

02 Lumber Description

Heartwood: Pinkish to red
Sapwood: White

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

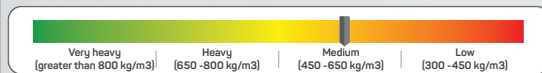


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density

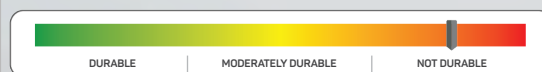


Movement in Service

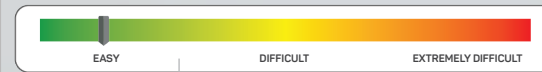


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Common, but tend to be over-exploited, restriction and protection needed, level of cut 100-200% of AAC

07 Processing & Working Properties

Sawing		Easy
Machining	Good with filler	Good
Gluing		Good
Nailing/Screwing (holding ability)		Poor
Ease of (Nailing/Screwing)		Easy
Finishing	Filler needed	Satisfactory

08 Uses



Veneer and plywood



Furniture



Interior joinery



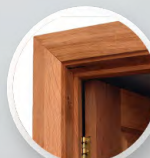
Packaging material



Pallets



Panelling



Trim

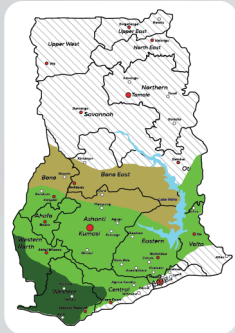
OTIE

Scientific name: *Pycnanthus angolensis*

Local name: *Otie*

Trade name: *Illomba, Otie*

01 Ecology and Distribution



Abundant in the Wet and Moist Evergreen and common in the Moist and Dry Semi-deciduous forests

- Transitional zone
- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Unavailable in these zones

02 Lumber Description

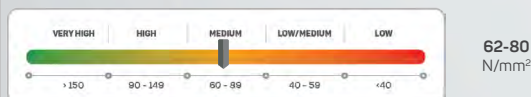
Heartwood: Light-brown to greyish pale red
Sapwood: Light-coloured

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

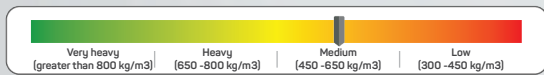


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density

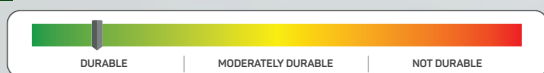


Movement in Service



05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Common and moderately exploited. Utilisable but not as popular to the trade, present cut is below AAC.

07 Processing & Working Properties

Sawing		Easy
	Easy to saw	
Machining		Good
	Good with filler	
Gluing		Good
Nailing/Screwing (holding ability)		Good
Ease of (Nailing/Screwing)		Easy
Finishing		Satisfactory
	Filler needed	

08 Uses



Joinery



Plywood and veneer



Mouldings



Boxes



Furniture

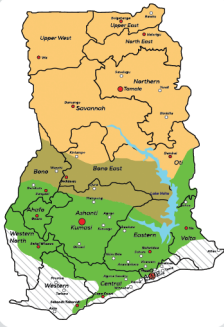
PAPAO

Scientific name: *Azelia africana*

Local name: Papao, Kpikalic/Kpaliga/Kolo Kakala, Wokpa

Trade name: Afzelia, Papao, Doussie, African oak

01 Ecology and Distribution



Mostly found in the Dry Semi-deciduous and fringing forests and the Savanna Woodlands of Ghana.

- Savannah
- Transitional zone
- Moist/Dry semi-deciduous
- Unavailable in these zones

02 Lumber Description

Heartwood: Light brown to dark reddish-brown

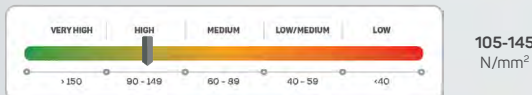
Sapwood: Pale-yellow

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

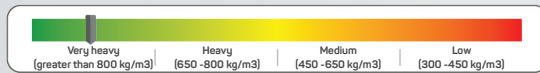


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density

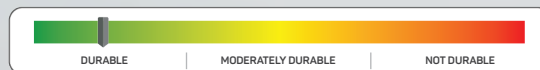


Movement in Service



05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Common, but tend to be over-exploited, restriction and protection needed, level of cut 100-200% of AAC

07 Processing & Working Properties

Sawing Easy

Machining Excellent

Gluing Good

Nailing/Screwing (holding ability) Good

Ease of (Nailing/Screwing) Quite Difficult

Finishing Good

08 Uses



Interior fittings



Joinery



Panelling



Floors



Doors



Frames



Veneer and plywood



Furniture

POTRODOM

Scientific name: *Erythrophleum ivorense*

Local name: *Potrodom, Bupunga / Elagji, Atsa, Etsati*

Trade name: *Potrodom, Tali*

01 Ecology and Distribution



Available in the Evergreen, Deciduous, and Savanna forests. Sparsely distributed in Dry Semi-deciduous forest and Savanna Woodland of Ghana

- Savannah
- Moist/Dry Semi-deciduous
- Transitional zone
- Unavailable in these zones

02 Lumber Description

Heartwood: Orangey yellowish brown
Sapwood: Wide band of creamy-yellow

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

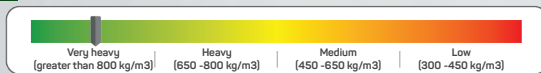


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density



Movement in Service

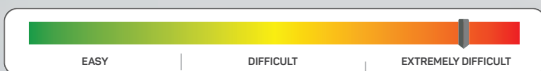


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Common and moderately exploited. Utilisable but not as popular to the trade, present cut is below AAC.

07 Processing & Working Properties

Sawing	<div style="width: 20%; background-color: red;"></div>	Difficult to saw	Difficult
Machining	<div style="width: 80%; background-color: green;"></div>	Works well with hand and machine tools	Excellent
Gluing	<div style="width: 40%; background-color: yellow;"></div>		Satisfactory
Nailing/Screwing (holding ability)	<div style="width: 60%; background-color: green;"></div>		Good
Ease of (Nailing/Screwing)	<div style="width: 20%; background-color: red;"></div>	Pre-boring needed	Difficult
Finishing	<div style="width: 80%; background-color: green;"></div>		Good

08 Uses



Joinery



Heavy flooring



Railway sleepers



Turnery



Construction

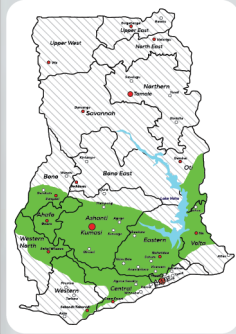


Boat building

SENYA

Scientific name: *Daniellia oliveri*
Local name: Senya, Accra copal, Nyaa/Kacheilo/
 Maje / Nyoo, Kunyan
Trade name: African copaiba balsam,
 West African copal tree

01 Ecology and Distribution



Available in the Dry
Semi-deciduous forests

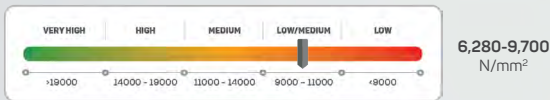
- Moist/Dry semi-deciduous
- Unavailable in these zones

02 Lumber Description

Heartwood: Reddish brown
Sapwood: Reddish brown

03 Strength Properties

Modulus of Elasticity (MoE) -
Bending strength

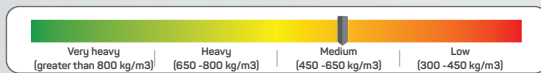


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density



Movement in Service

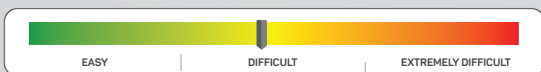


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Common and moderately exploited. Utilisable but not as popular to the trade, present cut is below AAC.

07 Processing & Working Properties

Sawing		Easy to saw	Easy
Machining		Works well with hand and machine tools	Excellent
Gluing			Good
Nailing/Screwing (holding ability)			Good
Ease of (Nailing/Screwing)			Easy
Finishing			Good

08 Uses



Veneer and plywood



Interior panelling



Moulding



Light carpentry



Furniture

WATAPUO

Scientific name: *Cola gigantea*
Local name: Watapuo, Uwu
Trade name: Watapuo; Colawood

01 Ecology and Distribution



Found in all the major forest types and in the Savanna woodland except Coastal Savannah

- Moist/Dry Semi-deciduous
- Evergreen - wet/moist/upland
- Unavailable in these zones
- Transitional zone

02 Lumber Description

Heartwood: Grey to brownish
Sapwood: Grey to brownish

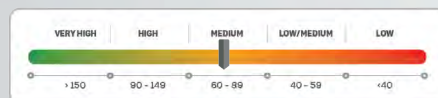
03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength



9,818 N/mm²

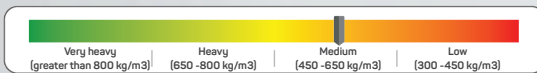
Modulus of Rupture (MoR) - Stiffness



77 N/mm²

04 Physical Properties

Density



Movement in Service

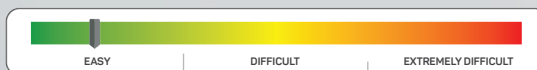


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Green

Has no particular conservation concerns. Widely available, not threatened

07 Processing & Working Properties

Sawing		Easy
Machining		Good
Gluing		Good
Nailing/Screwing (holding ability)		Good
Ease of (Nailing/Screwing)		Easy
Finishing		Satisfactory

08 Uses



Boxes



Light construction



Carvings



Crates and pallets



Furniture

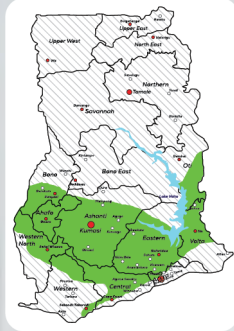
WAWABIMA

Scientific name: *Sterculia rhinopetala*

Local name: Wawabima

Trade name: Brown/red Sterculia, Wawabima

01 Ecology and Distribution



Available in the Moist and Dry Semi-deciduous forests of Ghana

- Moist/Dry semi-deciduous
- Unavailable in these zones

02 Lumber Description

Heartwood: Dark red-brown

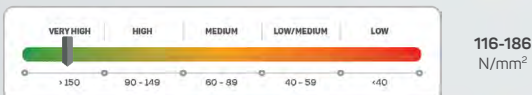
Sapwood: Pale red-brown

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

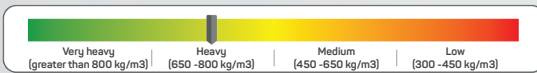


Modulus of Rupture (MoR) - Stiffness

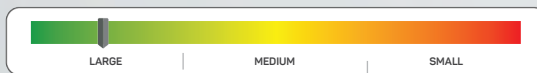


04 Physical Properties

Density



Movement in Service



05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Common and moderately exploited. Utilisable but not as popular to the trade, present cut is below AAC.

07 Processing & Working Properties

Sawing		Easy
Machining		Excellent
Gluing		Good
Nailing/Screwing (holding ability)		Good
Ease of (Nailing/Screwing)		Easy
Finishing		Good

08 Uses



Flooring



Frames



Doors



Furniture



Tool handles



Stairs

YAYA

Scientific name: *Amphimas pterocarpoides*

Local name: Yaya,

Trade name: Lati, Amphimas

01 Ecology and Distribution



Moderately found in major forest types of Ghana, especially the moist evergreen forest.

- Moist/Dry semi-deciduous
- Transitional zone
- Evergreen - wet/moist/upland
- Unavailable in these zones

02 Lumber Description

Heartwood: yellowish brown

Sapwood: Yellow-white to pale brown

03 Strength Properties

Modulus of Elasticity (MoE) - Bending strength

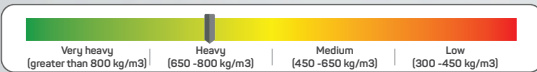


Modulus of Rupture (MoR) - Stiffness



04 Physical Properties

Density

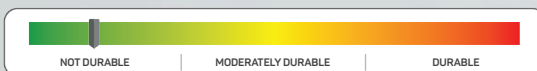


Movement in Service

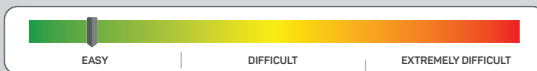


05 Durability Properties

Durability



Treatability



06 Forest Status / Star Rating



Has no particular conservation concerns. Widely available, not threatened

07 Processing & Working Properties

Sawing		Easy
Machining		Excellent
Gluing		Good
Nailing/Screwing (holding ability)		Good
Ease of (Nailing/Screwing)		Easy
Finishing		Good

08 Uses



CONCLUDING NOTES

The physical and technical properties of lesser-known and lesser-used timber species are not readily available even though they tend to be widely used. The gradual shortage and consequent increase in prices of wood from commonly known timber species on the Ghanaian market have presented further opportunities for end-users to be made aware of other wood options, comparable in quality and available for use.

This compendium offers a more visual and graphical approach to understanding the physical and technical properties of Ghanaian timber species, particularly the lesser used and lesser-known species. Disseminating technical information in this manner will facilitate effective knowledge uptake and application by wood users.

Even though this resource was primarily developed with the high volume timber consumers (HVTCs) in mind, its content and usage are relevant for all actors along the timber value chain, as well as academia. The book is useful for creating awareness, promoting the use of LUS and LKS as fit-for-purpose alternatives for wood and wood products, as well as expanding and diversifying market interest away from the commonly known or used and sometimes over-exploited timber species in Ghana.

This compendium was produced by KWC with funds from the Foreign Commonwealth and Development Office (FCDO) of UK, under the project “Building Capacities of Small-Medium Forest Enterprises to produce and Trade in legal timber in Ghana and Liberia – Phase II”.

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<http://tropical.theferns.info/viewtropical.php?id=Erythrophleum+ivorense>. Assessed on Jan 16, 2020

IMAGE CREDITS FOR ICONIZING USES OF SPECIES

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