

Grading Rules for African Timber

LOGS

The African timber trade of logs is based on the two following systems of quality grading:

- The Grading of the National Company of the National Wood (SNBG - Societe Nationale des Bois du Gabon) that is applied at the OKOUME and OZIGO species from Gabon, Equatorial Guinea, and Congo.
- A.T.I.B.T (Association Technique des Bois Tropicaux) that is applied on all others countries and at all the species being practically referred to the “different species” that means all the species different than Okoume and Ozigo in the three above mentioned countries.

This system is based on a valuation and on a friendly agreement in case of contestation.

All the logs destined to the export are divided in three classes: I or A; I/II or A/B; II or B; II/III or B/C; III or C and IV or D.

Each grade is defined from the end use yield free of defects and is expressed by a percentage of normal yield of the log.

For example if we consider a normal loss of the log sawed is of the 15 % and knowing that the B grade must have a minimum yield free of defects of the 75 %, the total yield of the B grade log will be: $(100 \% - 15 \%) \times 75 \% = 63,75 \%$

Table I:

| Grade | I or A | I/II or A/B | II or B | II/III or B/C | III or C | IV or D |
|---------------------------|--------|-------------|---------|---------------|----------|---------|
| Net yield free of defects | 100 % | 87,5 % | 75% | 62,5 % | 50 % | 25 % |
| Imperial yield | 100 % | 90 % | 80 % | 70 % | 60 % | 40 % |

The valuation of the minimum yield is done by an examination of the external visible defects on the log surface. The grader identifies the importance and the position of the defects, giving a penalisation for each defect by a guide done by ATIBT that gives for each kind and importance of the defects some penalisation points through different tables for each species.

At the end the grader will make the sum of the points comparing this result with the total points of the tables contained in the ATIBT guide obtaining the final grade of the log. Here attached you can find a table referred to BAHIA species.

The seller and the buyer in their contracts must indicate the quality of the parcel by a percentage of his composition (en weight or volume) or by number of points (see table II here after) in the different grades (I, II, III, IV) even if normally is used these commercial grade of the parcels:

- QLM (Qualité Loyale et Marchande)
- FAQ (Fair Average Quality)
- QS (Qualité Seconde or other)

Table II

| | Continental System | Imperial System |
|---------------------|--------------------|-----------------|
| Grade I or A | 100 | 100 |
| Grade II or B | 75 | 80 |
| Grade III or C | 50 | 60 |
| Grade IV or D | 25 | 40 |
| eventually | | |
| Grade I/II or A/B | 87,5 | 90 |
| Grade II/III or B/C | 62,5 | 70 |

Now we can make an example.

First of all we have to calculate the normal theoretical number of points of a parcel, then we will find the real number of points of the parcel in object. The difference between these two numbers of points divided for the normal theoretical number of points will be the refaction.

For a parcel Loyal et Marchande (QLM, composed 50% A, 35% B, 15% C)

$$50 \times 100 = 5.000$$

$$35 \times 75 = 2.625$$

$$15 \times 50 = 750$$

8.375 points

If we find the 40% A, 35% B and 25% C:

$$40 \times 100 = 4.000$$

$$35 \times 75 = 2.625$$

$$25 \times 50 = 1.250$$

$$7.875 \text{ points}$$

So the refaction will be: $[(8375 - 7850) \times 100] / 8375 = 5,97 \% \text{ (6 \%)}$

Rules of Mensuration

Dimensions

Length

The smallest distance measured along the generating line of the log between the straight sections of the two extremities. Length is expressed in meters and covered decimetres.

Diameter

Measured over sapwood and under bark EXCEPT WHERE AGREED OTHERWISE IN THE CONTRACT and within the buttresses. The average diameter of the log (which serves for the calculation of the logs volume) is determined by the "cross system", it is expressed in covered, inferiority rounded down cm, by taking the average of the largest and smallest diameters at each extremity:

$$D = \frac{d_1 + d_2 + d_3 + d_4}{4}$$

The diameters at each end of the log must be perpendicular and pass through the logs centre. The minimum diameter is the smallest average diameter, and the maximum diameter is the largest average diameter of the totality of all the logs in a parcel.

Volume calculation

V : Volume is expressed in cubic meters with three decimals after the point.

D : The average diameter is expressed in meters and cm

L : Length is expressed in meters and cm the volume is therefore obtained by the following formula:

$$V \text{ in Cubic meters} = 3.1416 \frac{\pi D^2 \times L}{4}$$

LUMBER

To have a grading for lumber we need some quality and quantity grading rules and african sawmills have many grading but one only find the approval of all the parts and is normally used: is the grade **FAS IMPERIAL**.

Originally of English tradition has been adopted by the ATIBT and his use is found in all the OAB (organisation Africaine des Bois) countries even if in Ghana has been adopted with some differences.

The FAS IMPERIAL system has some requirements:

Lumber must be sawed at bigger dimensions than the contract in order to permit the shrink due to the drying taking it to the 20 % of humidity.

Each parcel must be representative of the species and his quality

With these grades we find the lower limit of the board, all others boards excepted those included in a higher quality have to be included.

If there is no different agreement the boards must be selected on their worst face.

The percentages are always calculated in volume

Grades:

FAS

40 % free of defects and sap and max. 60 % with defects within the following limits and with sap not exceeding the 10 % of the width of the board.

| | |
|----------------|-----------|
| < 1,00 mt | 1 defect |
| 1,00 – 1,50 mt | 2 defects |
| > 1,50 mt. | 3 defects |

No. 1 COMMON & SELECT

As the previous grade as defects but with a percentage of 30 % of the board width of sap. Colour and grain variation allowed.

| | |
|----------------|-----------|
| < 0,60 mt. | 1 defect |
| 0,60 – 1,00mt. | 2 defects |
| 1,00 – 1,50mt. | 3 defects |
| > 1,50 mt. | 4 defects |

No. 2 COMMON & BETTER

Sap with no limits, small blue stain allowed, small worms holes allowed on max the 50 % of the board surface and on the max 10 % of the parcel. Density and colour variations allowed.

| | |
|----------------|-----------|
| < 0,60 mt. | 1 defect |
| 0,60 – 1,00mt. | 2 defects |
| 1,00 – 1,50mt. | 3 defects |
| > 1,50 mt. | 4 defects |

Note that exist some special grades as FAS coursons, Prime Strips, Prime Blocks and shorts, Prime Furniture Squares, Selected Constructional Grade.

In the ATIBT guide you can find all the above mentioned defects, for example:

1 defect :

- a) 1 knots 16 – 32mm. of diameter
- b) 2 knots < 16mm of diameter
- c) a small wormhole
- d) a small gum pocket not exceeding 32cm² of surface
- e) a small split on the extremity not longer than the 10 % of the board length.

2 defects:

- f) 1 knot 32 – 64mm. of diamter
- g) a small gum pocket 32 – 64 cm² of surface
- h) a split as in the point e) but not straight.

3 defects:

- i) 1 knot 64 – 89mm. of diameter
- j) a gum pocket bigger than 64cm² but not exceeding 97cm².

Rules of Mensuration

The sawn-timber measurement rules have been codified in the: GRADING RULES FOR AFRICAN SAWNTIMBER, edited by the ATIBT, and here we recall the main points of this publication.

Traditional Sawn-timber

Length

Measured in meters and rounded decimetres. All pieces of sawn-timber should be oversized in length by some 5cm, so as to compensate

For eventual splits at the extremities of any one piece, except that is for shorts, the lengths of which are deduced at 1.8m and above EXCEPT WHERE AGREED OTHERWISE IN THE CONTRACT.

Width

Measured in rounded cm-except in the case of a measurement by decametre, if previewed in the contract between the parties. In order to account for shrinkage, a sufficient overvaluation that takes into account the mode of sawing is to be anticipated at the moment of transformation. Except where agreed otherwise, the width is deduced at 15cm and above. If the contract has been established for sawn timber of different widths, the contract can anticipate the measurement of the widths of sawn timber by decametre, if not, it will be done by covered cm piece by piece.

Thickness

The dimension of sawn timber is given at humidity content of 20%. In order to arrive at this percentage, sufficient overvaluations are therefore to be anticipated at the moment of transformation, such overvaluations are a function of the species arid mode of sawing undertaken. For sawn timber, which is dry at the moment of embarkation (shipping dry), the following maximum overvaluations are admitted

- Up to 49mm : + 2mm
- From 50mm to 75mm : +3mm
- From 76mm to 1 00mm : + 4mm
- More than 1 00mm : + 5mm

Sawn timber that is dry at the moment of embarkation is that which is sufficiently dry to support the transport (following the INCOTERMS applicable in the contract) without being submitted to any damage.

Industrial parallel and nonparallel African sawn timber (AIP, AINP)

Length

Measured in meters and covered decimetres, taking into account an overvaluation in length of 5cm as for traditional sawn timber.

Width

Measured in the following manner

- For Industrial parallel sawn timber, at the narrowest point of the piece and at least 20cm from the pieces extremity;

. For Industrial non-parallel sawn timber, in the middle of the length of the piece. Sawn timber is considered to be non-parallel if the taper of a piece is superior to 3%.

The contract should indicate the manner in which the widths are to be measured, either in covered cm, or by decametre. If not otherwise mentioned in the contract, then the measurement of widths will be undertaken to covered cm.

Thickness

The indications concerning the thickness of traditional sawn timber equally apply to industrial sawn timber.

Convention between parties The dimension is defined by the contract between the parties. If nothing is specified the accepted minimum dimensions for traditional sawn timber apply, the minimum width for industrial sawn timber being 15cm.

Boules

Length

Should be 3m and more, except if the convention states otherwise. Boules are measured in meters and covered decametres, with an overvaluation in length of 5cm.

Width

Minimum width: 10 cm, except if the convention states otherwise. The width is measured either in covered cm or decametre at the mid length, plateau by plateau, descending from the top to the bottom of the boules. If not otherwise stated in the contract, measurements are taken to covered cm, for each plateau. Defaults are deducted on the width of the plateau, and measured as a proportion of the length of the plateau and the importance of the default.

Thickness

At the contractual thickness the timber must be at 20% humidity content. The same tolerances as for traditional sawn timber are admitted for dried boules ready for embarkation (shipping dry).

Volume

The volume of sawn timber and boules is obtained by multiplying:

The length (L), expressed in covered meters and decimetres, by the total width (W) of the parcel expressed in meters and covered cm, by the thickness (T), expressed in metres and covered mm.

L x W x T = Total volume in cubic meters (three figures after the point).

Packaging

Parcels of sawn timber should only contain pieces of the same length and thickness.

Width: 1.10 m to 1.20m maximum, taking into account the width of lorries. Height: 1.00m to 1.3m, taking into account the density of the species.

These two points are often the object of

Agreement between the two parties. The "sticking out" should be carried out with stickers of a maximum of 8 mm in width. If the sticking out is undertaken with stickers that are more than 8mm in width; the rate of freight is different and therefore higher.

Sawn timber that has been subject to sticking out with stickers of more than 22mm in thickness is normally refused by maritime transporters, but in certain cases however can be the object of a tariff negotiation.

On this subject, maritime transporters would like the thickness of stickers used for parcels of sawn timber to figure on the specification and be resumed on the bill of lading, so as to avoid any dispute.

Galvanised metal straps are recommended, with two straps of 7cm thickness gripping tightly at the base of the pallets, and at least two straps on the exterior of the pallets, however, it is indispensability to take into account the length of the parcels for the number of straps to use.

The straps should be sufficiently solid, to guarantee being handled on at least six separate occasions.

If possible, galvanised corners should be added to the parcel under the straps, in order to protect those tender species.

All those indications prescribed for sawn timber are also valuable for the boules.

Containers

Should be filled and the packaging secured; the maximum weight should be respected as it is specified in the norm for containers.

Sliced and peeled veneer

Theoretically, only artificially dried veneers (Kiln dried) are dispatched. The veneers are packed into thin wooden, or plywood cases and reinforced by solid wooden straps of between 15 to 20mm thickness (sawn from the core of the peeled log). Straps are used at the level of the chocks, as for sawn timber.

Cases can have dimension that are a maximum of 10cm on the length and width of the veneers.

If the veneers are loaded in containers; they should always be dried artificially and put in plastic so as to avoid moulding.