

Hardwood Grading Rules		Règles de Classement pour le Bois Dur	
FAS / Select&Better / 1&2Common		FAS / Select&Better / 1&2Common	
<i>Herkomst :</i>	Africa, Indonesia, Malaysia, South America	<i>Origine :</i>	Afrique, Indonésie, Malaisie, Amérique du Sud

Hardwood is a versatile and popular building and construction material used for many applications, including furniture, flooring, cabinetry, and decorative woodwork. Wholesale buyers need to understand the grading system for hardwood to make informed purchasing decisions and ensure that they are getting the best value for their money.

The NHLA Grading System

The National Hardwood Lumber Association (NHLA) grading system is the most commonly used system for classifying hardwood lumber. This system assigns grades to hardwood based on its appearance and quality, ranging from FAS (First and Seconds) to Select and Better.

FAS is the highest grade of hardwood, characterized by a smooth, clear appearance with few defects. A board must have at least 83% clear face cuttings to be considered FAS. This means that 83% of the board’s surface is free of knots, gaps, and other defects, making it ideal for high-end furniture, cabinetry, and other decorative applications where a smooth, uniform appearance is necessary. The remaining 17% of the board can contain some minor defects, but it should still have a very good overall appearance.

Select and Better is the next grade down from FAS. It’s considered “better” quality. The NHLA grading system characterizes this grade by a good overall appearance but may have more defects and a less even appearance than FAS-grade wood. This grade is commonly used for flooring, paneling, and other applications where a uniform appearance is not as important. While a Select and Better board can have some small knots, it can’t have any gaps, missing knots, or other defects that would impair its strength. This grade is suitable for applications where painting or staining the wood is necessary, hiding imperfections.

No.1 Common and No.2 Common grades are the lowest quality of hardwood. They have a high number of defects, including knots, gaps, and other blemishes that detract from the overall appearance of the wood. They are suitable for lower-end furniture and construction, for example, pallets or crates that will not be visible to customers.

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 diameter
- 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. Ali 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 and 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.

$L \times W \times T =$ 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.

CLASSEMENT DES SCIAGES AVIVES AFRICAINS

GRADING OF AFRICAN SAWN TIMBER

Edition Avril 1999



ASSOCIATION TECHNIQUE INTERNATIONALE DES BOIS TROPICAUX

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Traditional African Sawn Timber

INTRODUCTION

Currently there are basically two grading methods of sawn timber worldwide:

- 1. Grading of a piece on the basis of the number of “standard” defects it has in relation to its size;
- 2. Grading on the basis of clear surfaces, which means that the grader calculates the percentage of square surfaces clear of defects that are properly defined in relation to the whole surface of the piece. In this way a percentage of defect-free surface is to be obtained, which defines – mainly – the grade of the piece. This is the method used in, among others, the Malaysian Grading rules (MGR), the National Hardwood Lumber Association Rules (NHLA) and the SATA Rules Sciages Avivés Tropicaux Africains: Traditional African Sawn Timber.

This causes a certain amount of confusion as several different qualities carry the same name. Originally the United Kingdom was the dominant trading partner; which explains the fact that the various qualities are in English. Grading has been an oral “system” for a long time, until certain producers and users tried to transform it into a written form, but it never became an encompassing and uniform rule. This grading rule is known under the name « Empire Grading ».

In order to avoid all disputes and differences in interpretation of this (originally oral) grading scheme, ATIBT’s Commission III has decided to make a synthesis of these rules.



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SECTION 1 - GENERAL REMARKS

1.1. Timber will be well-sawn, with dimensions above contractual dimensions to allow for shrinkage by drying and such to satisfy the contractual dimensions at 20% moisture content (see section 6).

1.2. Each Parcel as a whole must be representative of the species and grade.

1.3. These grading rules define the poorest piece permitted in each grade; all other pieces, unless belonging to a lower grade, have to be included.

1.4. Except where stipulated, each piece shall be graded on the worse face.

1.5. Percentages are calculated in volume, unless specified otherwise.

1.6. As for parcels, quantity has to be within the limit of $\pm 10\%$ of the volume with a maximum variation of 20 m³ (or 700 cubic feet). Nevertheless, in the case of fixed dimensions, quantity has to be within the limit of $\pm 5\%$ of the volume with a maximum variation of 10 m³ (or 350 cubic feet).



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SECTION 2 - STANDARD GRADES

2.1 First and Second Grade – (FAS)

Consists of not less than 40% clear of defects and sapwood, not more than 60% with defects within the limits set below, permitting clear sapwood not exceeding 10% of the width of the piece.

In an piece under 1.00 m ² (less than 10 square feet)	1 defect
In an piece 1.00 m ² to 1.50 m ² (10 to 16 square feet)	2 defects
In an piece over 1.50 m ² (over 16 square feet)	3 defects

This grade should be of good texture.

A tolerance of 3% of volume of interlocked grain is allowed.

2.2 Number 1 Common and select Grade

Permitting defects within the limits set below, and clear sapwood not exceeding 20% of the width.

This grade admits some variation in texture and grain.

In an piece under 0.60 m ² (less than 6 square feet)	1 defect
In an piece 0.60 m ² to 1.00 m ² (6 to 10 square feet)	2 defects
In an piece 1.00 m ² to 1.50 m ² (10 to 15 square feet)	3 defects
In an piece over 1.50 m ² (over 16 square feet)	4 defects



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2.3 Number 2 Common Grade

Permitting clear sapwood without limit.

Light to medium blue stain allowed.

Permitting dead pinholes isolated and/or in clusters, not exceeding half of the surface of the piece, up to a maximum of 10% of pieces in one parcel.

Abnormal grain is permitted, providing it does not materially affect the strength and flatness of the piece.

Variations in colour and density permitted.

In an piece under 0.60 m ² (less than 6 square feet)	1 defect
In an piece 0.60 m ² to 1.00 m ² (6 to 10 square feet)	2 defects
In an piece 1.00 m ² to 1.50 m ² (10 to 15 square feet)	3 defects
In an piece over 1.50 m ² (over 16 square feet)	4 defects

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SECTION 3 - SPECIAL GRADES

3.1 Prime Grade

To be free of defects and sapwood for at least 80% and up to 20% with defects within the limits set below.

Permitting clear sapwood not exceeding 5% of the width of the piece.

In an piece under 1.00 m ² (less than 10 square feet)	1 defect
In an piece 1.00 m ² to 1.50 m ² (10 to 16 square feet)	2 defects
In an piece over 1.50 m ² (over 16 square feet)	3 defects

This grade should be of excellent texture and free of abnormal grain.

3.2 Prime Narrows Grade

The grain should be straight and free from defects.

3.3 First and Second (FAS) Shorts Grade

- c) In specifications of 15 cm (6 in.) and wider, pieces de 20 cm (8 in.) and wider may include one defect.
- d) In specifications of 7.5 cm (3 in.) and wider, pieces de 15 cm (6 in.) and wider may include one defect.

3.4 Prime Strips Grade

Better face to be free from defects, the reverse side and one third of the thickness of its adjacent edges admit one defect for each 1.20 m (4 ft) of length.



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3.5 Prime Blocks and Shorts Grade

Better face to be free from defects, the reverse side and one third of the thickness of its adjacent edges admit one defect for.

3.6 Prime Furniture Squares Grade

Square in section and free from defects.

3.7 Selected Constructional Grade

Well-sawn to contract size. Free of excessive sapwood, borer holes, unsound knots, heartwood rot and splits of a kind to impair the strength or durability of the piece.

Wane not to exceed 10% of the dimension, permitted in these sections, permitted in sections 390 cm² (60 square inches) and more.

Tight, well-boxed hearts permitted in these sections, unless excluded in the contract.

Ordinary seasoning checks not impairing the strength of the piece are permitted.



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SECTION 4 - ADDITIONS AND EXCEPTIONS TO SECTIONS 2 AND 3

4.1 Acajou

Industrial Timber Quality (ITQ) grade timber is the same as for the Number 1 Common and Select, but permits coarse texture, wooly finish, and variations in colour, density and grain affecting the appearance but not the stability of the lumber.

Number 1 Common and Select Shorts Grade: as for FAS Shorts Grade but will permit variations in grain and texture.

4.2 Obeche - (Samba - Ayous - Wawa)

Standard defect with following additions:

- Clear sapwood admitted without limit.

FAS grade to permit surface blue stain up to one third of the surface and hairy or wooly surface if considered likely to be smooth after planing.

Number 1 Common and Select grade permit:

- Surface blues tain.
- Dead pinholes or shot-holes to a limit of two per 0,010 m² to rate as 1 defect.

Groups of dead pinholes whose diameter does not exceed one third of the width of the piece to be counted as 2 defects.



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Number 2 Common Grade admits deep stain. Groups of pinholes and/or shot-holes whose diameter does not exceed one third of the width of the piece rate as 1 defect.

Groups whose diameter does not exceed one half of the width of the piece rate as 2 defects.

4.3 Abura - (Bahia)

Standard grading, but clear sapwood permitted without limit.

4.4 Tola - (Agba)

Standard grading, but pin knots and gum marks under 8 mm in diameter are not considered as defects.

Number 2 Common Grade: Standard grading, but admitting tension wood and woolly texture.

4.5 Kotibé - (Danta)

Standard grading, but pin knots under 8 mm in diameter are not considered as defects.

4.6 Mansonia - (Bété)

Variations of colour are not considered as defects.

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**SECTION 5 - DEFINITION OF STANDARDS
DEFECTS**

5.1 One standard defect

- a) One knot between 16 mm to 32 mm in diameter or two knots whose diameter sum up to not more than 32 mm.
- b) Two knots under 16 mm in diameter - (Except for knots less than 8 mm in diameter for certain species).
- c) One pinhole or shot-hole, or in clusters, less than 32 mm in diameter.
- d) One gum pocket not exceeding 32 cm² (5 square inches).
- e) One straight end split not exceeding 10 % of the length of the piece.

5.2 Two standard defects

- f) One knot between 32 mm to 64 mm in diameter or knots whose diameter sum up to not more than 64 mm.
- g) One gum pocket exceeding 32 cm² but not exceeding 64 cm² (15 square inches).
- h) One oblique end split not exceeding 10 % of the length of the piece.



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5.3 Three standard defects

- i) One knot between 64 mm to 89 mm in diameter or knots whose diameter sum up to not more than 89 mm.
- j) One gum pocket not exceeding 97 cm² (10 square inches).

Borer holes and large grub holes may be treated as knots, according to the area affected.

The following do not count as defects:

- Sapwood within permitted tolerances
- Spring within the limits of:

Up to 2.70 m (9 ft) length of the piece	13 mm
From 2.70 m to 3.60 m length of the piece	19 mm
Over 3.60 m (12 ft) length of the piece	32 mm

Slight twist and cup insufficient to impair flatness when dressed. For this purpose boards of 30 cm and wider, must be considered as ripped into boards of 30 cm and wider, must be considered as ripped into boards of 15 cm and wider. Warped, cupped and twisted boards exceeding these limits must be excluded from all grades.

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SECTION 6 - MEASUREMENT

6.1 Lengths

Lengths are rounded down to whole decimeters. All pieces have an excess length of 5 cm in order to balance end splits. Without contractual clauses stating otherwise, their standard length is 1.80 m and up.

6.2 Widths

Widths are rounded down to whole centimeters. All pieces must have an excess width of 1 cm for shrinkage. Without contractual clauses stating otherwise, their minimal width is 15 cm.

6.3 Thicknesses

The lumber must have its contractual thickness at 20% moisture content.

Sufficient allowances for shrinkage have therefore to be given while sawing, according to the species and the way of sawing.

The permitted excess thickness for dried lumber at time of shipment (shipping dry) is:

Up to 49 mm	+2 mm
50 mm to 75 mm	+3 mm
76 mm to 100 mm	+4 mm
Over 100 mm	+6 mm

Lumber is said to be «shipping dry» if it is dry enough to be shipped according to appropriate INCOTERMS to the contract.



Industrial African Sawn Timber

Industrial Parallel Sawn Timber (Avivés Industriels Parallèles): AIP

Industrial Non-Parallel Sawn Timber (Avivés Industriels Non Parallèles): AINP

INTRODUCTION

These grading rules were established to facilitate the trade of African Sawn Timber at the time when the production of sawn timber was rising and the export of logs was falling owing to the industrial development of the producing countries.

They have been designed and studied by industrial producers from tropical countries. This is the reason why these rules are well adapted to the specific issues of production and consider less the technical aspects of utilization.

Finally, a particularity of these grading rules: they apply not only to sawnwood with parallel edges and constant width (AIP) but also to sawnwood with non-parallel edges and of varying width.



SECTION 7 - PREPARATION OF THE TIMBER

The industrial sawn timber is cut from logs of all qualities from IV to I.

7.1 Sawn Timber

The lumber must have its contractual thickness at 20% moisture content. Sufficient allowances for shrinkage have therefore to be given while sawing, according to the species and sawing method.

Sawing has to be regular so that the dimension will be constant all over the piece. Exceptions are to be made only for the width of non-parallel industrial sawn timber (AINP).

Actual thickness must in no case be less than the nominal thickness; every piece not complying to this rule will be rejected. Additional thickness can be accepted, if not hampering the proper use of the piece.

For maximum 20% of the pieces in the parcel, wane is permitted on the arris in the following limits:

Maximum width :	10% of the width of the piece
Length	20% of the length of the piece
Depth	1/3 of the thickness of the piece

The ends are sawn square, with a compulsory excess length of 5 cm.



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7.2 Treatment for preservation

Sawn timber made from timber species liable to fungus and/or wood-eating insects, as well as sawn timber containing sapwood must be treated directly after sawing (after removal of the sawdust), using appropriate techniques and using insecticides and fungicides, thus ensuring a good protection of the wood until it reaches the buyer's yard stipulated in the original contract.

7.3 Packaging

The pieces are packaged in bundles of the same thickness and/or section and same length, with a sufficient number of straps to ensure that the bundle remains intact until it arrives at the buyer's yard stipulated in the original contract.

For sawn timber from vulnerable species (section 7.2), stickers of a sufficient and even thickness must be inserted in between the different layers of pieces. They are of the same species as the pieces of the bundle or of a neutral species, dry and eventually treated before with, if possible, the same preservation product as the pieces of the bundle.

The bundles are to carry on both sides and on their ends the marks which have been defined by the "special clauses" of the contract.

7.4 Parcel

A parcel of the same species is composed of the whole of species of the same thickness and/or of the same section, following the dimensions specified in the contract between seller and buyer.



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SECTION 8 - QUALITY

8.1 The timber is sound.

8.2 Pieces with the following defects are not admitted:

- Rot and deterioration, brittle heart, discoloration as a result of deterioration or rot,
- Pith traces, internal fractures (compression failure), splits except those at the ends,
- Dead or unsound knots, gall, blister grain,
- Sapwood exceeding the permitted tolerances stated below,
- Live pinworms, large grub holes.

8.3 Pieces with the following defects are admitted:

- One split or end splits with a maximum length or cumulative length not exceeding 10% of the length of the piece,
- Sound and non-discolored sapwood admitted on an arris, within the following tolerances measured at its widest point:
 - o Less than 30% of the width of the piece, if the face is free of defects other than end splits.
 - o Less than 15% of the width of the piece in all other cases.
- One or more discolorations or natural sound spots, whose cumulative surface does not exceed 20% of the surface of the piece.
- Thick streaks not leading to the rupture of the piece,
- Sound and intergrown knots.

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Certain species are known to have certain specific defects, such as dead pinholes, very small knots, resin release and resin pockets, black spots, etc. In these specific cases, pieces with these defects are admitted without limitation.

For 5% of the number of pieces in the parcel, the following deformities are permitted, excluding all others, and for pieces longer than 3 m (10 ft):

- bow,
- spring,

within 5 mm (0,005 m) per meter of the overall length of the piece.

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SECTION 9 - DIMENSIONS ET MEASUREMENT

- 9.1** Within these grading rules, the dimensions of the pieces are specified by the contract between the parties.
- 9.2** The contract must specify the way in which the pieces are to be measured: in whole centimeters, or by decameter (measuring tape) for the width.
- 9.3** Lengths are to be rounded down to the whole decimeter, taking into account an excess length of 5 cm.
- 9.4** The contractual thickness is measured at least 20 cm from the ends.
- 9.5** The width is to be measured:
- Of the Parallel Sawn Industrial Timber (AIP) at the most narrow width and at least 20 cm from the ends,
 - Of the Non-Parallel Sawn Industrial Timber (AINP) at mid-length of the piece. The minimum width of a piece is 15 cm. Conicity of the pieces is to be less than 3 %.