LABORATÓRIO NACIONAL
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FEATURES OF STRUCTURAL SUGI TIMBER FROM S. MIGUEL AND TERCEIRA (AUTONOMOUS REGION OF THE AZORES)

PROCONVERGENCIA AÇORES 2007-2013
CONSTRUIR O FUTURO
UNIÃO EUROPEIA
Fundo Europeu de Desenvolvimento Regional

REPORT 66/**2015 – DE/NCE**
English translation

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AZORINA – Sociedade de Gestão Ambiental e Conservação da Natureza, S.A.

Lisbon • March 2015

R&D STRUCTURES

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Title

FEATURES OF STRUCTURAL SUGI TIMBER FROM S. MIGUEL AND TERCEIRA (AUTONOMOUS REGION OF THE AZORES)

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FEATURES OF STRUCTURAL SUGI TIMBER FROM S. MIGUEL AND TERCEIRA (AUTONOMOUS REGION OF THE AZORES)

Abstract

The current report presents the appraisal of the visual characteristics of structural timber pieces from *Cryptomeria japonica* (Thunb. ex L.f.) D. Don. The sampling of the pieces was done by AZORINA according to the sampling plan established in the Technical Report 1/2014-DE/NCE. The information presented in this report aims to support the publication of a Portuguese standard regarding the visual strength grading of Sugi timber for structural applications.

This document was produced within a project settled with AZORINA, Sociedade de Gestão Ambiental e Conservação da Natureza, SA.

Keywords: Azores, Sugi, Visual and physical characteristics

SINGULARIDADES DA MADEIRA DE DIMENSÃO ESTRUTURAL DE CRIPTOMÉRIA PROVENIENTE DE S. MIGUEL E DA TERCEIRA (REGIÃO AUTÓNOMA DOS AÇORES)

Resumo

O presente relatório apresenta o levantamento das características visuais de peças de madeira de dimensão estrutural de *Cryptomeria japonica* (Thunb. ex L.f.) D. Don. A amostragem das peças foi realizada pela AZORINA de acordo com o protocolo estabelecido na Nota Técnica 1/2014 – DE/NCE. A informação constante do presente relatório tem em vista a elaboração de uma proposta de norma portuguesa (NP) de classificação visual para fins estruturais da madeira de criptoméria.

Este documento foi elaborado no âmbito do projeto estabelecido com a AZORINA, Sociedade de Gestão Ambiental e Conservação da Natureza, SA.

Palavras-chave: Açores, Criptoméria, Características visuais e físicas

Index

Index of figures

Index of tables

1 | Introduction

1.1 General information

The contract signed with Azorina, Sociedade de Gestão Ambiental e Conservação da Natureza, S.A., by direct award nº 36/AZORINA/2012, covers the acquisition services for a draft standard on the visual strength grading of sugi timber (*Cryptomeria japonica* (Thunb. ex L.f.) D. Don.), in accordance with European standardization, and the evaluation of its durability after being subject to the application of different treatments to protect against subterranean termites (*Reticulitermes* spp.) and drywood termites (*Cryptotermes brevis*). This report concerns the compilation of the visual characteristics of the timber relevant to the definition of the draft standard. The study encompasses sugi timber from the islands of São Miguel and Terceira provided by Azorina, Sociedade de Gestão Ambiental e Conservação da Natureza, S.A.. Sampling was carried out by Azorina, according to the principles defined in the Technical Report 1/2014-DE/NCE (MACHADO; *et al.*; 2014).

1.2 Framework of the present study

The ultimate goal of this study of visual and mechanical characterization relates to the development and submission to the Standardization Technical Committee CT14 "Madeiras", of the Instituto Português da Qualidade of a proposal for a Portuguese standard for visual strength grading of sugi timber. This standard will be the support for the CE marking process that, depending on the results, can follow the route of an harmonized standard or the European Technical Assessment (ETA), figure 1.1. Within the route of a harmonized standard the present study solely contractualized the visual strength grading (analysis of features and mechanical characterization).

However, given the recent involvement of LNEC (Laboratório Nacional de Engenharia Civil) in the machine grading studies of maritime pine (*Pinus pinaster*), a proposal for machine grading, by application of the equipment Timber Grader MTG (http://www.brookhuis.com/timber-grader-mtg.htlm) may also be contemplated.

In the framework of the study for a visual strength grading signed with Azorina, it is expected that two reports shall be draw up, one on the visual characterization of wood (this report) and a second on the proposal for a Portuguese standard for visual strength grading of sugi.

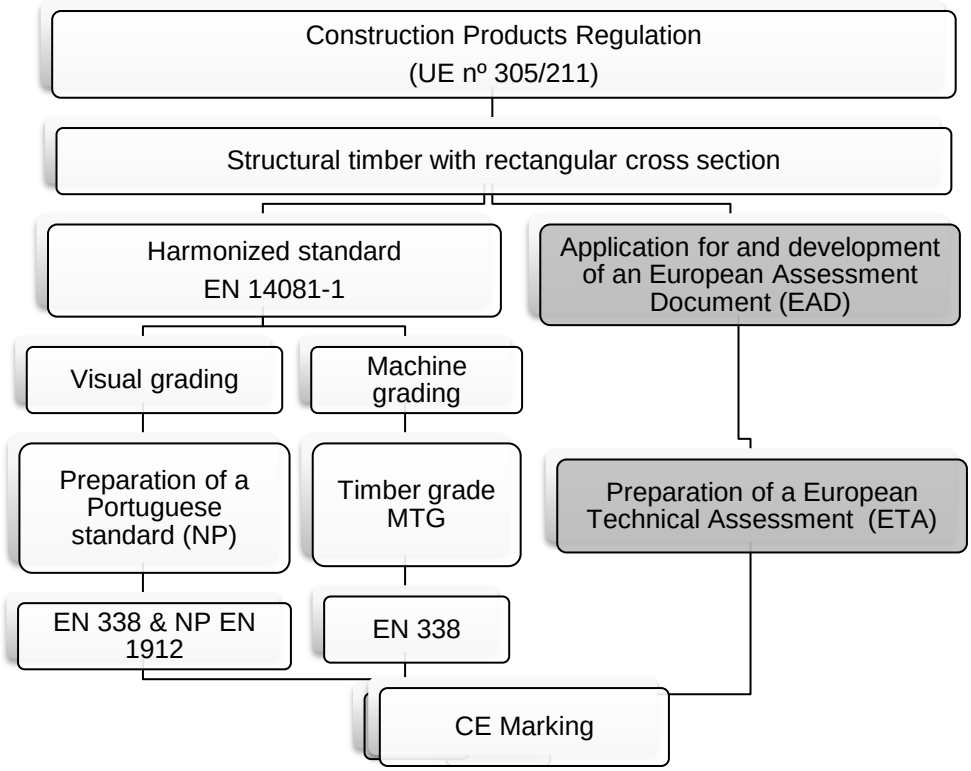

Figure 1.1 – Flowchart showing routes to obtain the CE marking

1.3 Scope of present report

The present report aims to compare the samples received (by origin) in order to establish possible differences in quality between the different origins. This characterization will support the strength grading criteria to be defined in a following report.

2 | Sampling

Sampling was conducted by Azorina according to the principles set by LNEC in the Technical Report 1/2014-DE/NCE. Sampling considered two origins each one corresponding to an island. From each origin samples were taken from at least two populations (stands) to ensure the representativeness of the material tested. Thus Azorina selected two populations on the island of São Miguel and three on Terceira Island (Annex I). Table 2.1 presents information on the material sent for testing. More detailed information is presented in Annex I (documentation sent by Azorina).

Table 2.1 – Data on the test pieces sent for testing

	Origin				
	S. Miguel		Terceira		
	Stand		Stand		
	P1	P2	P1	P2	P3
Age of stands (years)	59	59	> 40	> 40	> 40
Number of small test pieces	40	40	40	-	-
Number of large test pieces	40	40	-	33	7

Small test pieces – 2000 x 100 x 40 mm^3
Large test pieces – 3000 x 150 x 50 mm^3

Moisture content of the test pieces were verified at delivered to LNEC using a moisture meter based on electrical resistance (GANN Hydromette HT 85 T - percussion electrode with a 2% precision). All test pieces showing a moisture content above 18% were put aside and kept in a conditioning environment (20 °C ± 2 °C and 65% ± 5% relative humidity) until they reached a moisture content below 18%.

The test pieces were then visually analysed for the characterization of features (characteristics and defects, see Annex II) and afterwards tested in static bending. Given the opportunity provided by the availability of equipment for machine grading (MTG equipment) this task was also carried out.

3 | Survey of the features of the timber studied

The survey analysed the features (defects and other characteristics of the timber) that must be taken into account, on a mandatory basis, by visual strength grading standards in accordance with the harmonized standard for strength grading of structural timber with rectangular cross sections (CEN; 2011), table 3.1. Apart from these features, others that are identified in Annex II have also been taken into account.

Table 3.1 – Features that must be analysed on a mandatory basis (Annex A of EN 14081-1 (CEN; 2011))

Feature	Grading procedures
Knots	• Relation to the width and or thickness of the timber element • Relation to the cross-sectional area of timber on the basis of cross-sectional values • Relation to absolute values for a given range of timber sizes
Slope of grain	Local fibre deviations around defects shall be disregarded in measuring slope of grain (namely knots). The following increments are preferred: 1:4, 1:6, 1:8 and 1:10
Density and rate of growth	The grading standard shall contain a requirement for either density or rate of growth. For limits for rate of growth, the values in the following increments of ring width are preferred: 15 mm, 10 mm, 8 mm, 6 mm, 4 mm and 3 mm.
Fissures	The length of fissures shall be equal or inferior to the limits given in Table A.1 of EN 14081-1
Wane	The wane should not reduce the width or thickness of the piece in more than 2/3
Warp	Maximum warp shall be no greater than as given in Table A.2.of standard EN 14081-1
Biological deterioration	Limits should be imposed upon the presence of fungal and insect damage to timber and no live insect attack should be allowed.
Reaction wood	Limits should be imposed
Other features	Other grade characteristics and strength affecting criteria, e.g. mechanical damage, inbark, covered damage to the stem and top rupture, are to be restricted in line with the requirements given in this annex for other strength reducing characteristics that will have a similar effect on the strength of timber.

Survey and appraisal of the features had as guidance the two grading standards considered of reference for this study: the Portuguese visual strength grading standard for sawn timber of maritime pine (*Pinus pinaster* Ait.), NP 4305:1995, since it is the only standard applicable to home-grown timber; and, the French standard NF B52-001-1:2011+A1:2013, which amendment of 2013 includes the sugi timber grading from the island of Reunion.

4 | Evaluation of timber features

4.1 Knots

Knots are the defect with the largest detrimental effect on the mechanical properties of Softwoods, in which are included the sugi and maritime pine timber. Knot's evaluation is currently done by measuring the diameter of the knots and their relationship with the surface width of the element where the measurement is performed, or by determining the ratio of the cross section of the element occupied by the knot projection on that same section (KAR - Knot Area Ratio), figure 4.1. Measurement of the knots according to these two criteria can be consulted in the European standard EN 1310:1997 (CEN; 1997) (standard that supports the measurement of features according to NF B52-001-1:2011+A1:2013) or the Portuguese standard NP 4305:1995.

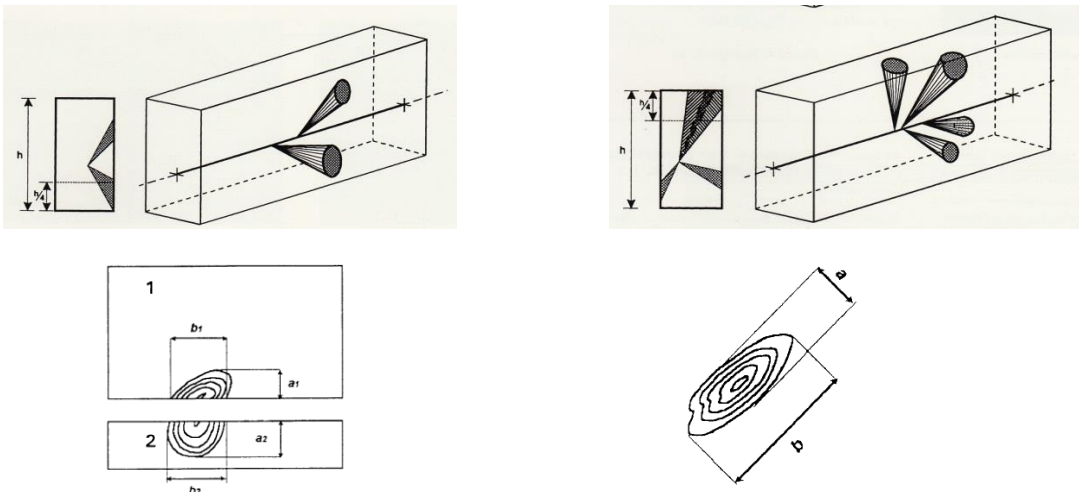

Figure 4.1 – Knot measuring rules applied by the reference standards (top: by KAR measurement, NP 4305:1995; below by measuring the diameter (CEN; 1997))

In the French standard rotten knots and knots with inbark are not admissible.

Regarding the criteria for knots according to NP4305:1995 it was found that test pieces from S. Miguel and Terceira have a similar share of pieces showing a marginal KAR (KAR_m) inferior to 1/5 (42% and 35%, respectively), figure 4.2.

Table 4.1 – Criteria for evaluation and requirements applied to knots by the reference standards

Features	Knots		
	NP 4305:1995		
	Grade EE	Grade E	
KAR_m	< 1/5	< 1/2	> 1/2
KAR_t	< 1/5	< 1/2	< 1/3
	NF B52-001-1:2011+A1:2013[1)]		
	Grade ST III	Grade ST IV	
Diameter (∅)			
• on face	∅ < 100 mm and ∅ < 1/2 *W*	∅ < 150 mm and ∅ < 3/4 *W*	
• on edge	∅ < 50 mm and ∅ < 3/4 *T*	∅ < 50 mm and ∅ < 3/4 *T*	

[1)] Grading for pieces showing a cross section inferior or equal to 18 000 mm²
W – with of piece
T – thickness of piece

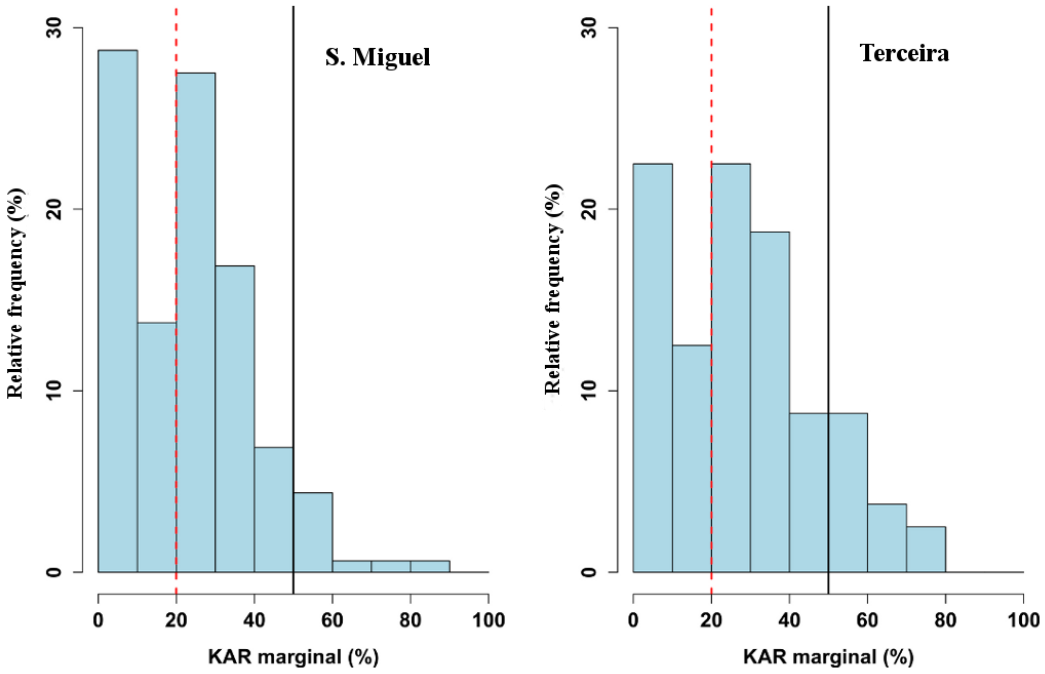

Figure 4.2 – Relative distribution of pieces in relation to marginal KAR (dashed line - grade EE; full line grade E)

Regarding total KAR (KAR_t) a similar distribution for the two origins is observed with a high percentage of pieces presenting a KAR_t below the limit of 1/5 (81% and 62% for S. Miguel and Terceira, respectively), figure 4.3.

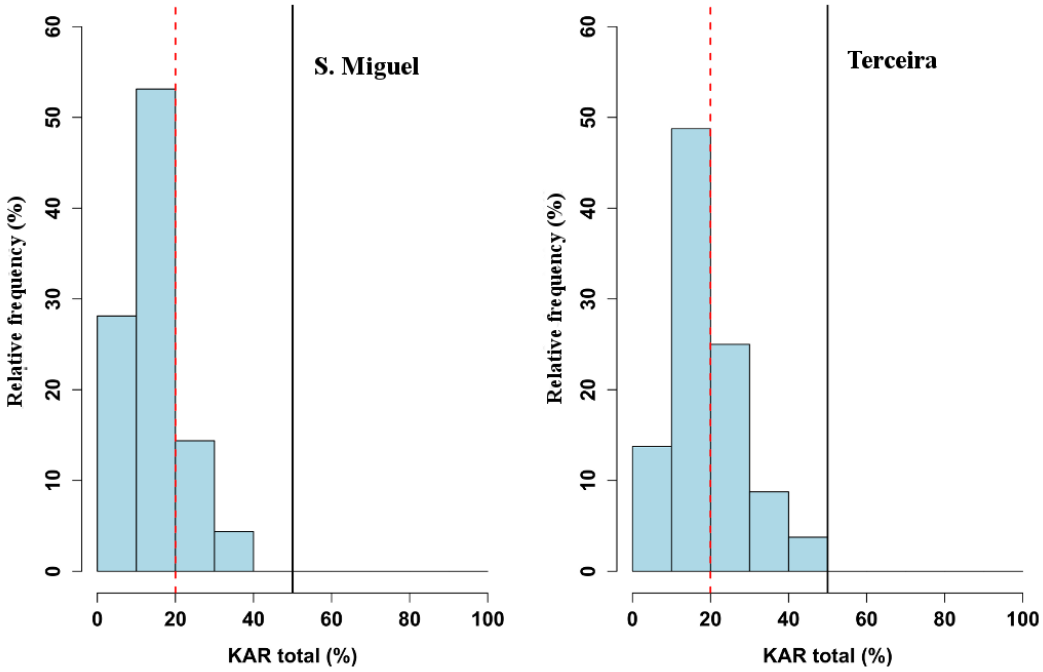

Figure 4.3 – Relative distribution of pieces in relation to total KAR (dashed line – grade EE; full line - grade E)

Considering the requirements related to the diameter of the knots, figures 4.4 and 4.5 confirm the results mentioned above for KAR. Thus, except for a piece, all analysed pieces are within the limits of the upper grade (grade ST III) in relation to the criteria of the diameter of the knots on the faces and edges, figure 4.4.

Regarding the relation between diameter of the knots and the width or thickness of the piece, most of the pieces analysed met the requirement of the upper grade (in relation to the face - 94% - S. Miguel and 96% - Terceira.), figure 4.5. The results obtained for the two origins are similar.

Therefore it is concluded that the analysed pieces present a high quality in relation to the presence of knots.

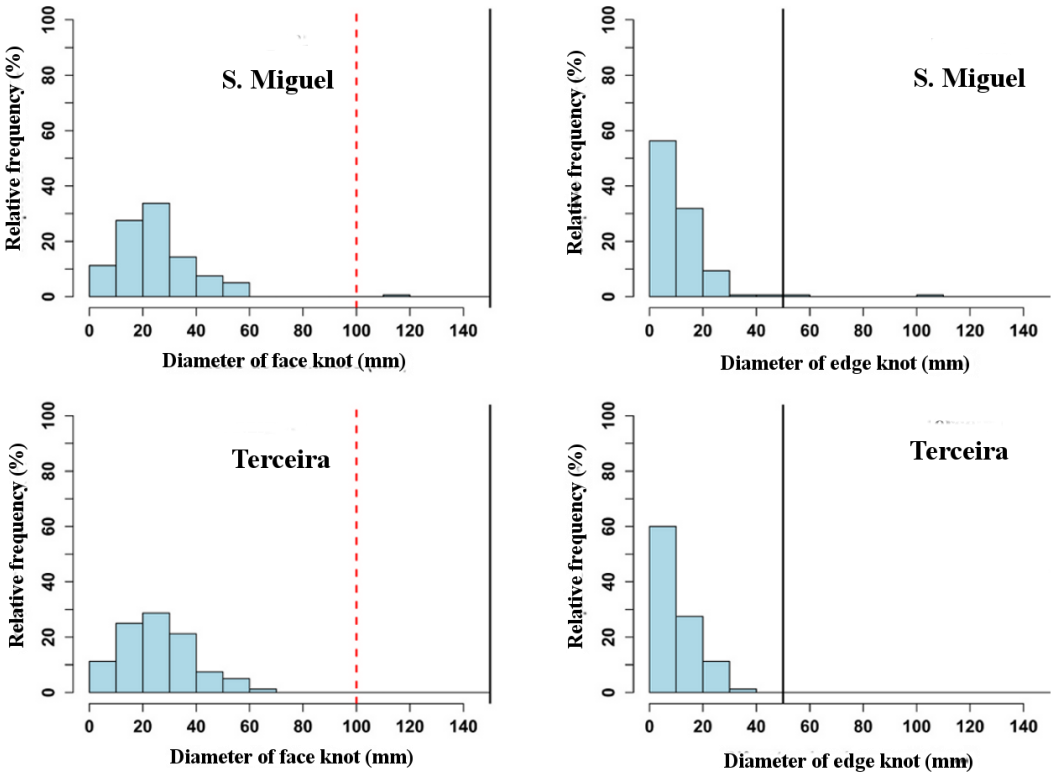

Figure 4.4 – Relative distribution of pieces according to the knot diameter on the faces and edges (dashed line - grade STIII; full line - grade IV; for edge knots the limit are identical for both grades)

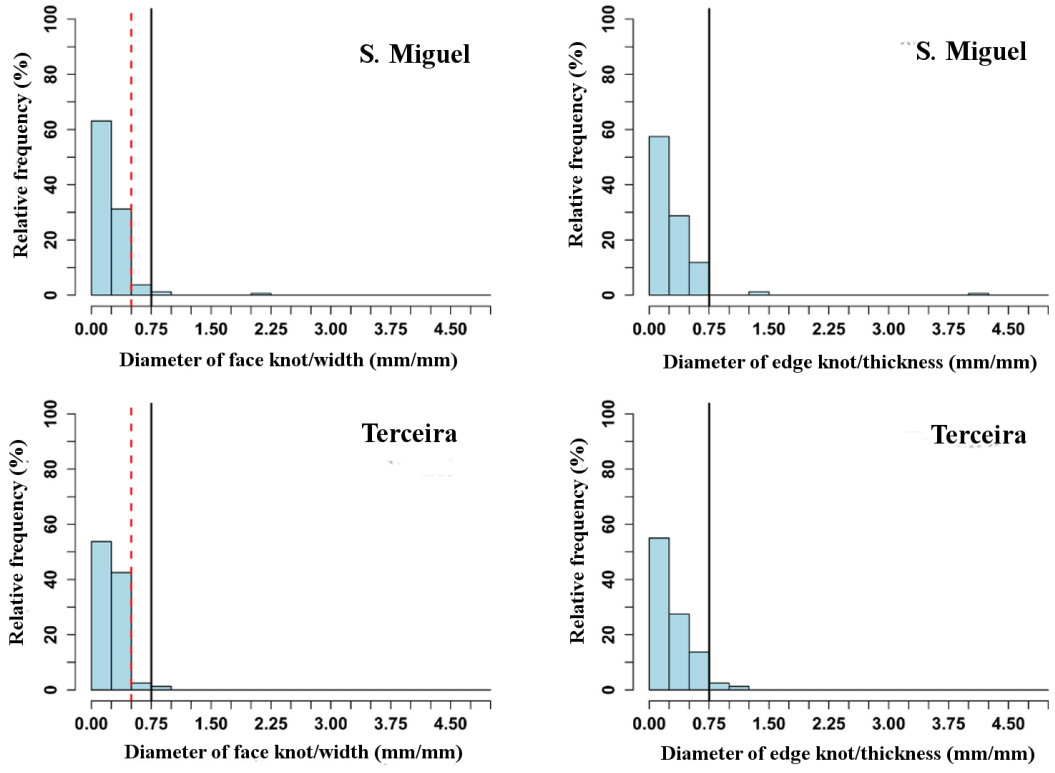

Figure 4.5 – Relative distribution of pieces according to the ratios diameter of the knot/with and diameter of the knot/thickness of the edges (dashed line - grade STIII; full line – grade IV; for edge knots the limit are identical for both grades)

4.2 Rate of growth

The rate of growth is used in softwoods visual strength grading standards as an indicator of the density of the pieces. Table 4.2 presents the requirements of NP 4305:1995. In the case of the French standard NF B52-001-1:2011+A1:2013 the rate of growth criterion is complemented with a direct measurement of density, table 4.3.

Table 4.2 – Rate of growth. Requirements applied to maritime pine in the NP 4305:1995

Feature	NP 4305	
Rate of growth	Grade EE	Grade E
	< 6mm/year	< 10 mm/year

Table 4.3 – Rate of growth and density. Requirements applied to sugi in the NF B52-001-1+A1:2013

NF B52-001-1:2011+A1:2013	
Grade ST III	Grade ST IV
≤ 8 mm/year	
> 400 kg/m³	No restrictions

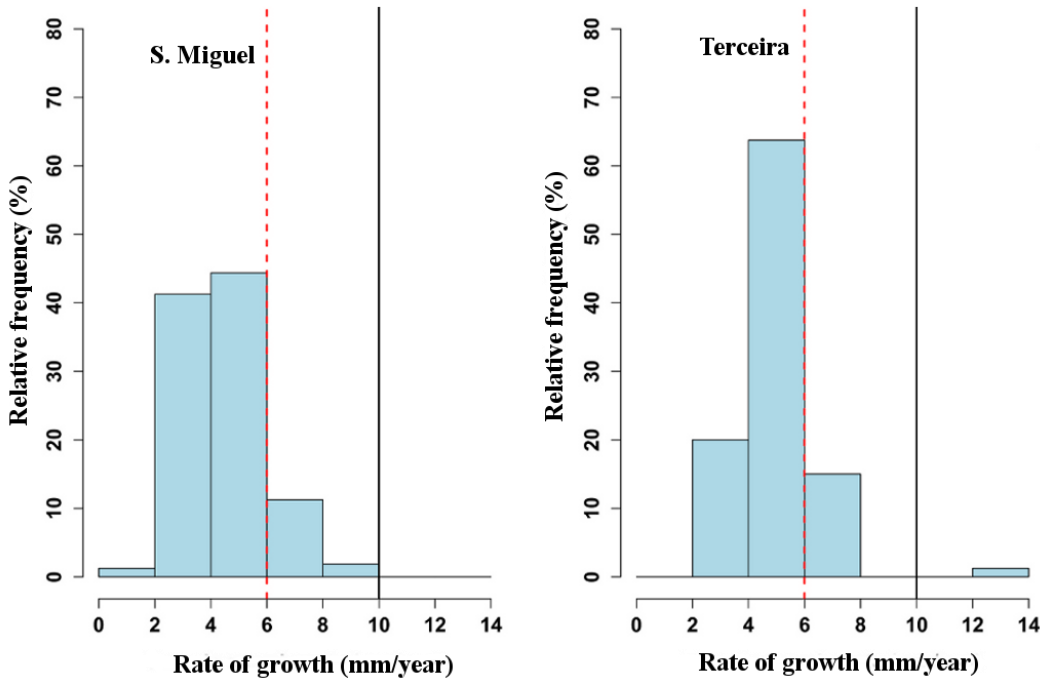

Figure 4.6 – Relative distribution of rate of growth for both origins (dashed line – grade EE; full line – grade E)

Regarding the rate of growth it was verified that most of the pieces presented a value below the limit of 6 mm/year corresponding to the upper grade in NP 4305:1995, figure 4.6.

The percentage of pieces below this threshold for the two origins is very similar, 84% for S. Miguel and 87% for Terceira. Also applying the requirement of the French standard in relation to the rate of growth it is concluded that about 99% of the pieces belong to the upper grade (grade ST III).

From figure 4.6 it can be verified a close distribution between the two origins.

4.3 Slope of grain

The slope of grain corresponds to the general orientation of the wood fibres in relation to the longitudinal axis of the piece, not including the localized deviations due to the presence of other defects. Table 4.4 presents the criteria and requirements applied by the two reference standards.

Both populations show a similar relative distribution, with a high percentage of pieces below the threshold associated with the upper grade in NP 4305:1995 (94% in S. Miguel and 91% in Terceira), figure 4.7.

The distribution of slope of grain by origins is similar.

Table 4.4 – Criteria for evaluation and requirements applied to slope of grain by the reference standards

Feature		**Slope of grain**	
		NP 4305:1995	
		Grade EE	Grade E
Slope of grain		< 1/10	< 1/6
		NF B52-001-1:2011+A1:2013	
		Grade ST III	Grade ST IV
Slope of grain	General	< 1/5	
	Local	< 1/3	

With regards to the French standard it turns out that it applies significantly more permissible limits than those of the Portuguese standard, noting that only a piece (from Terceira Island) would be rejected from the upper grade but nevertheless accepted in the lower grade.

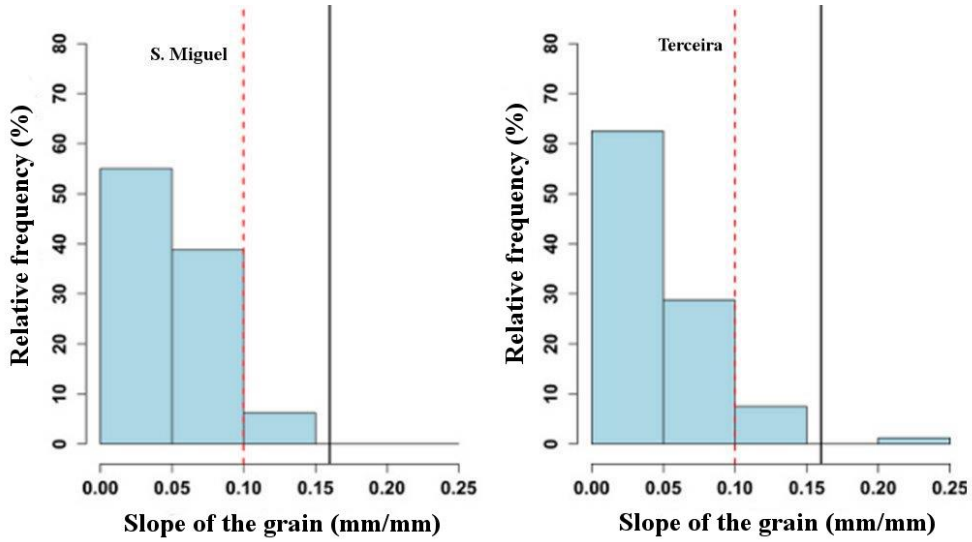

Figure 4.7 – Relative frequency of slope of grain for both origins (dashed line - grade EE; full line - grade E)

4.4 Warp

Warp represents the deformation exhibited by a given piece of timber. The limitation given to warping in standards for visual strength grading of timber is mainly due to issues of functional order and application difficulties on site. The various types of warps referred to in the reference standards are presented in figure 4.8.

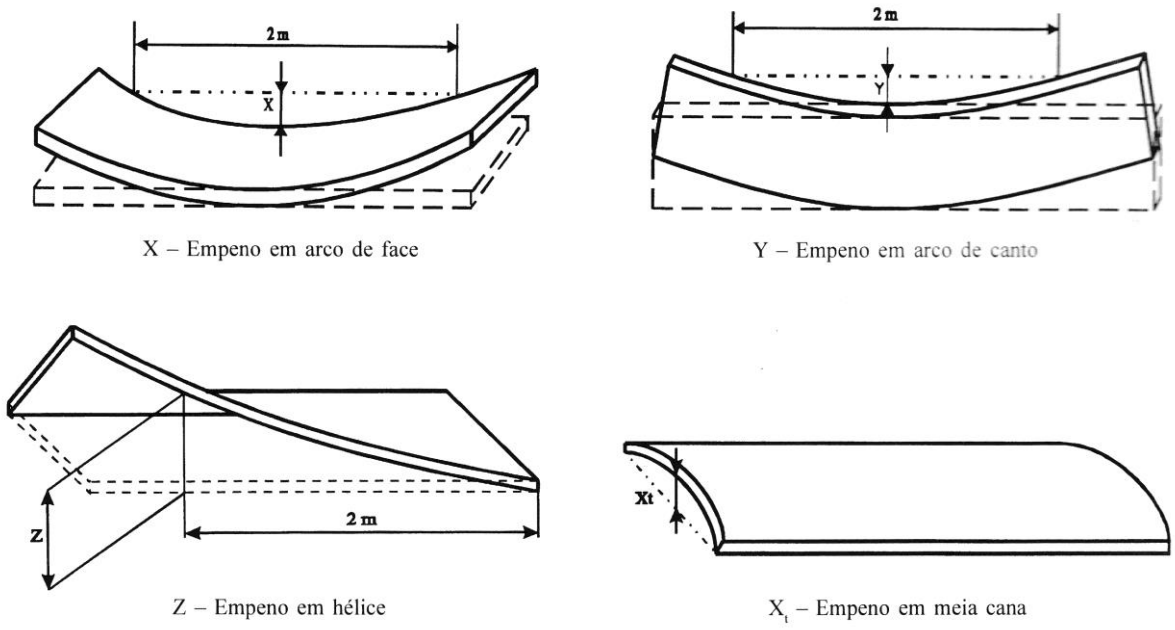

Figure 4.8 – Types of warp considered

Table 4.5 shows the criteria and requirements for classification of the features included in the item warping. Warp was measured on a 2m length with exception of cup.

Table 4.5 – Criteria for evaluation and requirements applied to warp by the reference standards

Feature	Warp			
	NP 4305:1995		NF B52-001-1:2011+A1:2013	
	Grade EE	Grade E	Grade ST III	Grade ST IV
Bow (mm/2m)	If T = 35mm → < 30mm; If T > 75mm → < 10mm (interpolate for intermediate values of thickness)		< 20 mm	
Spring (mm/2m)	If W = 60mm → < 10mm; If W > 250mm → < 5mm (interpolate for intermediate values of width)		< 12 mm	
Twist (mm/2m)	< 1,5 mm for each 25 mm of width of the piece		< 2 mm for each 25 mm of width of the piece	
Cup (mm)	< 1 mm for each 25 mm of width of the piece		No restrictions	

T – thickness of piece; W – width of piece

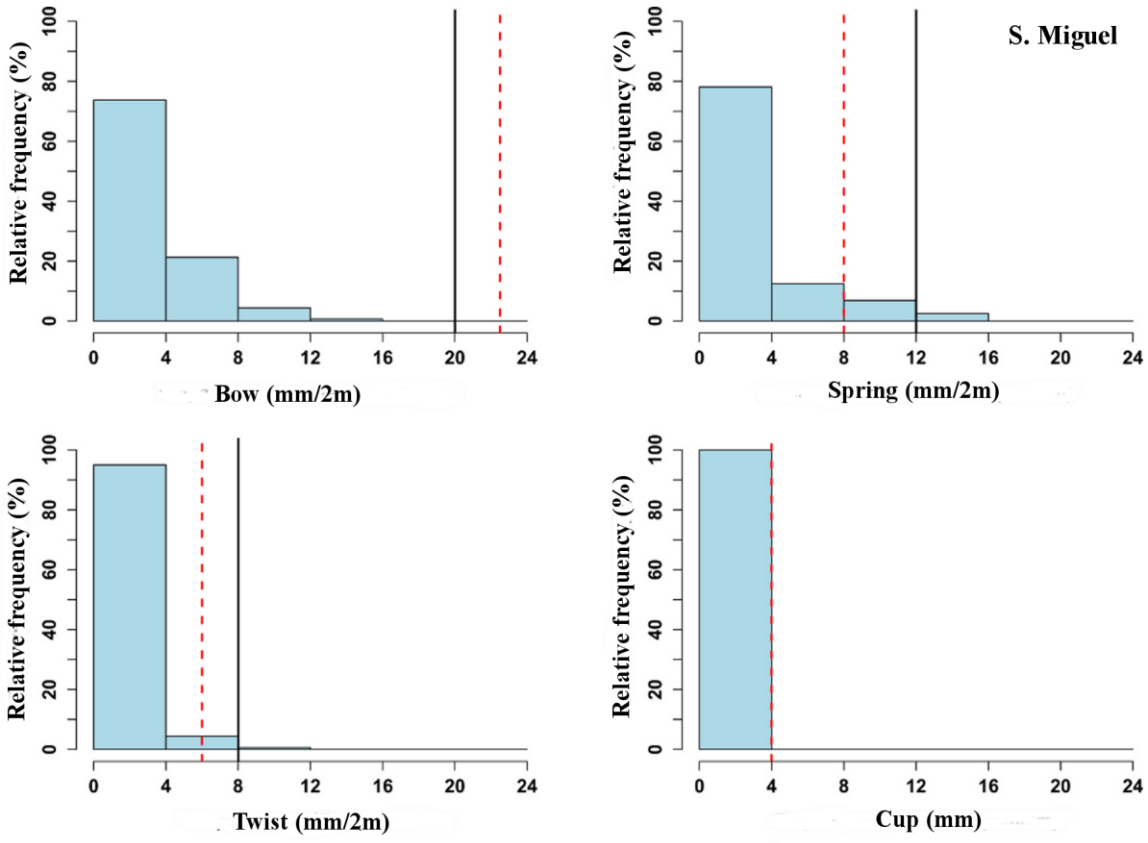

Figure 4.9 – Relative distribution of the warp measurements for S. Miguel origin (Dashed line – Limit imposed by NP 4305:1995 for grade EE; full line – Limit imposed by NF B52-001-1+A1:2013)

Figures 4.9 and 4.10 show that the warp limits imposed are in the majority of cases fulfilled (percentage always superior to 90%) by the test pieces analyzed. The relative distribution for the two origins and for each type of defect is similar.

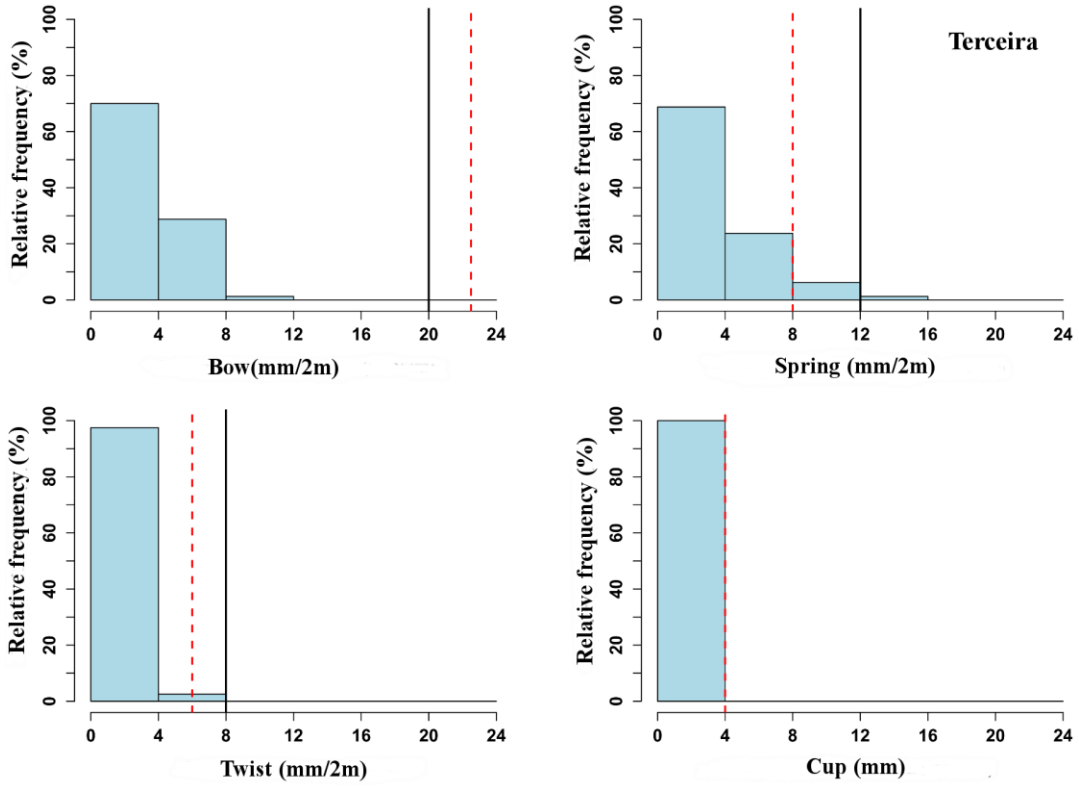

Figure 4.10 – Relative distribution of the warp measurements for Terceira origin (Dashed line – Limit imposed by NP 4305:1995 for grade EE; full line – Limit imposed by NF B52-001-1+A1:2013)

4.5 Fissures

Table 4.6 presents the classification criteria for fissures applied by the two reference standards.

Table 4.7 shows a comparison between the results obtained and the limits imposed by the two reference standards. From those results it was observed that in accordance with the requirements of French standard no piece is rejected and in the case of maritime pine standard a residual amount (2%) is rejected.

Table 4.6 – Criteria for evaluation and requirements applied for fissures by the two reference standards

Feature	Fissures			
	NP 4305:1995		NF B52-001-1:2011+A1:2013	
	Grade EE	Grade E	Grade ST III	Grade ST IV
Fissures going through the thickness	Not more than one fissure with the maximum length allowed by each meter Only permitted at the ends: < 600mm and < 1 x *W*	Only permitted at the ends: < 1.5 x *W*	≤ 600mm	
Fissures not going through the thickness	Superficial fissures < 300 mm can be ignored < 1/4 *L* and < 600mm	< 1/4 *L* and < 900 mm	No restrictions	

W – Width of piece; *L* – Length of piece

Table 4.7 – Results of the evaluation of fissures in accordance with the criteria and requirements applied by the reference standards

Feature	Fissures			
	NP 4305:1995		NF B52-001-1:2011+A1:2013	
	Grade EE	Grade E	Grade ST III	Grade ST IV
Fissures going through the thickness	S.Miguel – 95% of pieces comply Terceira – 93% of pieces comply	S. Miguel – 98% of the pieces comply Terceira – All pieces comply	All pieces comply	
Fissures not going through the thickness	All pieces of both origins comply	All pieces of both origins comply	No restrictions	

4.6 Others

Table 4.8 presents the criteria for grading in relation to wane and inbark followed by the two reference standards.

All pieces received fulfil the requirements indicated in table 4.8, relative to wane and inbark.

Table 4.9 presents the criteria for classification in relation to the presence of biological degradation.

Table 4.8 – Criteria for evaluation and requirements applied to wane and inbark by the reference standards

Features	NP 4305:1995		NF B52-001-1:2011+A1:2013	
	Grade EE	Grade E	Grade ST III	Grade ST IV
Wane	< 1/4 *T*; < 1/4 *W* in the full length < 1/3 *T*; < 1/3 *W* over 300mm (if each end had 3 or 4 sharp arris)	< 1/3 *T*; < 1/3 *W* in the full length < 1/2 *T*; < 1/2 *W* over 300mm (if each end had 3 or 4 sharp arris)	< 1/3 of the length and < 100cm of length < 1/3 of thickness	
Inbark	not going through the thickness Without limits in case they are shorter than the width of the piece If such does not happen fissures limits are applied going through the thickness Without limits if its length is < 1/2 of the width of the piece If such does not happen fissures limits are applied		Admissible	

W – Width of piece; *T* – Thickness of piece

Table 4.9 – Criteria for evaluation and requirements applied regarding biological deterioration

Features	NP 4305:1995		NF B52-001-1:2011+A1:2013	
	Grade EE	Grade E	Grade ST III	Grade ST IV
Blue stain	Admissible as long as it does not compromise the usage of the piece of timber		Admissible	
Black hole	Not admissible		Admissible if occurring in one single surface	
Insects	Not admissible		Not admissible	
Rot	Not admissible		Not admissible	

In relation to the criterion "resin pockets" included in the French standard there is no reference in the present document since the genus *Cryptomeria*, to which belongs the species *Cryptomeria japonica* (Thunb. Ex Lf) D.Don. does not present resin ducts.

5 | Conclusions

The results obtained from the compiled data of the features shown by the timber pieces under study allow concluding that:

- the sugi timber analysed presents a good visual quality presenting characteristics that put it mainly in the upper grades of the reference standards outlined in this report;
- there are not, from the point of view of visual characteristic, differences between the two origins, thus allowing the two samples to be considered as a single population;
- these results are consistent with the data provided as to stand characteristics, which are similar between stands and origins (including soil type, age of trees and density of the stand).

Lisbon, LNEC, March 2015

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Annexes

ANNEX I
Sampling of timber – Information provided by Azorina

Information about test pieces from São Miguel

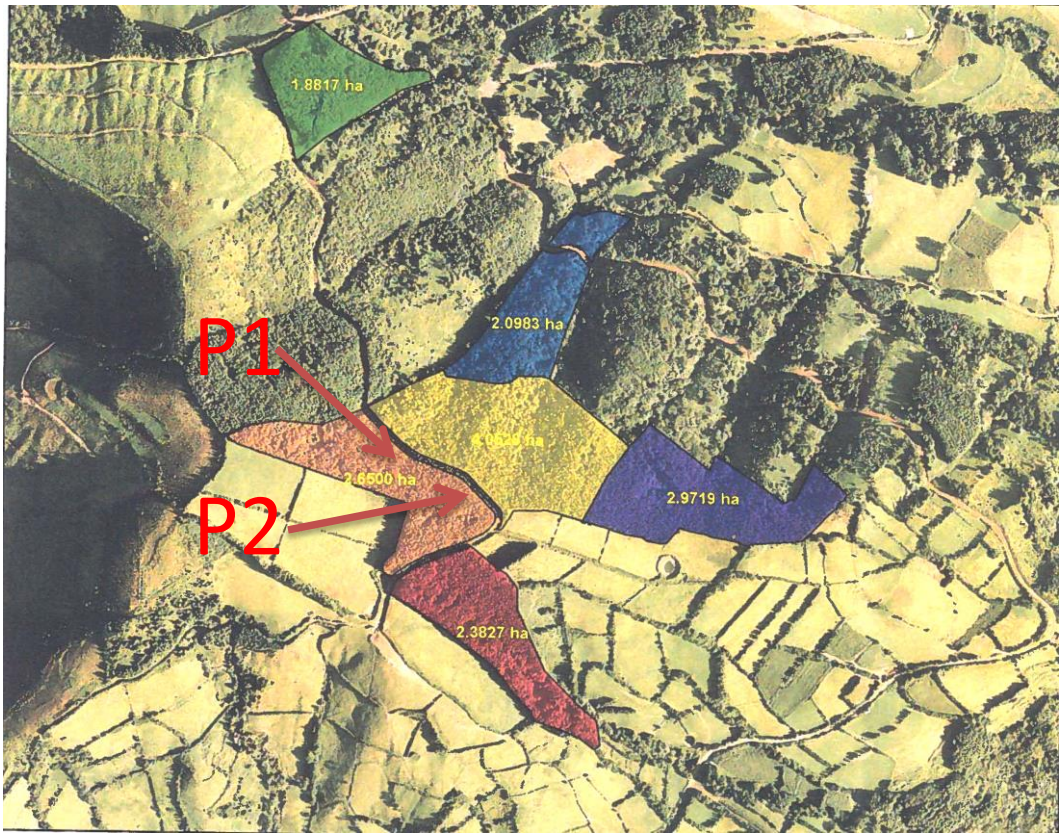

Figure 1. Location of stands (P1 and P2)

Information about Stands:

P1

Site: Povoação, Pico de Água Retorta

Stand coordinates: 660896,11; 4180120,16

Stand area: 2,6500 ha

Approximate volume of wood in the stand: 1196.8 m^3

Information about the stand:

Average DBH: 27,36 cm

Average age of trees: 59 years

Average height of trees: 19,53 m

Stand density: 1433 tree/ha

Surrounding vegetation: Wild kahili ginger (Hedychium gardnerinum), Native daphne (Pittosporum undulatum), Lily of the valley tree (Clethra arborea), Tree fern (Cyathea cooperi).

Stand soil: Andosols

Stand composition: Pure (Plantation)

Table 1. Data on cut down trees in P1.

Origin	Tree	DBH (cm)	Height (m)
P1	1	32	19.53
P1	2	36.2	19.53
P1	3	26.5	19.53
P1	4	34.5	19.53
P1	5	36.2	19.53
P1	6	41	19.53
P1	7	43.5	19.53
P1	8	27	19.53
P1	9	39.1	19.53
P1	10	35.6	19.53
P1	11	32.3	19.53
P1	12	32.7	19.53
P1	13	32.6	19.53

Figure 2. Marking on standing trees (P1).

Figure 3. Marking on logs (P1).

Figure 4. Marking on test-pieces at the sawmill.

Notes:

Coding reference for each of the samples follow on Excel sheet “Folha de Campo 2”.

Signs of armillaria were detected in A7 trees.

A10 and A11 trees over time (1 day) began to darken.

P2

Stand site: Povoação, Pico de Água Retorta

Stand coordinates: 660896,11; 4180120,16

Stand area: 2,6500 ha

Approximate volume of wood in the stand: 1196.8 m^3

Information about the stand:

Average DBH: 27,36 cm

Average age of trees: 59 years

Average height of trees: 19,53 m

Stand density: 1433 tree/ha

Surrounding vegetatione: Wild kahili ginger (Hedychium gardnerinum), Native daphne (Pittosporum undulatum), Lily of the valley tree (Clethra arborea), Tree fern (Cyathea cooperi).

Stand soil: Andosols

Stand composition: Pure (Plantation)

Table 2. Data on cut down trees in P2.

Origin	Tree	DBH (cm)	Height (m)
P2	1	35.8	19.53
P2	2	32.8	19.53
P2	3	32.6	19.53
P2	4	32.2	19.53
P2	5	34.2	19.53
P2	6	25.5	19.53
P2	7	51.1	19.53
P2	8	29.4	19.53
P2	9	27.1	19.53
P2	10	36.6	19.53
P2	11	41.4	19.53
P2	12	26.6	19.53
P2	13	36.6	19.53

Figure 5. 80 test-pieces with dimensions 40mmx100mmx2000mm.

Notes:

Coding reference for each of the samples follow on Excel sheet “Folha de Campo 2”.

Signs of armillaria were detected in A8, A10, A11, A12 and A13 trees.

Information about test pieces from terceira

A. PLOTS FEATURES

A.1) ORIGIN 1 - P1

Site of harvesting

County, Parish, Place: Praia da Vitória, Biscoitos, Quatro Ribeiras

GPS Coordinates: Lat 38:46:13N / Long 27:13:58W

Stand

Stand composition: Pure, evenaged, planted on a hill slope

Average age of the trees: + 40 years

Average DBH: 22,48 cm

Average tree height 14,23 m

Stand density (nº of trees/ ha): 1.414 trees/ha

Type of soil: andosols

A.2) ORIGIN 2 - P2

Site of harvesting

County, Parish, Place: Praia da Vitória, Biscoitos, Quatro Ribeiras

GPS coordinates: Lat 38:46:13N / Long 27:13:58W

Stand

Stand composition: Pure, evenaged, planted on a hill slope

Average age of trees: + 40 years

Average DHB: 22,48 cm

Average tree height: 14,23 m

Stand density (nº trees/ ha): 1.414 trees/ha

Type of soil: andosols with rocky outcrops

A.3) ORIGIN 3 - P3

Site of harvesting

County, Parish, Place: Angra do Heroísmo, Santa Bárbara, Doze Ribeiras

GPS coordinates: Lat 38:42:41N / Long 27:18:54W

Stand

Stand composition: Shelterbelts, pure, evenaged, planted

Average age of trees: + 40 years

Average DBH: 38,65 cm

Average tree height: 20,00 m

Stand density (nº trees/ ha): 1.070 trees/ha

Type of soil: andosols

B. INFORMATION ON TEST-PIECES

B.1) ORIGIN 1 - P1

Test piece identification(*)	Log diameter (cm)	Height of extraction of log cm)	Test piece dimension (cm)
P1 A1 T1 D4	40	220	4 x 10 x 200
P1 A1 T2 D3	32	440	
P1 A2 T3 D3	30	660	
P1 A2 T4 D2	28	880	
P1 A3 T3 D2	28	660	
P1 A3 T4 D2	25	880	
P1 A4 T1 D4	43	220	
P1 A4 T2 D3	37	440	
P1 A5 T1 D2	24	220	
P1 A6 T3 D2	28	660	
P1 A6 T4 D2	25	880	
P1 A7 T3 D2	26	660	
P1 A7 T4 D2	23	880	
P1 A8 T4 D2	23	880	

(*) P – Origin; A - Nº of the tree; T – Position of the log in the tree (T1 Basal, T4 apical); D – Class of diameter

B.2) ORIGIN 2 - P2

Test piece identification(*)	Log diameter (cm)	Height of extraction of log cm)	Test piece dimension (cm)
P2 A1 T2 D2	25	440	5 x 15 x 300
P2 A2 T1 D2	25	220	
P2 A3 T1 D2	23	220	
P2 A4 T3 D2	22	660	
P2 A5 T2 D2	22	440	
P2 A6 T1 D2	25	220	
P2 A7 T2 D2	23	440	
P2 A8 T3 D2	26	660	
P2 A9 T1 D4	48	220	
P2 A10 T1 D4	45	220	

(*) P – Origin; A - Nº of the tree; T – Position of the log in the tree (T1 Basal, T4 apical); D – Class of diameter

B.3) ORIGIN 3 - P3

Test piece identification(*)	Log diameter (cm)	Height of extraction of log cm)	Test piece dimension (cm)
P3 A11 T1 D4	40	220	5 x 15 x 300
P3 A11 T2 D3	35	440	

(*) P – Origin; A - Nº of the tree; T – Position of the log in the tree (T1 Basal, T4 apical); D – Class of diameter

B.4) OBSERVATIONS

It was found that often the same log (of the same tree and with a given diameter) could produce various test-pieces. Although the registration of these cases has not been signaled in the office, all samples are properly identified, and you can tell if it came from the same log as other(s), if your inscription is completely identical to others varying only in its number of identification (last digit).

This is illustrated by the following figure where the same log T1 (P1 origin, from nº 4 tree, with a diameter of class D4) originated three test-pieces, which have been assigned the numbers 21, 22 and 23.

ANNEX II
Survey of the features of the sugi test pieces

Identification LNEC	Identification Azorina	Dimensions							Knots (worst situation)									
		Length	Width (W) (mm)			Thickness (T) (mm)			KAR (NP4305)**			Diameter (Ø) (EN1310)						
		(mm)	topo	meio	topo	topo	meio	topo	KARmc (%)	KARmt (%)	KARtotal (%)	On the face (mm)				On the edge (mm)		
												a	b	average	Ø/l	a	b	average	Ø/E
1	T P1 A1 T2 D3 5	2210	97	95	100	38	39	39	27.08	19.71	40.42	50	20	35	0.36	6	18	12	0.31
2	T P1 A1 T2 D3 6	2200	92	97	96	37	39	39	27.73	0.00	22.88	17	22	19.5	0.21			0	0.00
3	T P1 A1 T1 D4 16	2220	100	98	101	37	37	39	51.99	0.00	17.50	45	20	32.5	0.33	27	22	24.5	0.65
4	T P1 A1 T1 D4 17	2220	99	99	100	38	40	38	50.66	0.00	13.46	33	23	28	0.28	30	25	27.5	0.71
5	T P1 A2 T4 D2 7	2215	98	99	100	39	40	39	4.56	24.25	23.82	49	20	34.5	0.35			0	0.00
6	T P1 A2 T4 D2 8	2210	96	100	97	39	40	40	4.53	51.60	27.46			0	0.00	15	18	16.5	0.42
7	T P1 A2 T4 D2 9	2224	97	97	101	40	39	39	6.99	4.58	18.94	20	35	27.5	0.28			0	0.00
8	T P1 A2 T4 D2 10	2208	97	99	98	39	39	39	6.98	12.04	17.76	30	17	23.5	0.24			0	0.00
9	T P1 A2 T3 D3 11	2220	95	96	102	39	39	37	35.43	0.00	31.59	27	20	23.5	0.24			0	0.00
10	T P1 A2 T3 D3 12	2214	95	95	94	39	39	38	0.00	59.14	19.01	38	21	29.5	0.31	30	22	26	0.67
11	T P1 A2 T3 D3 13	2198	98	96	101	39	40	40	0.00	59.06	18.99	30	11	20.5	0.21	16	20	18	0.45
12	T P1 A2 T3 D3 14	2215	93	97	96	40	40	40	35.87	2.65	24.39	60	20	40	0.42	7	11	9	0.23
13	T P1 A3 T3 D2 3	2224	97	96	99	38	39	39	25.89	0.00	14.10	25	15	20	0.21	12	5	8.5	0.22
14	T P1 A3 T3 D2 4	2218	96	98	96	38	40	39	0.00	61.33	29.96	32	20	26	0.27			0	0.00
15	T P1 A3 T4 D2 15	2217	98	95	96	38	39	37	0.00	4.17	30.67	26	45	35.5	0.37			0	0.00
16	T P1 A4 T2 D3 1	2217.5	97	94	98	38	40	39	67.83	0.00	32.65	25	40	32.5	0.34	25	20	22.5	0.58
17	T P1 A4 T2 D3 2	2216	94	97	98	39	39	38	0.64	48.64	41.83	45	38	41.5	0.43	7	20	13.5	0.35
18	T P1 A4 T1 D4 18	2215	96	95	100	39	39	38	0.87	7.57	19.29	20	12	16	0.16			0	0.00
19	T P1 A4 T1 D4 19	2209	98	99	96	40	39	39	25.33	0.00	6.33	13	10	11.5	0.12	10	17	13.5	0.34
20	T P1 A4 T1 D4 20	2218	100	102	103	39	39	39	13.13	0.00	6.31	7	8	7.5	0.07			0	0.00
21	T P1 A4 T1 D4 21	2250	96	95	103	40	39	40	19.42	24.29	11.09	19	12	15.5	0.16	15	12	13.5	0.34
22	T P1 A4 T1 D4 22	2222	106	103	98	39	39	40	18.59	8.37	15.41	78	26	52	0.51			0	0.00
23	T P1 A4 T1 D4 23	2227	106	103	98	39	39	40	36.55	40.66	40.45			0	0.00	16	15	15.5	0.39
24	T P1 A5 T1 D2 24	2213	99	100	99	38	40	36	28.84	37.42	29.98	28	23	25.5	0.26	42	32	37	0.97
25	T P1 A6 T3 D2 25	2212	99	98	100	40	40	38	39.24	0.00	17.17			0	0.00	20	18	19	0.48
26	T P1 A6 T3 D2 26	2218	98	101	100	39	40	38	0.00	37.82	15.72			0	0.00	20	16	18	0.46
27	T P1 A6 T3 D2 27	2200	99	98	100	39	40	44	25.03	11.31	12.24	18	16	17	0.17			0	0.00

Identification LNEC	Identification Azorina	Dimensions							Knots (worst situation)									
		Length	Width (W) (mm)			Thickness (T) (mm)			KAR (NP4305)**			Diameter (Ø) (EN1310)						
		(mm)	topo	meio	topo	topo	meio	topo	KARmc (%)	KARmt (%)	KARtotal (%)	On the face (mm)				On the edge (mm)		
												a	b	average	Ø/l	a	b	average	Ø/E
28	T P1 A6 T3 D2 28	2199	97	99	100	39	40	40	0.92	0.00	12.34	19	15	17	0.17			0	0.00
29	T P1 A6 T4 D2 34	2206	100	99	101	39	40	39	0.00	19.21	13.18	15	15	15	0.15			0	0.00
30	T P1 A6 T4 D2 35	2200	95	98	97	39	40	39	0.00	48.09	24.97	35	16	25.5	0.26	20	18	19	0.48
31	T P1 A6 T4 D2 36	2203	101	99	102	40	40	40	3.53	3.21	22.72	31	22	26.5	0.26			0	0.00
32	T P1 A6 T4 D2 37	2194	99	97	96	37	38	38	36.48	0.00	12.57	18	20	19	0.20			0	0.00
33	T P1 A7 T4 D2 29	2204	101	100	101	39	40	38	33.27	32.53	27.82	19	17	18	0.18	5	15	10	0.26
34	T P1 A7 T3 D2 30	2220	100	97	100	39	40	38	0.00	33.70	29.64	37	40	38.5	0.39			0	0.00
35	T P1 A7 T3 D2 31	2200	100	100	96	38	39	37	75.71	0.00	39.64	33	23	28	0.28			0	0.00
36	T P1 A7 T3 D2 32	2213	100	98	102	39	39	36	15.68	24.78	18.12	10	5	7.5	0.08	10	6	8	0.21
37	T P1 A7 T3 D2 33	2200	99	101	96	38	38	36	20.99	49.85	37.14			0	0.00	20	15	17.5	0.47
38	T P1 A8 T4 D2 38	2198	101	98	100	37	38	35	16.17	0.00	10.09	14	10	12	0.12			0	0.00
39	T P1 A8 T4 D2 39	2207	98	97	99	38	39	37	12.37	50.05	25.51	24	18	21	0.21	16	15	15.5	0.41
40	T P1 A8 T4 D2 40	2206	101	100	101	37	37	39	0.00	0.00	12.92	26	20	23	0.23			0	0.00
41	T P2 A1 T2 D2 1	3051	153	151	153	48	50	47	4.47	49.86	30.53	43	30	36.5	0.24	26	20	23	0.48
42	T P2 A1 T2 D2 2	3046	150	150	150	50	50	50	5.89	7.03	18.52	47	30	38.5	0.26			0	0.00
43	T P2 A2 T1 D2 6	3044	153	153	154	45	49	48	2.75	20.83	17.66	29	32	30.5	0.20	15	9	12	0.25
44	T P2 A2 T1 D2 7	3041	150	150	150	43	51	49	2.42	1.94	3.16	20	32	26	0.17	10	8	9	0.19
45	T P2 A2 T1 D2 8	3040	151	149	152	54	52	53	0.08	1.95	5.86	12	25	18.5	0.12			0	0.00
46	T P2 A3 T1 D2 3	3034	152	154	154	51	49	51	16.79	29.35	13.39	65	25	45	0.29	7	7	7	0.14
47	T P2 A3 T1 D2 9	3042	149	150	149	48	49	48	0.00	14.96	17.54	15	28	21.5	0.14			0	0.00
48	T P2 A4 T3 D2 4	3051	151	150	151	46	51	47	11.95	0.00	17.54	20	16	18	0.12	15	12	13.5	0.28
49	T P2 A4 T3 D2 5	3045	153	152	152	51	51	50	0.01	38.20	8.76	20	34	27	0.18	15	20	17.5	0.35
50	T P2 A5 T2 D2 10	3036	150	150	150	48	49	48	4.96	19.23	21.21	45	26	35.5	0.24	20	18	19	0.39
51	T P2 A5 T2 D2 11	3045	152	153	152	49	50	48	21.65	14.66	6.05	38	30	34	0.22	6	12	9	0.18
52	T P2 A5 T2 D2 12	3044	151	150	152	50	47	52	4.56	32.08	21.38	9	10	9.5	0.06	21	17	19	0.38
53	T P2 A6 T1 D2 13	3040	151	149	151	45	50	47	0.00	0.00	15.19	11	11	11	0.07			0	0.00
54	T P2 A6 T1 D2 14	3042	152	149	153	51	52	52	0.00	29.79	7.53	15	15	15	0.10			0	0.00

Identification LNEC	Identification Azorina	Dimensions							Knots (worst situation)									
		Length	Width (W) (mm)			Thickness (T) (mm)			KAR (NP4305)**			Diameter (Ø) (EN1310)						
		(mm)	topo	meio	topo	topo	meio	topo	KARmc (%)	KARmt (%)	KARtotal (%)	On the face (mm)				On the edge (mm)		
												a	b	average	Ø/l	a	b	average	Ø/E
55	T P2 A6 T1 D2 15	3033	154	151	154	54	52	52	12.90	0.00	8.35	12	8	10	0.07	12	12	12	0.23
56	T P2 A7 T2 D2 16	3044	150	153	155	50	51	47	4.15	26.35	4.91	60	36	48	0.31	10	14	12	0.24
57	T P2 A7 T2 D2 17	3038	149	151	153	52	49	54	26.33	11.88	16.46	8	32	20	0.13	8	6	7	0.14
58	T P2 A8 T3 D2 18	3045	150	150	153	47	51	48	37.23	14.92	15.58	47	24	35.5	0.24	25	23	24	0.49
59	T P2 A8 T3 D2 19	3022	150	150	152	50	51	50	68.15	24.92	17.85	65	65	65	0.43	10	30	20	0.40
60	T P2 A8 T3 D2 20	3020	152	152	153	53	52	51	1.08	23.40	16.48	70	43	56.5	0.37			0	0.00
61	T P2 A9 T1 D4 22	3035	157	159	159	51	51	51	74.43	0.00	10.30	30	27	28.5	0.18	24	25	24.5	0.48
62	T P2 A9 T1 D4 21	3025	148	144	148	52	51	51	0.00	0.00	16.12	30	32	31	0.21			0	0.00
63	T P2 A9 T1 D4 23	3033	153	147	153	49	51	50	25.48	0.27	22.39	42	28	35	0.23	28	21	24.5	0.49
64	T P2 A9 T1 D4 24	3048	155	157	153	50	50	50	42.66	0.00	16.81	30	22	26	0.17	5	13	9	0.18
65	T P2 A9 T1 D4 25	3018	149	150	150	48	48	48	0.00	0.00	16.27	33	31	32	0.21			0	0.00
66	T P2 A9 T1 D4 26	3018	150	149	150	47	49	52	0.00	0.00	22.24	20	20	20	0.13			0	0.00
67	T P2 A10 T1 D4 27	3040	150	147	151	49	50	50	44.11	0.00	12.14	60	28	44	0.29	22	21	21.5	0.43
68	T P2 A10 T1 D4 28	3040	153	156	153	50	51	50	0.00	15.68	30.27	37	27	32	0.21			0	0.00
69	T P2 A10 T1 D4 29	3030	154	151	153	49	51	49	0.00	2.68	22.67	57	31	44	0.29	6	7	6.5	0.13
70	T P2 A10 T1 D4 30	3050	151	156	153	49	51	50	22.14	0.00	22.28	50	8	29	0.19	7	6	6.5	0.13
71	T P2 A10 T1 D4 31	3030	152	148	153	50	49	49	6.05	31.30	20.52	28	25	26.5	0.18	3	3	3	0.06
72	T P2 A10 T1 D4 32	3048	153	151	155	50	50	49	28.80	0.00	25.11	27	17	22	0.14	6	8	7	0.14
73	T P2 A10 T1 D4 33	3030	151	149	152	47	58	49	0.00	31.46	12.15	21	20	20.5	0.14			0	0.00
74	T P3 A11 T1 D4 34	3030	151	150	151	49	58	48	0.00	2.62	9.47	23	15	19	0.13			0	0.00
75	T P3 A11 T1 D4 35	3044	152	154	152	50	59	50	6.80	0.00	13.38	13	22	17.5	0.11	7	15	11	0.21
76	T P3 A11 T1 D4 36	3037	150	150	152	48	50	50	0.00	51.60	11.50	22	35	28.5	0.19			0	0.00
77	T P3 A11 T1 D4 37	3044	151	155	158	52	52	50	36.11	0.00	13.55	21	14	17.5	0.11	24	15	19.5	0.38
78	T P3 A11 T1 D4 38	3030	151	150	154	50	50	49	0.00	37.96	9.28	32	55	43.5	0.29			0	0.00
79	T P3 A11 T1 D4 39	3050	149	155	150	54	52	51	0.00	9.93	11.26	70	45	57.5	0.38	10	10	10	0.19
80	T P3 A11 T2 D3 40	3030	148	147	150	48	52	49	0.37	0.00	28.47	60	45	52.5	0.35			0	0.00

Identification LNEC	Identification Azorina	Dimensions							Knots (worst situation)									
		Length	Width (W) (mm)			Thickness (T) (mm)			KAR (NP4305)**			Diameter (Ø) (EN1310)						
		(mm)	topo	meio	topo	topo	meio	topo	KARmc (%)	KARmt (%)	KARtotal (%)	On the face (mm)				On the edge (mm)			
												a	b	average	Ø/l	a	b	average	Ø/E
101	SM P1 A8 T1 D2 1	2020	98	98	96	41	41	40	3.58	0.00	18.02	30	81	55.5	0.57			0	0.00
102	SM P1 A8 T1 D2 2	2020	98	97	98	41	40	41	13.25	1.60	8.25	13	10	11.5	0.12	4	5	4.5	0.11
103	SM P1 A8 T1 D2 3	2020	98	96	97	40	42	42	0.00	2.22	10.94	25	90	57.5	0.59	5	12	8.5	0.21
104	SM P1 A8 T2 D2 1	1984	96	97	98	40	42	41	45.85	0.00	19.61	18	25	21.5	0.22	12	12	12	0.29
105	SM P1 A8 T2 D2 2	1985	99	98	97	41	41	41	0.00	27.45	12.78	20	15	17.5	0.18	17	15	16	0.39
106	SM P1 A8 T3 D2 1	1985	99	98	99	40	42	40	0.00	17.19	17.09	24	24	18	0.18	18	16	17	0.42
107	SM P1 A8 T4 D2 1	1985	97	97	98	41	42	40	9.59	49.98	31.87	30	33	31.5	0.32	24	25	24.5	0.60
108	SM P1 A9 T1 D3 1	1982	100	99	98	41	41	40	0.00	0.00	0.00			0	0.00			0	0.00
109	SM P1 A9 T1 D3 2	1992	99	99	100	41	42	42	0.00	0.00	0.25	10	3	6.5	0.07			0	0.00
110	SM P1 A9 T1 D3 3	2019	99	99	98	41	40	40	25.60	0.00	6.40	13	17	15	0.15			0	0.00
111	SM P1 A9 T2 D2 1	1989	99	99	96	41	43	41	36.00	26.62	33.04	53	48	50.5	0.52	14	8	11	0.26
112	SM P1 A9 T2 D2 2	1976	99	100	98	40	41	41	0.08	4.42	10.84	27	12	19.5	0.20			0	0.00
113	SM P1 A9 T3 D2 1	1995	99	98	99	40	41	40	26.63	41.60	26.65	47	28	37.5	0.38	22	26	24	0.60
114	SM P1 A9 T4 D2 1	1995	98	98	99	41	41	41	1.70	0.00	14.86	11	16	13.5	0.14			0	0.00
115	SM P1 A10 T1 D3 1	2007	98	98	99	42	42	42	0.00	0.00	0.00			0	0.00			0	0.00
116	SM P1 A10 T1 D3 2	2007	98	99	98	41	42	41	27.52	0.00	21.52	40	36	38	0.39	10	14	12	0.29
117	SM P1 A10 T1 D3 3	2006	98	98	98	41	42	41	0.00	0.00	0.00			0	0.00			0	0.00
118	SM P1 A10 T2 D2 1	1992	100	100	99	41	41	40	11.07	14.75	20.84	39	30	34.5	0.35			0	0.00
119	SM P1 A10 T2 D2 2	1992	101	100	96	41	42	42	0.00	2.42	7.13	15	16	15.5	0.16			0	0.00
120	SM P1 A10 T3 D3 1	1985	98	98	101	39	40	39	26.54	0.11	25.62	22	14	18	0.18			0	0.00
121	SM P1 A10 T4 D2 1	1997	98	96	98	40	42	40	31.88	10.43	19.88	8	8	8	0.08	15	21	18	0.44
122	SM P1 A11 T1 D3 1	1994	97	98	98	42	42	42	28.57	0.00	15.50	31	12	21.5	0.22	2	1	1.5	0.04
123	SM P1 A11 T1 D3 2	1986	100	98	98	41	41	41	24.13	2.62	14.00	14	18	16	0.16	9	10	9.5	0.23
124	SM P1 A11 T1 D3 3	1990	99	97	98	41	41	41	0.00	28.99	10.23	29	20	24.5	0.25	20	15	17.5	0.43
125	SM P1 A11 T2 D2 1	1992	97	99	99	41	42	41	0.00	83.94	23.19	20	35	27.5	0.28	8	15	11.5	0.28
126	SM P1 A11 T2 D2 2	1994	99	100	96	41	41	40	0.00	37.49	12.37	20	26	23	0.23	10	21	15.5	0.38
127	SM P1 A11 T3 D2 1	1995	98	98	99	39	40	40	35.63	0.00	12.93	21	16	18.5	0.19	9	15	12	0.30

Identification LNEC	Identification Azorina	Dimensions							Knots (worst situation)									
		Length	Width (W) (mm)			Thickness (T) (mm)			KAR (NP4305)**			Diameter (Ø) (EN1310)						
		(mm)	topo	meio	topo	topo	meio	topo	KARmc (%)	KARmt (%)	KARtotal (%)	On the face (mm)				On the edge (mm)			
												a	b	average	Ø/l	a	b	average	Ø/E
128	SM P1 A11 T4 D2 1	1998	99	98	99	41	42	41	0.00	17.70	15.82	20	23	21.5	0.22			0	0.00
129	SM P1 A12 T1 D3 1	1990	98	98	99	42	42	42	0.00	54.89	16.15	30	25	27.5	0.28			0	0.00
130	SM P1 A12 T1 D3 2	1984	100	100	100	41	42	41	0.00	14.58	3.64	18	14	16	0.16	8	9	8.5	0.21
131	SM P1 A12 T1 D3 3	1985	99	99	100	41	43	42	0.00	30.00	7.50	28	22	25	0.25	22	20	21	0.50
132	SM P1 A12 T2 D2 2	1997	99	99	99	40	42	40	0.00	26.62	16.48	20	22	21	0.21			0	0.00
133	SM P1 A12 T2 D2 1	2000	98	100	99	41	42	42	40.88	0.00	13.25	23	16	19.5	0.20	18	20	19	0.46
134	SM P1 A12 T3 D2 1	1985	99	98	97	40	42	40	0.00	13.63	24.10	22	20	21	0.21			0	0.00
135	SM P1 A13 T1 D3 1	2030	96	100	99	40	40	40	0.00	22.10	12.78	12	7	9.5	0.10	22	11	16.5	0.41
136	SM P1 A13 T1 D3 2	2017	98	97	98	41	42	42	0.00	42.33	13.56	40	16	28	0.29	20	15	17.5	0.42
137	SM P1 A13 T1 D3 3	2021	98	95	99	41	42	41	28.53	0.00	7.46	15	55	35	0.36			0	0.00
138	SM P1 A13 T2 D3 1	1988	99	99	98	41	41	41	12.89	41.47	23.95	30	17	23.5	0.24	23	21	22	0.54
139	SM P1 A13 T2 D3 2	1986	98	100	98	41	40	40	57.42	0.00	30.35	35	28	31.5	0.32	18	24	21	0.52
140	SM P1 A13 T3 D2 1	1993	99	98	98	40	41	40	0.24	67.98	32.48	32	35	33.5	0.34			0	0.00
141	SM P2 A8 T1 D2 1	2004	98	98	100	41	41	40	0.00	0.00	12.10	28	21	24.5	0.25			0	0.00
142	SM P2 A8 T1 D2 2	2005	100	98	99	40	41	41	1.84	9.69	19.50	8	18	13	0.13	16	12	14	0.34
143	SM P2 A8 T1 D2 3	2005	98	98	99	41	43	40	33.73	0.00	8.51	12	13	12.5	0.13			0	0.00
144	SM P2 A8 T2 D2 1	2009	99	98	99	40	41	40	25.30	13.07	16.41	47	25	36	0.36	10	9	9.5	0.24
145	SM P2 A8 T2 D2 2	2009	101	99	99	40	40	40	0.00	25.84	17.54	18	30	24	0.24	12	10	11	0.28
146	SM P2 A8 T3 D2 1	2008	99	97	99	42	41	41	1.26	27.76	14.26			0	0.00	11	11	11	0.27
147	SM P2 A8 T4 D2 1	1975	99	97	98	41	41	41	0.00	56.67	29.40	44	33	38.5	0.39	15	6	10.5	0.26
148	SM P2 A9 T1 D2 1	2032	99	98	98	41	42	42	0.00	17.74	13.84	16	14	15	0.15			0	0.00
149	SM P2 A9 T1 D2 2	2066	101	100	102	41	40	40	33.17	0.00	16.85	20	20	20	0.20	20	25	22.5	0.56
150	SM P2 A9 T1 D2 3	2046	100	98	100	42	43	40	0.00	17.55	13.44	16	14	15	0.15	1	1	1	0.02
151	SM P2 A9 T2 D2 1	2001	99	98	99	40	42	40	16.34	0.00	16.84	26	18	22	0.22	5	5	5	0.12
152	SM P2 A9 T2 D2 2	2000	99	98	99	41	42	41	3.86	0.00	8.99	22	18	20	0.20			0	0.00
153	SM P2 A9 T3 D2 1	2000	99	98	99	39	41	39	0.00	41.10	10.66	10	9	9.5	0.10	20	15	17.5	0.44
154	SM P2 A9 T4 D2 1	1995	99	99	99	40	42	40	22.72	34.05	30.43	26	32	29	0.29	18	14	16	0.39

Identification LNEC	Identification Azorina	Dimensions							Knots (worst situation)										
		Length	Width (W) (mm)			Thickness (T) (mm)			KAR (NP4305)**			Diameter (Ø) (EN1310)							
		(mm)	topo	meio	topo	topo	meio	topo	KARmc (%)	KARmt (%)	KARtotal (%)	On the face (mm)				On the edge (mm)			
												a	b	average	Ø/l	a	b	average	Ø/E
155	SM P2 A10 T1 D3 1	2010	97	99	99	42	41	41	9.71	0.00	2.43	16	13	14.5	0.15	8	9	8.5	0.21
156	SM P2 A10 T1 D3 2	2002	97	98	97	41	41	42	0.00	0.00	0.00			0	0.00			0	0.00
157	SM P2A13 T2 D2 -	1994	97	96	97	41	42	41	0.00	0.00	13.94	15	17	16	0.17			0	0.00
158	SM P2 A13 T2 D2 2	1995	98	99	95	40	40	40	0.00	32.24	13.29	16	26	21	0.22			0	0.00
159	SM P2 A13 T3 D2 1	2001	99	99	99	40	41	40	29.22	26.97	20.90	8	11	9.5	0.10	18	14	16	0.40
160	SM P2 A10 T1 D3 3	2007	97	97	97	41	41	42	0.00	3.86	7.77	16	10	13	0.13			0	0.00
161	SM P2 A10 T2 D3 1	2001	98	96	98	42	41	41	0.00	0.00	0.99	3	10	6.5	0.07			0	0.00
162	SM P2 A10 T2 D3 2	2003	98	98	95	41	41	41	1.18	40.64	16.21	40	15	27.5	0.28	18	26	22	0.54
163	SM P2 A10 T3 D2 1	1996	100	99	99	42	42	41	0.00	27.30	6.82	23	15	19	0.19	18	22	20	0.48
164	SM P2 A10 T4 D2 1	2002	98	98	97	41	40	41	17.11	0.62	27.15	30	23	26.5	0.27	5	2	3.5	0.09
165	SM P2 A11 T1 D4 1	1983	98	99	99	41	41	41	0.00	0.00	0.00			0	0.00			0	0.00
166	SM P2 A11 T1 D4 2	1988	100	99	96	41	41	42	0.00	11.46	2.87	12	10	11	0.11	5	4	4.5	0.11
167	SM P2 A11 T1 D4 3	1987	97	97	98	42	40	41	0.00	0.00	2.16	9	11	10	0.10			0	0.00
168	SM P2 A11 T2 D3 1	2000	99	98	100	42	42	41	30.99	2.05	21.59	50	13	31.5	0.32	14	12	13	0.31
169	SM P2 A11 T2 D3 2	2000	98	99	99	41	42	40	0.00	24.52	9.59	55	12	33.5	0.34	11	11	11	0.27
170	SM P2 A11 T3 D3 1	1968	99	99	99	40	41	40	19.89	6.64	12.93	40	19	29.5	0.30	8	5	6.5	0.16
171	SM P2 A11 T4 D2 1	2003	98	98	98	42	42	42	0.00	38.07	9.52	10	10	10	0.10			0	0.00
172	SM P2 A12 T1 D2 1	1999	99	99	98	41	42	41	49.32	0.00	13.15	200	37	118.5	1.20	175	30	102.5	2.48
173	SM P2 A12 T1 D2 2	2001	100	100	100	41	42	41	0.00	16.39	15.06	42	42	42	0.42			0	0.00
174	SM P2 A12 T1 D2 3	1998	99	98	99	40	41	40	22.04	4.04	15.59	37	52	44.5	0.45			0	0.00
175	SM P2 A12 T2 D2 1	1986	99	98	96	41	43	40	29.98	4.39	31.62	47	43	45	0.46	3	3	3	0.07
176	SM P2 A12 T2 D2 2	1980	101	99	100	40	41	40	50.74	13.43	28.42	25	35	30	0.30	17	25	21	0.52
177	SM P2 A12 T3 D2 1	1988	98	97	98	41	41	40	0.00	53.80	14.94	22	22	22	0.23			0	0.00
178	SM P2 A13 T1 D3 1	2013	100	100	99	40	39	40	38.63	0.49	15.36	24	20	22	0.22	14	20	17	0.43
179	SM P2 A13 T1 D3 2	2011	100	98	100	39	39	40	23.66	0.00	11.24	14	13	13.5	0.14			0	0.00
180	SM P2 A13 T1 D3 3	1998	99	96	98	40	39	40	2.06	0.00	0.51	3	2	2.5	0.03			0	0.00
181	SM P1 A1 T1 D3 1	2988	152	149	153	48	49	50	28.33	37.09	21.00	52	33	42.5	0.28	13	10	11.5	0.23

Identification LNEC	Identification Azorina	Dimensions							Knots (worst situation)										
		Length	Width (W) (mm)			Thickness (T) (mm)			KAR (NP4305)**			Diameter (Ø) (EN1310)							
												On the face (mm)				On the edge (mm)			
		(mm)	topo	meio	topo	topo	meio	topo	KARmc (%)	KARmt (%)	KARtotal (%)	a	b	average	Ø/l	a	b	average	Ø/E
182	SM P1 A1 T1 D3 2	2988	154	152	149	48	48	46	31.73	0.00	12.85	21	7	14	0.09	12	12	12	0.25
183	SM P1 A1 T1 D3 3	2990	158	152	156	47	50	47	19.39	48.36	32.36	39	71	55	0.35	36	67	51.5	1.07
184	SM P1 A1 T2 D2 1	2985	155	152	152	47	50	46	0.00	0.00	11.51	23	20	21.5	0.14			0	0.00
185	SM P1 A1 T2 D2 2	2985	156	154	155	49	51	46	21.75	13.87	23.12	40	35	37.5	0.24	12	11	11.5	0.24
186	SM P1 A1 T3 D2 1	2967	156	155	153	48	51	42	30.97	25.17	19.34	74	30	52	0.34	11	9	10	0.21
187	SM P1 A2 T1 D3 1	3075	158	155	156	48	50	49	0.00	0.00	7.51	16	21	18.5	0.12			0	0.00
188	SM P1 A2 T1 D3 2	3061	161	159	163	50	49	47	29.82	0.00	8.13	25	17	21	0.13	20	17	18.5	0.38
189	SM P1 A2 T1 D3 3	3065	160	158	160	50	50	45	26.67	0.00	7.37	35	5	20	0.13	25	18	21.5	0.44
190	SM P1 A2 T2 D2 1	2969	155	153	155	49	51	48	3.37	0.00	20.26	40	42	41	0.27	6	3	4.5	0.09
191	SM P1 A2 T2 D2 2	2975	158	151	158	50	50	47	23.14	25.52	19.06	32	28	30	0.19	20	17	18.5	0.38
192	SM P1 A2 T3 D2 1	2996	156	154	155	49	52	47	2.29	16.33	20.23	56	36	46	0.30	9	9	9	0.18
193	SM P1 A3 T1 D2 1	3030	160	155	158	47	49	45	0.00	0.95	13.87	24	20	22	0.14	3	3	3	0.06
194	SM P1 A3 T1 D2 2	3040	159	156	158	47	48	48	0.00	3.80	7.77	25	17	21	0.13			0	0.00
195	SM P1 A3 T1 D2 3	3033	159	155	155	50	50	47	14.94	26.36	28.73	50	40	45	0.29	15	4	9.5	0.19
196	SM P1 A3 T2 D2 1	3025	155	150	153	45	50	45	0.00	0.00	12.50	30	28	29	0.19	20	22	21	0.45
197	SM P1 A3 T2 D2 2	3015	156	154	157	51	51	47	26.65	19.07	18.20	22	23	22.5	0.14	17	23	20	0.40
198	SM P1 A3 T3 D2 1	3054	153	155	155	48	48	48	4.82	1.64	13.33	43	22	32.5	0.21			0	0.00
199	SM P1 A4 T1 D3 1	3040	155	153	152	49	51	50	9.30	2.09	15.47	44	42	43	0.28			0	0.00
200	SM P1 A4 T1 D3 2	3042	152	154	152	51	51	52	0.00	23.41	10.45	42	24	33	0.22	15	11	13	0.25
201	SM P1 A4 T1 D3 3	3140	156	155	156	51	50	48	0.00	33.37	19.46	36	32	34	0.22	18	21	19.5	0.39
202	SM P1 A4 T2 D2 1	2996	153	153	155	49	52	49	25.79	0.00	11.83	17	14	15.5	0.10	30	18	24	0.48
203	SM P1 A4 T2 D2 2	2997	157	155	158	50	50	48	17.78	21.74	14.21	22	16	19	0.12	10	13	11.5	0.23
204	SM P1 A4 T3 D2 1	3010	154	153	155	45	50	50	0.00	59.26	20.42	24	37	30.5	0.20	23	30	26.5	0.55
205	SM P1 A5 T1 D3 1	3006	158	156	159	48	50	50	0.00	0.00	2.54	15	14	14.5	0.09			0	0.00
206	SM P1 A5 T1 D3 2	3006	159	157	160	48	52	49	0.31	21.00	14.88	32	18	25	0.16	18	16	17	0.34
207	SM P1 A5 T1 D3 3	3005	159	155	159	49	52	49	0.00	0.00	9.66	16	13	14.5	0.09			0	0.00
208	SM P1 A5 T2 D2 1	3012	157	156	157	48	52	47	13.14	36.88	15.62	31	27	29	0.19	4	6	5	0.10

Identification LNEC	Identification Azorina	Dimensions							Knots (worst situation)									
		Length	Width (W) (mm)			Thickness (T) (mm)			KAR (NP4305)**			Diameter (Ø) (EN1310)						
		(mm)	topo	meio	topo	topo	meio	topo	KARmc (%)	KARmt (%)	KARtotal (%)	On the face (mm)				On the edge (mm)			
												a	b	average	Ø/l	a	b	average	Ø/E
209	SM P1 A5 T2 D2 2	3013	161	158	159	47	50	49	2.92	29.40	11.75	38	26	32	0.20	4	11	7.5	0.15
210	SM P1 A5 T3 D2 1	3023	156	154	158	47	50	50	17.65	29.12	20.65	38	22	30	0.19	18	20	19	0.39
211	SM P1 A6 T1 D4 1	3042	156	151	153	50	51	48	0.00	26.21	6.55	17	23	20	0.13	15	6	10.5	0.21
212	SM P1 A6 T1 D4 2	3053	154	155	159	48	52	50	5.09	51.92	29.60	25	18	21.5	0.14	13	3	8	0.16
213	SM P1 A6 T1 D4 3	3050	157	153	150	48	42	49	7.30	34.02	15.27	22	17	19.5	0.13	7	16	11.5	0.25
214	SM P1 A6 T2 D3 1	3010	152	150	153	45	52	48	13.22	34.54	19.57	35	34	34.5	0.23	20	17	18.5	0.38
215	SM P1 A6 T2 D3 2	3015	155	153	154	45	50	47	29.62	1.44	16.61	40	14	27	0.18	13	19	16	0.34
216	SM P1 A7 T1 D4 1	2960	152	155	157	49	49	50	0.00	70.82	19.21	27	90	58.5	0.38	15	70	42.5	0.86
217	SM P1 A7 T1 D4 2	2944	154	153	156	48	49	48	0.00	0.00	11.87	32	19	25.5	0.17			0	0.00
218	SM P1 A7 T1 D4 3	2947	156	154	154	47	50	49	0.00	0.00	3.17	12	18	15	0.10			0	0.00
219	SM P1 A7 T2 D3 1	2991	157	154	155	49	50	52	0.00	48.47	16.33	25	16	20.5	0.13			0	0.00
220	SM P1 A7 T2 D3 2	2990	155	155	158	49	50	48	29.05	19.10	22.54	45	36	40.5	0.26	26	23	24.5	0.50
221	SM P2 A1 T1 D3 1	3004	158	156	158	48	50	50	0.00	6.74	1.69	3	3	3	0.02			0	0.00
222	SM P2 A1 T1 D3 2	3008	161	159	160	49	51	51	0.00	21.91	5.48	20	12	16	0.10	25	13	19	0.38
223	SM P2 A1 T1 D3 3	3008	161	160	163	50	51	51	0.00	7.29	6.08	20	12	16	0.10			0	0.00
224	SM P2 A1 T2 D3 1	3022	156	152	156	47	50	49	12.20	0.43	11.76	15	12	13.5	0.09	10	11	10.5	0.22
225	SM P2 A1 T2 D3 2	3020	158	153	158	49	50	50	8.39	0.00	7.04	14	13	13.5	0.09			0	0.00
226	SM P2 A1 T3 D2 1	2966	153	151	154	48	50	45	0.47	0.00	12.01	30	15	22.5	0.15			0	0.00
227	SM P2 A2 T1 D3 1	3040	155	154	155	49	52	48	30.45	0.00	8.01	24	20	22	0.14	19	12	15.5	0.31
228	SM P2 A2 T1 D3 2	3052	158	155	157	49	50	50	34.31	16.11	22.69	34	29	31.5	0.20	25	15	20	0.40
229	SM P2 A2 T1 D3 3	3047	155	154	155	49	52	48	2.56	10.24	9.65	24	15	19.5	0.13	5	10	7.5	0.15
230	SM P2 A2 T2 D2 1	3003	151	155	155	49	51	46	32.79	25.33	19.65	13	17	15	0.10	18	11	14.5	0.30
231	SM P2 A2 T2 D2 2	2998	153	152	150	48	51	45	16.38	0.00	8.03	29	22	25.5	0.17			0	0.00
232	SM P2 A2 T3 D2 1	3048	151	149	149	48	52	46	26.11	35.45	18.79	53	40	46.5	0.31			0	0.00
233	SM P2 A3 T1 D3 1	3012	153	152	154	50	53	52	0.00	0.00	10.45	20	21	20.5	0.13			0	0.00
234	SM P2 A3 T1 D3 2	3009	159	155	156	50	52	51	0.00	25.55	14.41	52	38	45	0.29	24	15	19.5	0.38
235	SM P2 A3 T1 D3 3	3011	153	151	155	48	51	48	0.00	0.00	12.43	21	20	20.5	0.13			0	0.00

Identification LNEC	Identification Azorina	Dimensions							Knots (worst situation)										
		Length	Width (W) (mm)			Thickness (T) (mm)			KAR (NP4305)**			Diameter (Ø) (EN1310)							
												On the face (mm)				On the edge (mm)			
		(mm)	topo	meio	topo	topo	meio	topo	KARmc (%)	KARmt (%)	KARtotal (%)	a	b	average	Ø/l	a	b	average	Ø/E
236	SM P2 A3 T2 D2 1	3010	155	154	155	50	53	49	0.00	0.00	9.03	40	18	29	0.19			0	0.00
237	SM P2 A3 T2 D2 2	3012	157	153	155	46	50	48	3.14	0.86	16.02	60	60	60	0.39			0	0.00
238	SM P2 A3 T3 D2 1	2988	155	155	154	46	50	46	0.00	13.11	13.72	34	31	32.5	0.21			0	0.00
239	SM P2 A4 T1 D3 1	3021	155	153	159	47	52	50	0.00	0.92	14.39	25	18	21.5	0.14			0	0.00
240	SM P2 A4 T1 D3 2	3022	160	158	160	49	50	51	36.28	0.35	16.95	50	15	32.5	0.20	33	22	27.5	0.55
241	SM P2 A4 T1 D3 3	3024	156	154	159	44	52	49	3.07	15.01	12.27	36	15	25.5	0.16			0	0.00
242	SM P2 A4 T2 D2 1	3012	155	154	158	50	52	46	9.67	28.94	16.04	10	15	12.5	0.08	17	17	17	0.34
243	SM P2 A4 T2 D2 2	3003	154	158	158	50	52	47	0.12	36.55	14.54	23	20	21.5	0.14	28	20	24	0.48
244	SM P2 A4 T3 D2 1	2996	157	153	152	51	54	46	25.83	33.10	18.14	55	37	46	0.30	12	10	11	0.22
245	SM P2 A5 T1 D3 1	3042	152	150	154	49	51	50	0.00	0.00	9.25	16	23	19.5	0.13			0	0.00
246	SM P2 A5 T1 D3 2	3023	157	153	151	48	51	50	34.17	0.53	17.84	40	27	33.5	0.22	12	14	13	0.26
247	SM P2 A5 T1 D3 3	3034	152	152	156	49	50	46	0.00	37.78	18.34	32	23	27.5	0.18	18	15	16.5	0.34
248	SM P2 A5 T2 D2 1	3028	154	153	154	49	51	48	8.85	29.35	14.40	23	13	18	0.12	32	33	32.5	0.66
249	SM P2 A5 T2 D2 2	3032	156	156	158	50	51	48	3.27	0.00	10.03	70	50	60	0.38			0	0.00
250	SM P2 A5 T3 D2 1	2978	157	155	155	49	51	48	0.98	20.83	9.48	13	14	13.5	0.09			0	0.00
251	SM P2 A6 T1 D2 1	3022	155	154	155	49	49	49	0.00	10.38	7.06	18	28	23	0.15			0	0.00
252	SM P2 A6 T1 D2 2	3020	156	155	156	47	50	49	17.25	0.98	9.89	16	12	14	0.09	11	11	11	0.23
254	SM P2 A6 T2 D2 1	2991	155	153	153	51	53	48	26.33	16.15	23.48	23	19	21	0.14			0	0.00
255	SM P2 A6 T2 D2 2	2986	155	155	155	49	49	46	0.00	7.66	9.50	28	26	27	0.17			0	0.00
256	SM P2 A7 T2 D4 1	3002	156	151	155	50	51	51	0.00	0.00	11.67	25	23	24	0.16			0	0.00
257	SM P2 A7 T2 D4 2	3006	156	153	158	50	52	51	0.00	0.00	12.54	27	22	24.5	0.16			0	0.00
258	SM P2 A7 T1 D5 1	3021	156	156	154	51	52	52	11.92	0.00	2.98	12	4	8	0.05			0	0.00
259	SM P2 A7 T1 D5 2	3014	155	155	157	50	50	50	22.82	27.34	17.48	30	47	38.5	0.25			0	0.00
260	SM P2 A7 T1 D5 3	3020	157	154	154	50	51	51	27.58	0.00	11.58	22	21	21.5	0.14			0	0.00
261	SM P2 A5 T2 D3 1	3015	142	142	142	46	45	45	21.49	21.44	14.39			0	0.00	19	19	19	0.42

Identification LNEC	Identification Azorina	Rate of growth	Slope of grain	Fissures					Warps				Pith	Wane		Inbark
		R / number of annual rings	(not associated to knots) - see NP 4305	Through the thickness		Not going through the thickness		Ring shake	Bow	Spring	Twist	Cup	Present throughout the beam (P) /Partially present (PA)/Absent (A)	Measured in the same area		Present/ Absent (P or A)
		(mm)		Length (mm)	Width (mm)	Length (mm)	Width (mm)	Present/ Absent (P ou A)	(mm/2m)	(mm/2m)	(mm/2m)	(mm/2m)		Face	Edge	
1	T P1 A1 T2 D3 5	3.519	0.047					A	1	1	1	0.5	A			A
2	T P1 A1 T2 D3 6	3.250	0.033					A	0	4.5	0	0	A			A
3	T P1 A1 T1 D4 16	3.158	0.060					A	0	2.5	1.5	0	A			A
4	T P1 A1 T1 D4 17	3.852	0.067					A	4.5	3	1	0	A			A
5	T P1 A2 T4 D2 7	4.857	0.033					A	4.5	3	1	0	A			A
6	T P1 A2 T4 D2 8	4.455	0.007					A	5	5	1	0	A			A
7	T P1 A2 T4 D2 9	4.706	0.020					A	4	11	2	0	P			A
8	T P1 A2 T4 D2 10	3.800	0.020					A	0	12.5	2	0	P			A
9	T P1 A2 T3 D3 11	5.412	0.053					A	3	1	0.5	0	PA			A
10	T P1 A2 T3 D3 12	3.800	0.013					A	3.2	2.5	1	0	A			A
11	T P1 A2 T3 D3 13	4.250	0.033					A	1	0	0	0.5	A			A
12	T P1 A2 T3 D3 14	4.409	0.033					A	0	10	1.5	0	A			P
13	T P1 A3 T3 D2 3	5.000	0.100					A	3	2	1	0.5	A			A
14	T P1 A3 T3 D2 4	3.158	0.013					A	3.5	5	2	0	A			A
15	T P1 A3 T4 D2 15	3.611	0.013					A	4.5	0	2	0	A			A
16	T P1 A4 T2 D3 1	5.769	0.033					A	5	1.5	1.5	0	A			A
17	T P1 A4 T2 D3 2	6.000	0.040					A	4	6	1	0	A			A
18	T P1 A4 T1 D4 18	7.591	0.127					A	0	0	1.5	0	A			A
19	T P1 A4 T1 D4 19	7.300	0.120	100	0.1			A	3.5	1.5	1.5	0	A			A
20	T P1 A4 T1 D4 20	5.000	0.073					A	3	1	0	0	A			A
21	T P1 A4 T1 D4 21	5.469	0.033					A	1	2	0	0	A			A
22	T P1 A4 T1 D4 22	4.118	0.060	112	1.5	80	0.1	A	8	2.5	1	0.5	PA			A
23	T P1 A4 T1 D4 23	7.321	0.060					A	4	4.5	1	0	A			A
24	T P1 A5 T1 D2 24	4.833	0.033			97	0.5	A	6.5	7.5	1.5	0.5	P			A
25	T P1 A6 T3 D2 25	5.278	0.013					A	5	9	0.5	0	PA			A
26	T P1 A6 T3 D2 26	4.474	0.047					A	8	4	0	0	A			A
27	T P1 A6 T3 D2 27	3.480	0.020					A	3.5	1.5	0	1	A			A

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		R / number of annual rings	(not associated to knots) - see NP 4305	Through the thickness		Not going through the thickness		Ring shake	Bow	Spring	Twist	Cup	Present throughout the beam (P) /Partially present (PA)/Absent (A)	Measured in the same area		Present/ Absent (P or A)
		(mm)		Length (mm)	Width (mm)	Length (mm)	Width (mm)	Present/ Absent (P ou A)	(mm/2m)	(mm/2m)	(mm/2m)	(mm/2m)		Face	Edge	
28	T P1 A6 T3 D2 28	4.801	0.007					A	1	2.5	1	0	A			A
29	T P1 A6 T4 D2 34	6.599	0.013					A	6	5	0	0	A			A
30	T P1 A6 T4 D2 35	4.722	0.013					A	4.5	6	0.5	0	A			A
31	T P1 A6 T4 D2 36	4.286	0.020					A	1.5	1.5	0	0	A			A
32	T P1 A6 T4 D2 37	5.600	0.007					A	3.5	6.5	1	0	P			A
33	T P1 A7 T4 D2 29	4.688	0.020					A	6	5	4	1	P			A
34	T P1 A7 T3 D2 30	5.534	0.033					A	6.5	0.5	2	0.5	A			A
35	T P1 A7 T3 D2 31	4.333	0.027					A	1	6.5	0.5	0	A			A
36	T P1 A7 T3 D2 32	5.588	0.013	130	0.5			A	0.5	12	1	1	P			A
37	T P1 A7 T3 D2 33	5.000	0.027					A	2	10.5	0.5	1	PA			A
38	T P1 A8 T4 D2 38	3.571	0.027					A	8	5	6	0.5	PA			A
39	T P1 A8 T4 D2 39	3.409	0.073			100	3	A	3.5	1.5	5	0.5	P			A
40	T P1 A8 T4 D2 40	5.000	0.033	90	0.5			A	1.5	0	2	0	A			A
41	T P2 A1 T2 D2 1	5.733	0.040	85	2			A	8.5	0	0.5	0	PA			A
42	T P2 A1 T2 D2 2	5.250	0.007	150	1			A	1	1.5	0	1	PA			A
43	T P2 A2 T1 D2 6	4.294	0.147	130	2			A	6.5	1.5	1	0.5	PA			A
44	T P2 A2 T1 D2 7	4.048	0.220					A	7	0	0	0.5	PA			A
45	T P2 A2 T1 D2 8	5.357	0.060	150	3			A	1.5	3	0.5	0	PA			A
46	T P2 A3 T1 D2 3	3.333	0.087					A	1	0	1	0	PA			A
47	T P2 A3 T1 D2 9	2.944	0.073					A	4.5	1.5	0	0	A			A
48	T P2 A4 T3 D2 4	4.167	0.020			65	1	A	4.5	1	2	1	A			A
49	T P2 A4 T3 D2 5	3.815	0.007			180	1	A	1.5	3.5	0	1.5	P			A
50	T P2 A5 T2 D2 10	5.526	0.027					A	2	0.5	0	0	A	0.04667	0.16667	A
51	T P2 A5 T2 D2 11	5.333	0.013			85	1	A	3	1.5	2	1.5	P			A
52	T P2 A5 T2 D2 12	4.444	0.033	30	1			A	6	0	1	1.5	A	0.09396	0.09804	A
53	T P2 A6 T1 D2 13	4.292	0.040			30	0.5	A	3.5	0	1	0.5	A			A
54	T P2 A6 T1 D2 14	3.694	0.040					A	1	1	0	0	A	0.02632	0.28846	A

Identification LNEC	Identification Azorina	Rate of growth	Slope of grain	Fissures					Warps				Pith	Wane		Inbark
		R / number of annual rings	(not associated to knots) - see NP 4305	Through the thickness		Not going through the thickness		Ring shake	Bow	Spring	Twist	Cup	Present throughout the beam (P) /Partially present (PA)/Absent (A)	Measured in the same area		Present/ Absent (P or A)
		(mm)		Length (mm)	Width (mm)	Length (mm)	Width (mm)	Present/ Absent (P ou A)	(mm/2m)	(mm/2m)	(mm/2m)	(mm/2m)		Face	Edge	
55	T P2 A6 T1 D2 15	4.211	0.000	170	2			A	1	0	3	0.5	P			A
56	T P2 A7 T2 D2 16	6.063	0.080			40	1	A	2.5	1.5	0	0	P	0.02	0.06	A
57	T P2 A7 T2 D2 17	4.583	0.040					A	5.5	0.5	0	1	P			A
58	T P2 A8 T3 D2 18	5.600	0.033					A	5	0.5	0	1	A	0.08	0.17021	A
59	T P2 A8 T3 D2 19	6.000	0.040					A	2	0.5	0	0	A	0.06667	0.16	A
60	T P2 A8 T3 D2 20	5.000	0.044	85	1	120	1	A	1	4	0	0	P			A
61	T P2 A9 T1 D4 22	7.111	0.073					A	0	3.5	0	1	A	0.08805	0.08805	A
62	T P2 A9 T1 D4 21	4.705	0.067					A	1	0.5	1	0	A			A
63	T P2 A9 T1 D4 23	4.089	0.067			100	1	A	2	3	3	0.5	A			A
64	T P2 A9 T1 D4 24	4.286	0.033					P	2	4.5	0	0.5	A			A
65	T P2 A9 T1 D4 25	6.250	0.053			90	1	A	1	0.5	0	0	A			A
66	T P2 A9 T1 D4 26	5.400	0.040					A	3	0	0	0	A			A
67	T P2 A10 T1 D4 27	5.167	0.060					A	3	4	0	0	A			A
68	T P2 A10 T1 D4 28	5.969	0.047					A	4	3.5	0.5	0	A	0.05882	0.05882	A
69	T P2 A10 T1 D4 29	3.600	0.067					A	5	7	0	0	PA			A
70	T P2 A10 T1 D4 30	6.583	0.047					A	3.5	5.5	0	0	PA			A
71	T P2 A10 T1 D4 31	6.176	0.047			190	3	A	1	2.5	0	0	PA			A
72	T P2 A10 T1 D4 32	5.881	0.067					A	1.5	5.5	0	0	A			A
73	T P2 A10 T1 D4 33	6.714	0.053					A	2.5	1.5	0.5	0	A			A
74	T P3 A11 T1 D4 34	12.586	0.067					A	3	6.5	0	0	A	0.06667	1	A
75	T P3 A11 T1 D4 35	6.479	0.060					A	4.5	4	0	0	A			A
76	T P3 A11 T1 D4 36	5.077	0.107			50	1	A	0.5	5	4	1	PA			A
77	T P3 A11 T1 D4 37	6.702	0.120			50	1	A	1.5	5	0	0	PA			A
78	T P3 A11 T1 D4 38	4.762	0.047					A	3	1	0	0.5	A			A
79	T P3 A11 T1 D4 39	4.545	0.073					A	1	3	4	0	PA			A
80	T P3 A11 T2 D3 40	5.000	0.120					A	1.5	4	0	0.5	A			A

Identification LNEC	Identification Azorina	Rate of growth	Slope of grain	Fissures					Warps				Pith	Wane		Inbark
		R / number of annual rings	(not associated to knots) - see NP 4305	Through the thickness		Not going through the thickness		Ring shake	Bow	Spring	Twist	Cup	Present throughout the beam (P) /Partially present (PA)/Absent (A)	Measured in the same area		Present/ Absent (P or A)
		(mm)		Length (mm)	Width (mm)	Length (mm)	Width (mm)	Present/ Absent (P ou A)	(mm/2m)	(mm/2m)	(mm/2m)	(mm/2m)		Face	Edge	
101	SM P1 A8 T1 D2 1	4.167	0.060					A	6	4	1.5	0	A			P
102	SM P1 A8 T1 D2 2	4.545	0.060					A	1	6	0	0	PA			A
103	SM P1 A8 T1 D2 3	5.861	0.060			35	1	A	1.5	5	0	0	PA			P
104	SM P1 A8 T2 D2 1	5.714	0.067					A	4	3	1	0	A			A
105	SM P1 A8 T2 D2 2	5.357	0.000			80	2	A	3.5	7	0.5	0	P			A
106	SM P1 A8 T3 D2 1	5.125	0.007			70	0.5	A	6.5	0.5	2	0	A			A
107	SM P1 A8 T4 D2 1	6.667	0.033			80	1	A	5.5	9	0	0	P	0.01031	0.07143	A
108	SM P1 A9 T1 D3 1	3.929	0.053					A	2.5	2	0.5	0	A			A
109	SM P1 A9 T1 D3 2	4.667	0.087					A	2	2	2	0	A			A
110	SM P1 A9 T1 D3 3	2.224	0.073					A	9	2.5	0	0	A			A
111	SM P1 A9 T2 D2 1	2.333	0.093					A	5	0.5	1	0	A			A
112	SM P1 A9 T2 D2 2	5.625	0.073					A	3	2	0.5	0	P			A
113	SM P1 A9 T3 D2 1	7.286	0.027					A	7.5	0.5	1	0	PA			A
114	SM P1 A9 T4 D2 1	4.333	0.120					A	8	3	1	1.5	PA			A
115	SM P1 A10 T1 D3 1	4.259	0.033					A	2	0	0.5	0	A			A
116	SM P1 A10 T1 D3 2	3.385	0.047					A	3.5	4	4	0	A			A
117	SM P1 A10 T1 D3 3	5.625	0.020					A	3	1	1	0	A			A
118	SM P1 A10 T2 D2 1	5.625	0.053					A	6	1	2	0.5	PA			A
119	SM P1 A10 T2 D2 2	4.917	0.073	130	2	170	1	A	3.5	0.5	0	0	PA			A
120	SM P1 A10 T3 D3 1	3.231	0.033					A	8	6	4	0	A			A
121	SM P1 A10 T4 D2 1	2.778	0.033					A	7	8.5	3	0	A			A
122	SM P1 A11 T1 D3 1	2.800	0.073					A	3.5	3.5	0	0	A	0.09375	0.15385	A
123	SM P1 A11 T1 D3 2	3.750	0.020			21	10.5	A	3	4	1	0	P			A
124	SM P1 A11 T1 D3 3	3.267	0.080					A	3	4	1.5	0	A			A
125	SM P1 A11 T2 D2 1	3.833	0.027					A	4	3	2	0	A			A
126	SM P1 A11 T2 D2 2	4.625	0.000					A	4.5	9	2.5	0	P			A
127	SM P1 A11 T3 D2 1	2.625	0.053					A	5	0	3	0	A			A

Identification LNEC	Identification Azorina	Rate of growth	Slope of grain	Fissures					Warps				Pith	Wane		Inbark
		R / number of annual rings	(not associated to knots) - see NP 4305	Through the thickness		Not going through the thickness		Ring shake	Bow	Spring	Twist	Cup	Present throughout the beam (P) /Partially present (PA)/Absent (A)	Measured in the same area		Present/ Absent (P or A)
		(mm)		Length (mm)	Width (mm)	Length (mm)	Width (mm)	Present/ Absent (P ou A)	(mm/2m)	(mm/2m)	(mm/2m)	(mm/2m)		Face	Edge	
128	SM P1 A11 T4 D2 1	4.200	0.027					A	8.5	8.5	2	0	A			A
129	SM P1 A12 T1 D3 1	8.364	0.087					A	2	3	6	0	A	0.03125	0.025	A
130	SM P1 A12 T1 D3 2	6.875	0.080			20	0.5	A	1	0.5	2.5	0	A			A
131	SM P1 A12 T1 D3 3	9.000	0.093					A	2	5.5	1	0	A			A
132	SM P1 A12 T2 D2 2	4.455	0.093					A	1.5	3	1	0	A			A
133	SM P1 A12 T2 D2 1	8.339	0.027					A	1	1	2	0	A			A
134	SM P1 A12 T3 D2 1	6.000	0.053	70	0.5			A	2.5	5	0.5	0	A			A
135	SM P1 A13 T1 D3 1	2.759	0.087					A	9	2.5	6	0	PA			A
136	SM P1 A13 T1 D3 2	2.389	0.040					A	3.5	6	0.5	0	A			A
137	SM P1 A13 T1 D3 3	3.333	0.073			35	1	A	0.5	9.5	2	0	P			A
138	SM P1 A13 T2 D3 1	2.600	0.087					A	3	1.5	3.5	0	PA			A
139	SM P1 A13 T2 D3 2	4.286	0.040			130	1.5	A	1.5	2	1	0.5	PA			A
140	SM P1 A13 T3 D2 1	3.429	0.033					A	4.5	4	0	0	A			A
141	SM P2 A8 T1 D2 1	3.071	0.073					A	2	3	0	0	PA			A
142	SM P2 A8 T1 D2 2	2.429	0.060			90	1	A	2	9.5	4	0	P			A
143	SM P2 A8 T1 D2 3	2.316	0.073					A	6.5	4	4	0	A			A
144	SM P2 A8 T2 D2 1	2.167	0.073					A	0	6.5	0	0	PA			P
145	SM P2 A8 T2 D2 2	4.052	0.040			22	1	A	6.5	8	1.5	0	PA			A
146	SM P2 A8 T3 D2 1	2.778	0.053					A	1.5	10.5	0.5	0	P			A
147	SM P2 A8 T4 D2 1	2.000	0.013					A	6.5	5.5	0.5	0	A	0.08081	0.825	A
148	SM P2 A9 T1 D2 1	3.462	0.013					A	2	0.5	2	0	A			A
149	SM P2 A9 T1 D2 2	4.721	0.013			100	0.5	A	0	0.5	9.5	0.5	P			A
150	SM P2 A9 T1 D2 3	5.300	0.087					A	3	0	2.5	0	PA			A
151	SM P2 A9 T2 D2 1	3.583	0.047					A	1	3	6	0.5	A			A
152	SM P2 A9 T2 D2 2	6.667	0.020	190	2			A	5.5	5	4.5	0	P			A
153	SM P2 A9 T3 D2 1	7.500	0.000	108	1			A	4	8.5	6.5	0	PA			A
154	SM P2 A9 T4 D2 1	5.111	0.020	85	0.5	150	0.5	A	7	12	4	0	P			A

Identification LNEC	Identification Azorina	Rate of growth	Slope of grain	Fissures					Warps				Pith	Wane		Inbark
		R / number of annual rings	(not associated to knots) - see NP 4305	Through the thickness		Not going through the thickness		Ring shake	Bow	Spring	Twist	Cup	Present throughout the beam (P) /Partially present (PA)/Absent (A)	Measured in the same area		Present/ Absent (P or A)
		(mm)		Length (mm)	Width (mm)	Length (mm)	Width (mm)	Present/ Absent (P ou A)	(mm/2m)	(mm/2m)	(mm/2m)	(mm/2m)		Face	Edge	
155	SM P2 A10 T1 D3 1	1.957	0.047					A	1	2	0	0	A			A
156	SM P2 A10 T1 D3 2	6.000	0.067					A	8.5	4.5	0.5	0	A			A
157	SM P2A13 T2 D2 -	2.048	0.040					A	6.5	2.5	1.5	0	A			A
158	SM P2 A13 T2 D2 2	4.667	0.033					A	1	6.5	2.5	0	PA			A
159	SM P2 A13 T3 D2 1	7.000	0.033					A	3.5	4	0.5	0	PA			A
160	SM P2 A10 T1 D3 3	2.368	0.067			143	1	P	1	2	4.5	0	A			A
161	SM P2 A10 T2 D3 1	5.000	0.033					A	5	1	0.5	0.5	A			A
162	SM P2 A10 T2 D3 2	3.643	0.060					A	1	1.5	2	0.5	P			A
163	SM P2 A10 T3 D2 1	2.368	0.040			100	1	A	4.5	5	1.5	0.5	PA			A
164	SM P2 A10 T4 D2 1	2.563	0.000					A	9	7	0	0	A			A
165	SM P2 A11 T1 D4 1	3.050	0.053					A	4	3.5	1	0.5	A	0.02062	0.04878	A
166	SM P2 A11 T1 D4 2	3.750	0.093					A	1.5	4	2	0	PA			A
167	SM P2 A11 T1 D4 3	4.095	0.047					A	4.5	2.5	0	0	A			A
168	SM P2 A11 T2 D3 1	3.773	0.027					A	0	12.5	0	0	A			A
169	SM P2 A11 T2 D3 2	4.273	0.033					A	4.5	10.5	0.5	0	A			A
170	SM P2 A11 T3 D3 1	2.619	0.007			14	0.5	A	5	3	0	0	A			A
171	SM P2 A11 T4 D2 1	4.500	0.020					A	0	1.5	0.5	0	A			A
172	SM P2 A12 T1 D2 1	3.922	0.033	400	1			A	9	2	1	0	A			P
173	SM P2 A12 T1 D2 2	4.688	0.113					A	15	3	2	0	P			A
174	SM P2 A12 T1 D2 3	5.625	0.067					A	3	13	1.5	0	A			A
175	SM P2 A12 T2 D2 1	4.444	0.080					A	4	3.5	0	0.5	PA			A
176	SM P2 A12 T2 D2 2	6.444	0.020			124	1	A	6.5	10	1.5	0	P			A
177	SM P2 A12 T3 D2 1	4.500	0.033					A	0	4.5	3	0.5	A			A
178	SM P2 A13 T1 D3 1	5.800	0.073					A	3.5	4.5	1.5	0.5	PA			A
179	SM P2 A13 T1 D3 2	4.750	0.133			70	0.25	A	3.5	3	0	0.5	PA			A
180	SM P2 A13 T1 D3 3	4.300	0.140					A	3	4.5	1	0	A			A
181	SM P1 A1 T1 D3 1	5.525	0.040					A	4	4	0	0.5	A			A

Identification LNEC	Identification Azorina	Rate of growth	Slope of grain	Fissures					Warps				Pith	Wane		Inbark
		R / number of annual rings	(not associated to knots) - see NP 4305	Through the thickness		Not going through the thickness		Ring shake	Bow	Spring	Twist	Cup	Present throughout the beam (P) /Partially present (PA)/Absent (A)	Measured in the same area		Present/ Absent (P or A)
		(mm)		Length (mm)	Width (mm)	Length (mm)	Width (mm)	Present/ Absent (P ou A)	(mm/2m)	(mm/2m)	(mm/2m)	(mm/2m)		Face	Edge	
182	SM P1 A1 T1 D3 2	5.182	0.067					A	2	1	0	0	A			A
183	SM P1 A1 T1 D3 3	6.040	0.067	312	2			A	2.5	0.5	0	0	P			A
184	SM P1 A1 T2 D2 1	3.000	0.060			100	0.5	A	1.5	1	0	0.5	A	0.09032	0.41463	A
185	SM P1 A1 T2 D2 2	5.063	0.007	160	2.5	190	0.5	A	1.5	0	0	0.5	P			A
186	SM P1 A1 T3 D2 1	4.796	0.000					A	0	0	0.5	0.5	A	0.05732	0.46939	A
187	SM P1 A2 T1 D3 1	3.059	0.024					A	1	2	0	0	A			A
188	SM P1 A2 T1 D3 2	5.278	0.047			75	0.5	P	1	4.5	0	1.5	PA			A
189	SM P1 A2 T1 D3 3	5.442	0.047			180	0.5	A	2.5	3.5	3	1	P			A
190	SM P1 A2 T2 D2 1	3.333	0.007					A	3	2	0	0	A			A
191	SM P1 A2 T2 D2 2	5.625	0.000	90	1.5	38	1	A	2	2.5	3	0	P			A
192	SM P1 A2 T3 D2 1	4.545	0.020					A	4	1	2.5	0	A			A
193	SM P1 A3 T1 D2 1	4.736	0.040			140	1	P	2	1	2.5	0.5	PA	0.04459	0.71739	P
194	SM P1 A3 T1 D2 2	3.885	0.100					A	6.5	0	1	0	PA	0.14744	0.45833	A
195	SM P1 A3 T1 D2 3	6.170	0.120					A	1.5	4	3	0	PA			A
196	SM P1 A3 T2 D2 1	3.667	0.067			65	0.5	A	1.5	4	1	0.5	A	0.03922	0.125	A
197	SM P1 A3 T2 D2 2	4.711	0.033			210	1	A	7	3	0	0.5	P			A
198	SM P1 A3 T3 D2 1	4.286	0.013			80	0.5	A	5	2	0	0	P	0.04605	1	P
199	SM P1 A4 T1 D3 1	3.839	0.053			67	1	A	0	0.5	3	0	PA	0.06452	0.14583	A
200	SM P1 A4 T1 D3 2	5.200	0.067	115	1			A	2	1	0.5	1	A			A
201	SM P1 A4 T1 D3 3	5.189	0.040			400	1	A	1	0	1.5	1	P			A
202	SM P1 A4 T2 D2 1	3.987	0.027					A	5	2.5	1	1	PA	0.08442	0.32653	A
203	SM P1 A4 T2 D2 2	5.111	0.033	123	1.5			A	3	1	1	1	P			A
204	SM P1 A4 T3 D2 1	2.941	0.013					A	0.5	0.5	2.5	0.5	A			A
205	SM P1 A5 T1 D3 1	3.769	0.013					A	0	2	0.5	0	A	0.07643	0.16	A
206	SM P1 A5 T1 D3 2	7.143	0.027			85	0.5	A	1	2	0.5	0.5	PA			A
207	SM P1 A5 T1 D3 3	6.000	0.067					A	2.5	1.5	0	0.5	A			
208	SM P1 A5 T2 D2 1	6.857	0.027					A	3	1	0	0	A			

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		(mm)		Length (mm)	Width (mm)	Length (mm)	Width (mm)	Present/ Absent (P ou A)	(mm/2m)	(mm/2m)	(mm/2m)	(mm/2m)		Face	Edge	
209	SM P1 A5 T2 D2 2	6.682	0.027			50	1	A	3	2	1.5	0	P			A
210	SM P1 A5 T3 D2 1	5.188	0.000	100	1			A	2	0	0	0	P			A
211	SM P1 A6 T1 D4 1	3.405	0.053					A	1	2	1.5	0	A	0.07792	0.08163	A
212	SM P1 A6 T1 D4 2	6.125	0.080			154	0.5	A	5.5	5	5.5	0	P			A
213	SM P1 A6 T1 D4 3	5.714	0.033					A	1.5	2	3	1	PA			A
214	SM P1 A6 T2 D3 1	3.813	0.033			25	0.5	A	2	0	0	0.5	A			A
215	SM P1 A6 T2 D3 2	5.789	0.007	220	1	210	1	A	1.5	2	3.5	0	P			A
216	SM P1 A7 T1 D4 1	6.667	0.113					A	2	2	2	0	PA	0.05732	0.14286	P
217	SM P1 A7 T1 D4 2	6.000	0.107					A	8.5	14	0	0	A			P
218	SM P1 A7 T1 D4 3	2.632	0.093					A	4.5	4	0	0	A	0.15385	0.20833	A
219	SM P1 A7 T2 D3 1	5.852	0.033					A	2	2.5	0.5	0	A			A
220	SM P1 A7 T2 D3 2	7.727	0.033					A	2.5	0.5	0	1	A			A
221	SM P2 A1 T1 D3 1	5.500	0.040					A	1.5	2	0	0	A	0.04403	0.08163	A
222	SM P2 A1 T1 D3 2	3.412	0.020					A	0	0.5	0	1.5	A			A
223	SM P2 A1 T1 D3 3	4.444	0.040					P	5.5	2	1.5	0.5	PA			A
224	SM P2 A1 T2 D3 1	2.500	0.047			150	0.5	A	2.5	1	0	1.5	P			A
225	SM P2 A1 T2 D3 2	5.778	0.013	60	0.5				1	1	0	1	P			A
226	SM P2 A1 T3 D2 1	3.833	0.047						3.5	1.5	1.5	0.5	A			A
227	SM P2 A2 T1 D3 1	2.706	0.140					A	4	0.5	0	0	PA			A
228	SM P2 A2 T1 D3 2	5.000	0.047	5	0.5	15	0.5	A	3	2	2	0	P	0.04487	0.18	A
229	SM P2 A2 T1 D3 3	7.333	0.033					A	0.5	2	0.5	1.5	P			A
230	SM P2 A2 T2 D2 1	5.385	0.060					A	2.5	2	0.5	0	P			A
231	SM P2 A2 T2 D2 2	2.526	0.060					A	0.5	1	0	0	A			A
232	SM P2 A2 T3 D2 1	5.333	0.040			47	0.5	A	2.5	1	0.5	0.5	A			A
233	SM P2 A3 T1 D3 1	3.125	0.093			45	0.5	A	2.5	0.5	0	0	A	0.06667	0.19231	A
234	SM P2 A3 T1 D3 2	3.333	0.067			35	0.5	A	2	0.5	0	0.5	P			A
235	SM P2 A3 T1 D3 3	3.846	0.073	95	0.5			A	1.5	1	0	1	A			A

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		(mm)		Length (mm)	Width (mm)	Length (mm)	Width (mm)	Present/ Absent (P ou A)	(mm/2m)	(mm/2m)	(mm/2m)	(mm/2m)		Face	Edge	
236	SM P2 A3 T2 D2 1	2.579	0.040			55	0.5	A	4	0	0	0	A	0.06536	0.13462	A
237	SM P2 A3 T2 D2 2	4.167	0.020			110	0.5	A	2	0.5	2	1	P			A
238	SM P2 A3 T3 D2 1	3.200	0.073			57	0.5	A	0.5	1	2.5	1	PA			A
239	SM P2 A4 T1 D3 1	4.000	0.073					A	0.5	2	3	1	A	0.06452	0.21277	A
240	SM P2 A4 T1 D3 2	5.500	0.087					A	6.5	0.5	0	0	PA			A
241	SM P2 A4 T1 D3 3	5.250	0.040					A	2	3	1.5	0	PA			A
242	SM P2 A4 T2 D2 1	2.368	0.060					A	2	0	3	0.5	A			A
243	SM P2 A4 T2 D2 2	5.097	0.080	142	2			A	0	1	0	0.5	PA	0.05263	0.13462	A
244	SM P2 A4 T3 D2 1	2.588	0.033					A	2	0	3	1	A			A
245	SM P2 A5 T1 D3 1	2.863	0.080					A	4	2	0	0.5	P	0.12667	0.26	A
246	SM P2 A5 T1 D3 2	5.321	0.033					A	4	2.5	1	0	PA			A
247	SM P2 A5 T1 D3 3	5.417	0.033					A	0.5	1	1.5	1	PA			A
248	SM P2 A5 T2 D2 1	2.273	0.027					A	1.5	1	2.5	1	PA			A
249	SM P2 A5 T2 D2 2	4.932	0.013					A	0.5	1	0	0	P			A
250	SM P2 A5 T3 D2 1	3.846	0.040					A	0	2	1	0.5	A			A
251	SM P2 A6 T1 D2 1	4.769	0.020					A	7.5	0	0	0.5	P	0.03268	0.10204	A
252	SM P2 A6 T1 D2 2	7.429	0.013					A	2	2	0.5	0.5	PA			A
254	SM P2 A6 T2 D2 1	3.692	0.040			60	0.5	A	0.5	0	1.5	1	A	0.08333	0.26923	A
255	SM P2 A6 T2 D2 2	3.654	0.053			90	1	A	1.5	1.5	0	1.5	P	0.03226	0.16327	A
256	SM P2 A7 T2 D4 1	3.335	0.087					A	5.5	1.5	1	0	A			A
257	SM P2 A7 T2 D4 2	4.529	0.147	155	3			A	0	0	2	0	PA			P
258	SM P2 A7 T1 D5 1	4.000	0.053					A	2.5	1	4	0	A	0.05844	0.07843	A
259	SM P2 A7 T1 D5 2	7.857	0.127					A	1	13	1.5	0.5	A			A
260	SM P2 A7 T1 D5 3	4.063	0.067					A	2	3	2.5	0	A			A
261	SM P2 A5 T2 D3 1	3.955	0.027	120	1.5	62	1	A	1.5	0	2.5	0	PA			A