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European Technical Assessment

ETA-18/0288
of 23/04/2018

Trade Name of the Construction Product	Perlinato Strutturale
Product Family to which the Construction Product Belongs	EC PAC 13
Manufacturer	Consorzio Servizi Legno-Sughero Foro Buonaparte 12 20121 Milano Italy
Manufacturing Plant(s)	See Annex 1
This European Technical Assessment Contains	18 pages including 5 Annexes which form an integral part of this assessment
This European Technical Assessment is Issued in Accordance with Regulation (EU) No 305/2011, on the Basis of:	EAD 130196-00-03.04 “Solid Wood Boards for Flatwise Structural Use with Overlapping Edge Profiles”

1 Technical Description of the Product

1.1 General

This European Technical Assessment – ETA – applies to solid wood boards for flatwise structural use with overlapping edge profiles:

"Perlinato strutturale"

Solid wood boards for flatwise structural use with overlapping edge profiles (hereinafter "the profiled boards" or "the product") are:

- Visually graded flatwise based on a modified cross-section in accordance with DIN 4074-1 to S7, S10 or S13 or DIN 4074-5 to LS10 and better
- Assigned to a strength class based on the flatwise grade, the species and the source
- From the combinations of species and sources given in Clause 1.2 below
- Not treated with a fire retardant
- Not preservative treated
- Made exclusively of virgin wood; no recycled wood is used

The profiled boards are equipped with complementary tongue and groove or rebate profiles parallel to the grain direction along the opposing narrow edges. Examples of profiled cross section geometries are shown in Annex 1 (Figure 1 and Figure 2).

The minimum dimensions of the nominal cross section of the profiled boards are:

Thickness	18 mm
Width	80 mm

NOTE: The cross section of the profiled boards is rectangular, if the overlapping edge profiles are neglected (Annex 1, Figure 1 and Figure 2).

1.2 Wood Species and Source

Wood Species (softwood):

- Spruce (*Picea abies* (L.) Karst), Fir (*Abies alba* Mill.), Larch (*Larix decidua* Mill.), Pine (*Pinus sylvestris* L.).
  Source is Central, Northern and Eastern (CNE) Europe

- Douglas Fir (*Pseudotsuga menziesii* Mill.).
  Source is Germany and Austria

Wood Species (hardwood):

- Oak (*Quercus petrea* Liebl. and *Quercus robur* L.).
  Source is Germany

2 Specification of the Intended Use in Accordance with the Applicable European Assessment Document (hereinafter EAD)

2.1 Intended Use

The profiled boards are intended for use in buildings as a structural component of walls, floors and roofs in Service Classes 1 and 2 according to EN 1995-1-1. The profiles have no structural function, but prevent gaps opening between boards.

Within a roof construction, the product will not contribute to the water tightness, but will receive a suitable waterproofing and roof covering. Waterproofing and roof covering are not within the scope of the EAD and ETA.

2.2 Assumptions

2.2.1 General

Concerning product packaging, transport, storage, maintenance, replacement, and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on transport, storage, maintenance, replacement, and repair of the product as he considers necessary.

2.2.2 Design

The European Technical Assessment only applies to the manufacture and use of the profiled boards. Verification of stability of the works including application of loads on the products is not subject to this European Technical Assessment.

The following conditions shall be observed:

- Design of the product is carried out under the responsibility of an engineer experienced in such products;
- Verification is carried out by applying the rectangular cross section (the profiles have no structural function, but only prevent gaps opening between boards – see Figure 1 and Figure 2);
- Design of the works shall account for the protection of the profiled boards;
- The product is installed correctly;

Design of the product is according to EN 1995-1-1, EN 1995-1-2 and EN 1998-3 (for seismic actions), taking into account of Annex 3 of the European Technical Assessment. Standards and regulations in force at the place of use shall be considered.

2.2.3 Manufacturing

The profiled boards are manufactured according to the provisions of this European Technical Assessment. The product is produced by machining suitable boards, which are graded in accordance with EN 14081-1 (either dry-graded or not) on the assumption of a reduced cross-section. If required, moisture content is determined in accordance with EN 13183-2.

2.2.4 Packaging, Transport and Storage

The manufacturer's instruction for packaging, transport and storage shall be observed. The following aspects shall be considered:

- protection against unfavourable environmental effects;
- protection against external damage, that may affect the proper assembling of the profiled boards;
- intermediate storage at the construction site

2.2.5 Installation

2.2.5.1 General

The manufacturer shall provide installation instructions containing provisions to be followed to achieve the expected performance. It is assumed that the profiled boards will be installed according to the manufacturer's instructions.

2.2.5.2 Use, Maintenance and Repair of the Works

The profiled boards should not require maintenance or repair during the assumed working life if subject to normal use. Severe damage of the profiled boards may require immediate remedial action to restore the mechanical resistance and stability of the works.

If repair is deemed necessary it is generally made by replacement.

2.3 Assumed Working Life

This European Technical Assessment assumes a working life of 50 years for the profiled boards, when installed in the works, provided that the profiled boards are subject to appropriate installation, use, and maintenance (see Clause 2.2). These provisions are based upon the current state of the art and the available knowledge and experience.

In normal use conditions the real working life may be considerably longer without major degradation affecting the basic requirements for works[1].

The indications given as to the working life of the construction product cannot be interpreted as a guarantee, neither given by the product manufacturer or his representative nor by EOTA nor by the Technical Assessment Body, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

3 Performance of the Product and References to the Methods used for its Assessment

3.1 Essential Characteristics

The performance characteristics of the profiled boards are given in Table 1.

[1] The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works are subject, as well as on the particular conditions of design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than the working life indicated above.

Table 1: Essential Characteristics and Performance of the Product

No.	Essential Characteristic	Product Performance
Basic Works Requirement 1: Mechanical Resistance and Stability[1]		
1	Bending Strength	See Annex 4
2	Tension Strength Parallel	See Annex 4
3	Tension Strength Perpendicular	See Annex 4
4	Compression Strength Parallel	See Annex 4
5	Compression Strength Perpendicular	See Annex 4
6	Shear Strength	See Annex 4
7	Modulus of Elasticity Parallel	See Annex 4
8	Modulus of Elasticity Perpendicular	See Annex 4
9	Shear Modulus	See Annex 4
10	Density	See Annex 4
11	Dimensional Stability	See Annex 4
12	Durability of Timber	See Annex 4
Basic Works Requirement 2: Safety in Case of Fire		
13	Reaction to Fire	See Annex 4
14	Resistance to Fire	See Annex 4
Basic Works Requirement 4: Safety and Accessibility in Use		
15	Same as Basic Works Requirement 1	———

3.2 Assessment Methods

The assessment of the essential characteristics in Clause 3.1 of the profiled boards for the intended uses and in relation to the requirements for mechanical resistance and stability, for safety in case of fire, and for hygiene health, and the environment in the sense of the Basic Works Requirements № 1 to 3 of Regulation (EU) № 305/2011 has been made in accordance with the European Assessment Document EAD 130196-00-0304 for solid wood boards for structural use with overlapping edge profiles.

3.3 Identification

This European Technical Assessment for the profiled boards is issued on the basis of agreed data that identify the assessed product[2]. Changes to materials, to composition, to characteristics, or to the production process of the profiled boards could result in these deposited data being incorrect. Exova BM TRADA should be notified before the changes are introduced, as an amendment of the European Technical Assessment may be necessary.

4 Assessment and Verification of Constancy of Performance (hereinafter AVCP) System applied, with reference to its Legal Base

4.1 System of Assessment and Verification of Constancy of Performance

According to Commission Decision 97/176/EC the system of assessment and verification of constancy of performance to be applied to solid wood boards for flatwise structural use with overlapping edge profiles is System 2+. System 2+ is detailed in Commission Delegated Regulation (EU) № 568/2014 of 18 February 2014 Annex 1.3, and provides for the following items.

(a) The manufacturer shall carry out:

(i) An assessment of the performance of the construction product on the basis of testing (including sampling), calculation, tabulated values or descriptive documentation of that product;

(ii) Factory production control;

(iii) Testing of samples taken at the manufacturing plant by the manufacturer in accordance with the prescribed test plan[3].

(b) The notified factory production control certification body shall decide on the issuing, restriction, suspension or withdrawal of the certificate of conformity of the factory production control on the basis of the outcome of the following assessments and verifications carried out by that body:

(i) Initial inspection of the manufacturing plant and of factory production control;

(ii) Continuing surveillance, assessment and evaluation of factory production control.

4.2 AVCP for Construction Products for which a European Technical Assessment has been Issued

Manufacturers undertaking tasks under System 2+ shall consider the European Technical Assessment issued for the construction product in question as the assessment of the performance of that product. Manufacturers shall therefore not undertake the tasks referred to in Clause 4.1(a)(i) above.

[2] The technical file of the European Technical Assessment is deposited at Exova - BM TRADA

[3] The prescribed test plan has been deposited with Exova – BM TRADA and is handed over only to the notified factory production control certification body involved in the procedure for the assessment and verification of constancy of performance. The prescribed test plan is also referred to as the control plan.

5 Technical Details Necessary for the Implementation of the AVCP System, as provided for in the applicable EAD

5.1 Tasks for the Manufacturer

5.1.1 Factory Production Control

In the manufacturing plant the manufacturer establishes and continuously maintains a factory production control. All procedures and specifications adopted by the manufacturer are documented in a systematic manner. The purpose of the factory production control is to ensure the constancy of performances of the profiled boards with regard to their essential characteristics.

The manufacturer only uses raw materials supplied with the relevant inspection documents as laid down in the control plan. The incoming raw materials are subject to controls by the manufacturer before acceptance. Checks of incoming materials include control of inspection documents presented by the manufacturer of the raw materials and verification of the geometrical properties of the logs and /or boards.

To maintain the characteristic strength for the strength class, the manufacturer has procedures to ensure that the batch of timber that is graded has not been selected in a way that could truncate the expected upper range of strength properties.

The procedures of the manufacturer incorporate the specifications of EN 14081-1 for visually strength graded timber regarding factory production control including record-keeping.

The records shall be presented to the notified certification body involved in continuing surveillance of the factory production control. On request the records shall be presented to Exova BM TRADA.

5.1.2 Declaration of Performance

The manufacturer is responsible for preparing the Declaration of Performance. When all the criteria of the assessment and verification of constancy of performance are met, including the certificate of conformity of the factory production control issued by the notified factory production control certification body, the manufacturer draws up the Declaration of Performance. Essential characteristics to be included in the declaration of performance for the corresponding intended use are given in Table 1.

Profiled boards that have been dry-graded are marked in accordance with EN 14081-1 within the product-type.

5.2 Tasks for the Notified Body

5.2.1 Initial Inspection of the Manufacturing Plant and of Factory Production Control

The notified certification body for factory production control verifies the ability of the manufacturer to maintain an orderly system of manufacturing of the profiled boards in accordance with this European Technical Assessment.

In particular the following items are appropriately considered:

- Personnel and equipment;

- Suitability of the factory production control established by the manufacturer;
- Full implementation of the prescribed test plan.

5.2.2 Continuing Surveillance, assessment and Evaluation of Factory Production Control

The Notified Body shall visit the factory at least once a year to conduct a surveillance audit. In particular the following items are appropriately considered:

- Manufacturing process including personnel and equipment
- Factory production control
- Implementation of the prescribed test plan

If the provisions of the European Technical Assessment and the prescribed test plan are no longer fulfilled such that the constancy of performance of the product cannot be verified, the certificate may be suspended or withdrawn by the Notified Body.

Issued By Exova BM TRADA on

23/04/18

The Original Document is signed by Niresh Somlie

Annex 1 Manufacturing Plants

No.	Factory Name	Address
1.	**Balconi Giannino s.r.l.**	Via Sempione, 48 21029 - Vergiate (Varese)
2.	**Centro Legno di Peruzzi A. & C. s.n.c.**	Via Guido Rossa, 6 59015 Carmignano (Prato)
3.	**FAS s.r.l.**	Via Pangoni, 31 37022 Fumane (Verona)
4.	**F.B.E. di FONGARO ENRICO & C. s.n.c.**	Via dell'industria, 1 36070 Castelgomberto (Vicenza)
5.	**F.lli Soliani di Giovanni e Felice s.n.c.**	Via Francesco Petrarca, 30 42045 Luzzara (Reggio Emilia)
6.	**G.g.g. di Sardi Giulio & C. s.n.c.**	Via Buonarroti, 178 20900 Monza (Monza-Brianza)
7.	**Lavarone Industria Legnami s.p.a.**	Via A. Depretis, 102 80133 Napoli (Napoli)
8.	**Imola legno s.p.a.**	Via D. Luigi Sturzo, 10 40026 Imola (Bologna)
9.	**La Edilegno s.r.l.**	Via Vittorio Veneto, 31/H 31014 Colle Umberto (Treviso)
10.	**L.E.R. s.r.l.**	Viale Africa, 112 00144 Roma (Roma) Manufacturing plant: Località Saineta 01030 Bassano in Teverina (Viterbo)
11.	**Legnami Sangiorgio di Sangiorgio Alessandro & C. s.n.c.**	Via Trieste, 28 22036 Erba (Como)
12.	**Levill House s.r.l.**	Via Giovanni Pardo, 4 90145 Palermo (Palermo)
13.	**Mariana Luigi s.r.l.**	Via Provinciale per Dubino, 2 23014 Andalo Valtellino (Sondrio)
14.	**Mirrione Francesco Legnami s.r.l.**	Via Gamarra, 25 91011 Alcamo (Trapani)
15.	**Pacchiani Holz s.r.l.**	Via Folzoni, 12 24052 Azzano San Paolo (Bergamo)
16.	**Pircher Oberland s.p.a.**	Via Renza, 43 39034 Dobbiaco (BZ)
17.	**Renzetti Saverio & Fratelli s.n.c.**	Via Guazzi 52010 Bibbiena (Arezzo)
18.	**Subissati**	Via Fratelli Lombardi, 2-6 60010 Ostra Vetere AN
19.	**Vilte legnami s.r.l**	Via Arturo Toscanini, 3 20063 Cernusco sul Naviglio (MI)

Annex 2 Geometry and Installation of Profiled Boards – Examples

Figure 1: Example of cross section of solid wood boards for flatwise structural use with overlapping edge profiles – complementary tongue and groove. The dashed lines show the limits of the width of the cross section for grading and design.

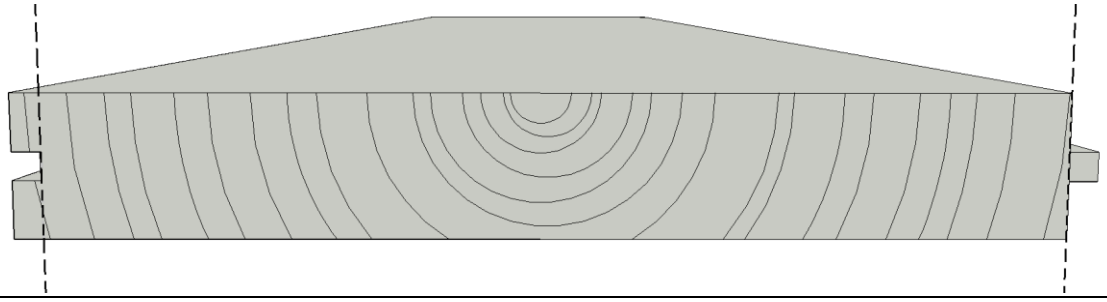


Figure 2: Example of cross section of solid wood boards for flatwise structural use with overlapping edge profiles – complementary rebates. The dashed lines show the limits of the width of the cross section for grading and design.

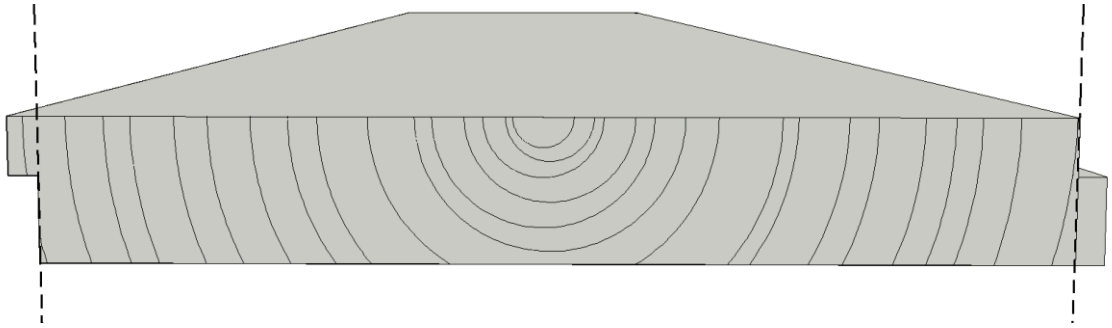


Figure 3: Example: staggered lay-up of tongue and groove profiled boards.

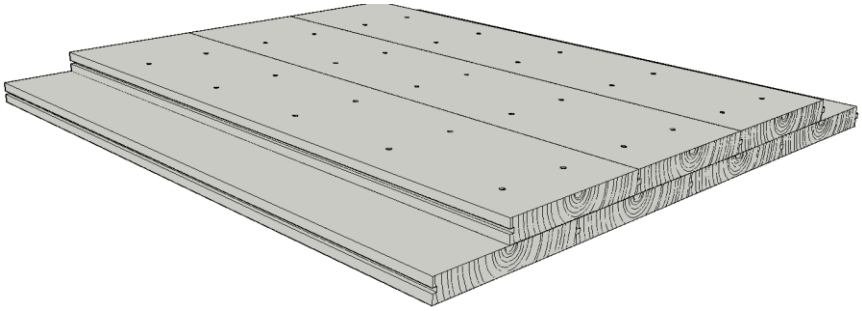


Figure 4: Example: staggered lay-up of rebate profiled boards.

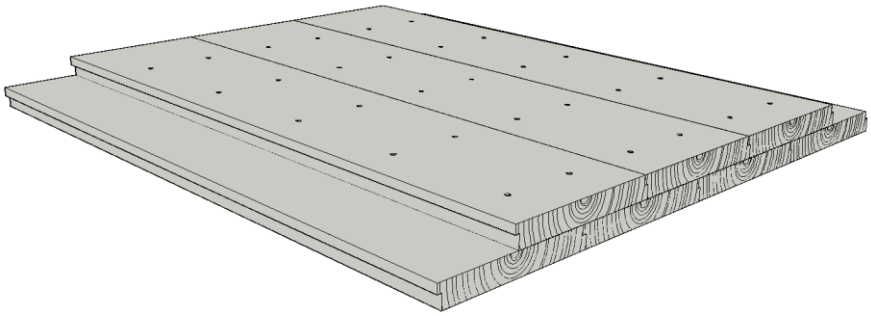


Figure 5: Example: crossed lay-up of tongue and groove profiled boards.

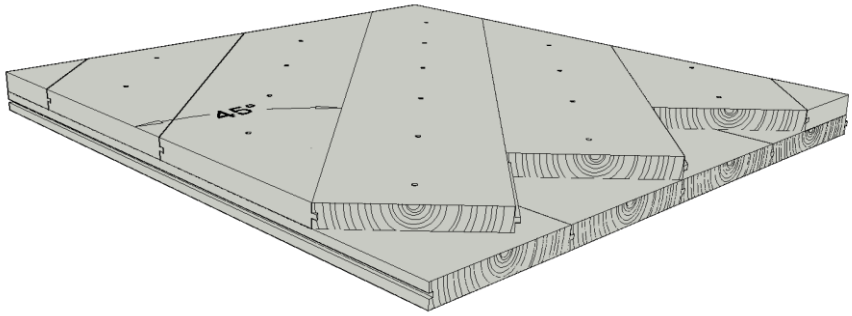
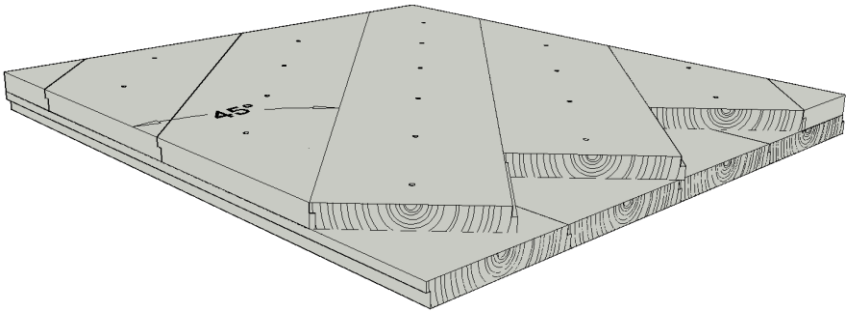


Figure 6: Example: crossed lay-up of rebate profiled boards.



Annex 3 Design of Solid Wood boards for Flatwise Structural Use with Overlapping Edge Profiles

Design of solid wood boards for flatwise structural use with overlapping edge profiles is in accordance with EN 1995-1-1, EN 1995-1-2 and EN 1998-3 (for seismic actions), taking into account the following items.

a) For mechanical actions perpendicular to the plane

According to Clause 3.2 of EN 1995-1-1, for solid timber with a characteristic density ≤ 700 kg/m³ the reference depth of the nominal cross-section in bending is 150 mm. For depths in bending of solid timber less than 150 mm the characteristic value $f_{m,k}$ should be increased by the factor k_h given by:

$$k_h = \min\begin{cases}\left(\frac{150}{h}\right)^{0,2}\\ 1,3\end{cases}$$

Where h is the depth in bending in mm.

According to Clause 6.6 of EN 1995-1-1, when the profiled boards are installed in more than one layer (either staggered as in Figures 3 and 4 or crossed as in Figures 5 and 6), the member strength properties shall be multiplied by a system strength factor k_{sys} as given in Figure 6.12 of EN 1995-1-1 for nailed or screwed laminations.

b) For mechanical actions parallel to the plane

According to Clause 3.2 of EN 1995-1-1 for solid timber with characteristic density ≤ 700 kg/m³, the reference width of nominal cross-section (maximum cross sectional dimension) in tension is 150 mm. For widths in tension of solid timber less than 150 mm the characteristic value $f_{t,k}$ should be increased by the factor k_h given by:

$$k_h = \min\begin{cases}\left(\frac{150}{h}\right)^{0,2}\\ 1,3\end{cases}$$

Where h is the width for tension in mm.

Annex 4 Characteristic data of solid wood boards for flatwise structural use with overlapping edge profiles

Table 2: Product performance of grades of S7, S10, S13 of solid wood boards for flatwise structural use with overlapping edge profiles of Spruce, Fir, Larch, Douglas Fir and Pine

BWR[1)]	Essential characteristic	Assessment method	Level, class or description		
			S7	S10	S13
1	**Mechanical resistance of solid wood boards for flatwise structural use with overlapping edge profiles of Spruce, Fir, Larch, Douglas Fir and Pine**				
	Strength class (Spruce and Pine)	[2)]	C18 or T12	C24 or T14.5	C30 or T21
	Strength class (Fir and Larch)	[2)]	C16 or T10	C24 or T14.5	C30 or T21
	Strength class (Douglas Fir)	[2)]	C18 or T12	C24 or T14.5	C35 or T26
	Dimensional timber	EN 336	Tolerance classes according to EN 336		
	Durability of timber • wood destroying fungi [3)]	EN 350	Class 5 (Class 4 if sapwood is excluded)		
	Service classes	EN 1995-1-1	1, 2		
2	**Reaction to fire**				
	Solid wood boards for flatwise structural use with overlapping edge profiles of Spruce, Fir, Larch, Douglas Fir and Pine	Commission Decision 2003/43/EC, as amended	D-s2, d0		
	Resistance to Fire				
	Charring rate	EN 1995-1-2			

NOTES
1) Basic Works Requirements;
2) EAD 130196-00-0304 and EN 338;
3) The natural durability in accordance with EN 350 shall be declared with specific reference to sapwood if the producer makes no special provision for its exclusion.

Table 3: Product performance of grades of "LS10 and better" solid wood boards for flatwise structural use with overlapping edge profiles of Oak

BWR[1)]	Essential characteristic	Assessment method	Level, class or description
			LS10 and better
1	**Mechanical resistance of solid wood boards for structural use with tongue and groove profiles of Oak**		
	Strength class of boards (Oak)	[2)]	D30
	Dimensional timber	EN 336	Tolerance classes according to EN 336
	Durability of timber • wood destroying fungi [3)]	EN 350	Class 5 (Class 4 if sapwood is excluded)
	Service classes	EN 1995-1-1	1, 2
2	**Reaction to fire**		
	Solid wood panelling for structural use with tongue and groove profiles of Spruce, Fir, Larch, Douglas Fir and Pine	Commission Decision 2003/43/EC, as amended	D-s2, d0
	Resistance to Fire		
	Charring rate	EN 1995-1-2	

NOTE
1) Basic Works Requirement;
2) EAD 130196-00-0304 and EN 338;
3) The natural durability in accordance with EN 350 shall be declared with specific reference to sapwood if the producer makes no special provision for its exclusion.

Annex 5 Reference Documents

Where no edition date is given in the list of standards below, the standard in its current version at the time of issuing the European Technical Assessment is of relevance.

EN 336	Structural timber – Sizes, permitted deviations
EN 350	Durability of wood and wood-based products. Testing and classification of the durability to biological agents of wood and wood-based materials
EN 1912	Structural Timber – Strength classes – Assignment of visual grades and species
EN 1995-1-1	Eurocode 5 – Design of timber structure – Part 1-1: General – Common Rules and rules for building
EN 1995-1-2	Eurocode 5 – Design of timber structure – Part 1-1: General – Structural fire design
EN 1998-3	Eurocode 8 — Design of structures for earthquake resistance — Part 3: Assessment and retrofitting of buildings
EN 13183-2	Moisture content of a piece of sawn timber – Part 2: Estimation by electrical resistance method
EN 14081-1	Timber structures – Strength graded structural timber with rectangular cross section – Part 1: General requirements
DIN 4074-1	Sortierung von Holz nach der Tragfähigkeit - Teil 1: Nadelschnittholz (Strength grading of wood – Part 1: machined softwood)
DIN 4074-5	Sortierung von Holz nach der Tragfähigkeit - Teil 5: Laubschnittholz (Strength grading of wood – Part 5: machined hardwood)
96/603/EC	Commission Decision 96/603/EC of 04 October 1996 establishing the list of products belonging to Classes A "No contribution to fire" provided for in Decision 94/611/EC implementing Article 20 of Council Directive 89/106/EEC on construction products, OJ L 267 of 19.10.1996, p. 23, Amended by Commission Decision 2000/605/EC of 26 September 2000, OJ L 258 of 12.10.2000, p. 36, and Commission Decision 2003/424/EC of 06 June 2003 OJ L 144 of 12.06.2003, p. 9
97/176/EC	Commission Decision 97/176/EC of 17 February 1997 on the procedure for attesting the conformity of construction products pursuant to Article 20 (2) of Council Directive 89/106/EEC as regards structural timber products and ancillaries, OJ L 73 of 14.03.1997, p. 19, Amended by Commission Decision 2001/596/EC of 8 January 2001, OJ L 209 of 02.08.2001, p. 33
CPR 305/2011	Regulation (EU) № 305/2011 of the European Parliament and of the Council of 09 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC, OJ L 088 of 04.04.2011, p. 5

568/2014/EC	Commission Delegated Regulation (EU) No 568/2014 of 18 February 2014 amending Annex V to Regulation (EU) No 305/2011 of the European Parliament and of the Council as regards the assessment and verification of constancy of performance of construction products