

EUROPEAN ASSESSMENT DOCUMENT

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SOLID WOOD BOARDS FOR FLATWISE STRUCTURAL USE WITH OVERLAPPING EDGE PROFILES

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This European Assessment Document (EAD) has been developed taking into account up-to-date technical and scientific knowledge at the time of issue and is published in accordance with the relevant provisions of Regulation (EU) No 305/2011 as a basis for the preparation and issuing of European Technical Assessments (ETA).

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1 SCOPE OF THE EAD

1.1 Description of the construction product

The product “Solid wood boards for flatwise structural use with overlapping edge profiles” is a visual or machine graded timber with complementary edge profiles of coniferous species, Sweet Chestnut (*Castanea sativa*, Mill.) or Oak (*Quercus petraea* Liebl. and *Quercus robur* L.) where the length is greater than the other two dimensions. Examples of profiles are tongue and groove profiles or complementary rebates.

The product is:

- visually graded in reliance on a grading rule
 - that complies with EN 14081-1
 - has provisions for the flatwise grading of the species cited above
 - where one or more combinations of timber source, species and grade is assigned to a strength class in EN 1912¹,

or

machine graded with settings determined in accordance with EN 14081-2

- not treated with a fire retardant
- not preservative treated
- made exclusively of virgin wood, no recycled wood is used.

The minimum dimensions of the nominal cross section (see Figures 1a and 1b) of the solid product are:

- 18 mm for thickness;
- 80 mm for width.

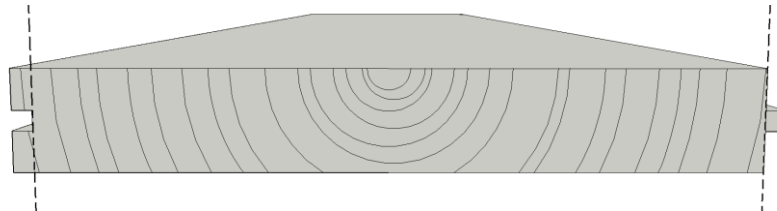


Figure 1a – Example of the product with tongue and groove profiles. The nominal cross-section is between the dashed lines.

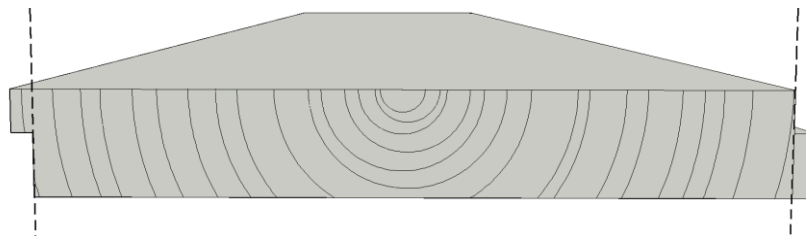


Figure 1b – Example of the product with complementary rebate profiles. The nominal cross-section is between the dashed lines.

¹ NOTE: Visual grading rules for European timbers are not currently published by CEN. DIN 4074-1 (for softwoods) and DIN 4074-5 (for hardwoods) fulfil the requirements given here. The use of grading rules such as those published by DIN is not geographically restricted.

The product is not covered by a harmonised European Standard (hEN).

Note:

- *EN 13986 applies to panels/panel products. The product covered within the scope of this EAD is not a panel, it is individual boards.*
- *EN 14195 applies to non-structural products intended for use as cladding. The product covered within the scope of this EAD is graded for structural use which is not limited to cladding.*

Concerning product packaging, transport, storage, maintenance, replacement and repair, it is the responsibility of the manufacturer to undertake the appropriate measures at the location where the product is fabricated and to provide guidance to its clients on the transport, storage, maintenance, replacement and repair of the product as necessary to ensure that the performance of the product is maintained.

It is assumed that the product will be installed according to the manufacturer's instructions.

Relevant manufacturer's stipulations having influence on the performance of the product covered by this European Assessment Document shall be considered for the determination of the performance and detailed in the ETA.

1.2 Information on the Intended Use(s) of the Construction Product

1.2.1 Intended Use(s)

Solid wood boards for flatwise structural use with overlapping edge profiles 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.

1.2.2 Working Life/Durability

The assessment methods included or referred to in this EAD have been written based on the manufacturer's request to take into account a working life of the product for the intended use of minimum 50 years when installed in the works, subject to appropriate installation (see 1.1). These provisions are based upon the current state of the art and the available knowledge and experience.

When assessing the product the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works².

The indications given as to the working life of the product cannot be interpreted as a guarantee given either by the product manufacturer or his representative or by EOTA when drafting this EAD or by the Technical Assessment Body issuing an ETA based on this EAD, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

² The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, as well as on the particular conditions of the 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 referred to above.

1.3 Specific Terms used in this EAD

1.3.1 Nominal Cross Section

The cross-section of the product without considering the width of the profiles (as defined in Figures 1a and 1b) which provides the basis of calculation for the characteristic values. The permitted deviations from the nominal cross section are given in Tolerance Class 1 of EN 336.

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

2.1 Essential Characteristics of the Product

Table 1 shows how the performance of the product is assessed in relation to the essential characteristics.

Table 1 Essential characteristics of the product and methods and criteria for assessing the performance of the product in relation to those essential characteristics

No.	Essential Characteristic	Assessment Method	Type of Expression of Product Performance (level, class, description)
Basic Works Requirement 1: Mechanical Resistance and Stability¹			
1	Bending strength	2.2.1	Class, Level
2	Tension strength parallel	2.2.2	Class, Level
3	Tension strength perpendicular	2.2.3	Class, Level
4	Compression strength parallel	2.2.4	Class, Level
5	Compression strength perpendicular	2.2.5	Class, Level
6	Shear strength	2.2.6	Class, Level
7	Modulus of elasticity parallel	2.2.7	Class, Level
8	Modulus of elasticity perpendicular	2.2.8	Class, Level
9	Shear modulus	2.2.9	Class, Level
10	Density	2.2.10	Class, Level
11	Dimensional stability	2.2.11	Description
12	Durability of Timber	2.2.12	Description
Basic Works Requirement 2: Safety in Case of Fire			
13	Reaction to fire	2.2.13	Class
14	Resistance to fire	2.2.14	Description, Level
Basic Works Requirement 4: Safety and Accessibility in Use			
15	Same as BWR 1		
¹ This characteristic also relates to BWR 4			

2.2 Methods and Criteria for Assessing the Performance of the Product in Relation to Essential Characteristics of the Product

Characteristic values for flatwise use shall be determined in accordance with EN 384 and EN14081-1 for visual or machine grading on boards with overlapping edge profiles.

- Coniferous species shall be assigned to a “T” class or a “C” class listed in EN 338.
- Hardwood species shall be assigned to a “D” class listed in EN 338.

For the species cited above from a known source, some visual strength grades for flatwise use are assigned to strength classes in EN 1912. These assignments may be adopted without further testing, based on the nominal cross section (as defined in Figures 1a and 1b).

Note: Examples of applicable grades are “S7”, “S10” and “S13” for softwoods, and “LS10 or better” for hardwoods.

2.2.1 Bending Strength

For Softwood Species:

Assignment of grades and species to “T” classes:

- The characteristic value shall be calculated from tension strength data in accordance with Table 2 of EN 384.

For Softwood or Hardwood Species:

Assignment of grades and species to “C” / “D” classes:

- Testing shall be carried out in accordance with Clause 19 of EN 408. The characteristic values from test data shall be determined in accordance with EN 384.

For Softwood and Hardwood Species:

The characteristic bending strength in MPa shall be stated in the ETA.

2.2.2 Tension Strength Parallel to the Grain

For Softwood Species:

Assignment of grades and species to “T” classes:

- The tensile strength parallel to the grain shall be tested according to Clause 13 of EN 408. The characteristic values from test data shall be determined in accordance with EN 384.

For Softwood or Hardwood Species:

Assignment of grades and species to “C” / “D” classes:

- The characteristic value shall be calculated from bending strength data in accordance with Table 2 of EN 384.

For Softwood and Hardwood Species:

The characteristic tensile strength in MPa shall be stated in the ETA.

2.2.3 Tension Strength Perpendicular to the Grain

For Softwood and Hardwood Species:

Assignment of grades and species to “T” or “C” / “D” classes:

- The characteristic value shall be calculated in accordance with Table 2 of EN 384 from tension strength data (Clause 2.2.5) for T classes or bending strength data (Clause 2.2.4) for C and D classes.

The characteristic tension strength perpendicular to the grain in MPa shall be stated in the ETA.

2.2.4 Compression Strength Parallel to the Grain

For Softwood and Hardwood Species:

Assignment of grades and species to “T” or “C” / “D” classes:

- The characteristic value shall be calculated in accordance with Table 2 of EN 384 from tension strength data (Clause 2.2.5) for T classes or bending strength data (Clause 2.2.4) for C and D classes.

The characteristic compression strength parallel to the grain in MPa shall be stated in the ETA.

2.2.5 Compression Strength Perpendicular to the Grain

For Softwood and Hardwood Species:

Assignment of grades and species to “T” or “C” / “D” classes:

- The characteristic value shall be calculated in accordance with EN 384 tension strength data (Clause 2.2.5) for T classes or bending strength data (Clause 2.2.4) for C and D classes.

The characteristic compression strength perpendicular to the grain in MPa shall be stated in the ETA.

2.2.6 Shear Strength

For Softwood and Hardwood Species:

Assignment of grades and species to “T” or “C” / “D” classes:

- The characteristic value shall be calculated in accordance with Table 2 of EN 384 tension strength data (Clause 2.2.5) for T classes or bending strength data (Clause 2.2.4) for C and D classes.

The characteristic shear strength in MPa shall be stated in the ETA.

2.2.7 Modulus of Elasticity Parallel to the Grain

For Softwood and Hardwood Species: Mean Values of Modulus of Elasticity

Assignment of grades and species to “T” or “C” / “D” classes:

- The modulus of elasticity perpendicular to the grain shall be tested according to Clause 9 of EN 408. The mean value from test data shall be determined in accordance with EN 384.

For Softwood and Hardwood Species: Characteristic Values of Modulus of Elasticity

Assignment of grades and species to “T” or “C” / “D” classes:

- The characteristic values shall be calculated in accordance with Table 2 of EN 384.

The mean and characteristic values of modulus of elasticity parallel to the grain in MPa shall be stated in the ETA.

2.2.8 Modulus of Elasticity Perpendicular to the Grain

For Softwood and Hardwood Species:

Assignment of grades and species to “T” or “C” / “D” classes:

- The mean value shall be calculated in accordance with Table 2 of EN 384.

The mean value of modulus of elasticity perpendicular to the grain in MPa shall be stated in the ETA.

2.2.9 Shear Modulus

For Softwood and Hardwood Species:

Assignment of grades and species to “T” or “C” / “D” classes:

- The mean value of the shear modulus shall be calculated in accordance with Table 2 of EN 384.

The mean value of the shear modulus in MPa shall be stated in the ETA.

2.2.10 Density

For Softwood and Hardwood Species:

Characteristic Density:

Assignment of grades and species to “T” or “C” / “D” classes:

- The measurements shall be carried out in accordance with Clause 7 of EN 408.

The characteristic values shall be determined in accordance with EN 384

Mean Density:

Assignment of grades and species to “T” or “C” / “D” classes:

- The mean value of mean density shall be calculated in accordance with Table 2 of EN 384.

The mean and characteristic density in kg/m³ shall be stated in the ETA.

2.2.11 Dimensional Stability

Dimensional stability shall be considered as swelling and shrinkage of structural timber due to changes of its moisture content. Swelling and shrinkage value of timber can be regarded as a constant value in the perpendicular to grain as given in EN 336 (Class 1) and as a small constant value along the grain.

2.2.12 Durability of Timber

The natural durability of timber shall be considered as given in EN 350, Table B.1 (softwoods) or Table B.2 (hardwoods) for the relevant species.

If the wood species is not given in EN 350, it shall be tested according CEN/TS 15083 and CEN/TS 15083-2.

2.2.13 Reaction to Fire

The product is considered to satisfy the performance D-s2, d0 for the characteristic “reaction to fire” in accordance with the Commission Decision 2003/43/EC, as amended, and Delegate Regulation (EU) 2016/364 without the need for testing on the basis of it fulfilling the conditions set out in that Decision and its intended use being covered by that Decision.

Therefore the performance of the product is D-s2, d0.

2.2.14 Resistance to Fire

The charring rate of the product shall be considered as the relevant value from Table 3.1 of EN 1995-1-2.

3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 System(s) of Assessment and Verification of Constancy of Performance to be Applied

For the products covered by this EAD the applicable European Legal Act is: 1997/176/EC European Commission as amended by 2001/596/EC.

The System is: 2+.

3.2 Tasks of the Manufacturer

The cornerstones of the actions to be undertaken by the manufacturer of the product in the procedure of assessment and verification of constancy of performance are laid down in Table 2.

Table 2 Control Plan for the Manufacturer; Cornerstones

No	Subject/Type of Control (<i>product, raw/constituent material, component - indicating characteristic concerned</i>)	Test or Control Method (<i>refer to 2.2 or 3.4</i>)	Criteria, if any	Minimum Number of Samples	Minimum Frequency of Control
Factory Production Control (FPC)¹ [including testing of samples taken at the factory in accordance with a prescribed test plan]					
1	Visual strength grading of timber	EN 14081-1 and grading rule	Grade	Every board	Every board
	Machine strength grading of timber	EN 14081-1	Strength class	Every board	Every board
	Dimensional tolerances	EN 336	Class 2	One	Every production run

3.3 Tasks of the Notified Body

The cornerstones of the actions to be undertaken by the notified body in the procedure of assessment and verification of constancy of performance for the product is laid down in Table 3.

Table 3 Control Plan for the Notified Body; Cornerstones

No	Subject/Type of Control <i>(product, raw/constituent material, component - indicating characteristic concerned)</i>	Test or Control Method <i>(refer to 2.2 or 3.4)</i>	Criteria, if any	Minimum Number of Samples	Minimum Frequency of Control
Initial inspection of the manufacturing plant and of factory production control					
1	The notified product certification shall verify the ability of the manufacturer for a continuous and orderly manufacturing of the product according the European Technical Assessment. In particular the following items shall be appropriately considered:				—
Competence of Personnel (grading)		EN 14081-1	-	EN 14081-1	
The suitability of the factory production control established by the manufacturer Full implementation of the prescribed test plan		EN 14081-1	-	EN 14081-1	
Continuous Surveillance, Assessment and Evaluation of Factory Production Control <i>(for systems 1+, 1 and 2+ only)</i>					
2	The notified product certification body shall verify that: <ul style="list-style-type: none"> - The manufacturing process; - The system of factory production control - The implementation of prescribed test plan are maintained 				1 per year

4 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 338	Structural timber – Strength classes
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 384	Structural timber – Determination of characteristic values of mechanical properties and density
EN 408	Timber structures – Structural timber and glued laminated timber – Determination of some physical and mechanical properties
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 14081-1	Timber structures – Strength graded structural timber with rectangular cross section – Part 1: General requirements
EN 14081-2	Timber structures. Strength graded structural timber with rectangular cross section. Machine grading; additional requirements for initial type testing
CEN TS 15083-1	Durability of wood and wood based products – Determination of the natural durability of solid wood against wood destroying fungi – test methods – Part 1: Basidiomycetes
CEN TS 15083-2	Durability of wood and wood based products – Determination of the natural durability of solid wood against wood destroying fungi – test methods – Part 2: soft rotting micro-fungi
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
(EU) 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
(EU) 2016/364	Commission Delegated Regulation (EU) 2016/364 of 1 July 2015 on the classification of the reaction to fire performance of construction products pursuant to Regulation (EU) No 305/2011 of the European Parliament and of the Council