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European Technical Assessment

ETA-12/0281
of 27.03.2024

General part

Technical Assessment Body issuing the European Technical Assessment

Österreichisches Institut für Bautechnik (OIB)
Austrian Institute of Construction Engineering

Trade name of the construction product

HASSLACHER CROSS LAMINATED TIMBER

Product family to which the construction product belongs

Solid wood slab elements to be used as structural elements in buildings

Manufacturer

Hasslacher Holding GmbH
Feistritz 1
9751 Sachsenburg
AUSTRIA

Manufacturing plants

Manufacturing plants 1 to 4

This European Technical Assessment contains

17 pages including 3 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

European Assessment Document (EAD) 130005-00-0304 "Solid wood slab element to be used as a structural element in buildings".

This European Technical Assessment replaces

European Technical Assessment ETA-12/0281 of 09.11.2020.

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Specific parts

1 Technical description of the product

1.1 General

This European Technical Assessment (ETA)¹ applies to the cross laminated timber “HASSLACHER CROSS LAMINATED TIMBER”. The product is made of softwood boards which are bonded together in order to form cross laminated timber (solid wood slab elements). Generally, adjacent layers of the softwood boards are arranged perpendicular (angle of 90°) to each other, see Annex 1, Figure 1.

The principle structure of the cross laminated timber is shown in Annex 1, Figure 2 and Figure 3. Surfaces are planed or sanded.

The solid wood slab elements consist of at least three and up to eleven adjacent layers which are arranged perpendicular to each other. With regard to the thickness of the solid wood slab element, thickness and orientation of individual layers are symmetrically assembled. In case of serious deviations from symmetry potential effects should be investigated.

The individual boards of the layers running parallel to the longitudinal direction of the element (longitudinal layers) may be side-glued.

In multilayer elements with at least five layers, a maximum of two consecutive board layers may be arranged in the same direction if their all over thickness does not exceed 90 mm.

Single board layers (maximum 50 % of the cross section) may be replaced by one- and multilayer solid wood panels. The solid wood panels shall be suitable for structural use.

Cover layers may be substituted by lamellae type “excellent”.

The surfaces of the solid wood slabs may be provided with wood-based panels.

HASSLACHER CROSS LAMINATED TIMBER and the boards for its manufacturing correspond to the specifications given in the Annexes 1 and 2. The material characteristics, dimensions and tolerances of the product, not indicated in these Annexes, are given in the technical file² of the European Technical Assessment.

The application of wood preservatives and flame retardants is not subject of the European Technical Assessment.

1.2 Components

1.2.1 Boards

The specification of the boards is given in Annex 2, Table 2. Boards are visually or machine strength graded. Only technically dried wood shall be used.

Wood species is Norway spruce (*Picea abies*), Radiata pine (*Pinus radiata*) or equivalent softwood.

1.2.2 Lamellae type “excellent”

The specification of the lamellae type “excellent” is given in Annex 2, Table 2. Lamellae are composed of a bearing lamellae as well as a transverse lamellae of European spruce and a cover

¹ The ETA-12/0281 was firstly issued in 2012 as European technical approval with validity from 20.08.2012, converted in 2017 to the European Technical Assessment ETA-12/0281 of 28.07.2017, amended in 2018 to ETA-12/0281 of 13.07.2018, amended in 2020 to ETA-12/0281 of 09.11.2020 and amended in 2024 to ETA-12/0281 of 27.03.2024.

² The technical file of the European Technical Assessment is deposited at Österreichisches Institut für Bautechnik and, in so far as is relevant to the tasks of the notified product certification body involved in the assessment and verification of constancy of performance procedure, is handed over to the notified product certification body.

lamellae of European spruce or equivalent softwood, birch or oak or equivalent hardwood. Bearing lamellae, transverse lamellae and cover lamellae are visually or machine strength graded. Only technically dried wood shall be used.

1.2.3 Wood-based panels

The specification of the wood-based panels is given in Annex 2, Table 2. Wood-based panels are in accordance with EN 13986³ or a European Technical Assessment.

1.2.4 Adhesive

The adhesive for bonding of the cross laminated timber and the finger joints of the individual boards shall conform to EN 301⁴.

Normally a MUF adhesive is used.

2 **Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)**

2.1 Intended use

The solid wood slab is intended to be used as a structural or non-structural element in buildings and timber structures.

The solid wood slab shall be subjected to static and quasi-static actions only.

The solid wood slab is intended to be used in service classes 1 and 2 according to EN 1995-1-1⁵. Members which are directly exposed to the weather shall be provided with an effective protection for the solid wood slab element in service.

2.2 General assumptions

The solid wood slab elements are manufactured in accordance with the provisions of the European Technical Assessment using the manufacturing process as identified in the inspection of the manufacturing plant by Österreichisches Institut für Bautechnik and laid down in the technical file.

The manufacturer shall ensure that the requirements in accordance with the Clauses 1, 2 and 3 as well as with the Annexes of the European Technical Assessment are made known to those who are concerned with planning and execution of the works.

Layers of planed boards shall be bonded together to the required thickness of the cross laminated timber. The individual boards shall be jointed in longitudinal direction by means of finger joints according to EN 14080⁶, there shall be no butt joints.

Adhesive shall be applied on one face of each board. The edges of the boards need not to be bonded.

Design

The European Technical Assessment only applies to the manufacture and use of cross laminated timber. Verification of stability of the works including application of loads on the cross laminated timber is not subject to the European Technical Assessment.

³ EN 13986:2004+A1:2015

⁴ EN 301:2023

⁵ EN 1995-1-1:2004 +AC:2006 +A1:2008 +A2:2014

⁶ EN 14080:2013

3 Performance of the product and references to the methods used for its assessment

3.1 Performance of the product

Table 1: Performance of the product in relation to the essential characteristics

Essential characteristic	Method of assessment	Performance
Basic requirement for construction works 1: Mechanical resistance and stability		
Bending	EAD 130005-00-0304, Clause 2.2.1.1	Annex 2
Tension and compression	EN 338 ⁹	Annex 2
Shear	EAD 130005-00-0304, Clause 2.2.1.3	Annex 2
Embedment strength	EAD 130005-00-0304, Clause 2.2.1.4	Annex 2
Creep and duration of the load	EAD 130005-00-0304, Clause 2.2.1.5	Annex 2
Dimensional stability	EAD 130005-00-0304, Clause 2.2.1.6	Annex 2
In-service environment	EAD 130005-00-0304, Clause 2.2.1.7	Annex 2
Bond integrity	EAD 130005-00-0304, Clause 2.2.1.8	Annex 2
Basic requirement for construction works 2: Safety in case of fire		
Reaction to fire	Commission Decision 2005/610/EC ¹⁰ , as amended	Annex 2
Resistance to fire	EAD 130005-00-0304, Clause 2.2.2.2	Annex 2
Basic requirement for construction works 3: Hygiene, health and environment		
Content, emission and/or release of dangerous substances	EAD 130005-00-0304, Clause 2.2.3.1	Clause 3.1.1
Water vapour permeability – Water vapour transmission	EN ISO 10456 ¹¹	Annex 2
Basic requirement for construction works 4: Safety and accessibility in use		
Impact resistance	EAD 130005-00-0304, Clause 2.2.4.1	Annex 2
Basic requirement for construction works 5: Protection against noise		
Airborne sound insulation	No performance assessed.	
Impact sound insulation	No performance assessed.	
Sound absorption	No performance assessed.	

⁹ EN 338:2016

¹⁰ Official Journal of the European Communities OJ L 208, 11.8.2005, p. 21

¹¹ EN ISO 10456:2007 + AC:2009

Essential characteristic	Method of assessment	Performance
Basic requirement for construction works 6: Energy economy and heat retention		
Thermal conductivity	EN ISO 10456	Annex 2
Air permeability	No performance assessed.	
Thermal inertia	EN ISO 10456	Annex 2

3.1.1 Hygiene, health and the environment

3.1.1.1 Content, emission and/or release of dangerous substances

The release of dangerous substances is determined according to EAD 130005-00-0304, “Solid wood slab element to be used as a structural element in buildings”. No dangerous substances is the performance of the HASSLACHER CROSS LAMINATED TIMBER in this respect.

NOTE In addition to the specific clauses relating to dangerous substances contained in the European Technical Assessment, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

3.2 Assessment methods

3.2.1 General

The assessment of the essential characteristics in Clause 3.1 of HASSLACHER CROSS LAMINATED TIMBER for the intended use, and in relation to the requirements for mechanical resistance and stability, for safety in case of fire, for hygiene, health and the environment, for safety and accessibility in use and for energy economy and heat retention in the sense of the basic requirements for construction works № 1, 2, 3, 4 and 6 of Regulation (EU) № 305/2011 has been made in accordance with the European Assessment Document EAD 130005-00-0304, Solid wood slab element to be used as a structural element in buildings.

3.2.2 Identification

The European Technical Assessment for HASSLACHER CROSS LAMINATED TIMBER is issued on the basis of agreed data that identify the assessed product. Changes to materials, to composition, to characteristics of the product, or to the production process could result in these deposited data being incorrect. Österreichisches Institut für Bautechnik should be notified before the changes are implemented, as an amendment of the European Technical Assessment is possibly 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/EC¹², as amended, the system of assessment and verification of constancy of performance to be applied to HASSLACHER CROSS LAMINATED TIMBER is System 1. System 1 is detailed in Commission Delegated Regulation (EU) № 568/2014¹³ of 18 February 2014, Annex, 1.2., and provides for the following items

- (a) the manufacturer shall carry out:
 - (i) factory production control;
 - (ii) further testing of samples taken at the manufacturing plant by the manufacturer in accordance with a prescribed test plan¹⁴;
- (b) the notified product certification body shall decide on the issuing, restriction, suspension or withdrawal of the certificate of constancy of performance of the construction product on the basis of the outcome of the following assessments and verifications carried out by that body:
 - (i) an assessment of the performance of the construction product carried out on the basis of testing (including sampling), calculation, tabulated values or descriptive documentation of the product;
 - (ii) initial inspection of the manufacturing plant and of factory production control;
 - (iii) continuous surveillance, assessment and evaluation of factory production control.

4.2 Construction products for which a European Technical Assessment has been issued

Notified bodies undertaking tasks under System 1 shall consider the European Technical Assessment issued for the construction product in question as the assessment of the performance of that product. Notified bodies shall therefore not undertake the tasks referred to in point 4.1 (b)(i).

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

5.1 Task for the manufacturer

5.1.1 Factory production control

In the manufacturing plant the manufacturer establishes and continuously maintains a factory production control. All data, procedures, and specifications adopted by the manufacturer are documented in a systematic manner in the form of instructions manual (user's guides) and process instructions. Purpose of factory production control is to ensure the constancy of performances of the product with regard to the 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 subjected to controls by the manufacturer before acceptance. Check of incoming materials includes control of inspection documents presented by the manufacturer of the raw materials.

The frequency of control and testing performed within factory production control as well as on the finished product, is in accordance with the determined manufacturing process and the prescribed test plan. The factory production control's results of testing are recorded and evaluated. The records are kept at least for ten years after the product has been placed on the market and are

¹² Official Journal of the European Communities OJ L 073, 14.3.1997, p. 19

¹³ Official Journal of the European Communities OJ L 157, 27.5.2014, p.76

¹⁴ The prescribed test plan has been deposited with Österreichisches Institut für Bautechnik and is handed over only to the notified product certification body involved in the procedure for the assessment and verification of constancy of performance. The prescribed test plan is also referred to as control plan.

Table 2: Dimensions and specifications

Item	Unit	Dimension/Specification		
Cross laminated timber				
Thickness	mm	57 to 360		
Width	m	≤ 4,0		
Length	m	≤ 20,0		
Number of layers	-	3 to 11 symmetric assembly		
Maximum width of joints between boards within one layer	mm	3		
Boards				
Surface	-	planed or sanded		
Thickness (planed dimension)	mm	19 to 45 30 to 45 for boards of strength class C40/L40/T26		
Width	mm	80 to 300		
Ratio width to thickness	-	CL26E11.8Pr ≥ 2,5 : 1	CL26E11.8 ≥ 4 : 1	CL36E14.7 ≥ 4 : 1
Boards shall be graded with suitable visual and/or machine procedures to be able to assign them to a strength class according to EN 338.	-	CL26E11.8Pr Pinus radiata	CL26E11.8 Softwood	CL36E14.7 3s, 5s, 7s, 9s 5ss, 7ss, 9ss ³⁾ Softwood
Cover layer		C24 or T14 ²⁾	C24 or T14 ²⁾ ≥ 70 % C24 or T14 ²⁾	C40 or T26 ²⁾
Inner layer		C14 or T8 ²⁾	≤ 30 % C16 or T11 ²⁾	C24 or T14 ²⁾

NOTE

- 1) In case of additional application of fire protection boards, a deviation from the symmetric assembly is allowed. The fire protection board and its application is not subject of this European Technical Assessment.
- 2) According to EN 338.
- 3) In case of two consecutive cover layers the same strength class is used.

Table 3 continued: Product characteristics of the solid wood slab

BWR	Essential characteristic	Assessment method	Level / Class / Description		
	Shear strength - parallel to the grain of the boards $f_{v,090,k}$ - perpendicular to the grain of the boards (rolling shear strength) $f_{v,9090,k}$	EN 338 EAD 130005-00-0304, Clause 2.2.1.3 A_{gross} , Annex 3	CL26E11.8Pr Pinus radiata	CL26E11.8 Softwood	CL36E14.7 Softwood
			4,0 MPa		
			1,5 MPa		
2. Mechanical actions in plane of the cross laminated timber					
	Strength class of boards	EN 338	CL26E11.8Pr Pinus radiata	CL26E11.8 Softwood	CL36E14.7 Softwood
	Modulus of elasticity - parallel to the grain of the boards $E_{0,mean}$	EAD 130005-00-0304, Clause 2.2.1.1 A_{net} , I_{net} , Annex 3	11800 MPa	11600 MPa	14700 MPa ¹⁾ 14600 MPa ²⁾ 14400 MPa ³⁾ 14000 MPa ⁴⁾
	Shear modulus - parallel to the grain of the boards $G_{090,mean}$	EAD 130005-00-0304, Clause 2.2.1.3 A_{net} Annex 3	250 MPa		
	Bending strength - parallel to the grain of the boards $f_{m,k}$	EAD 130005-00-0304, Clause 2.2.1.1 W_{net} , Annex 3	24 MPa		34,5 MPa
	Tensile strength - parallel to the grain of the boards $f_{t,0,k}$	EN 338	14 MPa		19,5 MPa
	Compressive strength - parallel to the grain of the boards $f_{c,0,k}$	EN 338	21 MPa		24,5 MPa
	Shear strength - parallel to the grain of the boards $f_{v,090,k}$	EAD 130005-00-0304, Clause 2.2.1.3 W_{net} , Annex 3	5,0 MPa ⁷⁾	4,0 MPa ⁷⁾	

NOTE

⁷⁾ Related to $A_{x,net}$ or $A_{z,net}$

HASSLACHER CROSS LAMINATED TIMBER
Characteristic data of cross laminated timber

Annex 2 of ETA-12/0281
of 27.03.2024

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Mechanical actions perpendicular to plane and in plane of cross laminated timber

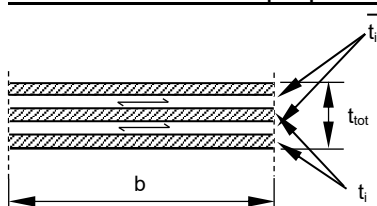
General

Due to the perpendicular orientation of the boards, cross laminated timber is able to transfer loads in all directions according to its condition of support. For cross laminated timber multi-axle stressed in both principal directions, different stiffness for the two principal directions shall be considered.

For calculation of characteristic values of cross-section, only boards which are oriented in direction of the mechanical action may be employed.

For design of cross laminated timber according to EN 1995-1-1, characteristic strength and stiffness of solid wood according to Annex 2 shall be taken.

Mechanical actions perpendicular to the solid wood slab



Where

t_i Thickness of board layers in direction of mechanical actions

\bar{t}_i Thickness of board layers perpendicular to direction of mechanical actions

The bending stiffness is specified in relation to the effective moment of inertia I_{eff} .

The calculation of the effective moment of inertia and therewith of the effective bending stiffness is according to EN 1995-1-1.

For I_{eff} see clause 9.1.3 and Annex B of EN 1995-1-1.

The term $\frac{s_i}{K_i}$ of EN 1995-1-1 should be substituted by $\frac{\bar{t}_i}{G_{9090} \cdot b}$.

$$I_i = \frac{b \cdot t_i^3}{12}$$

$$W_{eff} = \frac{2 \cdot I_{eff}}{t_{tot}}$$

$$A_i = b \cdot t_i$$

$$h_{tot} = \sum_i (t_i + \bar{t}_i)$$

$$\tau_{v,d} = \frac{1.5 \cdot V_d}{A_{gross}}$$

$$A_{gross} = b \cdot t_{tot}$$

Where

I moment of inertia

I_{eff} effective moment of inertia

s spacing of fasteners according to EN 1995-1-1 (not relevant for solid wood slab)

K slip modulus according to EN 1995-1-1 (not relevant for solid wood slab)

G_{9090} shear modulus of the board perpendicular to grain (rolling shear modulus); $G_{9090} = 50$ MPa

b width of the member of cross laminated timber

