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European Technical Assessment

ETA-18/0254
 of 07.05.2018

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

X-fix C

Product family to which the construction product belongs

Point connector – dovetail made of plywood for cross laminated timber

Manufacturer

SCHILCHER Trading & Engineering GmbH
 Lamnitz 8
 9833 Rangiersdorf
 Austria

Manufacturing plant

Manufacturing plant 1

This European Technical Assessment contains

10 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 130336-00-0603 “Point connector – dovetail made of plywood for cross laminated timber”.

Remarks

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may be made with the written consent of Österreichisches Institut für Bautechnik. Any partial reproduction has to be identified as such.

Specific parts

1 Technical description of the product

1.1 General

This European Technical Assessment (ETA) applies to the point connector for cross laminated timber "X-fix C". X-fix C is composed of a double-dovetail wedge made of plywood according to EN 13986.

The principle geometry and dimensions of X-fix C is shown in Annex 1, Figure 1 and Figure 2. Surfaces are planed.

X-fix C and the plywood for its manufacturing correspond to the specifications given in the Annexes 1 and 2. The material characteristics, dimensions and tolerances of X-fix C, not indicated in these Annexes, are given in the technical file¹ 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 Plywood

Plywood for use as structural component according to EN 13986 and EN 636. The specification of the plywood is given in Annex 2, Table 2.

Wood species is European beech or birch.

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

2.1 Intended use

The point connector is intended to be used as a shear connector for butt joints and able to cover tension loads. The point connector is not intended to transfer bending moments.

The following wood or wood-based materials may be used:

- Cross laminated timber according to European Technical Assessments or national standards and regulations in force at the place of use with minimum 5 crosswise arranged layers and minimum thickness of 100 mm. Maximum thickness of cover layers is 40 mm. Minimum strength class of lamellas for cross laminated timber is C16, average strength class of lamellas is C24 according to EN 338.

The point connector is subjected to static and quasi static actions only.

The point connector is intended to be used in service classes 1 and 2 according to EN 1995-1-1².

¹ 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.

² Reference documents are listed in Annex 3.

2.2 General assumptions

The point connector is 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 design and execution of the works.

Design

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

The following conditions shall be observed:

- Design of the point connector is carried out under the responsibility of an engineer experienced in such products.
- Design of the works shall account for the protection of the point connector to maintain service classes 1 and 2 according to EN 1995-1-1.
- The point connector is installed correctly.

Design of the point connector may be according to EN 1995-1-1, taking into account of Annex 2 of the European Technical Assessment.

Standards and regulations in force at the place of use shall be considered.

Packaging, transport, storage, maintenance, replacement and repair

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 the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

Installation

It is assumed that the product will be installed according to the manufacturer's instructions or (in absence of such instructions) according to the usual practice of the building professionals.

2.3 Assumed working life

The provisions made in the European Technical Assessment (ETA) are based on an assumed intended working life of X-fix C of 50 years, when installed in the works, provided that the point connector is 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 experience³.

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 choosing the appropriate products in relation to the expected economically reasonable working life of the works.

³ 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 can also be shorter than the assumed working life.

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

3.1 Essential characteristics of the product

Table 1: Essential characteristics of the product and assessment methods

No	Essential characteristic	Product performance
Basic requirement for construction works 1: Mechanical resistance and stability ¹⁾		
1	Tension strength and stiffness	Annex 2
2	Shear strength and stiffness	Annex 2
3	Embedment depth	Annex 2
4	Spacing, end and edge distances of the connector	Annex 2
5	Dimensional stability	Annex 2
6	Durability	Annex 2
Basic requirement for construction works 2: Safety in case of fire		
7	Reaction to fire	Annex 2
Basic requirement for construction works 3: Hygiene, health and the environment		
8	Emission of formaldehyde	Annex 2
Basic requirement for construction works 4: Safety and accessibility in use		
–	Same as BWR 1	
Basic requirement for construction works 6: Energy economy and heat retention		
18	Air permeability	No performance assessed.
¹⁾ These characteristics also relate to basic requirement for construction works 4.		

3.2 Assessment methods

3.2.1 General

The assessment of the essential characteristics in Clause 3.1 of X-fix C 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 use 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 130336-00-0603, Point connector – dovetail made of plywood for cross laminated timber.

3.2.2 Identification

The European Technical Assessment for X-fix C 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 (thereinafter 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 "X-fix C" is System 3. System 3 is detailed in Commission Delegated Regulation (EU) № 568/2014 of 18 February 2014, Annex, 1.4., and provides for the following items

- (a) The manufacturer shall carry out factory production control.
- (b) The notified laboratory shall assess the performance on the basis of testing (based on sampling carried out by the manufacturer), calculation, tabulated values or descriptive documentation of the construction product.

4.2 AVCP for construction products for which a European Technical Assessment has been issued

Notified bodies undertaking tasks under System 3 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).

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

5.1 Tasks for the manufacturer

5.1.1 Factory production control

In the manufacturing plant the manufacturer shall establish and continuously maintain a factory production control. All procedures and specifications adopted by the manufacturer shall be documented in a systematic manner. The factory production control shall ensure the constancy of performances of X-fix C with regard to the essential characteristics.

The manufacturer shall only use raw materials supplied with the relevant inspection documents as laid down in the control plan. The incoming raw materials shall be subject to controls by the manufacturer before acceptance. Check of incoming materials shall include control of inspection documents presented by the manufacturer of the raw materials.

The frequencies of controls conducted during manufacturing and on the finalised product are defined by taking account of the manufacturing process of the product and are laid down in the control plan.

The results of factory production control are recorded and evaluated. The records include at least the following data:

- Designation of the product, basic materials and components
- Type of control or test
- Date of manufacture of the product and date of testing of the product or basic materials or components
- Results of controls and tests and, if appropriate, comparison with requirements
- Name and signature of person responsible for factory production control

The records shall be kept at least for ten years time after the construction product has been placed on the market. On request they shall be presented to Österreichisches Institut für Bautechnik.

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, the manufacturer shall issue a declaration of performance.

Issued in Vienna on 07.05.2018
by Österreichisches Institut für Bautechnik

The original document is signed by:

Rainer Mikulits
Managing Director

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Table 2: Dimensions and specifications

Item	Dimension / Specification	
X-fix C		
Height	mm	96 ±0.5
Width	mm	130 ±0.5
Length	mm	90 ±1.0
Plywood		
Surface	—	planed, sanded, milled
Mechanical strength and stiffness of plywood for use as structural component according to EN 13986 and EN 636:	—	
Bending strength $f_{m,k}$	MPa	≥ 34.8
Bending modulus of elasticity $E_{m,mean}$		≥ 8 300
Tension strength $f_{t,k}$	MPa	≥ 36.9
Tension modulus of elasticity $E_{t,mean}$		≥ 8 600
Shear strength $f_{v,k}$	MPa	≥ 9.5
Shear modulus $G_{v,mean}$		≥ 620
Mean density ρ_{mean}	kg/m ³	≥ 680
Bonding quality Durability	—	Class 3, exterior Use class 2

X-fix C

Annex 2

Characteristic data of the point connector

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Table 3: Product characteristics of X-fix C

BWR	Essential characteristic	Assessment method	Level / Class / Description
1	Mechanical resistance and stability		
	Tension strength $R_{t,k}$	EAD 130336-00-0603	28 kN
	Slip modulus tension K_{ser}	EAD 130336-00-0603	20 kN / mm
	Shear strength $R_{v,k}$	EAD 130336-00-0603	28 kN
	Slip modulus shear K_{ser}	EAD 130336-00-0603	20 kN / mm
	Other mechanical actions		
	Embedment depth	Embedment depth top $d_e = 90$ mm Minimum remaining cross section $t_{rest,min} = 10$ mm	
	Spacing, end and edge distances of the connector	Minimum spacing between the point connectors (measured from the axis) $e_{conn} = 300$ mm Minimum end and edge distance (measured from the axis): $e_{end} = e_{edge} = 150$ mm	
	Dimensional stability Moisture content during service shall not change to such an extend that adverse deformation will occur.		
	Durability		
Service classes	EN 1995-1-1	1 and 2	
2	Reaction to fire		
	Plywood Minimum density: 400 kg/m ³ Minimum thickness: 9 mm	Commission Decision 2003/43/EC	Euroclass D-s2, d0
3	Hygiene, health and environment		
	Emission of formaldehyde	EN 13986	E1

X-fix C

Annex 2

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