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## European Technical Assessment

**ETA-14/0354**  
of 11.07.2018

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

Träger BauBuche GL75, Beam BauBuche GL75,  
Poutre BauBuche GL75, Trave BauBuche GL75

### Product family to which the construction product belongs

Glued laminated timber made of hardwood –  
Structural laminated veneer lumber made of  
beech

### Manufacturer

Pollmeier Furnierwerkstoffe GmbH  
Pferdsdorfer Weg 6  
99831 Creuzburg  
Germany

### Manufacturing plants

Pollmeier Furnierwerkstoffe GmbH  
Pferdsdorfer Weg 6  
99831 Creuzburg  
Germany

Hasslacher Holzbauteile GmbH & Co KG  
Am Hundsrück 2  
63924 Kleinheubach  
Germany

### This European Technical Assessment contains

16 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 130010-01-0304 “Glued laminated timber  
made of hardwood – Structural laminated veneer  
lumber made of beech”.

### This European Technical Assessment replaces

European Technical Assessment ETA-14/0354 of  
20.02.2015.

## 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)<sup>1</sup> applies to the glued laminated timber with trade names "Träger BauBuche GL75, Beam BauBuche GL75, Poutre BauBuche GL75 and Trave BauBuche GL75" hereinafter referred to as Träger BauBuche. Träger BauBuche is composed of lamellae of structural laminated veneer lumber (LVL) made of beech. Lamella conform to EN 14374. The glued laminated timber may be block glued.

Träger BauBuche consists of at least two lamellae which are bonded at the faces. Surfaces are grinded.

Träger BauBuche and the lamellae for its manufacturing correspond to the specifications given in Annex 1. The material characteristics, dimensions and tolerances of Träger BauBuche, not indicated in these Annexes, are given in the technical file<sup>2</sup> of the European Technical Assessment.

Holes in the glued laminated timber are not subject 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 Lamellae

The specification of the lamellae is given in Annex 1, Table 2. Lamella conform to EN 14374.

Surfaces shall be grinded at the earliest 24 hours before bonding. Provided that there is a possibility for clean storage in suitable facilities as well as proper quality control for prevention of dirt at the surfaces, the lamellae may be stored for a maximum period of 4 weeks after grinding. The lamellae shall be bonded at the faces. No recycled wood shall be used.

Wood species is European Beech (*Fagus sylvatica* L.).

##### 1.2.2 Adhesive

The adhesive for bonding of the glued laminated timber shall conform to EN 301, Type I. The adhesive for block gluing is gapfilling and conforms to EN 301, Type I 90 GF 1,5M. Only phenolic resorcinol (PRF) adhesives are applicable.

Adhesives with tested adhesive-hardener-ratio are given in the technical file of the European Technical Assessment.

<sup>1</sup> In 2015 ETA-14/0354 was firstly issued as European Technical Assessment ETA-14/0354 of 20.02.2015 and amended to ETA-14/0354 of 11.07.2018.

<sup>2</sup> 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.



### 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 Träger BauBuche of 50 years, when installed in the works, provided that the glued laminated timber elements 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<sup>4</sup>.

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.

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<sup>4</sup> 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 <sup>1)</sup>		
1	Bending strength	Annex 1
2	Tensile strength parallel to the grain	Annex 1
3	Tensile strength perpendicular to the grain	Annex 1
4	Compression strength parallel to the grain	Annex 1
5	Compression strength perpendicular to the grain	Annex 1
6	Shear strength	Annex 1
7	Modulus of elasticity parallel to the grain	Annex 1
8	Modulus of elasticity perpendicular to the grain	Annex 1
9	Shear modulus	Annex 1
10	Creep and duration of the load	Annex 1
11	Dimensional stability	Annex 1
12	Bonding quality	Annex 1
13	Bonding quality of block bonding	Annex 1
14	In-service environment	Annex 1
15	Density	Annex 1
16	Withdrawal strength of screws in GLT made of hardwood	Annex 1
17	Embedment strength of screws in GLT made of hardwood	Annex 1
18	Head pull-through parameter of screws in GLT made of hardwood	Annex 1
Basic requirement for construction works 2: Safety in case of fire		
19	Reaction to fire	Annex 1
20	Resistance to fire (Charring rate)	No performance assessed.
Basic requirement for construction works 3: Hygiene, health and the environment		
21	Emission of formaldehyde	Annex 1
Basic requirement for construction works 4: Safety and accessibility in use		
22	Same as Basic requirement for construction works 1	
Basic requirement for construction works 6: Energy economy and heat retention		
23	Thermal conductivity	Annex 1
24	Thermal inertia	Annex 1
<sup>1)</sup> 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 Träger BauBuche 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 130010-01-0304, Glued laminated timber made of hardwood – Structural laminated veneer lumber made of beech.

### 3.2.2 Identification

The European Technical Assessment for Träger BauBuche 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 (thereafter 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 Träger BauBuche is System 1. System 1 is detailed in Commission Delegated Regulation (EU) № 568/2014 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 plan<sup>5</sup>;
- (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 AVCP for 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).

<sup>5</sup> 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.



- The implementation of the control plan

The results of continuous surveillance are made available on demand by the notified product certification body to Österreichisches Institut für Bautechnik. When the provisions of the European Technical Assessment and the control plan are no longer fulfilled, the certificate of constancy of performance is withdrawn by the notified product certification body.

Issued in Vienna on 11.07.2018  
by Österreichisches Institut für Bautechnik

The original document is signed by:

Rainer Mikulits  
Managing Director

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**Table 3:** Product characteristics of Träger BauBuche

BR	Essential characteristic	Method of verification	Class / Use category / Numeric value
1	<b>Mechanical resistance and stability</b>		
	Bending strength $f_{m,k}$	EN 408	$k_{h,m} \cdot 75 \text{ MPa}^1$ with $k_{h,m} = \left(\frac{600}{h}\right)^{0.10}$
	Modulus of elasticity parallel to the grain of the lamellas		
	– $E_{0,mean}$	EN 408	16 800 MPa
	– $E_{0,05}$	EN 408	15 300 MPa
	Modulus of elasticity perpendicular to the grain of the lamellas		
	– $E_{90,mean}$	EN 14374	470 MPa
	– $E_{90,05}$	EN 14374	400 MPa
Tensile strength			
– parallel to the grain of the lamellas $f_{t,0,k}$	EAD 130010-01-0304	$k_{h,t} \cdot 60 \text{ MPa}^2$ with $k_{h,t} = \left(\frac{600}{h}\right)^{0.10}$	
– perpendicular to the grain of the lamellas $f_{t,90,k}$	EN 384	0.6 MPa	
Compressive strength			
– parallel to the grain of the lamellas $f_{c,0,k}$	EN 408 and EAD 130010-01-0304	$k_{c,0} \cdot 59.4 \text{ MPa}$ in service class 1 <sup>3)</sup> $k_{c,0} \cdot 49.5 \text{ MPa}$ in service class 2 <sup>3)</sup> with $k_{c,0} = \min \left\{ \begin{array}{l} 0.0009 \cdot h + 0.892 \\ 1.18 \end{array} \right.$ for $n > 3$	
– perpendicular to the grain of the lamellas $f_{c,90,k}$	EN 384 and EAD 130010-01-0304	14.8 MPa in service class 1 12.3 MPa in service class 2	
Shear strength $f_{v,k}$			
	EN 408	$k_{h,v} \cdot 4.5 \text{ MPa}^1$ with $k_{h,v} = \left(\frac{600}{h}\right)^{0.13}$	

1)  $h$  is the height of Träger BauBuche in mm.

2)  $h$  is the larger length of the cross section of Träger BauBuche perpendicular to the longitudinal axis in mm.

3)  $h$  is the height of Träger BauBuche in mm and  $n$  is number of lamellas of LVL.

<b>Träger BauBuche</b>	Annex 1 of European Technical Assessment ETA-14/0354 of 11.07.2018
Characteristic data of Träger BauBuche	



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BR	Essential characteristic	Method of verification	Class / Use category / Numeric value
<b>3</b>	<b>Hygiene, health and environment</b>		
	Emission of formaldehyde	EN 717-1	E1
<b>4</b>	<b>Safety and accessibility in use</b>		
	Same as BR 1		
<b>6</b>	<b>Energy economy and heat retention</b>		
	Thermal conductivity $\lambda$	EN ISO 10456	0.17 W/(m·K)
	Thermal inertia, specific heat capacity $c_p$	EN ISO 10456	1 600 J/(kg·K)
<b>Träger BauBuche</b>		Annex 1	
Characteristic data of Träger BauBuche		of European Technical Assessment ETA-14/0354 of 11.07.2018	

### Fasteners

Admissible fasteners in Träger BauBuche are nails, screws, rod dowels, bolts, split ring and shear connectors.

Calculation of fasteners shall follow EN 1995-1-1. However, for dowel-type fasteners with a diameter  $d \geq 8$  mm the embedment strength shall be reduced by factor 0.8 for use in the edge faces. Calculation of embedment strength of dowel-type fasteners is not permissible for use in the face.

### Screws in GLT made of hardwood

The following provisions are valid for connections in members made of Träger BauBuche with wood screws Assy 3.0 and Assy plus according to ETA 11/0190 and diameter  $d$   $5 \text{ mm} \leq d \leq 12 \text{ mm}$ .

Träger BauBuche must be predrilled for threaded lengths of the screws  $l_{ef} > l_{ef,max}$  given in Table A.2.

**Table A.2 Max. threaded lengths of the screws to be used without predrilling**

	Assy plus VG	Assy 3.0
Diameter $d$	$l_{ef,max}$	$l_{ef,max}$
mm	mm	mm
5	–	50
6	30	60
7	–	70
8	48	80
10	80	100
12	96	–

The minimum spacing, end and edge distances according to EN 1995-1-1, Table 8.2, Column 3 ( $\rho \leq 420 \text{ kg/m}^3$ ), apply for screws without predrilling. The minimum spacing, end and edge distances according to EN 1995-1-1, Table 8.2, Column 5, apply for screws with predrilling.

The characteristic withdrawal strength can be calculated by

$$F_{ax,\alpha,Rk} = n_{ef} \cdot k_{ax} \cdot f_{ax,90,k} \cdot d \cdot l_{ef}$$

with

$$f_{ax,90,k} = 0.52 \cdot d^{-0.35} l_{ef}^{-0.1} \cdot \rho_k^{0.8}$$

$n_{ef}$  ... effective number of screws according to ETA-11/0190

$$k_{ax} = 1 \text{ for } 45^\circ \leq \alpha \leq 90^\circ$$

$$k_{ax} = 0.3 + 0.7 \cdot \alpha/45^\circ \text{ for } \alpha < 45^\circ$$

<b>Träger BauBuche</b>	Annex 2 of European Technical Assessment ETA-14/0354 of 11.07.2018
Fasteners in Träger BauBuche	



EAD 130010-01-0304, European Assessment Document for “Glued laminated timber made of hardwood – Structural laminated veneer lumber made of beech”

ETA-11/0190, European technical Approval for „Würth self-tapping screws“ of Adolf Würth GmbH & Co. KG, Reinhold-Würth-Straße 12-17, 74653 Künzelsau, Germany, with validity from 27 June 2013 to 27 June 2018.

EN 301 (10.2013), Adhesives, phenolic and aminoplastic, for load-bearing timber structures – Classification and performance requirements

EN 383 (01.2007), Timber structures – Test methods – Determination of embedment strength and foundation values for dowel type fasteners

EN 384 (08.2016), Structural timber – Determination of characteristic values of mechanical properties and density

EN 408:2010+A1 (07.2012), Timber structures – Structural timber and glued laminated timber – Determination of some physical and mechanical properties

EN 717-1 (10.2004), Wood-based panels – Determination of formaldehyde release – Part 1: Formaldehyde emission by the chamber method

EN 1382 (02.2016), Timber structures – Test methods – Withdrawal capacity of timber fasteners

EN 1383 (02.2016), Timber structures – Test methods – Pull through resistance of timber fasteners

EN 1995-1-1 (11.2004), +AC (06.2006), +A1 (06.2008), +A2 (05.2014), Eurocode 5 – Design of timber structures - Part 1-1: General – Common rules and rules for buildings

EN 1995-1-2 (11.2004) +AC (06.2006), +AC (03.2009), Eurocode 5 – Design of timber structures – Part 1-2: General – Structural fire design

EN 14080 (06.2013), Timber structures – Glued laminated timber and glued solid timber – Requirements

EN 14374 (11.2004), Timber structures – Structural laminated veneer lumber – Requirements

EN ISO 10456 (12.2007), +AC (12.2009), Building materials and products – Hygrothermal properties – Tabulated design values and procedures for determining declared and design thermal values

<b>Träger BauBuche</b>	Annex 3  of European Technical Assessment ETA-14/0354 of 11.07.2018
Reference documents	

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