

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

**ETA-20/0620**  
**of 1 February 2021**

English translation prepared by DIBt - Original version in German language

### General Part

Technical Assessment Body issuing the  
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

KSH - Glued laminated timber made of side boards

Product family  
to which the construction product belongs

Glued laminated timber with full cross section finger joint

Manufacturer

Gebrüder Noack GbR  
Spremberger Straße 50  
03130 Spremberg OT Sellessen  
DEUTSCHLAND

Manufacturing plant

Gebrüder Noack GbR  
Spremberger Straße 50  
03130 Spremberg OT Sellessen

This European Technical Assessment  
contains

7 pages including 2 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 130661-00-0304

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## Specific part

### 1 Technical description of the product

KSH - Glued laminated timber made of side boards (in the following referred to as glued laminated timber) is made of solid Norway spruce (*Picea abies*) and/ or Scots pine redwood (*Pinus sylvestris*) laminations graded according to EN 14081-1. The strength class of the laminations is at least T14. The glued laminated timber is finger jointed over the full cross section.

The glued-laminated timber may be built up of one species only (in the following called "homogeneous lay-up") or with an arbitrary mixture of the two species Spruce and Pine within one cross-section (in the following called "hybrid lay-up").

The laminations are not finger jointed before they are face glued.

The ETA covers glued laminated timber with full cross section finger joint type "S" according to EAD 130661-00-0304, clause 1.1.

In terms of geometry the glued laminated timber is widely in accordance with the provisions given in EN 14080. The ETA covers glued laminated timber with a depth  $h$  of  $100 \text{ mm} \leq h \leq 220 \text{ mm}$ , a width  $b$  of  $60 \text{ mm} \leq b \leq 120 \text{ mm}$  and a geometry according to Annex 1, whereby the full cross section finger joint is always arranged according to the figures given in Annex 1.

The cutting direction of the fingers of the full cross section finger joint is parallel to the smaller side of the lamination. The length of the fingers of the full cross section finger joint is  $15 \text{ mm} \leq l_j \leq 20 \text{ mm}$ . The finger length  $l_j$ , the pitch  $p$ , the tip width  $b_t$ , the reduction factor  $v = b_t / p$  and the finger angle  $\alpha$  fulfil equations (1.1) and (1.2), respectively:

$$l_j \geq 4 \cdot p (1 - 2 \cdot v) \quad (1.1)$$

$$\alpha \leq 7.1^\circ \quad (1.2)$$

The reduction factor  $v$  is  $v \leq 0.18$ .

There are no knots or pronounced grain disturbances within the full cross section finger joint, whereby knots with a diameter smaller than 6 mm are disregarded.

Adhesives of type I with the letter "w" in the designation according to EN 15425 are used to produce the glued laminated timber and to glue the full cross section finger joint. The maximum glue line thickness of the finger joint is 0.1 mm. The adhesives used are deposited at Deutsches Institut für Bautechnik.

The ETA does not cover glued laminated timber that is

- preservative treated against biological attack,
- treated with flame retardants,
- made of recycled wood.

## 2 Specification of the intended use in accordance with the applicable European Assessment Document

KSH - Glued laminated timber made of side boards type "S" with full cross section finger joint is used in load-bearing timber structures in service class 1 according to EN 1995-1-1, clause 2.3.1.3.

The performances given in Section 3 are only valid if the KSH - Glued laminated timber made of side boards is used in compliance with the specifications and conditions given in Annex 2.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the KSH - Glued laminated timber made of side boards of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

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

### 3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Strength, stiffness and density properties of the glued laminated timber with full cross section finger joint	GL 24h according to EN 14080
Bending strength of the full cross section finger joint with edgewise bending of the laminations	$f_{m,ffj,edge,k} = 24 \text{ N/mm}^2$
Bending strength of the full cross section finger joint with flatwise bending of the laminations	$f_{m,ffj,flat,k} = 24 \text{ N/mm}^2$
Tensile strength parallel to the grain of the full cross section finger joint	$f_{t,0,ffj,k} = 19.2 \text{ N/mm}^2$

### 3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	D-s2, d0

### 3.3 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Content, emission and/or release of dangerous substances	No performance assessed
Formaldehyde emission	Class E1

### 3.4 Other essential characteristics

Essential characteristic	Performance			
Durability of bonding strength of the glued laminated timber with full cross section finger joint	Fulfilled for type "S"			
Durability against biological attack	Durability against	Glulam with		
		Homogeneous lay-up	Hybrid lay-up	
		Norway spruce ( <i>Picea abies</i> )	Scots pine redwood ( <i>Pinus sylvestris</i> )	Norway spruce and Scots pine redwood
	Fungi	DC 4	DC 3-4	DC 4
	Beetles	DC S	DC D	DC S
	Termites	DC S	DC S	DC S
	Marine borer	DC S	DC S	DC S
				Note: In the case of hybrid lay-up of the glulam the lower durability class of the two wood species is decisive.
The sapwood of Norway spruce and Scots pine redwood is regarded as not durable.				

#### 4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 130661-00-0304 the applicable European legal act is Commission Decision 97/176/EC, as amended by Commission Decision 2001/596/EC.

The system is 1.

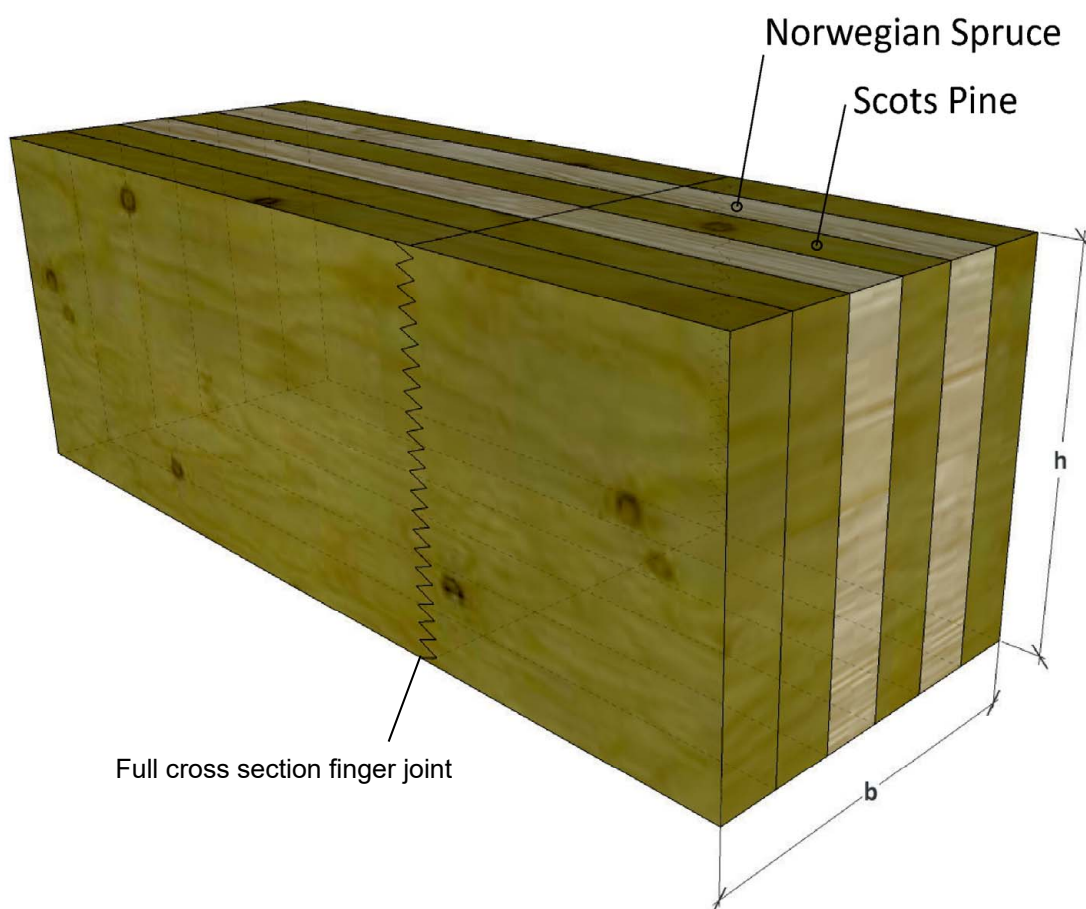
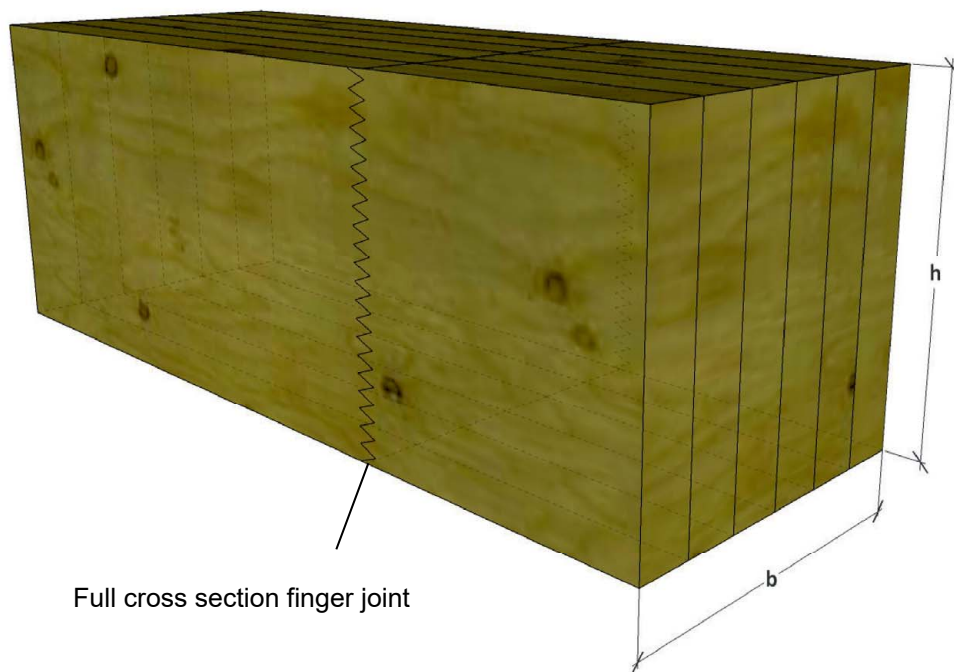
#### 5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 1 February 2021 by Deutsches Institut für Bautechnik

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Head of Department

*beglaubigt:*  
Dewitt



Electronic copy of the ETA by DIBt: ETA-20/0620

KSH - Glued laminated timber made of side boards

Basic structure - Homogenous lay-up and an example of hybrid lay-up

Annex 1

## Annex 2 Specifications of intended use

### A.2.1 Use of the KSH - Glued laminated timber made of side boards only:

- for static and quasi-static (non-fatigue) loads,
- in service class 1 according to EN 1995-1-1.

The provisions regarding the system strength factor  $k_{sys}$  according to EN 1995-1-1, clause 6.6 shall not be applied for this type of glued laminated timber.

### A.2.2 Manufacturing provisions

KSH - Glued laminated timber made of side boards with full cross section finger joint is produced according to EN 14080, Annex I (except Annexes I.6 and I.7), unless otherwise specified in the following and in the provisions deposited at DIBt.

The full cross section finger joint is produced by means of a cyclic automated finger joint facility.

### A.2.3 Installation provisions

EN 1995-1-1<sup>1</sup> applies for the installation of load-bearing timber structures with KSH - Glued laminated timber made of side boards.

<sup>1</sup> EN 1995-1-1:2004+A1:2008+A2:2014 Eurocode 5: Design of timber structures – Part 1-1: General - Common rules and rules for buildings

KSH - Glued laminated timber made of side boards	Annex 2
Specifications of intended use	