



## European Technical Approval ETA-13/0784

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung <i>Trade name</i>	Kronoply Magnum - Board
Zulassungsinhaber <i>Holder of approval</i>	Kronoply GmbH Wittstocker Chaussee 1 16909 Heiligengrabe DEUTSCHLAND
Zulassungsgegenstand und Verwendungszweck <i>Generic type and use of construction product</i>	Wände, Dächer, Decken aus vollflächig verklebten Lagen von OSB-Platten <i>Walls, roofs and ceilings made of OSB-panels which are glued together on their surfaces</i>
Geltungsdauer: <i>Validity:</i>	vom <i>from</i> bis <i>to</i> 26 June 2013 26 June 2018
Herstellwerke <i>Manufacturing plants</i>	3B TEC Holzbau GmbH Gottlieb-Daimler-Straße 17 14974 Ludwigsfelde Deutschland Henri VERMOT et Fils Les Terres Rouges 25130 Villers le Lac Frankreich

Diese Zulassung umfasst  
*This Approval contains*

14 Seiten einschließlich 5 Anhänge  
*14 pages including 5 annexes*

## I LEGAL BASES AND GENERAL CONDITIONS

- 1 This European technical approval is issued by Deutsches Institut für Bautechnik in accordance with:
  - Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products<sup>1</sup>, modified by Council Directive 93/68/EEC<sup>2</sup> and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council<sup>3</sup>;
  - *Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998<sup>4</sup>, as amended by Article 2 of the law of 8 November 2011<sup>5</sup>;*
  - Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC<sup>6</sup>.
- 2 Deutsches Institut für Bautechnik is authorized to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.
- 3 This European technical approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European technical approval.
- 4 This European technical approval may be withdrawn by Deutsches Institut für Bautechnik, in particular pursuant to information by the Commission according to Article 5(1) of Council Directive 89/106/EEC.
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- 6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

<sup>1</sup> Official Journal of the European Communities L 40, 11 February 1989, p. 12  
<sup>2</sup> Official Journal of the European Communities L 220, 30 August 1993, p. 1  
<sup>3</sup> Official Journal of the European Union L 284, 31 October 2003, p. 25  
<sup>4</sup> *Bundesgesetzblatt Teil I 1998*, p. 812  
<sup>5</sup> *Bundesgesetzblatt Teil I 2011*, p. 2178  
<sup>6</sup> Official Journal of the European Communities L 17, 20 January 1994, p. 34

## II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

### 1 Definition of the product and intended use

#### 1.1 Definition of the construction product

"Magnum - Board" are plane elements for wall, floor or roof constructions with a thickness between 75 mm and 250 mm. They consist of at least three OSB slabs which are glued together parallel to their direction of construction (see Annex 1).

They have a width of up to 2.8 m and a length of up to 20 m.

Wall elements according to Annex 2, which are compression loaded in plane of the element parallel to the direction of the grain can have a height of  $H \leq 6.5$  m.

Wall elements according to Annex 2, which are compression loaded in plane of the element perpendicular to the direction of the grain can have a height of  $H \leq 2.8$  m.

Wall elements according to Annex 3, which are compression loaded in plane of the element perpendicular to the direction of the grain, may have horizontal joints with a relative offset, which are to be arranged within an distance of a  $\leq 0.3 \cdot H$  from the top or bottom edge. More horizontal joints are not allowed. The height of the element may not exceed  $H = 3.8$  m.

#### 1.2 Intended use

"Magnum - Board" may be used as non-carrying or load-carrying wall, floor or roof construction element for wood constructions, which are designed according to EN 1995-1-1. National regulations may apply.

"Magnum-Board" may be subject to loads parallel and perpendicular to the elements plane.

It may only be subject to static or quasistatic actions.

The use is limited to the service classes 1 and 2 according to EN 1995-1-1.

The provisions made in this European technical approval are based on an assumed working life of the products of 50 years, provided that the conditions laid down in section(s) 4.2 /5.1/ 5.2 for transport/storage/installation/use are met. 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.

### 2 Characteristics of the product and methods of verification

The assessment of the fitness of the product for the intended use in relation to the requirements for mechanical resistance and stability, for safety in case of fire, for hygiene, health and the environment, for protection against noise, for energy economy and heat retention, as well as for durability in the sense of these Essential has been made in compliance with the assessment rules for solid wood slabs agreed upon within EOTA.

## 2.1 Mechanical resistance and stability (ER1)

### 2.1.1 General

Information regarding the load carrying capacity can be taken from annexes 4 and 5.

Design and execution of wall, floor, roof or special elements of "Magnum Board" is performed according to EN 1995-1-1. Additional national provisions shall be taken into account.

### 2.1.2 Specification of the elements

The products correspond to the information given in the annexes 1 to 3 of this European technical approval. Details on the elements are deposited at Deutsches Institut für Bautechnik (DIBt).

The "Magnum Board" elements consist of at least three and up to 10 OSB slabs, each of which is 25 mm thick. The slabs have to correspond to the data deposited at DIBt.

The single OSB slabs are glued together parallel to their direction of the grain of the surface layers when manufacturing the element.

In the surface layers of the wall, floor and roof elements there are no butt joints over the elements length and height.

The inner layers, up to 2/5 of the thickness can include butt joints, if not stated otherwise hereafter. In the area of butt joints there has to be an overlap of at least 300 mm.

For the plane bonding between the OSB slabs a PU adhesive, fulfilling the requirements Type I according to EN 15425, must be used under observation of the processing instructions given by the manufacturer of the adhesive. The use of another glue as deposited at DIBt is only allowed after former approval by DIBt. Only sanded OSB slabs may be used.

## 2.2 Behaviour in case of fire (ER2)

### 2.2.1 Reaction to fire

In accordance with Commission Decision 2003/43/EC the solid wood slab elements covered by this European technical approval for use as wall, roof, ceiling and special construction components comply with Euroclass D-s2, d0 according to EN 13501-1. For the use as floor construction components they comply with Euroclass D<sub>f</sub>-s1. The boundary conditions stated in the commission decision have to be attended for this classification.

The Decision of the European Commission might not apply if wood-based panels or other coverings are part of the element, depending on the coverings used and the boundary conditions affected.

## 2.3 Hygiene, health and the environment (ER3)

### 2.3.1 Dangerous substances

A manufacturer's declaration has been submitted that no dangerous substances are used in the product regulated by this European technical approval.

Wood preservatives or flame retardants are not part of the European technical approval.

The class of formaldehyde is E1 according to EN 13986 with respect to OSB slabs.

Note: In addition to the specific clauses relating to dangerous substances contained in this European technical approval, 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 Directive, these requirements need also to be complied with, when and where they apply.

### 2.3.2 Vapor permeability

No performance determined.

## 2.4 Safety in use (ER 4)

### 2.4.1 Impact resistance

No performance determined.

## 2.5 Protection against noise (ER 5)

### 2.5.1 Airborne sound insulation

No performance determined.

### 2.5.2 Impact sound insulation

No performance determined.

### 2.5.3 Acoustic absorption

No performance determined.

## 2.6 Energy economy and heat retention (ER 6)

### 2.6.1 Thermal conductivity

Design values for the timber elements can be taken from EN ISO 10456<sup>7</sup>. National regulations have to be followed.

### 2.6.2 Air-tightness

No performance determined.

## 2.7 Aspects of durability, serviceability, identification

### 2.7.1 Durability

The use of the product is admissible only in service classes 1 and 2 according to EN 1995-1-1. When using the elements as external constructions components an additional durable effective weather protection shall be ensured.

The properties of the timber elements shall not adversely be affected by the action of moisture. Depending on the application, the timber elements shall be protected from moisture.

### 2.7.2 Serviceability

Manufacturing tolerances of the timber elements are permitted within specified limits.

The dimensions of the elements shall be stable and must not be adversely affected by any actions (e.g. moisture).

### 2.7.3 Identification

The Magnum Board Elements shall be marked such that they can be clearly identified.

<sup>7</sup>

EN ISO 10456:2007 + AC:2009

Building materials and products – Hygrothermal properties – Tabulated design values and procedures for determining declared and design thermal values

### 3 Evaluation and attestation of conformity and CE marking

#### 3.1 System of attestation of conformity

According to the communication of the European Commission<sup>8</sup> system 1 of the attestation of conformity applies.

System 1: Certification of the conformity of the product by an approved certification body on the basis of:

- (a) Tasks for the manufacturer:
  - (1) factory production control;
  - (2) further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan;
- (b) Tasks for the approved body:
  - (3) initial type-testing of the product;
  - (4) initial inspection of factory and of factory production control;
  - (5) continuous surveillance, assessment and approval of factory production control.

Note: Approved bodies are also referred to as "notified bodies".

#### 3.2 Responsibilities

##### 3.2.1 Tasks for the manufacturer

###### 3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall insure that the product is in conformity with this European technical approval.

The manufacturer may only use initial materials stated in the technical documentation of this European technical approval.

The factory production control shall be in accordance with the control plan which is part of the technical documentation of this European technical approval. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited with Deutsches Institut für Bautechnik.<sup>9</sup>

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

###### 3.2.1.2 Other tasks for the manufacturer

The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks referred to in section 3.1 in the field of glued OSB slabs in order to undertake the actions laid down in section 3.2.2. For this purpose, the control plan referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the approved body involved.

<sup>8</sup> Letter of the European Commission of 15/11/2011 to EOTA

<sup>9</sup> The control plan is a confidential part of the European technical approval and only handed over to the approved bodies involved in the procedure of attestation of conformity. See section 3.2.2.

### 3.2.2 Tasks for the approved bodies

The approved body shall perform the

- initial type-testing of the product,
- initial inspection of factory and of factory production control,
- continuous surveillance, assessment and approval of factory production control,

in accordance with the provisions laid down in the control plan.

The approved body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

The approved certification body involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European technical approval.

In cases where the provisions of the European technical approval and its control plan are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform Deutsches Institut für Bautechnik without delay.

### 3.3 CE marking

The CE marking shall be affixed on the product itself, on the packaging or on accompanying commercial documents. The letters "CE" shall be followed by the identification number of the approved certification body, where relevant, and be accompanied by the following additional information:

- the name and address of the producer (legal entity responsible for the manufacture),
- the last two digits of the year in which the CE marking was affixed,
- the number of the EC certificate of conformity for the product,
- the number of the European technical approval,
- the type of element
- number and thickness of layers
- manufacturing plant

## 4 Assumptions under which the fitness of the products for the intended use was favourably assessed

### 4.1 Manufacturing

The elements have to be manufactured according to the instructions deposited at DIBt.

The European technical approval is issued for the product on the basis of agreed data, deposited with Deutsches Institut für Bautechnik, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to Deutsches Institut für Bautechnik before the changes are introduced. Deutsches Institut für Bautechnik will decide whether or not such changes affect the approval and consequently the validity of the CE marking on the basis of the approval and if so whether further assessment or alterations to the approval shall be necessary.

## 4.2 Installation

### 4.2.1 Design of the elements

Verification of stability of the buildings while using the solid wood slab elements is not subject of this European technical approval.

Fitness for the intended use of the solid wood slab is given under the following conditions:

- Design of the solid wood slab elements is carried out under the responsibility of an engineer experienced in these elements.
- Design of the works provides a sufficient protection of the solid wood slab elements.
- The solid wood slab elements are installed correctly.

Design of the solid wood slab elements can be performed according to EN 1995-1-1 taking into account the Annexes 4 and 5 of this European technical approval. Standards and regulations valid in the place of use shall be considered.

### 4.2.2 Installation of solid wood slab elements

Elements which are directly exposed to the weather shall be provided with an effective protection for the solid wood slab element during assembling and service.

Roofs made of "Magnum Board" must have an incline  $\geq 5^\circ$ . Elements for steep roofs must be insulated by an overlying insulation layer.

The use of "Magnum Board" for the outer wall of basements, for wet rooms or for stables is not allowed.

## 5 Indications to the manufacturer

### 5.1 General

The manufacturer shall ensure that the requirements stated in the clauses 1, 2 and 4 and the annexes of this European technical approval are made known to those who are concerned during planning and execution of the works.

### 5.2 Packaging, transport and storage

The solid wood slab elements shall be protected during transport and storage against any damage and detrimental moisture effects. The manufacturer's instruction for packaging, transport and storage shall be observed.

### 5.3 Use, maintenance, repair

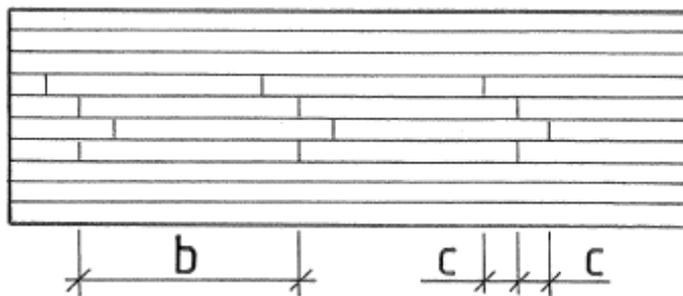
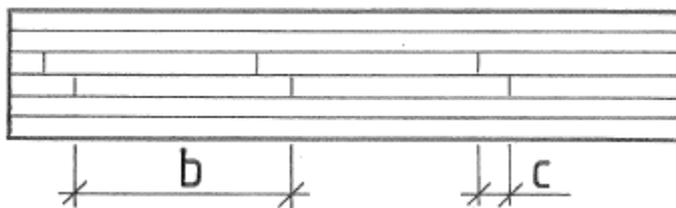
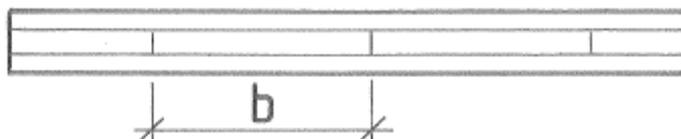
The assessment of the fitness for use is based on the assumption that maintenance is not required during the assumed intended working life. In case of a severe damage of a solid wood slab element immediate actions regarding the mechanical resistance and stability of the works shall be initiated. Should this situation arise replacement of the elements can be necessary.

Uwe Bender  
Head of Department

*beglaubigt:*  
Christian Warns

## Magnum Board

Elements with three or more layers



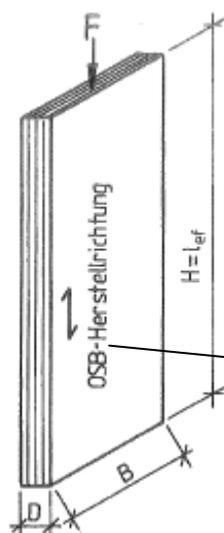
Butt joints in the Magnum Board – elements (Examples)

$b \geq 1000 \text{ mm}$

$c \geq 300 \text{ mm}$

## Magnum Board

Vertically loaded elements

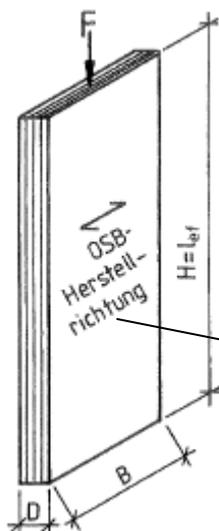


Compression load parallel to the direction of construction of the OSB slabs.

Height of wall  $H \leq 6,5 \text{ m}$

Equivalent member length  $l_{ef} \leq 6,5 \text{ m}$

Direction of construction



Compression load perpendicular to the direction of construction of the OSB slabs.

Height of wall  $H \leq 2,8 \text{ m}$

Equivalent member length  $l_{ef} \leq 2,8 \text{ m}$

Direction of construction

Direction of construction = direction of the grain of the surface layers

Kronoply Magnum - Board

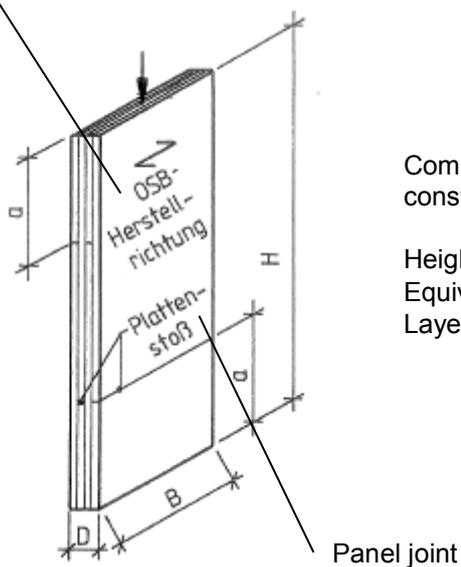
Vertically loaded elements without panel joint

Annex 2

## Magnum Board

Vertically loaded elements  
- with panel joint -

Direction of construction



Compression load parallel to the direction of construction of the OSB slabs.

Height of wall  $H \leq 3,8 \text{ m}$   
Equivalent member length  $l_{ef} \leq 3,8 \text{ m}$   
Layer with joint  $a \leq 0,3 \text{ m}$

Direction of construction = direction of the grain of the surface layers

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Vertically loaded elements with panel joint

Annex 3

Characteristic values of strength and stiffness for "Magnum-Board" with and without joints in the panels in N/mm<sup>2</sup>

Type of load	Characteristic values of strength and stiffness	
Bending perpendicular to the elements plane	$f_{m,0,k}$	<b>17,6</b>
	$f_{m,90,k}$	<b>15,3</b>
Shear in plane of the element	$f_{v,0,k}$	<b>1,6</b>
	$f_{v,90,k}$	
Compression perpendicular to the elements plane <sup>1</sup>	middle <sup>2</sup> $f_{c,k}$	<b>4,5</b>
	edge <sup>2</sup> $f_{c,k}$	<b>4,0</b>
Compression in plane of the element	$f_{c,0,k}$	<b>16</b>
	$f_{c,90,k}$	<b>14</b>
Modulus of elasticity perpendicular to the elements plane	$E_{m,0,mean}$ <sup>3</sup>	<b>5000</b>
	$E_{m,90,mean}$ <sup>3</sup>	<b>3500</b>
Modulus of shear in plane of the element	$G_{v,0,k}$	<b>130</b>
	$G_{v,90,k}$	
Modulus of compression in plane of the element	$E_{c,0,mean}$ <sup>3</sup>	<b>5000</b>
	$E_{c,90,mean}$ <sup>3</sup>	<b>4500</b>
<sup>1</sup> compression at 1% strain = limit value of the applicable compression load <sup>2</sup> H = Height of the element loaded with compression vertically to its plane middle: edge distance > thickness of the element; edge: edge distance ≤ thickness of the element <sup>3</sup> $E_{m,c,k} = 0,85 \cdot E_{m,c,mean}$ ; $G_{v,k} = 0,85 \cdot G_{v,mean}$		

As values for  $k_{mod}$  and  $k_{def}$  the values for OSB/3 plates according to EN 1995-1-1 can be taken into account.

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Characteristic values of strength and stiffness

Annex 4

## Notes for the design

### Wall elements

The design of wall elements for vertical and horizontal loads can be done according to EN 1995-1-1. The characteristic values given in annex 4 shall be used.

For the calculation of the stability of wall elements under vertical load the following buckling values kann be taken into account:

Equivalent member length	Slenderness ratio (maximum)	Reduction factor for buckling $k_c$
$l_{ef} \leq 6,0$ m	$\lambda \leq 210$	1,0
$l_{ef} > 6,0$ m und $l_{ef} \leq 6,5$ m	$\lambda \leq 130$	0,7

As mechanical key values to determine the relative slenderness ratio  $\lambda_{rel,c}$  the values for  $f_{c,0,k}$  or  $f_{c,90,k}$  and  $E_{m,0,k}$  or  $E_{m,90,k}$  have to be taken into account.

The anchorage of the wall elements has to be proved.

### Roof and floor elements

The design of roof and floor elements for vertical and horizontal loads can be done according to EN 1995-1-1. The characteristic values given in annex 4 shall be used.

### Fasteners

As fasteners the following products can be used

- Nails according to EN 14592 with  $d_n = 3,1$  mm or 3,8 mm and  $l_n > 50$  mm,
- Screws "HECO-TOPIX" according to ETA 11/0284. The diameter  $d$  is  $d = 10$  mm.
- Screws "Würth ASSY" according to ETA 11/0190, Type II following Annex 4 of the ETA. The diameter  $d$  is  $d = 10$  mm.

The following principles shall be observed:

- For the distance between the nails and screws EN 1995-1-1 applies.
- perpendicular to the length of the lateral side the distance to the unloaded edge has to be at least 30 mm.
- the distance to the unloaded edge in case of connections involving shear (transverse tension) may not be under the 70% of the elements thickness.

Connections with nails in the lateral side of the elements are not allowed.

Connections with screws perpendicular to the plane of the elemente have to be predrilled.

Characteristic values for the connections shall be taken from Annex 5, page 2.

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Notes for the design – page 1

Annex 5  
Page 1

### Characteristic values for connectors in Magnum Board

Type of load	Characteristic values of strength and stiffness		
<b>nails</b>			
<b>Shear</b>		$d_n = 3,1 \text{ mm}$	$d_n = 3,8 \text{ mm}$
Direction of load parallel to the plane of the element, axis of nail perpendicular	$R_k$	<b>1550 N</b>	<b>1900 N</b>
<b>screws</b>			
<b>Shear</b>		$d_1 = 10 \text{ mm}$	
Direction of load parallel to the plane of the elements, smooth shaft and thread perpendicular to the outer element	$R_k$	<b>15000 N</b>	
Direction of load parallel to the plane of the outer element, smooth shaft perpendicular to the outer element, thread in the lateral surface of the inner element	$R_k$	<b>5500 N</b>	
Direction of load perpendicular to the plane of the outer element, smooth shaft perpendicular to the outer element, thread in the lateral surface of the inner element being under transverse tension <sup>1</sup>	$R_k$	<b>7500 N</b>	
<b>Withdrawal capacity</b>		$d_1 = 10 \text{ mm}$	
Smooth shaft and thread perpendicular to the plane of the element	$f_{1,90,k}$	<b>18 N/mm<sup>2</sup></b>	
Smooth shaft and thread parallel to the plane of the element (perpendicular to the lateral surface)	$f_{1,0,k}$	<b>12 N/mm<sup>2</sup></b>	
<b>Pull through resistance</b>		$d_1 = 10 \text{ mm}$	
Smooth shaft and thread perpendicular to the plane of the element	$R_{2,90,k}$	<b>15·<math>d_k^2</math> N</b>	
<sup>1</sup> the distance between the axis of the screw and the loaded edge has to be at least 70% of the elements thickness under transverse tension. $d_k$ = diameter of the head of the screw in mm			

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Notes for the design – page 2

Annex 5  
Page 2