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Authorised and notified according to Article 29 of the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011

MEMBER OF EOTA

European Technical Assessment ETA-13/0019 of 03/11/2015

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the construction product:	ROCKPANEL PLY 6 mm, 8 mm and 10 mm supplied with a primer coating. The top(colour) coat can be site applied or in a paint shop
Product family to which the above construction product belongs:	Prefabricated mineral wool boards with organic or inorganic finish and with specified fastening system
Manufacturer:	ROCKWOOL B.V. Konstruktieweg 2 NL-6045 JD Roermond Tel. +31 475 353 000 Fax +31 475 353 550
Manufacturing plant:	ROCKWOOL B.V. / ROCKPANEL Group Konstruktieweg 2 NL-6045 JD Roermond
This European Technical Assessment contains:	25 pages including 6 annexes which form an integral part of the document
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:	European Assessment Document (EAD) no. EAD 090001-00-0404 for Prefabricated compressed mineral wool boards with organic or inorganic finish and with specified fastening system, edition May 2015.
This version replaces:	The previous ETA with the same number and validity from 2013-03-13 to 2018-03-13

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product and intended use

Technical description of the product
General
ROCKPANEL PLY 6, 8 and 10 mm with primer finish are made from prefabricated mineral wool boards with thermo-setting synthetic binders. The top (colour) coat can be site applied or in a paint shop. The boards are fastened to timber subframes. Fastening to the timber subframe is carried out with corrosion resistant nails or screws. Mechanical fasteners, gaskets, and aluminum profiles are specified by the ETA-holder.

The ROCKPANEL PLY panels are surface treated with a four-layer water-borne polymer emulsion primer on one side, in a grey colour.

The physical properties of the panels are indicated in Table 1.

Table 1

Property	Value
Thickness and tolerances	6 ± 0,3 mm / 8 ± 0,5 mm / 10 ± 0,5 mm
Length, max	3050 mm
Width, max	1250 mm
Density, nominal and tolerances	1000 kg/m^3 -100 / +150
Bending strength, length and width	$f_{05} \geq 15$ N/mm^2
Modulus of elasticity	m(E) $\geq$ 3065 N/mm^2
Cumulative dimensional change % according to EN 438-2	Length / Width: $\leq$ 0,067
Thermal conductivity	0,35 W/(m • K)
Coefficient of thermal expansion, length and width	$\alpha = 9{,}7 \times 10^{-3}$ (10^{-6} K^{-1})
Coefficient of moisture expansion 23° C/50% RH to 92% RH	$\leq$ 0,241 mm/m after 4 days

Finish
The finish consists of a light grey primer for painting on the building site or in a paint shop.

Subframes
The panels are attached to the building by fixing to a subframe of wood.
The vertical battens should have a minimum thickness of 28 mm (solid wood).
Also LVL battens (Laminated Veneer Lumber) with a minimum thickness of 27 mm, according to EN 14374, can be used (Ultralam R, CE 0672-CPD-I)

Appropriate preservative treatment of subframes
Use the appropriate part of EN 335 to identify the "use class" of a given service environment and geographical location. Table 1 in EN 335 will assist in determining the biological agents that can attack timber in certain situations. The user can then consider the type and duration of performance required select an appropriate level of durability and ensure that the timber or wood-based product specified has either, as a natural (see EN 350-2) or an acquired characteristic durability as the result of appropriate preservative treatment (see EN 351-1).

Joints
Aluminum profiles
The horizontal joints between the panels can be open in the case of ROCKPANEL strips or EPDM foam gasket. The strips or gasket are 15 mm wider than the batten at both sides.
The horizontal joints between the panels are made with a ROCKPANEL "A" extruded aluminum chair profile or equivalent in the case of panels mechanically fixed on timber battens. The chair profile has an overlap of at least 15 mm on the board above the profile.
See section 3, Figure 2.

Foam gasket
A 3 mm thick EPDM foam gasket (self-adhering backside) is fixed to the timber battens. If the horizontal joint is closed with an aluminum chair profile, the vertical joint is backed with the 60 mm wide gasket and for the intermediate battens the 36 mm gasket is used.

In the case of open horizontal joints the width of the gasket 15 mm at both sides wider than the batten.

Fasteners
The panels are mechanically fixed to vertical timber subframe.

The mechanical fastening to timber battens is carried out with either ROCKPANEL stainless steel screws 4,5 × 35 mm no 1.4401 or 1.4578 (EN 10088) or ROCKPANEL ring shank nails 2,7/2,9 x 32 mm or 40 mm no 1.4401 or 1.4578 (EN 10088).

The maximum fixing distances and edge distances appear from Table 11, the hole diameter from Table 10, design load and characteristic load appears from annex A and B of the ETA.
The installation method with the use of fixed points and moving points appears from Figure 1.

2 Specification of the intended use in accordance with the applicable EAD

The boards are intended for external cladding according to Figure 2 and for fascias and soffits. The cladding on vertical timber battens with mechanically fixed boards

can be carried out with or without ventilated cavities at the back. See section 3, Figure 2

The provisions made in this European Technical Assessment are based on an assumed intended working life of the kit of 50 years, provided that they are subject to appropriate use and maintenance.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body, 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

	Characteristic	Assessment of characteristic
3.2	**Safety in case of fire (BWR 2)**	
	Reaction to fire of the board in its intended use as a cladding kit	
		The aluminum profiles are classified as **Euroclass A1**
		Classification of panels: See Table 2

The panels have been classified in accordance with EN 13501-1 with the following parameters:

Table 2. Euroclass classification of different constructions with ROCKPANEL boards

Fixing method	**Ventilated or non-ventilated**	**Vertical wooden subframe PLY in the thicknesses**		
		6 mm	**8 mm**	**10 mm**
Mechanically fixed	Non-ventilated. Cavity filled with mineral wool	**B-s2, d0** Closed 6 mm horizontal joint		
	Ventilated with EPDM gasket on the battens [a]		**B-s2, d0** open 6 mm horizontal joint	
	Ventilated with 6 mm ROCKPANEL PLY strips on the battens [b]	**B-s2, d0** open 6 mm horizontal joint		

[a] width of the gasket 15 mm at both sides wider than the batten
[b] width of the strip 15 mm at both sides wider than the batten

Field of application
Further to the limitations described in section 1 of the ETA, the following field of application applies.

Euroclass classification
The classification mentioned in Table 2 is valid for the following end use conditions:

Mounting:
- Mechanically fixed to a wooden subframe
- The panels are backed with min. 50 mm mineral wool insulation with density 30-70 kg/m³ according to EN 13162 with a cavity between the panels and the insulation (mechanically fixed)
- The boards are backed with min. 40 mm mineral wool insulation with density 30-70 kg/m³ according to EN 13162 without a cavity between the back of the board and the insulation behind the subframe (mechanically fixed – non ventilated)

Substrates:
- Concrete walls, masonry walls

Insulation:
- Ventilated constructions: The battens are backed with min. 50 mm mineral wool insulation with density 30-70 kg/m³ according to EN 13162 with a cavity of min. 28 mm between the panels and the insulation
- Non-ventilated constructions: The panels are backed with min. 40 mm mineral wool with density 30-70 kg/m³ according to EN 13162 between the battens and min. 50 mm with density 30-70 kg/m³ behind the battens without a cavity
- Results are also valid for all greater thickness of mineral wool insulation layer with the same density and the same or better reaction to fire classification
- The test result of a test with mineral wool insulation shall be valid, without test, for the same type of panel used without insulation, if the substrate chosen according to EN 13238 is made of panel with Euro-class A1 or A2 (e.g. fibres-cement panel).

Subframe:
- Vertical softwood battens without fire retardant treatment, thickness minimum 28 mm
- Test results are also valid for the same type of panel with aluminum or steel frame
- Test results are also valid for the same type of panel with vertical LVL battens, without fire retardant treatment, thickness minimum 27 mm

Fixings:
- Results are also valid with higher density of the fixing devices
- Test results are also valid for the same type of panel fixed by rivets made of the same material of screws and vice versa

Cavity:
- Unfilled or filled with insulation of stone wool with a nominal density of 30-70 kg/m^3
- The depth of the cavity is minimum 28 mm
- Test results are also valid for other higher thickness of air space between the back of the board and the insulation behind the subframe

Joints:
- Vertical joints are with an EPDM foam gasket backing or ROCKPANEL strip backing as described in table 2 and horizontal joints can be open (ventilated constructions) or with an aluminum profile (ventilated and non-ventilated constructions)
- Test results are also valid for higher thicknesses of ROCKPANEL strips
- Test results are also valid in the case of using ROCKPANEL strips instead of EPDM foam gaskets
- The result from a test with an open horizontal joint is also valid for the same type of panel used in applications with horizontal joints closed by steel or aluminum profiles

The classification is also valid for the following product parameters:

Thickness:
- Nominal 6 mm, individual tolerances ± 0,3 mm
- Nominal 8 mm, individual tolerances ± 0,5 mm
- Nominal 10 mm, individual tolerances ± 0,5 mm

Density
- Nominal 1000 kg/m^3 , individual tolerances -100 / +150 kg/m^3

Characteristic	Assessment of characteristic
3.3 Hygiene, health and the environment (BWR 3)	
Content, emission and/or release of dangerous substances	
	Use category: Outdoor S/W2 The kit does not contain/release dangerous substances specified in TR 034, dated April 2013*), except Formaldehyde concentration 0,0105 mg/m^3 Formaldehyde class E1 The used fibres are not potential carcinogenic No biocides are used in the ROCKPANEL boards No flame retardant is used in the boards No cadmium is used in the boards
Water vapour permeability	
	s_d declared : ≤ **1,2 m at 23° C and 85% RH** The designer shall consider the relevant needs for ventilation, heating and insulation to minimise condensation in service.
Water tightness of joints	
	No performance determined
Drainability	
	See section 'Aspects related to the performance of the product'
3.4 Safety and accessibility in use (BWR 4)	
Wind load resistance	
Mechanical properties of panels	**See section 1, Table 1**
Design value of axial loads	
In absence of national regulations the design values X_d may be calculated as indicated in the ETA (see Tables A1 up to and including B4). Below is mentioned the safety factor which has been used in the calculation of the design values.	
Fixing position and design value X_d of the axial load M/E/C (Middle/Edge/Corner) of mechanical fixings corresponding to the wind load resistance (load acting perpendicular to the façade) *Remark:* Design value X_d obtained by dividing the characteristic value X_k by a partial factor γ_M : $X_d = X_k / \gamma_M$ The design value X_d of a material property can be expressed in general terms as $X_d = \eta \times X_k / \gamma_m$; γ_m ROCKPANEL = 1,6; conversion factor η = 0,8 (aged bending strength divided by the f_{05} (Table 12, Annex C))	**ROCKPANEL screws:** Fastener specification according to Table 4. Design value X_d depends on the modification factor k_{mod}, the strength class of the wood and the different material factors γ_M. Annex A1, A2, A3 and A4, row (24), (25) and (26) contain the design value of the axial load $\boldsymbol{X_d} = X_k / \gamma_M$ for the different fixing locations and board thicknesses. Tables include wind suction results according to "Wind suction and pressure resistance" **ROCKPANEL nails:** Fastener specification according to Table 3. Design value X_d depends on the modification factor k_{mod}, the strength class of the wood and the different material factors γ_M. Annex B1, B2, B3 and B4, row (24), (25) and (26) contain the design value of the axial load $\boldsymbol{X_d} = X_k / \gamma_M$ for the different fixing locations and board thicknesses. Tables include wind suction results according to "Wind suction and pressure resistance"

Characteristic	Assessment of characteristic
Pull/out and pull/through resistance of fasteners and mechanical resistance of boards	
Pull-out resistance of fasteners	**ROCKPANEL screws:** Fastener specification according to Table 4. Annex A1, A2, A3 and A4 row (14) and (15) contain the characteristic withdrawal capacity F_{ax} for both strength classes C18 and C24 according to EN 338. Design value X_d depends on the modification factor k_{mod} , the strength class of the wood and the material factor γ_M . Row (22) and (23) contain the design value X_d of the axial withdrawal capacity for both strength classes C18 and C24.
	ROCKPANEL nails: Fastener specification according to Table 3 Annex B1, B2, B3 and B4 row (14) and (15) contain the characteristic withdrawal capacity F_{ax} for both strength classes C18 and C24 according to EN 338. Design value X_d depends on the modification factor k_{mod} , the strength class of the wood and the material factor γ_M . Row (22) and (23) contain the design value X_d of the axial withdrawal capacity for both strength classes C18 and C24.
Pull-through resistance of boards	**ROCKPANEL screws:** Fastener specification according to Table 4. Annex A1, A2, A3 and A4, row (4) contain the characteristic pull-through for three different fixing locations. Row (6) contains the design value of the pull-through resistance for the different fixing locations.
	ROCKPANEL nails: Fastener specification according to Table 3 Annex B1, B2, B3 and B4, row (4) contain the characteristic pull-through for three different fixing locations. Row (6) contains the design value of the pull-through resistance for the different fixing locations.
Wind suction and pressure resistance	
Resistance to wind load M/E/C corrected for f_{05} declared (15 N/mm²).	
Average strength N 10 mm PLY	**Screws: 977 / 445 /238** (according to Annex A4 Table A1) **Nails: 453 / 304 / 235** (according to Annex B4 Table B4)
Average strength N 8 mm PLY	**Screws: 1097 / 429 / 222** (according to Annex A3 Table A1) **Nails: 768 / 495 / 242** (according to Annex B3 Table B3)
Average strength N 6 mm PLY	**Screws: 453 / 208 / 115** (according to Annex A1 Table A1 and Annex A2 Table A2) **Nails: 454 / 252 / 128** (according to Annex B1 Table B1 and Annex B2 Table B2)
Average failure load N/m²: 10 mm PLY	**Screws: 1737 / 1853 / 2128** (according to Annex A4 Table A1) **Nails : 966 / 1351 / 2446** (according to Annex B4 Table B4)
Average failure load N/m²: 8 mm PLY	**Screws: 2808 / 2592 / 2790** (according to Annex A3 Table A1) **Nails: 2457 / 3177 / 3654** (according to Annex B3 Table B3)
Average failure load N/m²: 6 mm PLY	**Screws: 1811 / 1935 / 2137** (according to Annex A1 Table A1 and Annex A2 Table A2) **Nails: 2422 / 2908 / 2986** (according to Annex B1 Table B1 and Annex B2 Table B2)

Characteristic		Assessment of characteristic	
Mechanical resistance			
	Characteristic shear strength mechanical fixings Average values	**screw**	6 / 8 / 10 mm : 1160 / 1162 / 1406 (N)
		nail	6 / 8 /10 mm : 900 / 863 / 935 (N)

Characteristic	Assessment of characteristic
Impact resistance [a]	
PLY 10, 8 and 6 mm	See Table 5
[a] For definition of use category see Table 15	

Characteristic	Assessment of characteristic
Hygrothermal behaviour	
Resistance to Hygro-thermal cycles	**Pass**
Dimensional stability	See Table 6
Resistance to Xenon Arc exposure	Not relevant

*) In addition to the specific clauses relating to dangerous substances contained in this 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 EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

Aspects related to the performance of the product

All materials shall be manufactured by ROCKWOOL B.V. or by subcontractors under the responsibility of ROCKWOOL B.V. / ROCKPANEL Group

The European Technical Assessment is issued for the product on the basis of agreed data/information, deposited with ETA-Danmark, 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 ETA-Danmark before the changes are introduced. ETA-Danmark will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

Installation details and application details for the man on site are given by ROCKWOOL B.V. / ROCKPANEL Group in the manufacturer's application guide technical dossier which forms part of the documentary material for this ETA. On the protective film of every board the website is printed which guides the end user to the most actual information.

For non-ventilated use, the substrate shall be airtight.

The boards are in general mounted with a joint width of between 5 and 8 mm.

If the joints are to be sealed, only durable sealants should be used with a good adhesion on the edges of the boards and a good UV-stability. To prevent sticking to the subframe, a PE-film or tape can be used.

The cladding kit shall be designed and installed so that water which penetrates in the air space or condensation water shall be drained out of the installed kit without accumulation or moisture damage or leakage into the substrate or the wall cladding kit

The boards for external cladding shall not be fixed over building or settlement joints. Where settlement joints are located in the building the same movements of the

building and substructure shall be possible in the external cladding.

The water diffusion resistance of the boards is declared as a means for the designer to decide whether they are sufficiently vapour permeable, especially when used for cladding without ventilated cavities at the back. The designer can then establish that condensation in the entire wall as a result of water vapour diffusion will not occur or will occur only to an extent where damage is not caused during the condensation period and the wall will dry out again during the evaporation period. The designer shall consider the critical moisture content for all the integrated materials.

For non-ventilated intended use, the pressure level preceding the pressure level where leakage occurs is declared as a means for the designer to decide on the necessity of the use of a vapour control membrane.

The panels should not be taken into account when designing a timber stud wall to resist racking forces.

The holes for the fixings are drilled into the panels not less than 15 mm or 20 mm from a vertical edge and 50 mm from a horizontal edge (see Table 11) The panels are fixed making sure that the screws are not over-tightened.

Board fixing with fixed points, slotted holes and moving points in accordance with Table 10.

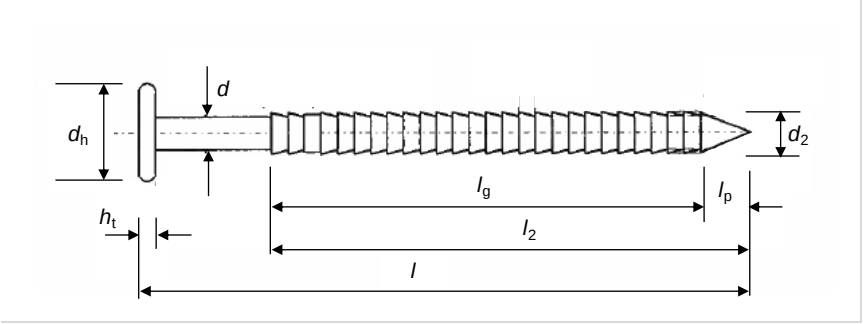
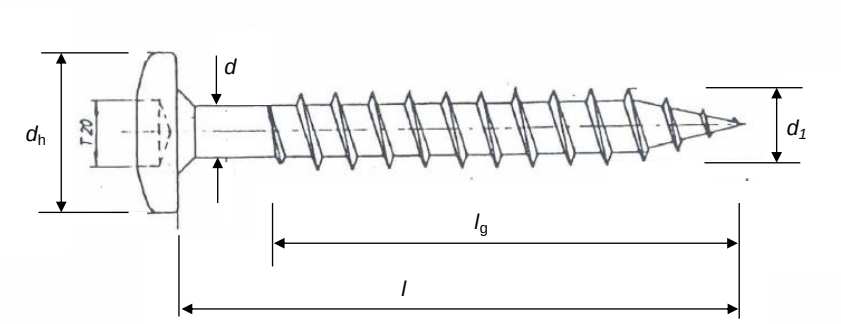
Table 3	Ring-shank nail 2,7/2,9 x 32 and 2,7/2,9 x 40 mm
Stainless steel in accordance with EN 10088 - Material number 1.4401 or 1.4578 Definitions in accordance with EN 14592:2008+A1:2012	
d = 2,6 – 2,8 d_2 = 2,8 – 3,0 l for nail 32 = 31 – 32,5 l for nail 40 = 39 – 40,5 l_2 for nail 32 = 24 – 26 l_2 for nail 40 = 32 – 34 l_p = ≤ 4,8 l_g = l_2 - l_p d_h = 5,8 – 6,3 h_t = 0,8 – 1,0	

Table 4	Torx screws 4,5 x 35 mm
Stainless steel in accordance with EN 10088 - Material number 1.4401 or 1.4578 Definitions in accordance with EN 14592:2008+A1:2012	
d = 3,3 – 3,4 d_1 = 4,3 – 4,6 l = 35 -1,25 l_g = 26,25 – 28,5 d_h = 9,6 - 0,4	

Impact resistance

Table 5 Shatter properties – Degrees of exposure in use						
			product 'PLY' 6, 8 and 10 mm			
		energy J	category IV	category III	category II	category I
impact by hard body	0,5 kg	1	Pass	-----		
	0,5 kg	3	----	Pass	Pass	Pass
	1 kg	10	----	----	damaged by impact at the bottom	

Dimensional stability

Table 6 Deformation ROCKPANEL 'PLY' in accordance with EN 438-2		
	'PLY' 1000/8	
characteristic	length of the board	width of the board
deformation	0,068 %	0,065 %
dry heat 23° / 50% to 23°C / 0% (mm/m)	-0,284	-0,239
coefficient of thermal expansion (10^{-6} °K $^{-1}$)	9,4	10,1
coefficient of moisture expansion 42% change RH (mm/m) 50% to 92% RH after 4 days	0,237	0,244

Wind load resistance

Table 7 Test results average failure load panel fixing N/m² corrected for f_{05} declared (15 N/mm²). Positions according to Table 9			
	6 mm M / E / C	8 mm M / E / C	10 mm M / E / C
Screws	1811 / 1935 / 2137	2808 / 2592 / 2790	1737/ 1853 / 2128
Nails	2422 / 2908 / 2986	2457 / 3177 / 3654	966 / 1351 / 2446

Table 8 Test results average strength panel fixing N corrected for f_{05} declared (15 N/mm²) Positions according to Table 9			
	6 mm M / E / C	8 mm M / E / C	10 mm M / E / C
Screws	453 / 208 / 115	1097 / 429 / 222	977 / 445 / 238
Nails	454 / 252 / 128	768 / 495 / 242	453 / 304 / 235

Fixing positions

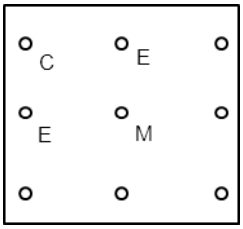
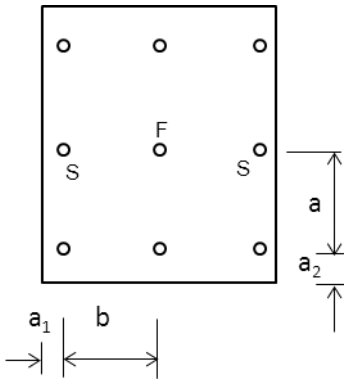
Table 9 Fixing positions M / E / C used in this document	
	M: fixing in intermediate position E: edge fixing C: corner fixing

Table 10 Hole diameters mm

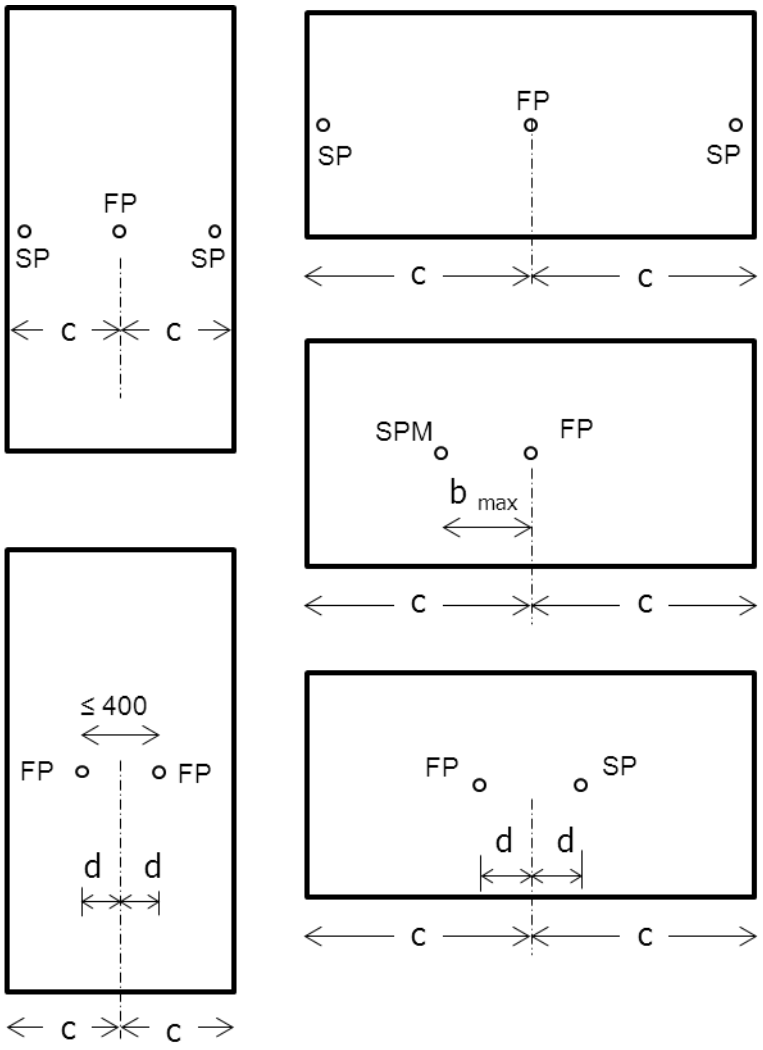


	screw	nail
F - Fixed point	3,2	2,5
S - Slotted holes	4,4 x 5,5	2,8 x 4,0
Moving points – all the other positions	5,5	4,0 [a]

[a] max board length considered 2300 mm *(a larger panel length requires a larger hole and head diameter)*

Table 11 Minimum edge distances and maximum distances between fastenings in mm									
	b_{max}			a_{max}			a_1		a_2
	6	8	10	6	8	10	6 / 8	10	6/8/10
Screw	400	500	600	400	500	600	15	20	50
Nail	400	500	600	300	400	500	15	20	50

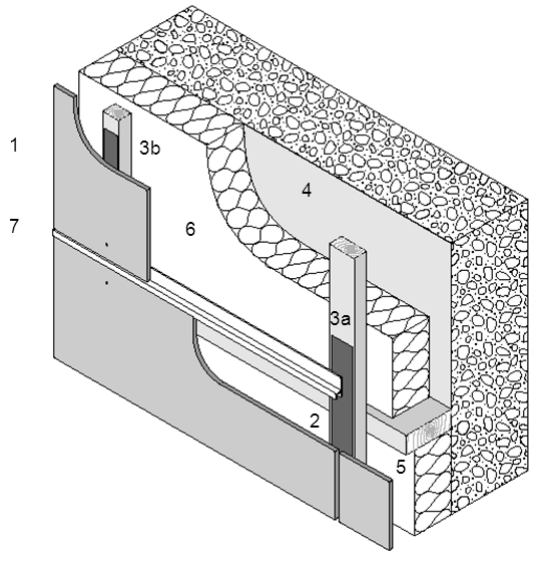
Figure 1 : Examples of possible installation methods with the use of fixed points and slotted points



FP – fixed point
SP – slotted point
MP – moving point
All the other fixing points are 'moving points'
b_{max} : see Table 5

FP	Fixed points may be realized by the use of a metal (aluminum or stainless steel) sleeve in a hole with the diameter of a moving point.
SP	Slotted points may be realized by the use of a metal (aluminum or stainless steel) side sleeve in a hole with the diameter of a moving point. Maximum distance between slide sleeve and fixed point amounts 600 mm.
SPM	Slotted point with the use of a slide sleeve (see also SP)

Figure 2. Ventilated intended use



1	Compressed mineral wool board with organic or inorganic finish
2	EPDM foam gasket
3	Subframe: a – joint batten and b – intermediate batten
4	Vapour barrier
5	Timber beam
6	Insulation
7	ROCKPANEL "A" – 8 mm aluminum chair profile or equivalent

4 Attestation and verification of constancy of performance (AVCP)

4.1 AVCP system

According to the decision 2003/640/EC of the European Commission as amended, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) is 1, since there is a clearly identifiable stage in their production which results in an improvement of fire performance due to the limiting of organic material.

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark

Issued in Copenhagen on 2015-11-03 by

Thomas Bruun
Managing Director, ETA-Danmark

ANNEX A1

CHARACTERISTIC AXIAL LOAD - screw / PLY 6 / gasket

Table A1: Characteristic axial load X_k and **design** value of the axial load $X_d = X_k / \gamma_M$ for the combination **screw** and 6 mm boards (with the use of gaskets), with $\alpha \geq 30°$ [e] corrected for f_{05} declared (15 N/mm²).							
board thickness				6 mm (with the use of a gasket)			(1)
location of the fixing in the board according to table 9				M-middle	E-edge	C-corner	(2)
pull-through N							(3)
characteristic pull-through N				*407*	*235*	*128*	(4)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(5)
design value X_d of the pull-through N				204	118	64	(6)
wind suction							(7)
average wind load in N/m²				1811	1935	2137	(8)
average strength N				*453*	*208*	*115*	(9)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(10)
design value X_d of the pull-through N				227	104	58	(11)
withdrawal capacity							(12)
characteristic withdrawal capacity $F_{ax,k,Rk}$ [b] [c] [d]							(13)
strength class	C18	ρ_k = 320 kg/m³		963 [b]	963 [b]	963 [b]	(14)
wood (EN 338)	C24	ρ_k = 350 kg/m³		1035 [b]	1035 [b]	1035 [b]	(15)
modification factor for k_{mod}				k_{mod} [a]			(16)
axial withdrawal capacity $F_{ax,k,Rk} \cdot k_{mod}$ [a] [b] [c] [d]							(17)
strength class	C18	ρ_k = 320 kg/m³		963 • k_{mod}	963 • k_{mod}	963 • k_{mod}	(18)
wood (EN 338)	C24	ρ_k = 350 kg/m³		1035 • k_{mod}	1035 • k_{mod}	1035 • k_{mod}	(19)
material factor (NA to) EN 1995-1-1 §2.4.1				γ_M = 1,30 [withdrawal capacity]			(20)
design value X_d of the axial withdrawal capacity N							(21)
strength class	C18	ρ_k = 320 kg/m³		740 • k_{mod}	740 • k_{mod}	740 • k_{mod}	(22)
wood (EN 338)	C24	ρ_k = 350 kg/m³		796 • k_{mod}	796 • k_{mod}	796• k_{mod}	(23)
design value of the axial load $X_d = X_k / \gamma_M$ N				**minimum value of the rows:**			(24)
strength class	C18	ρ_k = 320 kg/m³		**(3) (7) (15)**	**(3) (7) (15)**	**(3) (7) (15)**	(25)
wood (EN 338)	C24	ρ_k = 350 kg/m³		**(3) (7) (16)**	**(3) (7) (16)**	**(3) (7) (16)**	(26)
board span b				400			(27)
fixing distance a				400			(28)

[a]: modification factor k_{mod} depends on the serviceclass (humidity conditions) and the load-duration class according to the National Annex of EN 1995-1-1

[b]: with reduced thread diameter to fulfil the minimum l_{ef} demand ($d = l_{ef} / 6 = 26,25/6 = 4,30$ mm) ;

[c]: angle α between shaft and the wood grain: $\alpha \geq 30°$

[d]: calculation in accordance with EN 1995-1-1+C1+A1:2008 formula (8.38), (8.39) and (8.40)

[e]: α is the angle between the screw axis and the grain direction

ANNEX A2

CHARACTERISTIC AXIAL LOAD - screw / PLY 6 / strip PLY 6

Table A2: Characteristic axial load X_k and **design** value of the axial load $\boldsymbol{X_d} = X_k / \gamma_M$ for the combination **screw** and 6 mm boards (with the use of PLY 6 mm strips), with $\alpha \geq 30°$ [e] corrected for f_{05} declared (15 N/mm²).

board thickness				6 mm (with the use of a gasket)			(1)
location of the fixing in the board according to table 9				M-middle	E-edge	C-corner	(2)
pull-through N							(3)
characteristic pull-through N				*407*	*235*	*128*	(4)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(5)
design value X_d of the pull-through N				204	118	64	(6)
wind suction							(7)
average wind load in N/m²				1811	1935	2137	(8)
average strength N				*453*	*208*	*115*	(9)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(10)
design value X_d of the pull-through N				227	104	58	(11)
withdrawal capacity							(12)
characteristic withdrawal capacity $F_{ax,k,Rk}$ [b] [c] [d]							(13)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		588 [b]	588 [b]	588 [b]	(14)
	C24	ρ_k = 350 kg/m³		632 [b]	632 [b]	632 [b]	(15)
modification factor for k_{mod}				k_{mod} [a]			(16)
axial withdrawal capacity $F_{ax,k,Rk} \cdot k_{mod}$ [a] [b] [c] [d]							(17)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		588 • k_{mod}	588 • k_{mod}	588 • k_{mod}	(18)
	C24	ρ_k = 350 kg/m³		632 • k_{mod}	632 • k_{mod}	632 • k_{mod}	(19)
material factor (NA to) EN 1995-1-1 §2.4.1				γ_M = 1,30 [withdrawal capacity]			(20)
design value X_d of the axial withdrawal capacity N							(21)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		452 • k_{mod}	452 • k_{mod}	452 • k_{mod}	(22)
	C24	ρ_k = 350 kg/m³		486 • k_{mod}	486 • k_{mod}	486 • k_{mod}	(23)
design value of the axial load $\boldsymbol{X_d} = X_k / \gamma_M$ N				**minimum value of the rows:**			(24)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		**(3) (7) (15)**	**(3) (7) (15)**	**(3) (7) (15)**	(25)
	C24	ρ_k = 350 kg/m³		**(3) (7) (16)**	**(3) (7) (16)**	**(3) (7) (16)**	(26)
board span b				400			(27)
fixing distance a				400			(28)

[a]: modification factor k_{mod} depends on the serviceclass (humidity conditions) and the load-duration class according to the National Annex of EN 1995-1-1

[b]: with reduced thread diameter to fulfil the minimum l_{ef} demand ($d = l_{ef} / 6 = 21,15/6 = 3,52$ mm) ;

[c]: angle α between shaft and the wood grain: $\alpha \geq 30°$

[d]: calculation in accordance with EN 1995-1-1+C1+A1:2008 formula (8.38), (8.39) and (8.40)

[e]: α is the angle between the screw axis and the grain direction

ANNEX A3

CHARACTERISTIC AXIAL LOAD - screw / PLY 8 / gasket

Table A1: Characteristic axial load X_k and **design** value of the axial load $\boldsymbol{X_d} = X_k / \gamma_M$ for the combination **screw** and 8 mm boards (with the use of gaskets), with $\alpha \geq 30°$ [e] corrected for f_{05} declared (15 N/mm²).

board thickness				6 mm (with the use of a gasket)			(1)
location of the fixing in the board according to table 9				M-middle	E-edge	C-corner	(2)
pull-through N							(3)
characteristic pull-through N				*642*	*508*	*331*	(4)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(5)
design value X_d of the pull-through N				321	254	166	(6)
wind suction							(7)
average wind load in N/m²				2808	2592	2790	(8)
average strength N				*1097*	*429*	*222*	(9)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(10)
design value X_d of the pull-through N				549	215	111	(11)
withdrawal capacity							(12)
characteristic withdrawal capacity $F_{ax,k,Rk}$ [b] [c] [d]							(13)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		858 [b]	858 [b]	858 [b]	(14)
	C24	ρ_k = 350 kg/m³		922 [b]	922 [b]	922 [b]	(15)
modification factor for k_{mod}				k_{mod} [a]			(16)
axial withdrawal capacity $F_{ax,k,Rk} \cdot k_{mod}$ [a] [b] [c] [d]							(17)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		858 • k_{mod}	858 • k_{mod}	858 • k_{mod}	(18)
	C24	ρ_k = 350 kg/m³		922 • k_{mod}	922 • k_{mod}	922 • k_{mod}	(19)
material factor (NA to) EN 1995-1-1 §2.4.1				γ_M = 1,30 [withdrawal capacity]			(20)
design value X_d of the axial withdrawal capacity N							(21)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		660 • k_{mod}	660 • k_{mod}	660 • k_{mod}	(22)
	C24	ρ_k = 350 kg/m³		709 • k_{mod}	709 • k_{mod}	709• k_{mod}	(23)
design value of the axial load $\boldsymbol{X_d} = X_k / \gamma_M$ N				**minimum value of the rows:**			(24)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		**(3) (7) (15)**	**(3) (7) (15)**	**(3) (7) (15)**	(25)
	C24	ρ_k = 350 kg/m³		**(3) (7) (16)**	**(3) (7) (16)**	**(3) (7) (16)**	(26)
board span b				500			(27)
fixing distance a				500			(28)

[a]: modification factor k_{mod} depends on the serviceclass (humidity conditions) and the load-duration class according to the National Annex of EN 1995-1-1

[b]: with reduced thread diameter to fulfil the minimum l_{ef} demand ($d = l_{ef} / 6 = 24,75/6 = 4,12$ mm) ;

[c]: angle α between shaft and the wood grain: $\alpha \geq 30°$

[d]: calculation in accordance with EN 1995-1-1+C1+A1:2008 formula (8.38), (8.39) and (8.40)

[e]: α is the angle between the screw axis and the grain direction

ANNEX A4

CHARACTERISTIC AXIAL LOAD - screw / PLY 10 / gasket

Table A1: Characteristic axial load X_k and **design** value of the axial load $\boldsymbol{X_d} = X_k / \gamma_M$ for the combination **screw** and 10 mm boards (with the use of gaskets), with $\alpha \geq 30°$ [e] corrected for f_{05} declared (15 N/mm²).

board thickness				6 mm (with the use of a gasket)			(1)
location of the fixing in the board according to table 9				M-middle	E-edge	C-corner	(2)
pull-through N							(3)
characteristic pull-through N				*498*	*449*	*311*	(4)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(5)
design value X_d of the pull-through N				249	225	156	(6)
wind suction							(7)
average wind load in N/m²				1737	1853	2128	(8)
average strength N				*977*	*445*	*238*	(9)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(10)
design value X_d of the pull-through N				489	223	119	(11)
withdrawal capacity							(12)
characteristic withdrawal capacity $F_{ax,k,Rk}$ [b] [c] [d]							(13)
strength class	C18	ρ_k = 320 kg/m³		701 [b]	701 [b]	701 [b]	(14)
wood (EN 338)	C24	ρ_k = 350 kg/m³		753 [b]	753 [b]	753 [b]	(15)
modification factor for k_{mod}				k_{mod} [a]			(16)
axial withdrawal capacity $F_{ax,k,Rk} \cdot k_{mod}$ [a] [b] [c] [d]							(17)
strength class	C18	ρ_k = 320 kg/m³		701 • k_{mod}	701 • k_{mod}	701 • k_{mod}	(18)
wood (EN 338)	C24	ρ_k = 350 kg/m³		753 • k_{mod}	753 • k_{mod}	753 • k_{mod}	(19)
material factor (NA to) EN 1995-1-1 §2.4.1				γ_M = 1,30 [withdrawal capacity]			(20)
design value X_d of the axial withdrawal capacity N							(21)
strength class	C18	ρ_k = 320 kg/m³		539 • k_{mod}	539 • k_{mod}	539 • k_{mod}	(22)
wood (EN 338)	C24	ρ_k = 350 kg/m³		579 • k_{mod}	579 • k_{mod}	579 • k_{mod}	(23)
design value of the axial load $\boldsymbol{X_d} = X_k / \gamma_M$ N				**minimum value of the rows:**			(24)
strength class	C18	ρ_k = 320 kg/m³		**(3) (7) (15)**	**(3) (7) (15)**	**(3) (7) (15)**	(25)
wood (EN 338)	C24	ρ_k = 350 kg/m³		**(3) (7) (16)**	**(3) (7) (16)**	**(3) (7) (16)**	(26)
board span b				600			(27)
fixing distance a				600			(28)

[a]: modification factor k_{mod} depends on the serviceclass (humidity conditions) and the load-duration class according to the National Annex of EN 1995-1-1

[b]: with reduced thread diameter to fulfil the minimum l_{ef} demand ($d = l_{ef} / 6 = 22,75/6 = 3,79$ mm) ;

[c]: angle α between shaft and the wood grain: $\alpha \geq 30°$

[d]: calculation in accordance with EN 1995-1-1+C1+A1:2008 formula (8.38), (8.39) and (8.40)

[e]: α is the angle between the screw axis and the grain direction

Characteristic axial load - nail / PLY 6 / gasket **ANNEX B1**

Table B1: Characteristic axial load X_k and **design** value of the axial load $\boldsymbol{X_d} = X_k / \gamma_M$ for the combination 32 mm **nail** and 6 mm PLY boards (with the use of gaskets) corrected for f_{05} declared (15 N/mm²).

board thickness				6 mm (with the use of a gasket)			(1)
location of the fixing in the board according to table 9				M-middle	E-edge	C-corner	(2)
pull-through N							(3)
characteristic pull-through N				*199*	*133*	*132*	(4)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(5)
design value X_d of the pull-through N				100	67	66	(6)
wind suction							(7)
average wind load in N/m²				2422	2908	2986	(8)
average strength N				*454*	*252*	*128*	(9)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(10)
design value X_d of the pull-through N				227	146	64	(11(
withdrawal capacity							(12)
characteristic withdrawal capacity $F_{ax,k,Rk}$ [b] [d]							(13)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		217	217	217	(14)
	C24	ρ_k = 350 kg/m³		259	259	259	(15)
modification factor for k_{mod}				k_{mod} [a]			(16)
axial withdrawal capacity $F_{ax,k,Rk} \cdot k_{mod}$ [a] [b] [d]							(17)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		217 • k_{mod}	217 • k_{mod}	217 • k_{mod}	(18)
	C24	ρ_k = 350 kg/m³		259 • k_{mod}	259 • k_{mod}	259 • k_{mod}	(19)
material factor (NA to) EN 1995-1-1 §2.4.1				γ_M = 1,30 [withdrawal capacity]			(20)
design value X_d of the axial withdrawal capacity N							(21)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		167 • k_{mod}	167 • k_{mod}	167 • k_{mod}	(22)
	C24	ρ_k = 350 kg/m³		199 • k_{mod}	199 • k_{mod}	199 • k_{mod}	(23)
design value of the axial load $\boldsymbol{X_d} = \boldsymbol{X_k} / \boldsymbol{\gamma_M}$ N				**minimum value of the rows:**			(24)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		**(3) (7) (15)**	**(3) (7) (15)**	**(3) (7) (15)**	(25)
	C24	ρ_k = 350 kg/m³		**(3) (7) (16)**	**(3) (7) (16)**	**(3) (7) (16)**	(26)
board span b				400			(27)
fixing distance a				300			(28)

[a]: modification factor k_{mod} depends on the serviceclass (humidity conditions) and the load-duration class according to the National Annex of EN 1995-1-1

[b]: with reduced thread diameter to fulfil the minimum l_{ef} demand ($d = l_{ef} / 8 = 18,4/8 = 2,30$ mm) ;

[d]: calculation in accordance with EN 1995-1-1:2004 + AC:2006 + A1:2008 formula (8.23 a)

Characteristic axial load - nail / PLY 6 / strip PLY 6 **ANNEX B2**

Table B2: Characteristic axial load X_k and **design** value of the axial load $\boldsymbol{X_d} = X_k / \gamma_M$ for the combination 40 mm **nail** and 6 mm PLY boards (with the use of 6 mm PLY strips) corrected for f_{05} declared (15 N/mm²).

board thickness				6 mm (with the use of 6 mm PLY strips)			(1)
location of the fixing in the board according to table 9				M-middle	E-edge	C-corner	(2)
pull-through N							(3)
characteristic pull-through N				*199*	*133*	*132*	(4)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(5)
design value X_d of the pull-through N				100	67	66	(6)
wind suction							(7)
average wind load in N/m²				2422	2908	2986	(8)
average strength N				*454*	*252*	*128*	(9)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(10)
design value X_d of the pull-through N				227	146	64	(11)
withdrawal capacity							(12)
characteristic withdrawal capacity $F_{ax,k,Rk}$ [b] [d]							(13)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		271	271	271	(14)
	C24	ρ_k = 350 kg/m³		325	325	325	(15)
modification factor for k_{mod}				k_{mod} [a]			(16)
axial withdrawal capacity $F_{ax,k,Rk} \cdot k_{mod}$ [a] [b] [d]							(17)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		271 • k_{mod}	271 • k_{mod}	271 • k_{mod}	(18)
	C24	ρ_k = 350 kg/m³		325 • k_{mod}	325 • k_{mod}	325 • k_{mod}	(19)
material factor (NA to) EN 1995-1-1 §2.4.1				γ_M = 1,30 [withdrawal capacity]			(20)
design value X_d of the axial withdrawal capacity N							(21)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		208 • k_{mod}	208 • k_{mod}	208 • k_{mod}	(22)
	C24	ρ_k = 350 kg/m³		250 • k_{mod}	250 • k_{mod}	250 • k_{mod}	(23)
design value of the axial load $\boldsymbol{X_d} = \boldsymbol{X_k} / \boldsymbol{\gamma_M}$ N				**minimum value of the rows:**			(24)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		**(3) (7) (15)**	**(3) (7) (15)**	**(3) (7) (15)**	(25)
	C24	ρ_k = 350 kg/m³		**(3) (7) (16)**	**(3) (7) (16)**	**(3) (7) (16)**	(26)
board span b				400			(27)
fixing distance a				300			(28)

[a]: modification factor k_{mod} depends on the serviceclass (humidity conditions) and the load-duration class according to the National Annex of EN 1995-1-1

[b]: with reduced thread diameter to fulfil the minimum l_{ef} demand ($d = l_{ef} / 8 = 20,6/8 = 2,57$ mm) ;

[d]: calculation in accordance with EN 1995-1-1:2004 + AC:2006 + A1:2008 formula (8.23 a)

Characteristic axial load - nail / PLY 8 / gasket **ANNEX B3**

Table B3: Characteristic axial load X_k and **design** value of the axial load $\boldsymbol{X_d} = X_k / \gamma_M$ for the combination 32 mm **nail** and 8 mm PLY boards (with the use of gaskets) corrected for f_{05} declared (15 N/mm²).

board thickness				8 mm (with the use of a gasket)			(1)
location of the fixing in the board according to table 9				M-middle	E-edge	C-corner	(2)
pull-through N							(3)
characteristic pull-through N				*176*	*211*	*193*	(4)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(5)
design value X_d of the pull-through N				88	106	97	(6)
wind suction							(7)
average wind load in N/m²				2457	3177	3654	(8)
average strength N				*768*	*495*	*242*	(9)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(10)
design value X_d of the pull-through N				384	248	121	(11)
withdrawal capacity							(12)
characteristic withdrawal capacity $F_{ax,k,Rk}$ [b] [d]							(13)
strength class	C18	ρ_k = 320 kg/m³		168	168	168	(14)
wood (EN 338)	C24	ρ_k = 350 kg/m³		201	201	201	(15)
modification factor for k_{mod}				k_{mod} [a]			(16)
axial withdrawal capacity $F_{ax,k,Rk} \cdot k_{mod}$ [a] [b] [d]							(17)
strength class	C18	ρ_k = 320 kg/m³		168 • k_{mod}	168 • k_{mod}	168 • k_{mod}	(18)
wood (EN 338)	C24	ρ_k = 350 kg/m³		201 • k_{mod}	201 • k_{mod}	201 • k_{mod}	(19)
material factor (NA to) EN 1995-1-1 §2.4.1				γ_M = 1,30 [withdrawal capacity]			(20)
design value X_d of the axial withdrawal capacity N							(21)
strength class	C18	ρ_k = 320 kg/m³		129 • k_{mod}	129 • k_{mod}	129 • k_{mod}	(22)
wood (EN 338)	C24	ρ_k = 350 kg/m³		155 • k_{mod}	155 • k_{mod}	155 • k_{mod}	(23)
design value of the axial load $\boldsymbol{X_d} = \boldsymbol{X_k} / \boldsymbol{\gamma_M}$ N				**minimum value of the rows:**			(24)
strength class	C18	ρ_k = 320 kg/m³		**(3) (7) (15)**	**(3) (7) (15)**	**(3) (7) (15)**	(25)
wood (EN 338)	C24	ρ_k = 350 kg/m³		**(3) (7) (16)**	**(3) (7) (16)**	**(3) (7) (16)**	(26)
board span b				500			(27)
fixing distance a				400			(28)

[a]: modification factor k_{mod} depends on the serviceclass (humidity conditions) and the load-duration class according to the National Annex of EN 1995-1-1

[b]: with reduced thread diameter to fulfil the minimum l_{ef} demand ($d = l_{ef} / 8 = 16,2/8 = 2,02$ mm) ;

[d]: calculation in accordance with EN 1995-1-1:2004 + AC:2006 + A1:2008 formula (8.23 a)

Characteristic axial load - nail / PLY 10 / gasket **ANNEX B4**

Table B4: Characteristic axial load X_k and **design** value of the axial load $\boldsymbol{X_d} = X_k / \gamma_M$ for the combination 40 mm **nail** and 10 mm PLY boards (with the use of gaskets) corrected for f_{05} declared (15 N/mm²).

board thickness				10 mm (with the use of a gasket)			(1)
location of the fixing in the board according to table 9				M-middle	E-edge	C-corner	(2)
pull-through N							(3)
characteristic pull-through N				*156*	*131*	*127*	(4)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(5)
design value X_d of the pull-through N				78	66	64	(6)
wind suction							(7)
average wind load in N/m²				966	1351	2446	(8)
average strength N				*453*	*304*	*235*	(9)
material factor ROCKPANEL γ_M (manufacturers declaration)				*2,0*	*2,0*	*2,0*	(10)
design value X_d of the pull-through N				227	152	118	(11)
withdrawal capacity							(12)
characteristic withdrawal capacity $F_{ax,k,Rk}$ [b] [d]							(13)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		296	296	296	(14)
	C24	ρ_k = 350 kg/m³		354	354	354	(15)
modification factor for k_{mod}				k_{mod} [a]			(16)
axial withdrawal capacity $F_{ax,k,Rk} \cdot k_{mod}$ [a] [b] [d]							(17)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		296 • k_{mod}	296 • k_{mod}	296 • k_{mod}	(18)
	C24	ρ_k = 350 kg/m³		354 • k_{mod}	354 • k_{mod}	354 • k_{mod}	(19)
material factor (NA to) EN 1995-1-1 §2.4.1				γ_M = 1,30 [withdrawal capacity]			(20)
design value X_d of the axial withdrawal capacity N							(21)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		228 • k_{mod}	228 • k_{mod}	228 • k_{mod}	(22)
	C24	ρ_k = 350 kg/m³		272 • k_{mod}	272 • k_{mod}	272 • k_{mod}	(23)
design value of the axial load $\boldsymbol{X_d} = \boldsymbol{X_k} / \boldsymbol{\gamma_M}$ N				**minimum value of the rows:**			(24)
strength class wood (EN 338)	C18	ρ_k = 320 kg/m³		**(3) (7) (15)**	**(3) (7) (15)**	**(3) (7) (15)**	(25)
	C24	ρ_k = 350 kg/m³		**(3) (7) (16)**	**(3) (7) (16)**	**(3) (7) (16)**	(26)
board span b				600			(27)
fixing distance a				500			(28)

[a]: modification factor k_{mod} depends on the serviceclass (humidity conditions) and the load-duration class according to the National Annex of EN 1995-1-1

[d]: calculation in accordance with EN 1995-1-1:2004 + AC:2006 + A1:2008 formula (8.23 a)

Annex C

Table 12 - Control plan for the manufacturer

Nr	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
(1)	(2)	(3)	(4)	(5)	(6)
Factory production control (FPC) [including testing of samples in accordance with a prescribed test plan]*					
1	Board thickness	EN 325	6 ± 0,3 mm 8 ± 0,5 mm 10 ± 0,5 mm	40 [a]	One board for every 200 boards produced
2	Density	EN 323	1000 -100 / +150 kg/m^3	40 [a]	One board for every 200 boards produced
3	Bending strength dry parallel and perpendicular to the production direction	EN 310	f_{05} ≥ 15 N/mm²	20 (length) + 20 (width) [a]	One board for every 200 boards produced
4	Bending strength after ageing parallel and perpendicular to the production direction	EN 310 Ageing in accordance with description in table 13	lowest individual strength f ≥ 12 N/mm²	3 (length) + 2 (width)	One board for every 200 boards produced
5	Water absorption after 4 days	see table 13	≤ 2 weight % after 4 days; if sample fails, the 2nd sample must be tested.	1 (2 in the case of fail)	One board for every 200 boards produced
6	Organic material content (resin binder)	Glowing at 650° for at least 60 min. *Remark: time depends on the type of oven*	8 ± 1,5 weight %	40 [a]	One board for every 200 boards produced
7	Reaction to fire [b]	EN 13162 loss on ignition Table B.2	Table 4 EN 13501-1	Three specimen [b]	every two years
The below mentioned controls are carried out by the sub-supplier and the documentation is maintained by the board manufacturer as part of his FPC					
8	Dowel-type fasteners for timber structures		EN 14592, Annex ZA.2 Procedure for attestation of conformity		Every 3 years
9	EPDM foam gasket		Manufacturers declaration		Every 3 years

[a] amount of samples from four different boards

[b] Small components, e.g. gaskets and seals shall be considered on the basis of EOTA Technical Report TR 021

Table 13 - Special methods of control and testing used for the evaluation

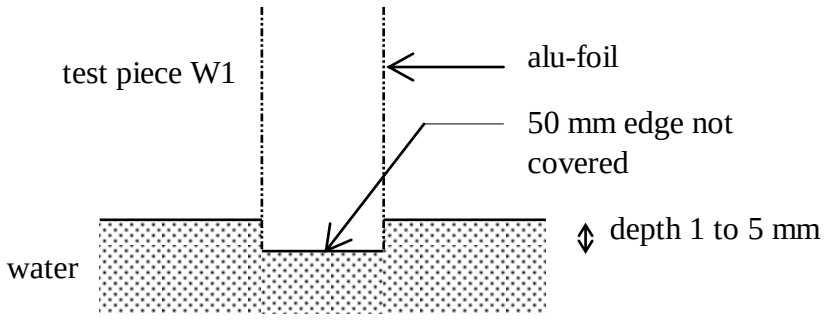
Bending strength after ageing		
	Ageing of the 5 test pieces in (tab)water from 70ºC (with surface tension changing additives : for instance 0,5 ml Triton per litre) for 30 minutes. Determination of the bending strength in accordance with EN-310 within 20 minutes after the ageing period in a test room with an air temperature between 17 and 23°C.	
Water absorption		
	The water absorption by the edges must be determined on test pieces W1 in the size 50*400 mm. The dimensions and the weight of the test pieces is determined. The sample is wrapped with aluminum foil with the exception of one 50 mm edge. The test pieces are vertically placed in a bucket with tab water, with the 50 mm size without aluminum foil horizontally in the water. The edge must be 1 to 5 mm in the water (without additives).	
	Test conditions:	
	Water temperature	17 - 23 °C
	Room temperature	17 - 23 °C
		

Table 14 - Control plan for the notified body (bodies)

Nr	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
(1)	(2)	(3)	(4)	(5)	(6)
Initial type-testing of the product (ITT)					
1	Testing to determine the product performance has been carried out under the responsibility of the TAB as part of the procedure to issue the ETA				
Initial inspection of factory and factory production control (FPC)					
1	See table 12				
Continuous surveillance, judgment and assessment of factory production control (FPC)					
1	See table 12				

Table 15 – Impact resistance : Definition of use categories

Use category	Description
I	A zone readily accessible at ground level to the public and vulnerable to hard body impacts but not subjected to abnormally rough use.
II	A zone liable to impacts from thrown or kicked objects, but in public locations where the height of the kit will limit the size of the impact; or at lower levels where access to the building is primarily to those with some incentive to exercise care.
III	A zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects.
IV	A zone out of reach from ground level

The hard body impact with steel ball represents the action from heavy, non-deformable objects, which accidentally hit the kit.