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Authorised and notified according toArticle 29 of the Regulation (EU) No 305/2011 of the European Parliamentand of the Council of 9 March 2011

European Technical Assessment ETA-13/0340 of 2018-01-18

I General Part

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 FS-Xtra 9 mm finish Colours/Rockclad, ROCKPANEL FS-Xtra 9 mm finish Structures and ROCKPANEL FS-Xtra 9 mm finish ProtectPlus
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 Konstruktieweg 2 NL-6045 JD Roermond
This European Technical Assessment contains:	14 pages including 4 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
This version replaces:	The previous ETA with the same number issued on 2015-03-25

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product and intended use

Technical description of the product
General
ROCKPANEL FS-Xtra 9 mm finish Colours/Rockclad, ROCKPANEL FS-Xtra 9 mm finish Structures and ROCKPANEL FS-Xtra 9 mm finish ProtectPlus are made from prefabricated compressed rock wool panels with thermo-hardening synthetic binders. The boards are fastened to aluminium or steel subframes. Fastening to the aluminium or steel subframe is carried out with corrosion resistant rivets.
Mechanical fasteners, aluminium and steel profiles are specified by the ETA-holder.

The ROCKPANEL FS-Xtra Colours panels are surface treated with a four-layer water-borne polymer emulsion coating on one side, in a range of colours.

The ROCKPANEL FS-Xtra Structure panels are surface treated with a three-layer water-borne polymer emulsion paint on one side, in a limited range of colours

The ROCKPANEL FS-Xtra ProtectPlus panels are surface treated with a four-layer water-borne polymer emulsion coating on one side, which has been provided with an extra anti-graffiti clear coat as a fifth layer on the colour coating.

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

Table 1:

Property	Value
Thickness, nominal	9
Length, max	3050 mm
Width, max	1250 mm
Density, nominal	1250 kg/m^3
Bending strength, length and width	$f_{05} \geq 25,5$ N/mm^2
Modulus of elasticity	m(E) $\geq$ 4740 N/mm^2
Thermal conductivity EN 10456	0,55 W/(m × K)
Cumulative dimensional change %	Length / Width: 0,064
Coefficient of thermal expansion, length and width	α = 9,7 (10^{-6} °K $^{-1}$)
Coefficient of moisture expansion 23 °C/50% RH to 92% RH, length and width	0,206 mm/m after 4 days

Finishes
The finishes are indicated in Table 2. The coatings are provided in a number of colours.

Table 2:

ROCKPANEL FS-Xtra Colours: (water-borne polymer emulsion coating)	Colourcoating in a range of colours
ROCKPANEL FS-Xtra Structures: (water-borne polymer emulsion paint)	Colour coating RAL 7005, 7016, 7021, 7024, 7035 and 9010.
ROCKPANEL FS-Xtra ProtectPlus: (water-borne polymer emulsion coating with anti-graffiti clear coat)	Clear coat pure or Clear coat with stone texture "Stones" e.g.: Mineral Chalk, Basalt Anthracite or clear coat with metallic particles e.g. Mettalics Alluminium, Briliant Karbo, Chameleon

The colourfastness of the panels is indicated in table 3.

Table 3:

Property	Value (ISO 105 A02)
Colour fastness after 5000 hours artificial weathering (TR010 climate class S)	ROCKPANEL FS-Xtra Colours: 3-4 or better ROCKPANEL FS-Xtra Structures: 3-4 or better ROCKPANEL FS-Xtra ProtectPlus: 4 or better

Subframes
The panels are attached to the building by fixing to a subframe of aluminium or steel.

The minimum thickness of the vertical aluminium profiles is 1,5 mm. The aluminium is AW-6060 according to EN 755-2. The $R_m/R_{p0,2}$ value is 170/140 for profile T6 and 195/150 for profile T66.

The minimum thickness of the vertical steel profiles is either 1,0 mm [a] (steel quality is S320GD +Z EN 10346 number 1.0250, or equivalent for cold forming), or 1,5 mm [a] (steel quality EN 10025-2:2004 S235JR number 1.0038).

[a] The minimum coating thickness (Z or ZA) is determined by the corrosion rate (amount of corrosion loss in thickness per year) which depends on the specific outdoor atmospheric environment; the Zinc Life Time Predictor can be used to calculate the Corrosion Rate in µm/y for a Z coating: http://www.galvinfo.com:8080/zclp/ [copyright The International Zinc association]. The coating designation (classification which

determines the coating mass) shall be agreed between the contractor and the building owner. Alternatively, a hot dip galvanized coating according to EN ISO 1461 can be used.

Joints
The horizontal joints between the panels can be open.

Fasteners
The panels are mechanically fixed to vertical aluminium or steel subframe. The mechanical fastening to aluminium subframe is carried out with EN AW-5019 (AlMg5) rivets, head diameter 14 mm, body diameter 5 mm, head colour coated. The mechanical fastening to steel subframe is carried out with either EN 10088 (no 1.4578) rivets, head diameter 15 mm, body diameter 5 mm, head colour coated, or EN 10088 (no 1.4567) rivets, head diameter 14 mm, body diameter 5 mm, head colour coated.
For correct fixing, a riveting tool with rivet spacer must be used, see Table 5 and Table 10 of the ETA.

The maximum fixing distances and hole diameter, appear from Tables 11 and 12 of the ETA.

The installation method with the use of fixed points and moving points appears from Annex 3, Table 11 and Figure 2 of the ETA.

Design value of the axial load appears from Annex 3, Table 10 and Table 13 of the ETA.

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

The boards are intended for external cladding and for fascias and soffits according to Figure 1. The cladding on vertical aluminum or steel subframe with mechanically fixed boards shall be carried out with ventilated cavities at the back.

The provisions made in this European Technical Assessment are based on an assumed intended working life of the kit of 50 years.

In addition, for aluminium support systems intended to be used for facades:
In some member states national climate conditions may reduce the service life of the aluminium support system to 35 years or more.

An additional assessment of the aluminium support system might be necessary to comply with Member State regulations or administrative provisions.

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	The aluminium profiles are classified as **Euroclass A1** Classification of panels: See table 4
3.3 Hygiene, health and the environment (BWR 3)	
Dangerous substances	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	**No Performance determined**
Water permeability incl. joints for non-ventilated applications	**No Performance determined**
3.4 Safety and accessibility in use (BWR 4)	
In absence of national regulations the design values X_d may be calculated as indicated in the ETA (see Table 13). Below is mentioned the safety factors which has been used in the calculation of the design values.	
Pull-out resistance of fasteners	**Rivets aluminium or stainless steel:** Fastener specification according to Table 5. Annex 3 Table 13 row *(13)* contains the characteristic pull-out strength.
Pull-through resistance of boards	**Rivets aluminium or stainless steel:** Fastener specification according to Table 5. Characteristic pull-through for three different fixing locations. Annex 3 Table 13 row *(6)* contains the design value of the pull-through resistance for the different fixing locations.
Wind load resistance	**Rivets aluminium or stainless steel:** Fastener specification according to Table 5. Annex 3 Table 13 row *(8)* contains the average wind load resistance (N/m²). Kit failure due to failure of the boards. Maximum deformations in the wind load tests for M/E/C: 28/26/27 mm
Design values of axial loads 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 $X_d = \eta * X_k / \gamma_m$. For ROCKPANEL γ_m = 1,6. The conversion factor η = 0,8 [aged bending strength divided by the f_{05} (Table B.1, Annex B)]. As a result γ_M = 2,0	**Rivets aluminium or stainless steel:** The design value of the axial load $X_d = X_k / \gamma_M$ for the combination **rivet** and 9 mm FS-Xtra boards can be found in Annex 3 Table 13 row *(16)*. The following material factors have been used: for the FS-Xtra γ_M = 2,0; for the connection rivet-subframe γ_M = 1,25

Characteristic		Assessment of characteristic
	Characteristic shear strength rivet fixings - Average values Deformation	2390 N 3,2 mm
	Impact resistance	See Table 6 and annex 4 table 14 for use category
	Dimensional stability	See Table 7
	Wind load resistance	See Table 8 and 9; for the locations see Table 10
	Mechanical resistance	See section 1, Table 1
3.7	**Sustainable use of natural resources (BWR 7)**	No performance determined
3.8	**Aspects of durability**	
	Resistance to Hygrothermal cycles	**Pass**
	Resistance to Xenon Arc exposure	**Pass**

*) 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 Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

Reaction to fire

Table 4. Euroclass classification of construction with ROCKPANEL FS-Xtra 9 mm finish Colours/Rockclad, ROCKPANEL FS-Xtra 9 mm finish Structures and ROCKPANEL FS-Xtra 9 mm finish ProtectPlus

Fixing method	**Ventilated or non-ventilated**	**Vertical aluminium or steel profiles**
Mechanically fixed	Ventilated with ≥ 20 mm cavity	**A2-s1,d0**

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 4 is valid for the following end use conditions:

Mounting:
- Mechanically fixed to a metal subframe
- The panels are backed with min. 50 mm mineral wool insulation with density 30-70 kg/m^3 according to EN 13162 with a cavity between the panels and the insulation

Substrates:
- Concrete walls, masonry walls

Insulation:
- Ventilated constructions: The subframe is backed with min. 50 mm mineral wool insulation with density 30-70 kg/m^3 according to EN 13162 with a cavity of minimal 20 mm between the panels and the insulation
- 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
- Results are also valid for the panels without insulation, if the substrate chosen according to EN 13238 is made of panel with Euro-class A1 or A2 (e.g. fibre-cement panels)

Subframe:
- Test results are only valid for a metal subframe

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
- The depth of the cavity is minimum 20 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 without a gasket backing and horizontal joints can be open or closed with an aluminium profile
- 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 aluminium profiles
- Max joint width: 8 mm

The classification is also valid for the following product parameters:

Thickness:
- Nominal 9 mm

Density
- Nominal 1250 kg/m^3

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.

The European Technical Assessment is issued for the product on the basis of agreed data/information, deposited with ETA-Danmark, which describes 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 in the manufacturer's application guide technical dossier which forms part of the documentary material for this ETA. On every pallet label and/or on the protective film of every board the website is printed which guides the end user to the most actual information.

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 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 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 20 mm from a vertical edge and 50 mm from a horizontal edge. For correct fixing, a riveting tool with rivet spacer must be used.

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

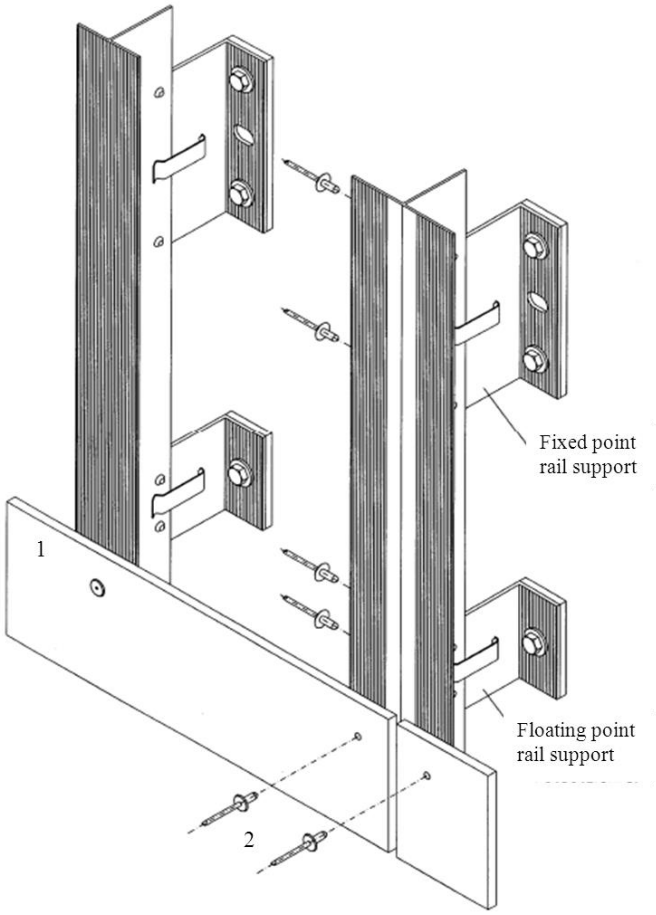
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking

Issued in Copenhagen on 2018-01-18 by

Thomas Bruun
Managing Director, ETA-Danmark

Annex 1
Pre-fabricated compressed mineral wool boards with organic or inorganic finish

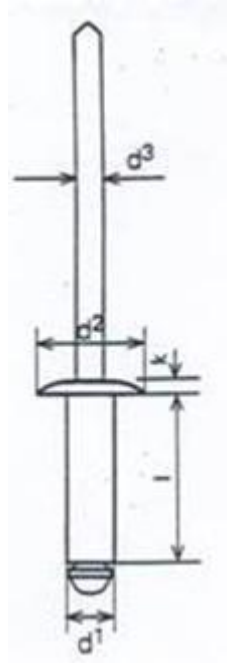
Figure 1. Ventilated intended use on vertical metal subframe



1. Compressed mineral wool board with organic or inorganic finish
2. Rivet fixing

Annex 2
Fastener specification

Table 5 - Fastener specification for metal sub-frames

Rivet aluminium or stainless steel					
		SFS Aluminium	SFS Stainless steel A4 [a]	MBE Aluminium	MBE stainless steel [b]
	Code	AP14-50180-S	SSO-D15-50180	1290406	1290806
	Body	aluminium EN AW-5019 (AlMg5) in accordance with EN 755-2	stainless steel material number 1.4578 in accordance with EN 10088	aluminium EN AW-5019 (AlMg5) in accordance with EN 755-2	stainless steel material number 1.4567 in accordance with EN 10088
	Mandrel	stainless steel material number 1.4541 in accordance with EN 10088	stainless steel material number 1.4541 in accordance with EN 10088	stainless steel material number 1.4541 in accordance with EN 10088	stainless steel material number 1.4541 in accordance with EN 10088
	Pull-out strength	$F_{mean,n}$ = 2038	$F_{mean,n}$ = 1428	$F_{mean,10}$ = 2318	$F_{mean,10}$ = 3212
		s = 95	s = 54	s = 85	s = 83
		$F_{u,5}$ = 1882	$F_{u,5}$ = 1339	$F_{u,5}$ = 2155	$F_{u,5}$ = 3052
	d^1	5	5	5	5
	d^2	14	15	14	14
	d^3	2,7	2,7	2,7	2,95
	l	18	18	18	16
	k	1,5	1,5	1,5	1,5
	profile	aluminium t ≥ 1,5 mm	steel t ≥ 1,0 mm [a]	aluminium t ≥ 1,8 mm	steel t ≥ 1,5 mm [b]

[a] : The minimum thickness of the vertical steel profiles is 1,0 mm. The steel quality is S320GD +Z EN 10346 number 1.0250 (or equivalent for cold forming). For minimum coating thickness see [c]

[b]: The minimum thickness of the vertical steel profiles is 1,5 mm. The steel quality is EN 10025-2:2004 S235JR number 1.0038. For minimum coating thickness see [c]

[c] : The minimum coating thickness (Z or ZA) is determined by the corrosion rate (amount of corrosion loss in thickness per year) which depends on the specific outdoor atmospheric environment (the Zinc Life Time Predictor can be used to calculate the Corrosion Rate in µm/y for a Z coating: http://www.galvinfo.com:8080/zclp/ (copyright The International Zinc association).
The coating designation (classification which determines the coating mass) shall be agreed between the contractor and the building owner.
Alternatively a hot dip galvanized coating according to EN ISO 1461 can be used.

Annex 3
Performance

Impact resistance

Table 6. Use category and shatter properties of ROCKPANEL FS-Xtra 9 mm				
Body	Category IV	Category III	Category II	Category I
Hard body 1 joule	pass	---	---	---
Hard body 3 joule	---	pass	pass	pass
Hard body 10 joule	---	---	pass	pass
Soft body 10 joule	pass	pass	---	---
Soft body 60 joule	---	---	fail	fail

Dimensional stability

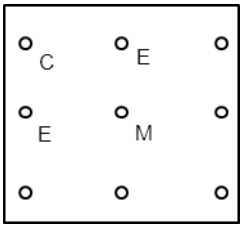
Table 7. Deformation ROCKPANEL 'FS-Xtra' in accordance with EN 438-2		
characteristic	'FS-Xtra' 1250/7,5	
	length of the board	width of the board
deformation	0,061 %	0,066 %
dry heat 23° / 50% to 23°C / 0% (mm/m)	-0,240	-0,290
coefficient of thermal expansion (10^{-6} °K $^{-1}$)	9,7	9,7
coefficient of moisture expansion 42% change RH (mm/m) 50% to 92% RH after 4 days	0,204	0,207

Wind load resistance

Table 8	Test results average failure load panel fixing N/m² Positions according to Table 10		
	9 mm		
	M	E	C
Rivets	4030	3750	3918

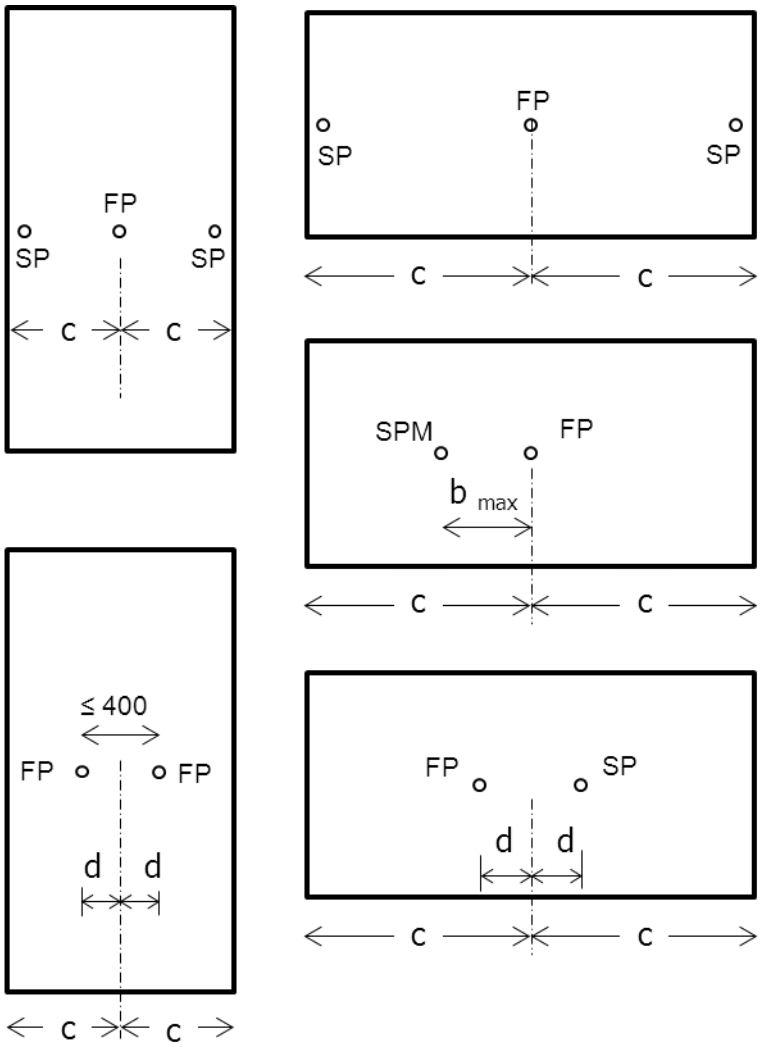
Table 9	Test results average strength panel fixing N Positions according to Table 10		
	9 mm		
	M	E	C
Rivets	2267	900	439

Fixing positions

Table 10. Fixing positions M / E / C used in this document	
	M: fixing in intermediate position E: edge fixing C: corner fixing See figure 2 for examples of possible installation methods *Remark* Rivet fixing only with a riveting tool with rivet spacer

Annex 3 continued

Figure 2 : Examples of possible installation methods with the use of fixed points and slotted points



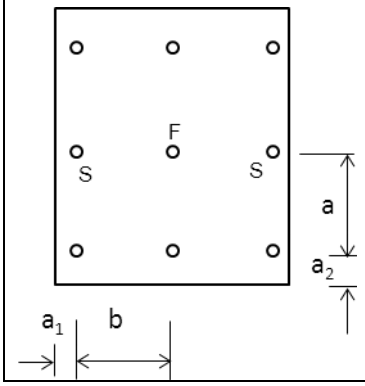
FP – fixed point
SP – slotted point
MP – moving point
All the other fixing points are 'moving points'
b_{max} : see Table 12

FP Fixed points may be realized by the use of a metal (aluminium 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 (aluminium 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)

Table 11. Hole diameters mm



	rivet
F - Fixed point	5,1
S - Slotted holes	5,1 x 8,0
Moving points – all the other positions	8,0

Annex 3 continued

Table 12. Minimum edge distances and maximum distances between fastenings in mm				
	b_{max}	a_{max}	a_1	a_2
Rivet	600	600	≥ 20	≥ 50

Table 13: Characteristic axial load X_k and design value of the axial load $X_d = X_k / \gamma_M$ for the combination **rivet** and 9 mm **FS-Xtra** boards [a]					
board thickness		9 mm			*(1)*
location of the fixing in the board		M-middle	E-edge	C-corner	*(2)*
pull-through N					*(3)*
	characteristic pull-through N	935	608	400	*(4)*
	material factor Rockpanel γ_M	2,0	2,0	2,0	*(5)*
	design value X_d of the pull-through N	**468**	**304**	**200**	*(6)*
wind suction					*(7)*
	average wind load in N/m²	4030	3750	3918	*(8)*
	average strength N	2267	900	439	*(9)*
	material factor Rockpanel γ_M	2,0	2,0	2,0	*(10)*
	design value X_d of the pull-through N	1134	450	220	*(11)*
pull-out strength (lowest value of rivet/subframe combination)					*(12)*
	Pull-out $F_{u,5}$ N	≥ 1300	≥ 1300	≥ 1300	*(13)*
	material factor aluminium γ_M	1,25	1,25	1,25	*(14)*
	design value X_d of the pull-out N	1040	1040	1040	*(15)*
design value of the axial load $X_d = X_k / \gamma_M$ for the combination **rivet** and 8 mm boards		**468**	**304**	**200**	*(16)*
	board span b	600			*(17)*
	fixing distance a	600			*(18)*

[a] For correct fixing, a riveting tool with rivet spacer must be used; [b]: calculation according ETAG 034 annex D: $F_{u,5} = F_{mean}$ -1,64•s

Annex 4

Table 14 – 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.