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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

European Technical Assessment ETA-24/0911 of 2025/07/03

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 A2 finish Colours (9 mm), Rockpanel A2 finish Structures (9 mm) and Rockpanel A2 finish ProtectPlus (9 mm) applied with PlankClip system
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:	21 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 090001-01-0404 for Prefabricated compressed mineral wool boards with organic or inorganic finish and with specified fastening system
This version replaces:	-

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product and intended use

General
Rockpanel A2 finish Colours, Rockpanel A2 finish Structures and Rockpanel A2 finish ProtectPlus are prefabricated compressed mineral wool panels with thermo-hardening synthetic binders. The boards are cut into planks between 100 mm and 300 mm and can be attached to timber or aluminium sub-constructions. Fastening to the timber or aluminium sub-construction by means of a special PlankClip. The PlankClip system consist of an aluminium mounting clip, an undercut anchor (to attach the PlankClip to the board) and a self-drilling screw for both timber and aluminium, to attach the PlankClip to the sub-construction. Mechanical fasteners and sub-construction are specified by the ETA-holder.

The Rockpanel A2 Colours panels are surface treated on one side with water-borne primer- and water-borne coloured paint layers, in a range of colours.

The Rockpanel A2 Structures panels are surface treated on one side with water-borne primer- and water-borne coloured paint layers, in a limited range of colours.

The Rockpanel A2 ProtectPlus panels are surface treated on one side with water-borne primer- and water-borne coloured paint layers, which have been provided with an extra anti-graffiti clear coat on the colour paint. The finishes “Woods”, “Stones”, “Chameleon” and “Textured” contain an additional design layer on top of the coloured paint.

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

Table 1:

Property	Value
Thickness, nominal	9 mm
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: 0.064 Width: 0.064
Coefficient of thermal expansion, length and width	$\alpha = 9.7$ (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 A2 Colours: (water-borne polymer emulsion paint)	Colour coating in a range of colours
Rockpanel A2 Structures: (water-borne polymer emulsion paint)	Colour coating RAL 7005, 7016, 7021, 7024, 7035 and 9010
Rockpanel A2 ProtectPlus (water-borne polymer emulsion paint with anti-graffiti clear coat)	Clear coat pure or Clear coat with wood design “Woods” e.g. Teak, Alder etc. or Clear coat with design “Textured” e.g. Carrara White, Sapphire Blue etc. or Clear coat with stone design “Stones” e.g. Mineral Chalk, Basalt Anthracite etc. or with metallic particles “Metals” e.g. Aluminium, Brass etc. and clear coat with design “Chameleon”

The colour fastness 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 A2 Colours: 3-4 or better Rockpanel A2 Structures: 3-4 or better Rockpanel A2 ProtectPlus: 4 or better

Subframes
The cut planks (width 100 to 300 mm) are attached to the building by fixing them to a subframe made of aluminum or timber.

The minimum thickness of the aluminum profiles is 1.8 mm). The aluminium is AW-6060 or AW 6063 according to EN 755-2. The $R_m/R_{p0.2}$ value is $\geq$ 165/120

The vertical timber battens should have a minimum thickness of 28 mm (solid wood).

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 in the event of horizontal orientated planks:
Horizontal joints:
The PlankClip system results in open horizontal joints. The system should be mounted in way the open joint is 6 mm.

Vertical joints:
The PlankClip system result in open vertical joints. The system should be mounted in way the open joint is between 3 to 6 mm.

Joints in the event of vertical orientated planks:
Vertical joints:
The PlankClip system results in open vertical joints. The system should be mounted in way the open joint is 6 mm.

Horizontal joints:
The PlankClip system result in open horizontal joints. The system should be mounted in way the open joint is between 3 and 6 mm.

Fasteners
Fasteners for the PlankClip system:
Secret fixing clips (PlankClip) are attached to the back of the panels by means of one SFS TU-S 6x9 blind fasteners (no 1.4401 according to EN 10088) for each clip.

Small Planks 100 mm to 145 mm wide can be mounted by means of one larger clip (Clip01). Wider planks 150 mm to 300 mm should be mounted be means of two clips: The larger clip (Clip01) along the top and the smaller clip (Clip02) along the bottom (assuming an horizontal orientation).

The larger clip (Clip01) is always fixed to the sub-construction by means of an SDAW-D7/ SR1-4,5*34-A2 screw. The smaller clip (Clip02) is fixed by either sliding in the larger clip (Clip01) or sliding in a starter clip (FC01)

For correct fixing, a blind hole drill with rivet depth stop (or equivalent) must be used, see Table 8 of the ETA. The maximum fixing distances and hole diameter, appear from Tables 8 and 9 of the ETA.

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

Design value of the axial load appears from Annex 3, Table 7 and Table 10-1, 10-2 and 10-3 of the ETA.

2 Specification of the intended use in accordance with the applicable European Assessment Document (hereinafter EAD)

The boards are intended for external cladding and for fascia's. The cladding on timber battens or aluminum subframe with the PlankClip system shall be carried out with a ventilated cavity of 40 mm at the back., this cavity is created by use of the PlankClip. See Annex 1.

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	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 Assessed**
Water permeability incl. joints for non-ventilated applications	**No Performance Assessed**
Drainability	**Drainable**
3.4 Safety and accessibility in use (BWR 4)	
The following concerns performances for wind load resistance and mechanical resistance including pull-out of fasteners and mechanical resistance of boards, wind suction and pressure resistance and shear resistance of mechanical fixing. In absence of national regulations the design values X_d may be calculated as indicated in the ETA (see Table 10-1, 10-2 and 10-3). Below the safety factors are listed which have been used in the calculation of the design values.	
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}. As a result γ_M = 2.0	**Small Plank (100 to 145 mm)** fixed with Clip01**:** To an aluminium subframe, design value X_d: 64/154 N To a timber subframe, design value X_d depends on the modification factor k_{mod}, the strength class of the wood and the different materials factors γ_M. Boards to a solid timber subframe: see Annex 3, Table 10-1 row (24). (according to Annex 3 Table 10-1) **Large Plank (150 to 300 mm)** fixed with Clip01&Clip02**:** Clip02 has its own counter clip, no shared clips (see table 7). To an aluminium subframe, design value X_d: 175/273 N To an timber subframe, design value X_d depends on the modification factor k_{mod}, the strength class of the wood and the different materials factors γ_M. Boards to a solid timber subframe: see Annex 3 Table 10-1 row (24). (according to Annex 3, Table 10-2) **Large Plank (150 to 300 mm)** fixed with Clip01&Clip02**:** Random joints / Clips share counter clip (see table 7). To an aluminium subframe, design value X_d: 175/223/158 N To an timber subframe, design value X_d depends on the modification factor k_{mod}, the strength class of the wood and the different materials factors γ_M. Boards to a solid timber subframe: see Annex 3 Table 10-1 row (24). (according to Annex 3, Table 10-2)
Characteristic shear strength	Clip01/Clip02 fixed with TU-s and SDAW-screw**:** Failure load $F_{u,C}$: ≥ 1160 N, Deformation: 1.3 mm

*) 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.

Characteristic	Assessment of characteristic
Wind load resistance (End / Intermediate) / (End / Intermediate 'C' / Joint 'B')	
Average strength N For the locations see Table 7	**Small Plank (100 to 145 mm)** fixed with Clip01**:** **129 / 308** (according to Annex 3 Table 10-1) **Large Plank (150 to 300 mm)** fixed with Clip01 & Clip02**:** **350 / 546** Clip02 has its own counter clip, no shared clips (see table 7). (according to Annex 3 Table 10-2) **Large Plank (150 to 300 mm)** fixed with Clip01 & Clip02**:** **350 / 446 / 315** Random joints / Clips share counter clip (according to Annex 3 Table 10-2)
Average failure load N/m^2 For the locations see Table 7	**Small Plank (100 to 145 mm)** fixed with Clip01**:** **2680 / 2640** (according to Annex 3 Table 10-1) Maximum deformations (mm) wind load tests(field/supports): **22,2 / 7,3** Kit failure due to pull-out of the undercut anchor (cone failure). **Large Plank (150 to 300 mm)** fixed with Clip01 & Clip02**:** **3600 / 2310** (according to Annex 3 Table 10-2) Maximum deformations (mm) wind load tests(field/supports): **13,3 / 2,0** Kit failure due to pull-out of the undercut anchor (cone failure). **Large Plank (150 to 300 mm)** fixed with **3600 / 1920 / 1920** Clip01 & Clip02 Random joints /Clips share counter clip: (according to Annex 3 Table 10-3) Maximum deformations (mm) wind load tests(field/supports): **13,3 / 2,0** Kit failure due to pull-out of the undercut anchor (cone failure).

Impact resistance	Rockpanel A2 9 mm finish Colours or finish Structures or finish ProtectPlus: classified in PlankClip application according EAD 090062-00-0404	
	Small planks (100 to 145 mm wide) at 600 span:	
	Body / Impact Cat. 1 field / Impact Cat. 2 field or more	
	H1: Hard body 1J / IV / IV	
	H2: Hard body 3J / III / III	
	S1 : Soft body 10J / No performance assessed / No performance assessed	
	Large planks (150 to 300 mm wide) at 600 span:	
	Body / Impact Cat. 1 field / Impact Cat. 2 field or more	
	H1: Hard body 1J / IV / IV	
	H2: Hard body 3J / III / III	
	S1 : Soft body 10J / No performance assessed / III	
	S2 : Soft body 60J / No performance assessed / No performance assessed	
	See Annex 4 Table 11 for the definition of use category	
Mechanical resistance	See section 1, Table 1	

3.8 Aspects of durability

Resistance to Hygrothermal cycles	**Pass**
Dimensional stability	**See Table 6**
Immersion in water without UV	**Not relevant**
Humidity and NaCl	**Not relevant**
Humidity and SO2	**Not relevant**
Resistance to Xenon Arc exposure	**Pass**

Reaction to fire

Table 4. Euroclass classification of construction with Rockpanel A2 finish Colours, Rockpanel A2 finish Structures and Rockpanel A2 finish ProtectPlus in PlankClip application

Fixing method	Ventilated or non-ventilated	Aluminium subframe	Vertical wooden subframe
Mechanically fixed	Ventilated PlankClip application width Rockpanel A2, 9 mm plank ≥ 100 mm	**A2-s1,d0** open 6 mm horizontal joint	
	Ventilated PlankClip application width Rockpanel A2, 9 mm plank ≥ 100 mm Planks in horizontal orientation		**A2-s1,d0** open 6 mm horizontal joint
	Ventilated PlankClip application width Rockpanel A2, 9 mm plank ≥ 100 mm Planks in Vertical orientation		**A2-s1,d0** open 6 mm horizontal joint

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 wooden or metal subframe by means of the aluminium PlankClip
- The construction/panels are insulated 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, timber framing and a wall made of metal frame e.g. LWSF.

Insulation:
- Ventilated constructions: The subframe is insulated with min. 50 mm mineral wool insulation with density 30-70 kg/m^3 according to EN 13162. In the event of a timber sub-construction the cavity of 40 mm is achieved by only the PlankClip and the timber battens shall be between the insulation. In the event of an aluminium subframe the cavity can be ≥ 40.

- 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 of the aluminium sub-construction 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:
- Vertical softwood battens without fire retardant treatment, thickness minimum 25 mm
- Test results are also valid for the same type of panel with a metal subframe.

Fixings:
- Results are also valid with higher density of the fixing devices.

Cavity:
- Unfilled
- The depth of the cavity is minimum 40 mm for a metal subframe, and 40 mm for a timber subframe
- Test results on aluminium sub-frames are also valid for other higher thickness of air space between the back of the board and the insulation behind the subframe. Cavities at timber sub-construction have to be achieved by the PlankClip and are exactly 40mm

Joints:

- Joints are open. For timber subframes no gasket should be used.
- 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: 6 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 applied with the PlankClip application are mounted with a joint width of 6 mm

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 (TU-S) are drilled into the panels not less than 18 mm from a vertical edge and exactly 65 mm from the horizontal top edge in the event of using one clip01. In the event of using two clips (Clip01 and Clip02), the edge distance from the horizontal edge is exactly 45 mm as well from the top edge and also from the bottom edge. The TU-S anchors are fixed making sure the instructions of SFS are followed. Perpendicular drilling and application of the TU-S are essential. Also removing the drilling-dust and a hard and equal underground before application of the TU-S should be granted.

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

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 provided for in the applicable EAD

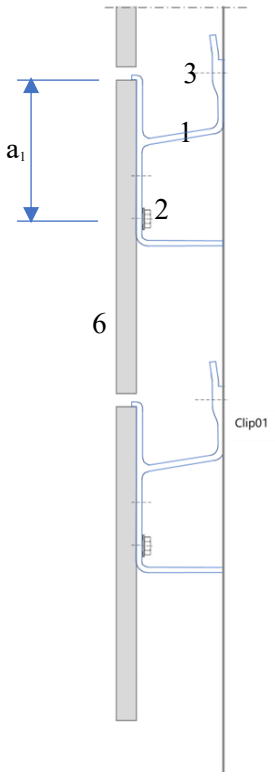
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking.

Issued in Copenhagen on 2025-07-03 by

Thomas Bruun
Managing Director, ETA-Danmark

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

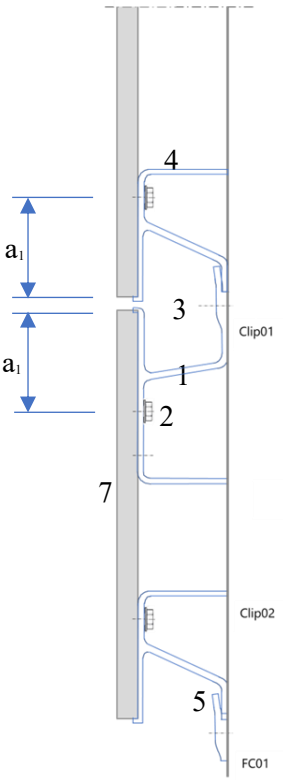
Figure 1a. Small (100 to 145 mm) planks fixed with Clip01



1. Clip 01
2. Undercut anchor TU-S-6x9-A4 applied in bottom hole
3. SDAW screw 4,5x34-A2
6. Rockpanel A2, 9 mm plank 100 to 145 mm wide

a_1 Edge distance see table 9

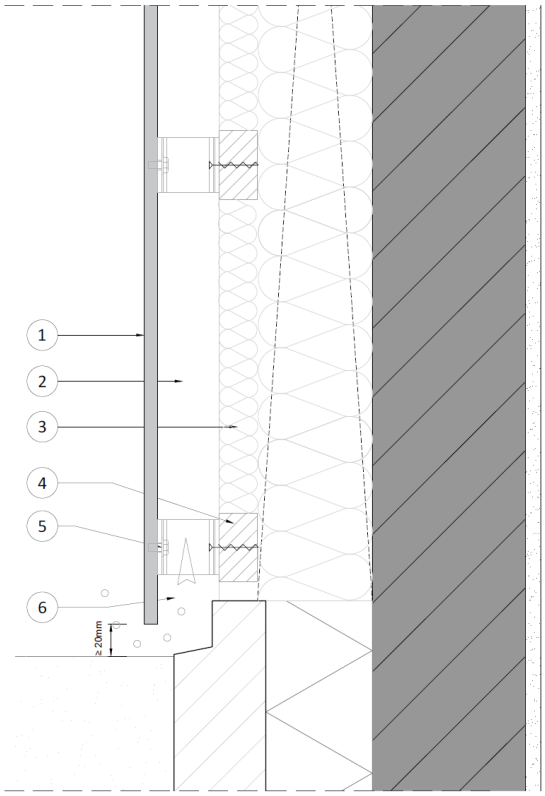
Figure 1b. Large (150 to 300 mm) planks fixed with Clip01 & Clip02



1. Clip 01
2. Undercut anchor TU-S-6x9-A4 applied in top hole
3. SDAW screw 4,5x34-A2
4. Clip 2
5. Starter Clip FC01
7. Rockpanel A2, 9 mm plank 150 to 300 mm wide

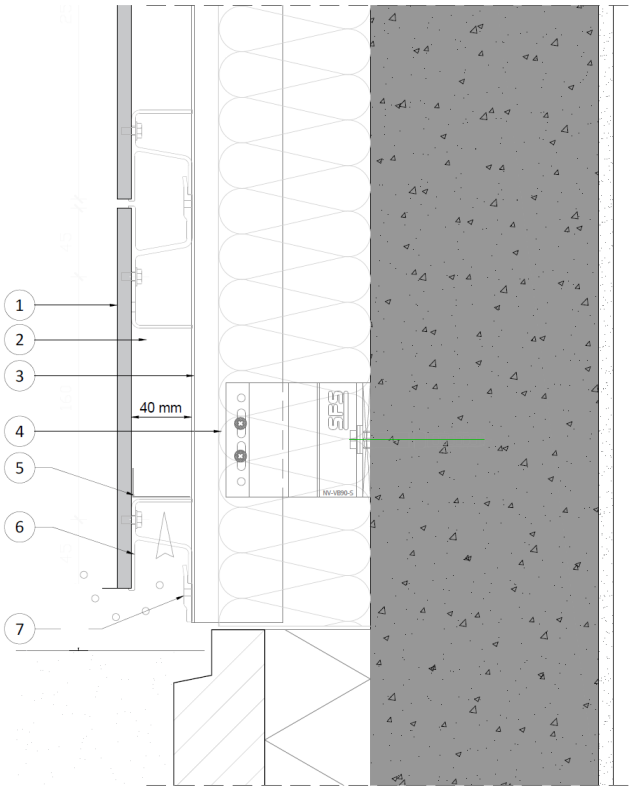
a_1 Edge distance see table 9

Figure 1c. Application on timber battens vertical orientated



1. Rockpanel Plank (in drawing vertical orientated)
2. Cavity 40 mm wide (equal to depth PlankClip)
3. Insulation
4. Timber battens positioned between the insulation
5. Undercut anchor
6. Ventilation

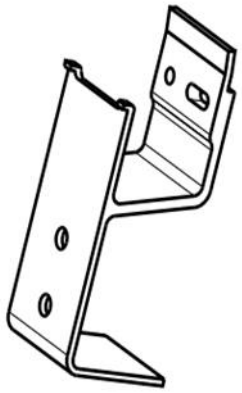
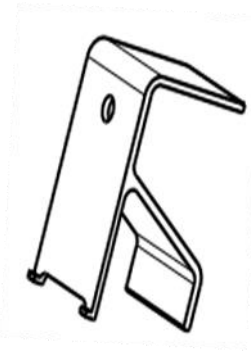
Figure 1d. Application on aluminium horizontal orientated



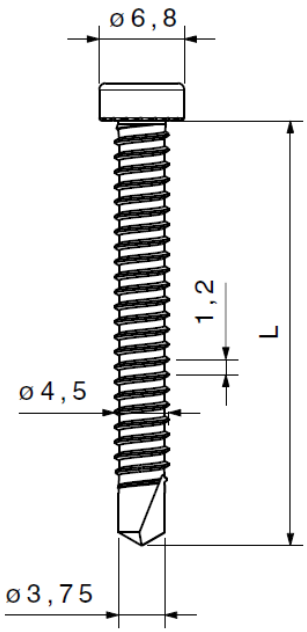
1. Rockpanel Plank (in drawing horizontal orientated)
2. 40 mm ≤ Cavity ≤ 100 mm wide
3. Insulation
4. Aluminium sub-construction
5. Undercut anchor
6. PlankClip02
7. Starter Clip FC01

Annex 2
PlankClip and fastener specification

A2.1 PlankClip specification

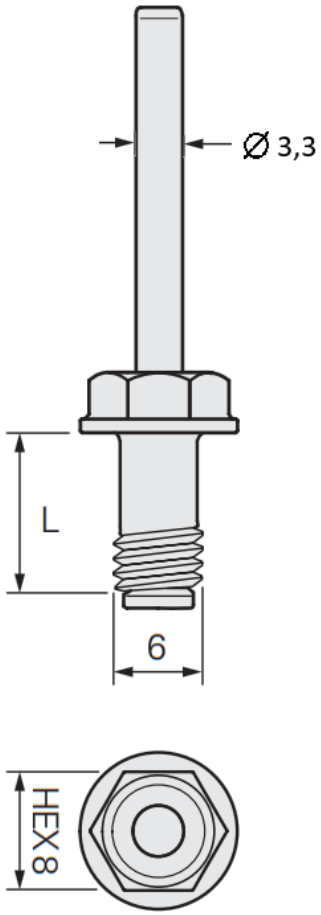
Main Clip / Clip01	Supporting Clip / Clip02	Starter Clip / FC01
		
Width 36 mm	Width 36 mm	Width 36 mm
Hight 100 mm	Hight 60 mm	Hight 27 mm
Depth 40 mm	Depth 40 mm	N.A.
Top hole TU-S: large plank application		
Bottom hole TU-S: small plank application		

A2.2 Fastener specification

Table 5-1. Self-drilling screw for aluminium and timber supports code: SDAW-D7/SR1-4.5x34-A2	
Stainless steel A2 in accordance with EN ISO 3506	
Length: 34 mm	

[a]: The minimum thickness of the aluminium profiles is ≥ 1.8 mm.

Table 5-2. TU-S 6x9 blind fastener specification for PlankClip



manufacturer	SFS group
code	TU-S 6 x 9 (L)
Body	Stainless steel material number 1.4401 in accordance with EN 10088
mandrel	Electro-galvanized carbon steel

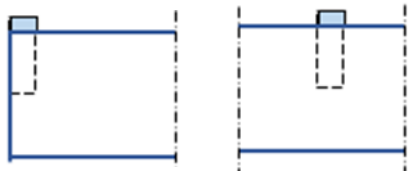
Thickness PlankClip 2,5 mm, impact depth in Rockpanel board 6,5 mm

Annex 3
Performance

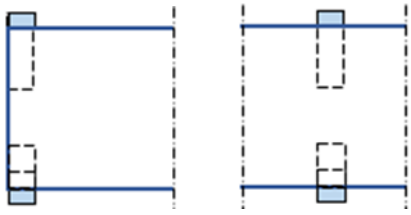
Dimensional stability

Table 6. Deformation Rockpanel A2 in accordance with EN 438-2		
	Rockpanel A2	
characteristic	Length of the board	Width of the board
deformation	0.061 %	0.066 %
dry heat 23°C / 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

Fixing positions for small planks (100 to 145 mm).

Table 7a. Fixing positions End / Intermediate used in this document	
End Intermediate 	E: End (always at the beginning/ end of the plank) I: Intermediate (position between begin and end) See figure 2 for examples of possible installation methods

Fixing positions for large planks (150 to 300 mm), every Clip has his own counter clip.

Table 7b. Fixing positions End / Intermediate used in this document	
End Intermediate 	E: End (always at the beginning/ end of the plank) I: Intermediate (position between begin and end) See figure 2 for examples of possible installation methods

Fixing positions for large planks (150 to 300 mm), Clips have a shared counter clip.

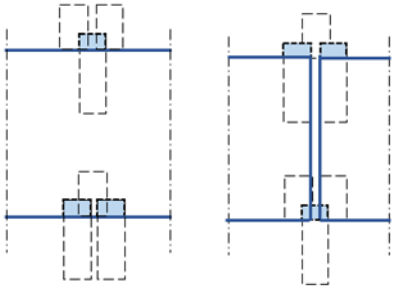
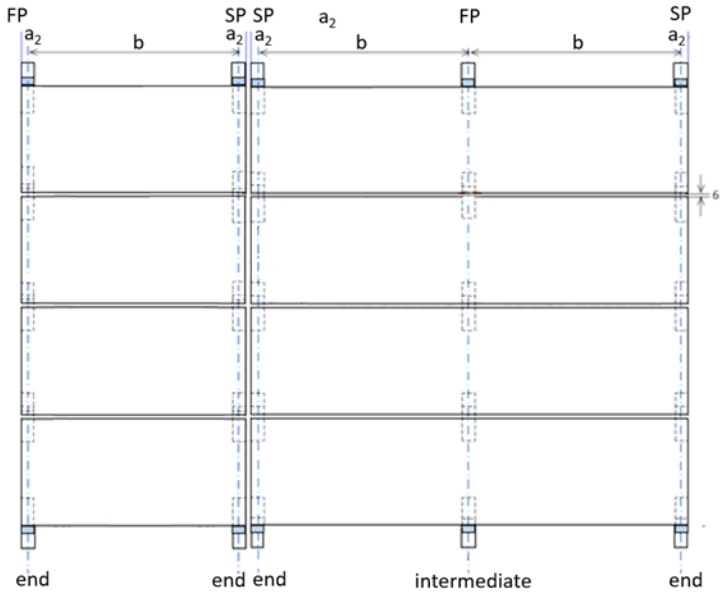
Table 7c. Fixing positions Intermediate ‘C’/ Joint ‘B’ used in this document	
Intermediate ‘C’ Joint ‘B’ 	‘C’: Single intermediate position slide into 2 clips ‘B’: 2 Single end positions slide into 1 clip See figure 2 for examples of possible installation methods

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

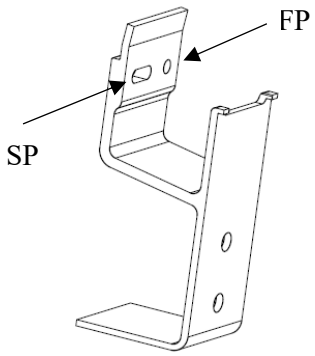
Large plank (150 to 300 mm), every Clip has his own counter clip.



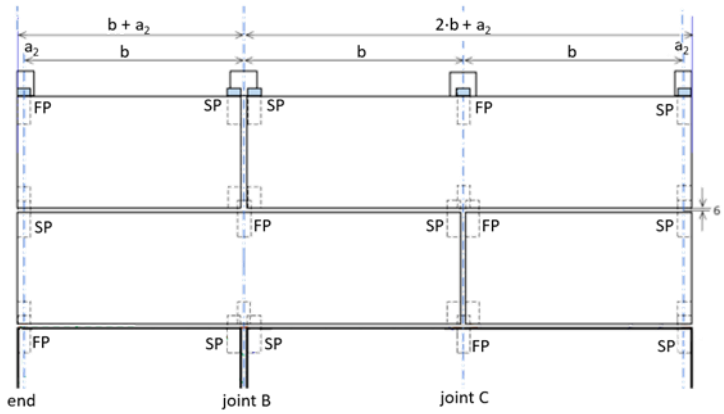
FP – fixed point
All the other fixing points in the same plank are 'sloted points' (SP)
b_{max}: see Table 9

FP:
Fixed points are realized by the use of the round (right) hole in Clip01. Every plank has only 1 FP located near the middle of the Plank.

SP:
Slotted points are realized by the use of the long (left) hole in Clip01.

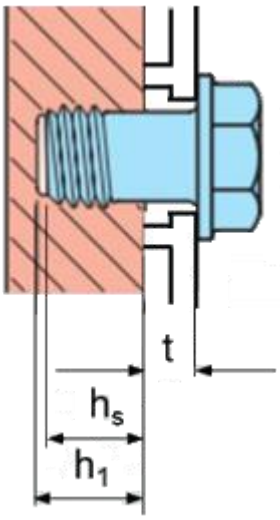


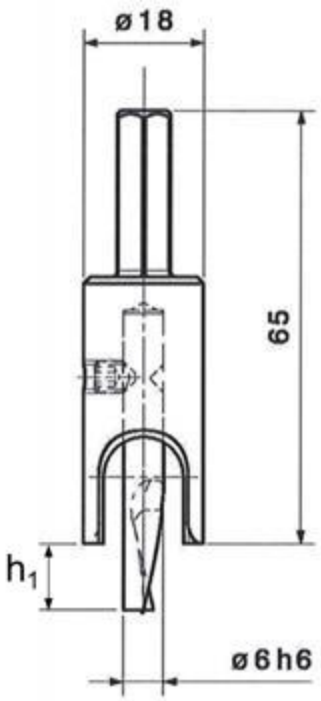
large planks (150 to 300 mm), Clips have a shared counter clip.



Annex 3 continued

Table 8. Specification hole for TU-S anhor





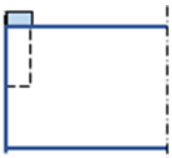
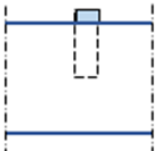
anchor	TU-S 6 x 9
t [mm]	2,5
h_s [mm]	6,5
h_1 [mm]	6,5 +0,5/-0
hole diameter [mm]	6; tolerances +0/-0,1

HSS blind hole drill bit 6,0 mm with depth control stop

Table 9. Edge distances and maximum distances between fastenings in mm

	b_{max}	a_1	a_2
Small Planks 100 to 145 mm (1 clip)	600	65	≥ 18
Large Planks 150 to 300 mm (2 clips)	600	45	≥ 18

Table 10-1. Characteristic axial load X_k and design value of the axial load $X_d = X_k / \gamma_M$ for the combination **small Plank (100 to 145 mm)** onto solid timber or aluminium alloy EN 573 , in combination with Clip01 and screw SDAW- 4,5 x 34 [a] with $\alpha \geq 30°$ [e]

Plank thickness		9 mm		*(1)*
Location of the fixing in the board		End 	Intermediate 	*(2)*
Pull-out strength concealed fixing				*(3)*
	Pull-out $F_{u;5}$ N ≥	303	332	*(4)*
	Material factor Rockpanel γ_M *[b]*	2.0	2.0	*(5)*
	Design value X_d of the pull-out N	**152**	**166**	*(6)*
Wind suction				*(7)*
	Average wind load in N/m²	2680	2640	*(8)*
	Average strength N	129	308	*(9)*
	Material factor Rockpanel γ_M *[b]*	2.0	2.0	*(10)*
	Design value X_d of the pull-through N	**64**	**154**	*(11)*
Withdrawal capacity screw SDAW - 4,5 x 34 [a] on timber				*(12)*
	Characteristic withdrawal capacity $F_{ax,k,Rk}$ *[c] [d]*			*(13)*
	Strength class wood C24 (EN 338)	756	756	*(14)*
	Modification factor for k_{mod}	k_{mod} [c]		*(15)*
	Axial withdrawal capacity $F_{ax,k,Rk}$ • k_{mod}	756 • k_{mod}	756 • k_{mod}	*(16)*
	Material factor	γ_M = 1,30 [withdrawal capacity]		*(17)*
	Design value X_d of the axial withdrawal capacity N	582 • k_{mod}	582 • k_{mod}	*(18)*
Pull out strength screw SDAW - 4,5 x 34 [a] on aluminium (lowest value of screw/subframe combination)				*(19)*
	Pull-out $F_{u,5}$ N	≥ 940	≥ 940	*(20)*
	Material factor aluminium γ_M	1,3	1,3	*(21)*
	Design value X_d of the pull-out N	723	723	*(22)*
Design value of the axial load $X_d = X_k / \gamma_M$		Minimum value of the rows:		*(23)*
	Timber: strength class wood C24 ρ_k = 350 kg/m3	**(6) (11) (18)**	**(6) (11) (18)**	*(24)*
	Aluminium alloy EN 573: 1,8 ≤ thickness ≤ 3,0	**(6) (11) (22)**	**(6) (11) (22)**	*(25)*
Plank span b [mm]		≤ 600		*(26)*
Plank width [mm]		100 - 145		

[a]: SFS group AG

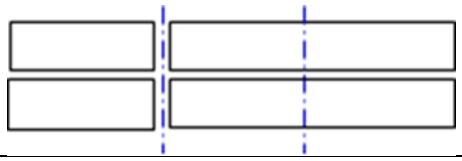
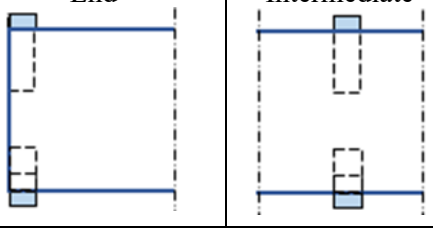
[b]: $\gamma_M = \gamma_m / \eta$; for Rockpanel γ_m = 1,6 and η = 0,8

[c] 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+A1:2008 (E) formula (8.38), (8.39) and (8.40)

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

Table 10-2. Characteristic axial load X_k and design value of the axial load $X_d = X_k / \gamma_M$ for the combination large **Plank (150 to 300 mm)** onto solid timber or aluminium alloy EN 573 , in combination with Clip01, Clip02 and screw SDAW- 4,5 x 34 [a] with $\alpha \geq 30°$ [e]

Plank thickness		9 mm		*(1)*
Location of the fixing		End	Intermediate	*(2)*
Clip02 has its own counter clip				
Pull-out strength concealed fixing				*(3)*
	Pull-out *(at least 2 fixings)* $F_{u;5}$ N ≥	2•303	2•332	*(4)*
	Material factor Rockpanel γ_M *[b]*	2.0	2.0	*(5)*
	Design value X_d of the pull-out N	**303**	**332**	*(6)*
Wind suction				*(7)*
	Average wind load in N/m²	3600	2310	*(8)*
	Average strength N	350	546	*(9)*
	Material factor Rockpanel γ_M *[b]*	2.0	2.0	*(10)*
	Design value X_d of the pull-out N	**175**	**273**	*(11)*
Withdrawal capacity screw SDAW - 4,5 x 34 [a] on timber				*(12)*
	Characteristic withdrawal capacity $F_{ax,k,Rk}$ *[c] [d]*			*(13)*
	Strength class wood C24 (EN 338)	1•756	1•756	*(14)*
	Modification factor for k_{mod}	k_{mod} [c]		*(15)*
	Axial withdrawal capacity $F_{ax,k,Rk}$ • k_{mod}	756 • k_{mod}	756 • k_{mod}	*(16)*
	Material factor	γ_M = 1,30 [withdrawal capacity]		*(17)*
	Design value X_d of the axial withdrawal capacity N	582 • k_{mod}	582 • k_{mod}	*(18)*
Pull out strength screw SDAW - 4,5 x 34 [a] on aluminium(lowest value of screw/subframe combination)				*(19)*
	Pull-out $F_{u,5}$ N	≥ 940	≥ 940	*(20)*
	Material factor aluminium γ_M	1,3	1,3	*(21)*
	Design value X_d of the pull-out N	723	723	*(22)*
Design value of the axial load $X_d = X_k / \gamma_M$		Minimum value of the rows:		*(23)*
	Timber: strength class wood C24 ρ_k = 350 kg/m3	**(6) (11) (18)**	**(6) (11) (18)**	*(24)*
	Aluminium alloy EN 573: 1,8 ≤ thickness ≤ 3,0	**(6) (11) (22)**	**(6) (11) (22)**	*(25)*
Plank span b [mm]		≤ 600		*(26)*
Plank width [mm]		150 - 300		*(27)*

[a]: SFS group AG

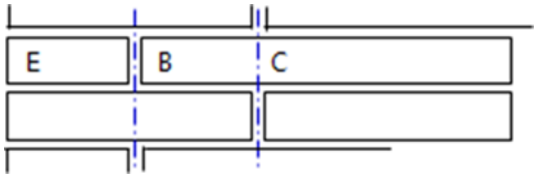
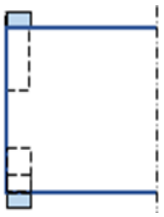
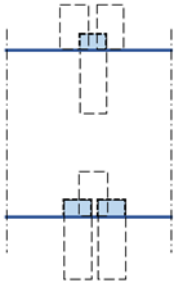
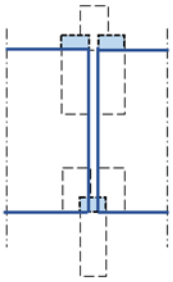
[b]: $\gamma_M = \gamma_m / \eta$; for Rockpanel γ_m = 1,6 and η = 0,8

[c] 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+A1:2008 (E) formula (8.38), (8.39) and (8.40)

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

Table 10-3. Characteristic axial load X_k and design value of the axial load $X_d = X_k / \gamma_M$ for the combination large **Plank (150 to 300 mm)** onto solid timber or aluminium alloy EN 573 , in combination with Clip01, Clip02 and screw SDAW- 4,5 x 34 [a] with $\alpha \geq 30°$ [e]

Plank thickness		9 mm			*(1)*
Location of the fixing		End	Intermediate 'C'	Joint 'B'	*(2)*
Random joints / Clips share counter clip					
Pull-out strength concealed fixing					*(3)*
	Pull-out *(at least 2 fixings)* $F_{u;5}$ N ≥	2•303	2•332	4•303	*(4)*
	Material factor Rockpanel γ_M *[b]*	2.0	2.0	2.0	*(5)*
	Design value X_d of the pull-out N	**303**	**332**	**606**	*(6)*
Wind suction					*(7)*
	Average wind load in N/m^2	3600	1920	1920	*(8)*
	Average strength N	350	446	315	*(9)*
	Material factor Rockpanel γ_M *[b]*	2.0	2.0	2.0	*(10)*
	Design value X_d of the pull-out N	**175**	**223**	**158**	*(11)*
Withdrawal capacity screw SDAW - 4,5 x 34 [a] on timber					*(12)*
	Characteristic withdrawal capacity $F_{ax,k,Rk}$ *[c] [d]*				*(13)*
	Strength class wood C24 (EN 338)	1•756	1•756	1•756	*(14)*
	Modification factor for k_{mod}	k_{mod} [c]			*(15)*
	Axial withdrawal capacity $F_{ax,k,Rk}$ • k_{mod}	756 • k_{mod}	756 • k_{mod}	756 • k_{mod}	*(16)*
	Material factor	γ_M = 1,30 [withdrawal capacity]			*(17)*
	Design value X_d of the axial withdrawal capacity N	582 • k_{mod}	582 • k_{mod}	582 • k_{mod}	*(18)*
Pull out strength screw SDAW - 4,5 x 34 [a] on aluminium (lowest value of screw/subframe combination)					*(19)*
	Pull-out $F_{u,5}$ N	≥ 940	≥ 940	≥ 940	*(20)*
	Material factor aluminium γ_M	1,3	1,3	1,3	*(21)*
	Design value X_d of the pull-out N	723	723	723	*(22)*
Design value of the axial load $X_d = X_k / \gamma_M$		Minimum value of the rows:			*(23)*
	Timber: strength class wood C24 ρ_k = 350 kg/m3	**(6) (11) (18)**	**(6) (11) (18)**	**(6) (11) (18)**	*(24)*
	Aluminium alloy EN 573: 1,8 ≤ thickness ≤ 3,0	**(6) (11) (22)**	**(6) (11) (22)**	**(6) (11) (22)**	*(25)*
	Plank span b [mm]	≤ 600			*(26)*
	Plank width [mm]	150 - 300			*(27)*

[a]: SFS group AG

[b]: $\gamma_M = \gamma_m / \eta$; for Rockpanel $\gamma_m = 1{,}6$ and $\eta = 0{,}8$

[c] 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+A1:2008 (E) formula (8.38), (8.39) and (8.40)

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

Annex 4

Impact resistance

Table 11. 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.