PRODUCTEN RvA C 019

SKH

KOMO® productcertificaat

halfproduct

Stichting Keuringsbureau Hout SKH
Bezoekadres:
'Het Cambium', Nieuwe Kanaal 9c, 6709 PA Wageningen
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Postbus 159, 6700 AD Wageningen
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TRIPLEX

voor niet-constructieve bouwkundige en niet-bouwkundige toepassingen

Nummer: 32997/06 **PDF**
Uitgegeven: 2006-01-04
Vervangt:

Producent	**Fabriek te**	**Importeur**
Fetim B.V. Kopraweg 1 1047 BP AMSTERDAM Postbus 770 1000 AT AMSTERDAM Tel. (020) 580 53 33 Fax (020) 580 52 22 E-mail: info@fetim.nl Website: http://www.fetim.nl		

Verklaring van SKH

Dit productcertificaat is op basis van BRL 1705 "Triplex" afgegeven door SKH, conform het SKH Reglement voor Certificatie.

SKH verklaart, dat het gerechtvaardigd vertrouwen bestaat, dat het door de producent vervaardigde triplex bij voortduring aan de in dit productcertificaat vastgelegde technische specificaties voldoet, mits het voorzien is van het hieronder afgebeelde KOMO®-merk op een wijze als aangegeven in dit productcertificaat.

SKH verklaart, dat het gecertificeerde triplex in zijn toepassingen onder bovengenoemde voorwaarden voldoet aan de van toepassing zijnde eisen van het Bouwbesluit.

Voor de erkenning door de Minister van VROM wordt verwezen naar het "Overzicht van erkende Kwaliteitsverklaringen in de bouw" zoals weergegeven op de website van Stichting Bouwkwaliteit (SBK) www.bouwkwaliteit.nl.

Voor SKH R. Wigboldus, directeur

Gebruikers van dit productcertificaat wordt geadviseerd om bij SKH te informeren of dit document nog geldig is.

Dit productcertificaat bestaat uit 4 bladzijden.

KOMO®

Bouwbesluit draagt CE

Beoordeeld is:
kwaliteitssysteem
product
Periodieke controle

KOMO® productcertificaat

TRIPLEX

voor niet-constructieve bouwkundige en niet-bouwkundige toepassingen

BOUWBESLUITINGANG (ALLEEN VOOR BOUWKUNDIGE TOEPASSING)

Nr	Afdeling	Grenswaarde / bepalingsmethode	Prestatie volgens kwaliteitsverklaring	Opmerkingen i.v.m. toepassing
2.1	Algemene sterkte in gebruikssituatie			Prestatie van het triplex in zijn toepassing is niet beoordeeld; door constructeur te bepalen
2.12	Beperking ontwikkeling van brand	Klasse 1, 2, 3 of 4, volgens NEN 6065, dan wel ten minste brandklasse D volgens NEN-EN 13501-1		Volumieke massa ≥ 400 kg/m^3 Dikte ≥ 9 mm, klasse D Dikte < 9 mm, klasse F
2.15	Beperking ontstaan van rook	Rookdichtheid ≤ 10 m^{-1}, $\leq 5{,}4$ m^{-1} of $\leq 2{,}2$ m^{-1} volgens NEN 6066, dan wel minimaal rookklasse s2 volgens NEN-EN 13501-1		Dikte ≥ 9 mm voldoen aan rookklasse s2 Dikte < 9 mm, geen waarde bekend
3.15	Beperking toepassing schadelijke materialen	Volgens voorschriften Ministeriële Regeling		Formaldehyde klasse E1 bepaald volgens EN 717-2

1 PRODUCTSPECIFICATIE

1.1 Onderwerp

Triplex voor niet-constructieve bouwkundige toepassingen.
Triplex voor niet-bouwkundige toepassingen.

1.2 Merken

Elke triplex plaat wordt gemerkt met het KOMO®-merk
De uitvoering van dit merk is als volgt:
- woordmerk KOMO® of beeldmerk
- nr. **32997**
- nominale dikte in mm
- aanduiding klasse volgens tabel 1 van BRL 1705
- aanduiding E1

Plaats van het merk: duidelijk zichtbaar op elke geleverde plaat.

1.3 Productspecificatie

De productspecificatie bevat ten minste de dikte en de type-aanduiding van de oppervlakte-afwerking.

Het door Fetim B.V. vervaardigde triplex voldoet aan paragrafen 3 en 4 en tabel 2 van BRL 1705, "Triplex".
Dit houdt onder andere in dat de kwaliteit van de dekfineren voldoet aan de eisen vermeld in NEN-EN 635-2 voor de van toepassing zijnde klasse naar uiterlijk.
Bovendien voldoen de platen aan de volgende normen:
- NEN-EN 314-2 Triplex. Kwaliteit van lijmverbindingen. Deel 2 - Eisen.
- NEN-EN 315 Triplex. Toelaatbare maatafwijkingen.

TRIPLEX

voor niet-constructieve bouwkundige en niet-bouwkundige toepassingen

Tabel 1: Omschrijving van verschillende type platen

Type	Dikte in mm	Draagt CE	Klasse oppervlakte afwerking volgens BRL 1705	Houtsoort	Lijm
Europlex (B/BB)	3-8 9-40	Ja	C	Okoumé door en door	UMF
Aquagarant (B/B)	3-8 9-40	Ja	A	Okoumé door en door	UMF

Tabel 2: Opbouw van de platen

Type plaat	Dikte in mm	Aantal lagen (minimum)
Alle boven genoemde typen	3-6	3
	6-10	5
	12	7
	15-22	9
	25	11
	30	13
	40	15

2 PRODUCTEIGENSCHAPPEN

2.1 Producteigenschappen uit het oogpunt van veiligheid

ALGEMENE STERKTE VAN DE BOUWCONSTRUCTIE; BB-AFDELING 2.1

2.1.1 Sterkte bouwconstructie; BB-art. 2.1
De karakteristieke waarden van de mechanische eigenschappen van het triplex zijn niet bepaald.
Het triplex kan derhalve slechts worden toegepast als niet-constructieve plaat.

BEPERKING VAN ONTWIKKELING VAN BRAND; BB-AFD. 2.12

2.1.2 Bijdrage tot brandvoortplanting; BB-art. 2.91
De brandklasse van het triplex behoort, bepaald overeenkomstig NEN-EN 13501-1,
tot brandklasse D voor triplex van 9 mm en dikker en brandklasse F voor platen dunner dan 9 mm.

BEPERKING VAN ONTSTAAN VAN ROOK; BB-AFD. 2.15

2.1.3 Rookdichtheid; BB-art. 2.125
De rookklasse van het triplex, bepaald overeenkomstig NEN-EN 13501-1, behoort tot
rookklasse s2 voor triplex van 9 mm en dikker.
De rookklasse voor platen dunner dan 9 mm is niet bepaald.

2.2 Producteigenschappen uit het oogpunt van gezondheid

BEPERKING TOEPASSING SCHADELIJKE MATERIALEN; BB-AFD. 3.15

2.2.1 Toepassing schadelijke materialen; BB-art. 3.106
De formaldehyde-emissie van de platen bepaald overeenkomstig EN 717-2 voldoet aan de eisen voor klasse E1.

TRIPLEX

voor niet-constructieve bouwkundige en niet-bouwkundige toepassingen

3 OVERIGE PRODUCTEIGENSCHAPPEN

Geen.

4 WENKEN VOOR DE TOEPASSER

4.1 Aflevering

Bij aflevering van het triplex inspecteren of:

- geleverd is wat is overeengekomen;
- het merk en de wijze van merken juist zijn;
- de producten geen zichtbare gebreken vertonen als gevolg van transport en dergelijke.

Indien op grond van het bovenstaande tot afkeuring wordt overgegaan, dient contact te worden opgenomen met:

Fetim B.V.

en zo nodig met:

de certificatie instelling Stichting Keuringsbureau Hout SKH
Kantoorgebouw 'Het Cambium',
Nieuwe Kanaal 9c, 6709 PA Wageningen
Postbus 159, 6700 AD Wageningen

Telefoon:	(0317) 45 34 25	E-mail:	mail@skh.org
Fax:	(0317) 41 26 10	Website:	http://www.skh.org

4.2 Productcertificaat

De producent is verplicht te zorgen dat de afnemer op het werk de beschikking heeft over een exemplaar van het volledige productcertificaat.

4.3 Toepassing en gebruik

Het triplex is geschikt voor niet-constructieve bouwkundige toepassingen en andere niet-constructieve toepassingen.

4.4 Geldigheidscontrole

Controleer of het productcertificaat nog geldig is; raadpleeg de SKH-website: http://www.skh.org.

KOMO productcertificaat

NL/SfB: Rf7

Kiwa N.V.
Certificatie en Keuringen
Sir Winston Churchill-laan 273
Postbus 70
2280 AB Rijswijk
Telefoon 070 - 414 44 00
Telefax 070 - 414 44 20

kiwa
Partner for progress

Geaccrediteerd door de Raad voor Accreditatie
RvC

Knauf gipskartonplaat

Nummer : K2478/95
Uitgegeven : 1995-10-01
Vervangt : K2478/94
d.d. 1994-10-01

Producent
Knauf B.V.
Mesonweg 8 - 12
3542 AL UTRECHT
Telefoon 030-2473311
Telefax 030-2410176

Fabriek
N.V. Isolava - Belgips
Ooigemstraat 12
8710 Wielsbeke
België
Telefoon 00 32 56 666791
Telefax 00 32 56 669683

VERKLARING VAN KIWA

Dit productcertificaat is op basis van BRL 1009, " Gipskartonplaat", conform het Kiwa-Reglement voor Productcertificatie 1990 afgegeven door Kiwa.

Kiwa verklaart, conform §3 van EN 45011, juncto ISO/IEC Guide 2 (zie blad 2), dat de door de producent vervaardigde Gipskartonplaat aan de in dit productcertificaat vastgelegde technische specificaties voldoen, mits zij zijn voorzien van het hieronder afgebeelde KOMO-merk op de wijze zoals aangegeven in dit productcertificaat.

Voor de relatie van de uitspraken van dit productcertificaat met de voorschriften van het Bouwbesluit wordt verwezen naar de lijst van kwaliteitsverklaringen zoals die halfjaarlijks door de Stichting Bouwkwaliteit (SBK) te Rijswijk wordt gepubliceerd.

ing. B. Meekma,
directeur Certificatie en Keuringen, Kiwa N.V.

Gebruikers van dit productcertificaat wordt geadviseerd om bij Kiwa te informeren of dit document nog geldig is.

Afbeelding van KOMO-merk

KOMO

KOMO productcertificaat

Knauf gipskartonplaat:

Nummer : **K2478/95**
Uitgegeven : 1995-10-01

De in de "Verklaring van Kiwa" opgenomen verwijzing naar de volgende norm EN 45011 houdt in: handeling van derde partij, waarmee wordt aangetoond, dat er voldoende vertrouwen bestaat dat een naar behoren gedefinieerd proces in overeenstemming is met een bepaalde norm, of een ander normatief document.

PRODUCTSPECIFICATIE

Algemeen
De gipskartonplaten zijn conform BRL 1003 "Gipskartonplaat" d.d. 1995-06-01.

Plaattypen
De volgende plaattypen vallen onder dit productcertificaat:

GKB	= normale plaat
GKBI	= plaat met vertraagde wateropname
GKF	= plaat met verhoogde brandwerendheid
GKFI	= plaat met vertraagde wateropname en verhoogde brandwerendheid

Langkanten
De langskanten kunnen zijn uitgevoerd op één van de volgende wijze, die hieronder zijn weergegeven:
- volle kant;
- halfronde kant;
- ronde kant;
- afgeschuinde kant;
- halfronde afgeschuinde kant
- facet kant

Brandveiligheid
Voor de gipskartonplaten met een maximale dikte van 15mm geldt het volgende:
- de gipskartonplaten behoren tot klasse 2 van de bijdrage tot brandvoortplanting volgens NEN 6065.
- de gipskartonplaten bezitten een maatgevende rookdichtheid ≤ 1m² volgens NEN 6066.

Merken
De producten worden gemerkt met het KOMO-beeldmerk.
De uitvoering van dit merk is als volgt:

K2478

Plaats van het merk: op iedere gipskartonplaat.

Verplichte aanduidingen:
- fabrieksnaam/gedeponeerd handelsmerk/logo;
- plaattype;
- productiedatum;
- KOMO-beeldmerk en certificaatnummer.

WENKEN VOOR DE TOEPASSER

1. De producten zijn bestemd om te worden toegepast in de woning- en utiliteitsbouw. Neem daarbij de volgende toepassingsvoorwaarden in acht:
   1.1 bij toepassing van de producten dienen de verwerkingsvoorschriften en toepassingsvoorwaarden in acht te worden genomen zoal vermeld in de geldende technische documentatie van Knauf B.V. of, indien beschikbaar, de betreffende attesten;
   1.2 bij twijfel contact opnemen met Knauf B.V..
2. Inspecteer bij aflevering of:
   2.1 geleverd is wat is overeengekomen;
   2.2 het merk en de wijze van merken juist zijn;
   2.3 de producten geen achtbare gebreken vertonen als gevolg van transport en dergelijke.
3. Indien u op grond van het hiervoor gestelde tot afkeuring overgaat, neem dan contact op met:
   3.1 Knauf B.V.
   en zo nodig met:
   3.2 Kiwa N.V.

KOMO productcertificaat

NL/SfB: -

Kiwa N.V.
Certificatie en Keuringen
Sir Winston Churchill-laan 273
Postbus 70
2280 AB Rijswijk

Telefoon 070 – 414 44 00
Telefax 070 – 414 44 20

Geaccrediteerd door de Raad voor Accreditatie

RvC

Vormstukken, platen en stroken van minerale wol voor thermische isolatie van systeemvloeren

Nummer : **K4397/02**
Uitgegeven : 2001-06-01
Vervangt : K4397/01
d.d. 1997-06-01

Producent
Rockwool Lapinus B.V.
Industrieweg 15
6045 JG Roermond
Postbus 1160
6040 KD Roermond
Telefoon 0475-353535
Telefax 0475-353484

VERKLARING VAN KIWA

Dit productcertificaat is op basis van BRL 4304, "Platen, dekens en vormstukken van minerale wol (MW) voor thermische isolatie van systeemvloeren", conform het Kiwa-Reglement voor Productcertificatie: 2001 afgegeven door Kiwa.

Kiwa verklaart, conform §3 van EN 45011, juncto ISO/IEC Guide 2 (zie blad 2), dat de door de producent vervaardigde Platen, dekens en vormstukken van minerale wol (MW) voor thermische isolatie van systeemvloeren aan de in dit productcertificaat vastgelegde technische specificaties voldoen, mits zij zijn voorzien van het hieronder afgebeelde KOMO-merk op de wijze zoals aangegeven in dit productcertificaat.

Voor de relatie van de uitspraken van dit productcertificaat met de voorschriften van het Bouwbesluit wordt verwezen naar de lijst van kwaliteitsverklaringen zoals die halfjaarlijks door de Stichting Bouwkwaliteit (SBK) te Rijswijk wordt gepubliceerd.

B. Meekma

ing. B. Meekma,
directeur Certificatie en Keuringen, Kiwa N.V.

Gebruikers van dit productcertificaat wordt geadviseerd om bij Kiwa te informeren of dit document nog geldig is.

Afbeelding van KOMO-merk

Dit productcertificaat bestaat uit 3 bladzijden

KOMO productcertificaat

Vormstukken, platen en stroken van minerale wol voor thermische isolatie van systeemvloeren

kiwa
Partner for progress

Nummer : **K4397/02**
Uitgegeven : 2001-06-01

De in de "Verklaring van Kiwa" opgenomen verwijzing naar de vigerende norm EN 45011 houdt in: handeling van derde partij, waarmee wordt aangetoond, dat er voldoende vertrouwen bestaat dat een naar behoren geïdentificeerd product in overeenstemming is met een bepaalde norm, of een ander normatief document.

PRODUCTSPECIFICATIE

Technische specificatie van het product
De beoordelingsrichtlijn onderscheidt vier toepassingstypes:
A niet op druk en niet op delaminatie te belasten;
B wel op druk en niet op delaminatie te belasten;
C niet op druk en wel op delaminatie te belasten;
D op druk en delaminatie te belasten.

De producten in deze kwaliteitsverklaring behoren tot toepassingstype C of D (zie tabel 1).

Vorm en samenstelling
Vormstukken, platen en stroken van thermoharde kunststofgebonden steenwol vezels. De producten zijn niet voorzien van een bekleding.

Afmetingen

Tabel 1 - Afmetingen in mm

Eindfabrikaat	Type	Lengte	Breedte	Dikte
416.000.5vk	C	600	1000	250
416.000.5vl	C	1000	600	250
416.000.h5k	C	600	500	250
904.416.065	C	1000	105	30, 43, 52
904.416.080	C	120	760	190
904.416.222	C	1000	280	255
		1200	492	265
417	C	450 - 2500	450 - 2500	40 - 150
418	D	450 - 2500	450 - 2500	30 - 150
904.418.000	D	1000	110	70

Toleranties type C:
- lengte ± 2%
- breedte ± 5 mm
- diktegemiddeld + 5 mm of + 6% van de laagste waarde en -1 mm: afwijking individuele waarde t.o.v. gemiddelde ± 5 mm.

Toleranties type D:
- lengte ± 2%
- breedte ± 5 mm
- diktegemiddeld ± 3 mm: afwijking individuele waarde t.o.v. gemiddelde ± 3 mm.

Warmtegeleidingscoëfficiënt:

$\lambda_{declared}$:
De gedeclareerde waarde van de warmtegeleidingscoëfficiënt ($\lambda_{declared}$) van het isolatiemateriaal is vermeld in tabel 2.
De dikte van het isolatiemateriaal gedeeld door de $\lambda_{declared}$ is de gedeclareerde waarde van de warmteweerstand van het isolatiemateriaal ($R_{declared}$).
De $R_{declared}$ verrekend met de correctiefactor voor het isolatiemateriaal uit de NEN 1068 is de rekenwaarde voor de warmteweerstand van het isolatiemateriaal (R_{reken}).

λ_{reken}:
De rekenwaarde van de warmtegeleidingscoëfficiënt (λ_{reken}) van het isolatiemateriaal is vermeld in tabel 2.
Deze waarde is ontleend aan de NEN 1068 en de Ministeriële Regeling nr. 6 (Stcrt. 1993, 249).

Vervorming bij hoge temperatuur onder belasting
De producten behorende tot type D zijn voldoende vormvast.
De dikteverandering na beproeving bij 23°C en 20 kPa is maximaal 10%. De dikteverandering na beproeving bij 80°C en 20 kPa is maximaal 5%.

Vlakheid
De afwijking ten opzichte van een plat vlak bedraagt maximaal 6 mm/m.

Haaksheid
De afwijking bedraagt maximaal 3 mm op 500 mm vanaf het hoekpunt.

Treksterkte
De producten behorende tot type D kunnen minimaal twee maal hun eigen gewicht dragen.

Waterafstotendheid
De wateropname bedraagt maximaal 1,0 kg/m².

Gedrag bij brand
De producten in deze kwaliteitsverklaring zijn onbrandbaar volgens NEN 6064.

Druksterkte bij 10% vervorming
De producten behorende tot type D zijn ingedeeld in klassen volgens de beoordelingsrichtlijn.
Zie tabel 2.

Delaminatiesterkte
De delaminatiesterkte bedraagt minimaal 3 x het eigen gewicht van het vormstuk.

Druksterkte bij 10% vervorming na waterabsorptie
De producten behorende tot type D zijn na waterabsorptie ingedeeld in klassen volgens de beoordelingsrichtlijn.
Zie tabel 2.

Delaminatiesterkte na waterabsorptie
De delaminatiesterkte na waterabsorptie bedraagt minimaal de sterkte van de bevestiging van het isolatiemateriaal aan het vloerelement.

Merken
De producten worden gemerkt met het KOMO-merk.
De uitvoering van dit merk is als volgt:
- zie voorzijde van dit productcertificaat.

Plaats van het merk:
- per verpakkingseenheid.

Overige verplichte aanduidingen:
- fabrieksnaam of gedeponeerd handelsmerk;
- afmetingen in SI-eenheden;
- aantal vierkante meters per pak;
- certificaatnummer K4397;
- productiecode.

Tabel 2

Halffabrikaat	Eindfabrikaat	Vorm	Druksterkte, klasse	Druksterkte na W.A., klasse	$\lambda_{declared}$ W/(mK)
416.055	416.000.5vk	vormstuk	-	-	0,034
	416.000.5vl	vormstuk	-	-	0,034
	416.000.h5k	vormstuk	-	-	0,034
416.065	904.416.065	strook	-	-	0,036
416.080	904.416.080	vormstuk	-	-	n.v.t.[1]
416.222	904.416.222	vormstuk	-	-	n.v.t.[2]
417	417	plaat	-	-	0,033
418	418	strook/plaat	C4	C4	0,039
418	904.418.000	vormstuk	C4	C4	0,039

[1] λ_{reken} = 0,040 W/(mK).
[2] $R_{declared}$ = 7,50 m²K/W. Hieruit volgt R_{reken} = 7,14 m²K/W.

WENKEN VOOR DE TOEPASSER

1. De producten zijn bestemd om te worden toegepast in en onder vrijdragende systeemvloeren van constructief beton waarvoor een KOMO-attest-met-productcertificaat is afgegeven.

2. Inspecteer bij aflevering of:
   2.1 geleverd is wat is overeengekomen;
   2.2 het merk en de wijze van merken juist zijn;
   2.3 de producten geen zichtbare gebreken vertonen als gevolg van transport en dergelijke.

3. Indien u op grond van het hiervoor gestelde tot afkeuring overgaat, neem dan contact op met:
   3.1 Rockwool Lapinus B.V.
   en zo nodig met:
   3.2 Kiwa N.V.

4. Wijziging ten opzichte van de vorige editie betreft verwijdering van product 422.

ETA-Danmark A/S
Kollegievej 6
DK-2920 Charlottenlund
Tel. +45 72 24 59 00
Fax +45 72 24 59 04
Internet www.etadanmark.dk

Authorised and notified according to Article 10 of the Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products

ETA DANMARK

MEMBER OF EOTA

European Technical Approval ETA-12/0054

Trade name:	Rockpanel Xtreme 8 mm finish Colours/Rockclad and Rockpanel Xtreme 8 mm finish ProtectPlus
Holder of approval:	Rockwool B.V. / Rockpanel Group Konstruktieweg 2 NL-6045 JD Roermond Tel. +31 475 353 000 Fax +31 475 353 550
Generic type and use of construction product:	Prefabricated mineral wool boards with organic or inorganic finish and with specified fastening system
Valid from: to:	2012-04-16 2017-04-16
Manufacturing plant:	Rockwool B.V. Konstruktieweg 2 NL-6045 JD Roermond
This European Technical Approval contains:	33 pages including 6 annexes which form an integral part of the document

I LEGAL BASIS AND GENERAL CONDITIONS

1 This European Technical Approval is issued by ETA-Danmark A/S in accordance with:

- Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products[1)], as amended by Council Directive 93/68/EEC of 22 July 1993[2)].

- Bekendtgørelse 559 af 27-06-1994 (afløser bekendtgørelse 480 af 25-06-1991) om ikrafttræden af EF direktiv af 21. december 1988 om indbyrdes tilnærmelse af medlemsstaternes love og administrative bestemmelser om byggevarer.

- Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex to Commission Decision 94/23/EC[3)].

2 ETA-Danmark A/S is authorized to check whether the provisions of this European Technical Approval are met. Nevertheless, the responsibility for the conformity of the products to the European Technical Approval and for their fitness for the intended use remains with the holder of the European Technical Approval.

3 This European Technical Approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European Technical Approval.

4 This European Technical Approval may be withdrawn by ETA-Danmark A/S pursuant to Article 5(1) of Council Directive 89/106/EEC.

5 Reproduction of this European Technical Approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of ETA-Danmark A/S. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European Technical Approval.

6 This European Technical Approval is issued by ETA-Danmark A/S in English.
This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

1) Official Journal of the European Communities N° L40, 11 Feb 1989, p 12.
2) Official Journal of the European Communities N° L220, 30 Aug 1993, p 1.
3) Official Journal of the European Communities N° L 17, 20 Jan 1994, p 34.

II SPECIAL CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product and intended use

General

Rockpanel Xtreme 8 mm finishes Colours/Rockclad and Rockpanel Xtreme 8 mm finish ProtectPlus is prefabricated compressed mineral wool boards with thermo-setting synthetic binders. The boards are fastened to timber or aluminium subframes. Fastening to the timber subframe is carried out with corrosion resistant nails or screws or by bonding (with an intermediate RockPanel strip with specified finish). Fastening to aluminium subframe is carried out with corrosion resistant rivets or by bonding. Mechanical fasteners, gaskets, adhesives with primers, strips for bonding and aluminium profiles are specified by the ETA-holder.

The RockPanel Xtreme Colours panels are surface treated with a four-layer water-borne polymer emulsion paint on one side, in a range of colours.

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

The physical properties of the panels are indicated in table 1:

Table 1:

Property	Value
Thickness	8 ± 0,5 mm
Length, max	3050 mm
Width, max	1500 mm
Density, nominal	1200 ±100 kg/m^3
Bending strength, length and width	$f_{05} \geq 34,5$ N/mm^2
Modulus of elasticity	m(E) ≥ 5260 N/mm^2
Thermal conductivity	0,51 W/(m × K)
Coefficient of thermal expansion, length and width	$\alpha \leq 13 \times 10^{-3}$ mm/m × K
Coefficient of moisture expansion 23 °C/50 %RH to 95 %RH	≤ 0.29 mm/m after 4 days
Deformation according to EN 438-2	≤ 0,100%

Finishes

The finishes are indicated in table 2. The paints are provided in a number of colours.

Table 2

RockPanel Xtreme Colours: (water-borne polymer emulsion paint)	Colourpaint
RockPanel Xtreme ProtectPlus: (water-borne polymer emulsion paint with anti-graffiti clear coat)	Clear coat pure or Clear coat with wood texture "Woods": Teak, Maple, Alder, Cherry, Mahogany, Merbau and Oak or With metallic particles

The colourfastness of the panels is indicated in table 3.

Table 3:

Property	Value (ISO 105 A02)
Colour fastness after 5000 hours artificial weathering	RockPanel Xtreme Colours: 3-4 or better RockPanel Xtreme ProtectPlus: 4 or better

Subframes

The panels are attached to the building by fixing to a sub-frame of aluminium or wood.

The vertical battens should have a minimum thickness of 28 mm.

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

Joints

Aluminium profiles

The horizontal joints between the panels can be open in the case of aluminium rail supports and the bonded application on RockPanel strips.

The horizontal joints between the panels are made with a Rockpanel "A" extruded aluminium 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 annex 1.

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 aluminium 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 or bonded either to vertical timber (with intermediate RockPanel strips and specified finish) or aluminium 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) with heads in the colour of the panels or Rockpanel ring shank nails 2,7/2,9 × 32 mm no 1.4401 or 1.4578 (EN 10088) with heads in the colour of the panels. Fastening to aluminium is carried out with aluminium EN AW-5019 (AlMg5) rivets, head diameter 14 mm, shank diameter 5 mm, head colour coated (for correct fixing, a riveting tool with rivet spacer must be used), see annex 3.

Bonding to both timber (with intermediate RockPanel strips and specified finish) and aluminium rails is carried out with RockPanel Tack-S adhesive. The bonding shall be carried out in accordance with the manufacturer's instructions. See annex 1. Bonding is only allowed on vertical sub-constructions with a drained cavity for ventilated applications.

The maximum fixing distances, hole diameter and characteristic load appears from annex 2, tables 5, 6 and 7.

Intended use

The boards are intended for external cladding 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. The cladding on vertical timber battens provided with mechanically fixed RockPanel strips (with specified finish) with the bonding system must be carried out with a ventilated cavity at the back. The cladding on vertical aluminium support shall be carried out with a ventilated cavity at the back. See annex 1.

Assumed working life

The assumed intended working life of the boards for the intended use is 50 years, provided that they are subject to appropriate use and maintenance.

An "assumed intended working life" means that it is expected that, when this working life has elapsed, the real working life may be, in normal use conditions, considerably longer without major degradation affecting the essential requirements.

The indications given as to the working life of the boards cannot be interpreted as a guarantee given by Rockwool B.V / Rockpanel Group or ETA-Danmark A/S.

2 Characteristics of product and assessment

	Characteristic	Assessment of characteristic
	2.1 Mechanical resistance and stability	Not relevant.
	2.2 Safety in case of fire	
	Reaction to fire	The aluminium profiles are classified as **Euroclass A1** Classification of panels: See table 4
	2.3 Hygiene, health and the environment	
	Water vapour permeability	**Xtreme Colours:** S_d < **1,80 m** at 23°C and 85 %RH **Xtreme ProtectPlus:** S_d < **3,5 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 permeability incl. joints for non-ventilated applications	**50 Pa**
	Influence on air quality and Release of dangerous substances to soil and water	No dangerous materials *) 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. Formaldehyde concentration 0,0105 mg/m^3 Formaldehyde class E1

	2.4 Safety in use		
	In absence of national regulations the design values X_d may be calculated as indicated in the ETA (see tables 6 and 6-1 to 6-8). Below is mentioned the safety factors which has been used in the calculation of the design values.		
	Fixing position and characteristic value X_k 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:* The characteristic value X_k is used to obtain the design value X_d by dividing the characteristic value X_k by a partial factor γ_M : $X_d = X_k / \gamma_M$	**Rockpanel rivets:** To an aluminium subframe, characteristic value X_k : See Annex 2 Table 6-1 row (4), (9) and (13)	
		Rockpanel screws: The axial withdrawal capacity also depends on the modification factor k_{mod} and the strength class of the wood. Boards to a wooden subframe: for the characteristic value X_k see Annex 2 Tables 6-2 and 6-3, row (4), (8), (19) and (20) Strips to a wooden subframe (bonding system): see Annex 2 Tables 6-5 and 6-6, row (3), (6), (15) and (16)	
		Rockpanel nails: The axial withdrawal capacity also depends on the modification factor k_{mod} and the strength class of the wood. Boards to a wooden subframe see Annex 2 Table 6-4, row (4), (9), (19) and (20). Strips to a wooden subframe (bonding system): see Annex 2 Table 6-7 and Table 6-8 row (6), (19) and (20)	

	Characteristic	Assessment of characteristic
	Characteristic shear strength mechanical fixings Average values	**RockPanel nails:** Failure load: **1325 N** Deformation: **15 mm** **RockPanel rivets:** Failure load: **1722 N** Deformation: **1,7 mm** **RockPanel screws:** Failure load: **1549 N** Deformation: **9 mm**

	Characteristic and design initial tensile strength Tack-S adhesive *[a]*	
	Conditions +23°, -20°C, -40°C and +80°C	Contact surfaces: rear of the board onto ProtectPlus: X_k = 6,94 N/mm¹ and X_d = 1,735 N/mm¹ ; rear of the board onto Colours code 7Y: X_k = 8,30 N/mm¹ and X_d = 2,075 N/mm¹
	Conditions +23°, -20°C, and +80°C	Contact surfaces: rear of the board onto aluminium: X_k = 5,92 N/mm¹ and X_d = 1,48 N/mm¹

[a] for the material property γ_M = 4 can be used. For the partial load factor γ_F = 1.5 can be used; these values cannot be taken as mandatory for all member states.

	Characteristic and design initial tensile strength FoamTape *[b]*	
	Conditions +23°	Contact surfaces: - rear of the board onto ProtectPlus: $X_k = X_d$ = 0,73 N/mm¹ Contact surfaces: - rear of the board onto Colours code 7Y: $X_k = X_d$ = 1,17 N/mm¹ Contact surfaces: - rear of the board onto aluminium: $X_k = X_d$ = 0,47 N/mm¹

[b] for the material property γ_M = 1 can be used. For the partial load factor γ_F = 1.5 can be used; these values cannot be taken as mandatory for all member states.

	Characteristic and design initial shear strength Tack-S adhesive *[c]*	
	Conditions +23°, -20°C, -40°C and +80°C	Contact surfaces: rear of the board onto ProtectPlus and Colours code 7Y: X_k = 7,00 N/mm¹ and X_d = 0,175 N/mm¹ Contact surfaces: rear of the board onto aluminium: X_k = 8,58 N/mm¹ and X_d = 0,214 N/mm¹

[c] for the material property γ_M = 40 can be used. For the partial load factor γ_F = 1.5 can be used; these values cannot be taken as mandatory for all member states.

	Characteristic and design initial shear strength FoamTape *[d]*	
	Condition +23°	Contact surfaces: rear of the board onto ProtectPlus and Colours code 7Y: X_k = 1,00 ; X_d = 0,05 N/mm¹ Contact surfaces: rear of the board onto aluminium: X_k = 0,99 N/mm¹ ; X_d = 0,05 N/mm¹

[d] for the material property γ_M = 20 can be used (shear caused by temporary load). For the partial load factor γ_F = 1.5 can be used; these values cannot be taken as mandatory for all member states

	Characteristic	Assessment of characteristic
	Deformation shear declared Tack-S adhesive	
	Cconditions +23°, -20°C, and +80°C:	Contact surfaces: rear of the board onto - ProtectPlus and Colours code 7Y: 3,9 to 6,1 mm Contact surfaces: rear of the board onto - aluminium: 4,5 to 6,0 mm
	Impact resistance	Hard body impact – steel ball 0,5 kg (3 J): Category III, II and I Soft body impact 3 kg (10 J): Category IV and III Soft body impact 50 kg (300 J): Category II
	Mechanical resistance of panels	**See section 1, table 1**

	Characteristic	Assessment of characteristic
	Cumulative dimensional change %	Length: 0,097% Width: 0,100%
	Coefficient of thermal expansion m/m.°K	Length: $12{,}4.10^{-6}$ Width: $12{,}5.10^{-6}$
	Coefficient of moisture expansion 42% RH difference after 4 days mm/m	Length: 0,282 Width: 0,268

	Resistance to wind load M/E/C	
	Average strength N	**Rivets: 1449 / 617 / 311** (according to Annex 2 Table 6-1) **Screws: 1105 / 482 /236** (according to Annex 2 Table 6-2 and Annex A-3 Table 6-3) **Nails: 1009 / 627 / 397** (according to Annex 2 Table 6-4)
	Average failure load N/mm²:	**Rivets: 2567 / 2769 / 2958** (according to Annex 2 Table 6-1) **Screws: 1992 / 2161 / 2243** (according to Annex 2 Table 6-2 and Annex A-3 Table 6-3) **Nails : 2637 / 4131 / 5162** (according to Annex 2 Table 6-4)
	2.5 Protection against noise	Not relevant
	2.6 Energy economy and heat retention	Not relevant
	2.7 Related aspects of serviceability	
	Resistance to Hygrothermal cycles	**Pass**
	Resistance to Xenon Arc exposure	**Pass**
	Immersion in water without UV 21 Days	Characteristic tensile strength for contact surfaces: rear of the board onto ProtectPlus and Colours code 7Y: X_k = 2,80 N/mm¹ Contact surfaces: rear of the board onto aluminium: X_k = 3,12 N/mm¹
	42 days	Characteristic tensile strength for contact surfaces: rear of the board onto ProtectPlus and Colours code 7Y: X_k = 2,22 N/mm¹ Contact surfaces: rear of the board onto aluminium: X_k = 2,58 N/mm¹
	Humidity and NaCl	Characteristic tensile strength for contact surfaces: rear of the board onto aluminium: X_k = 6,03 N/mm¹
	Humidity and SO_2	Characteristic tensile strength for contact surfaces: rear of the board onto aluminium: X_k = 6,67 N/mm¹

*) *) The declaration of the manufacturer states that the Rockpanel board do not contain substances which have to be classified as dangerous according to Regulation 1272/2008 and/or listed in the "Indicative list on dangerous substances" of the EGDS and/or substances that may be dangerous to the users of the work and the environment- taking into account the installation conditions of the construction product and the release scenarios resulting from there.

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

Table 4 Euroclass classification of different constructions with RockPanel boards

Fixing method	Ventilated or non-ventilated	vertical wooden subframe	vertical aluminium subframe
		Xtreme Colours and Xtreme ProtectPlus	
mechanically fixed	Non-ventilated. Cavity filled with mineral wool	**B-s1,d0** closed horizontal joint	
	Ventilated with EPDM gasket on the battens [a]	**B-s2,d0** open 6 mm horizontal joint	
	Ventilated with 6 or 8 mm RockPanel strips on the battens [b] [c]	**B-s2,d0** open 6 mm horizontal joint	
bonded	ventilated with 8 mm RockPanel strips on the battens [b] [c]	**B-s2,d0** open 6 mm horizontal joint	
	ventilated		**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
[c] composition 'Xtreme' or 'Durable' according to ETA-07/0141

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 or adhered as described in table 4, which are attached to the subframe mentioned below
- Adhered to a wooden subframe with intermediate Rockpanel strips mechanically fixed
- The panels are backed with min. 50 mm mineral wool insulation with density 51-69 kg/m³ with an air gap between the panels and the insulation (mechanically fixed)
- The panels are backed with min. 40 mm mineral wool insulation with density 51-69 kg/m³ without an air gap between the wooden subframe (mechanically fixed – non ventilated)
- The panels are backed with min. 50 mm mineral wool insulation with density 51 – 69 kg/m^3 with an air gap between the panels and the insulation (fixing method Adhesive RockPanel Tack-S)

Substrates:
- Concrete walls, masonry walls, timber framing

Insulation:
- Ventilated constructions: The battens are backed with min. 50 mm mineral wool insulation with density 51-69 kg/m³ with an air gap of min. 28 mm between the panels and the insulation
- Non-ventilated constructions: The panels are backed with min. 40 mm mineral wool insulation with 51-69 kg/m³ between the battens and min. 50 mm with density 51-69 kg/m³ behind the battens without air gap
- Ventilated construction and fixing method adhesive Rockpanel Tack-S: The panels are backed with min. 50 mm mineral wool insulation with density 51-69 kg/m³ with an air gap of min. 36 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

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

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 $\geq 51 - 69$ 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

Joints:

- Vertical joints are with an EPDM foam gasket backing or Rockpanel strip backing as described in table 4 and horizontal joints can be open (ventilated constructions) or with an aluminium profile (ventilated and non-ventilated constructions)
- 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

The classification is also valid for the following product parameters:

Thickness:

- Nominal 8 mm, individual tolerances ± 0,5 mm

Density

- Nominal 1050 kg/m^3 , individual tolerances ± 150 kg/m^3

3 Attestation of Conformity and CE marking

3.1 Attestation of Conformity system

The attestation of conformity applied to this product specified by the European Commission in Mandate Construct 98/437/EC, Annex 3 is System 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.

a) Tasks for the manufacturer:
   1. factory production control,
   2. further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan.

b) Tasks for the notified body:
   3. initial type-testing of the product,
   4. initial inspection of factory and of factory production control,
   5. continuous surveillance, assessment and approval of factory production control.

3.2 Responsibilities

3.2.1 Tasks of the manufacturer

3.2.1.1 Factory production control

The manufacturer has a factory production control system in the plant and exercises permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer are documented in a systematic manner in the form of written policies and procedures. This production control system ensures that the product is in conformity with the European Technical Approval.

The manufacturer shall only use raw materials supplied with the relevant inspection documents as laid down in the control plan[1]. The incoming raw materials shall be subject to controls and tests by the manufacturer before acceptance. Check of incoming materials shall include control of the inspection documents presented by suppliers (comparison with nominal values) by verifying dimension and determining material properties

The quality control on the components includes checks on:

Dimensions
Material quality
Density

The frequency of controls and tests conducted during production and on the final product is laid down in the control plan taking account of the automated manufacturing process of the boards. The actions to be undertaken by the manufacturer of the boards in the procedure of attestation of conformity are laid down in Table 9 Annex 4. Table 10 contains the special methods of control testing.

The results of factory production control are recorded and evaluated

The records shall be presented to ETA-Danmark A/S on request

3.2.2. Tasks of notified bodies

3.2.2.1 Initial type testing of the product

For initial type testing the results of the tests performed as part of the assessment for the European Technical Approval shall be used unless there are changes in the production line or plant. In such cases the necessary initial type testing has to be agreed between ETA-Danmark A/S and the notified body

3.2.2.2 Initial inspection of the factory and of factory production control

The notified body shall ascertain that, in accordance with the control plan, the factory and the factory production control are suitable to ensure continuous and orderly manufacturing of the board according to the specifications mentioned in Table 9.

3.2.2.3 Continuous surveillance, assessment and approval of factory production control.

The notified body shall visit the factory at least twice a year for regular inspection. It has to be verified that the system of factory production control and the specified automated manufacturing process are maintained taking account of the control plan.
Continuous surveillance and assessment of factory production control have to be performed according to the control plan.
The results of product certification and continuous surveillance shall be made available on demand by the certification body or inspection body, respectively, to ETA-Danmark. In cases where the provisions of the European Technical Approval and the prescribed test plan are no longer fulfilled the conformity certificate shall be withdrawn.

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41 The control plan has been deposited at the ETA-Danmark A/S and is only made available to the approved bodies involved in the conformity attestation procedure.

3.3 CE marking

The CE marking shall be affixed on every pallet label of each delivery. The CE symbol shall be in accordance with Directive 93/68/EC and accompanied by the following information:

- identification number of the certification body;
- name or identifying mark of the - producer and manufacturing plant;
- the last two digits of the year in which the CE-marking was affixed;
- number of the EC certificate of conformity;
- number of the European Technical Approval
- declaration concerning dangerous substances

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

4.1 Manufacturing

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

The European Technical Approval 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.

4.2 Installation

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 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 from a vertical edge and 50 mm from a horizontal edge (see Annex 2). The panels are fixed making sure that the screws are not over-tightened.

4.3 Packaging, storage and transportation

The panels with a protective film on the finish (no protective film on a structured surface) are delivered on pallets and with a protective cover and edge protection.

The panels shall be stacked on a dry sub-soil and protected against rain.

Pallets shall be stacked no more than two high.

4.4 Maintenance and repair

A circular saw with hard point teeth is used for cutting of the boards. For special shapes a jigsaw with wolfram grid can be used. Edge painting after cutting for durability reasons is not necessary; edge painting has only an aesthetic function.

The choice of fixing (nails, screws, rivets or adhesive) depends on the substrate and the aesthetical view. The edge distance of the mechanical fixing depends on the position of the fixing (corner or edge).

If the product is used in a not ventilated construction, repainting of the Xtreme Colours is only allowed with a vapour permeable finish with an S_d- value no more then 0.2 m; in general waterborne acrylic paint meets this requirement. Repainting of Xtreme ProtectPlus is not allowed

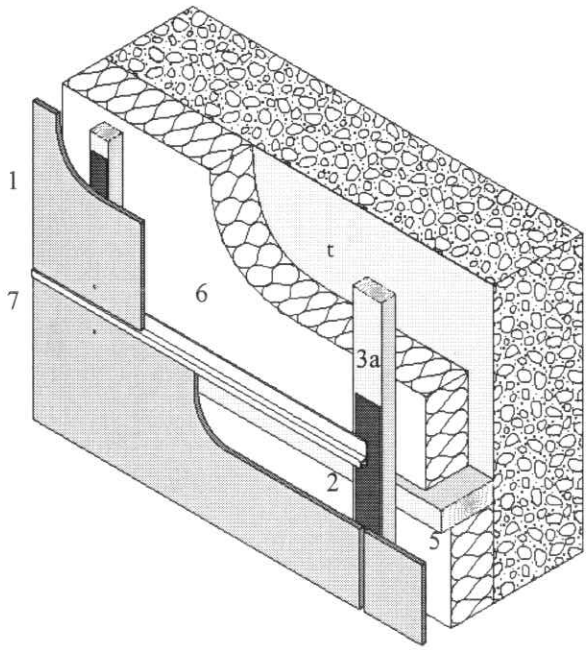
Depending on the surface treatment, the boards can be cleaned with ordinary cleaning agents dissolved in hand warm water. Organic solvents for the Xtreme ProtectPlus finish are in general also allowed (such as turpentine and acetone). To remove graffiti, the manufacturer can supply a special cleaner.

Thomas Bruun
Manager, ETA-Danmark

Annex 1

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

Figure 1. 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 aluminium chair profile or equivalent

Figure 2. Non-ventilated intended use

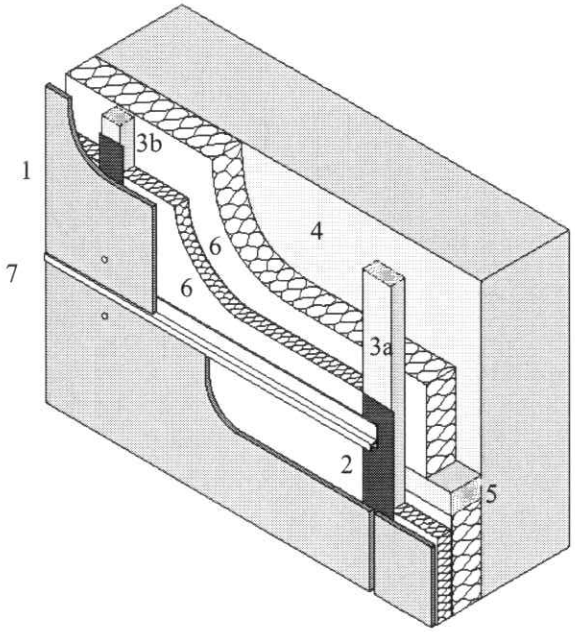
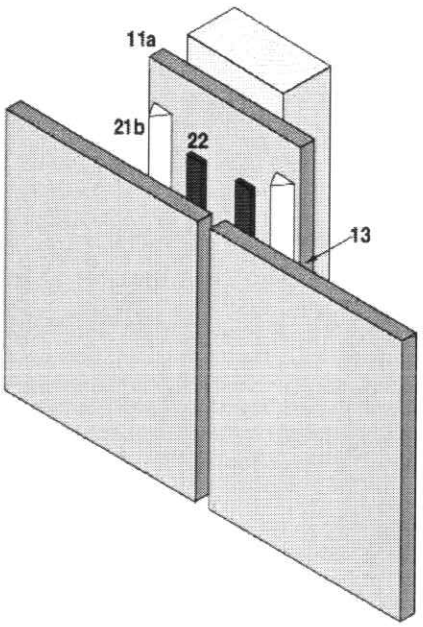


Figure 3. Bonding with Tack-S. Only on ventilated intended use



11a	8 mm RockPanel Xtreme or Durable (ETA-07/0141) strip, finish 'ProtectPlus' (version without structure) or 'Colours'(with traceability code 7Y on the rear side); strips mechanically fixed with RockPanel nails or screws
13.	Reverse of the board primered with 'MSP Transparent'
21b.	Triangular adhesive ridge with a height of 9 mm
22.	'FoamTape' self adhesive on two sides 3*12 mm

Figure 4 Bonding with Tack-S onto aluminum subframe

Figure 4.1 Vertical joints between boards

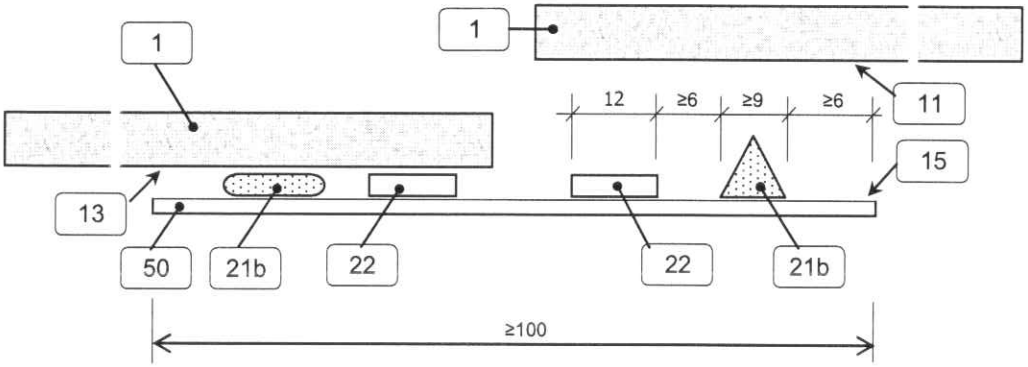
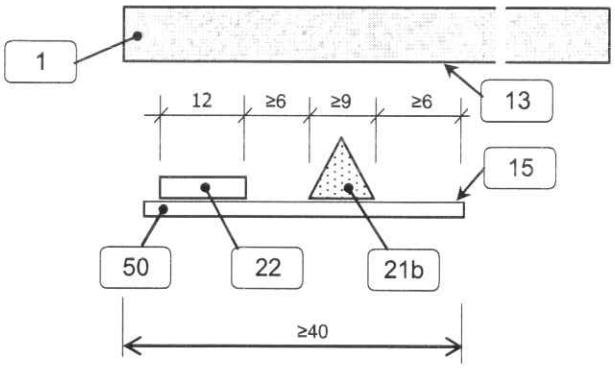


Figure 4.2 Bonding onto end profiles and onto intermediate profiles



1	Compressed mineral wool board with organic or inorganic finish
13	'Primer MSP' applied with a roller in one layer
15	"Prep M" one-step pretreatment
21b	'Tack-S' continuous triangular adhesive ridge of 9 mm
22	'FoamTape' self adhesive on two sides 3*12 mm (with a release foil on one side)
50	Aluminium subframe

Figure 5 Bonding with Tack-S onto wooden subframe with intermediate 8 mm RockPanel strips

Figure 5.1 Vertical joints between boards

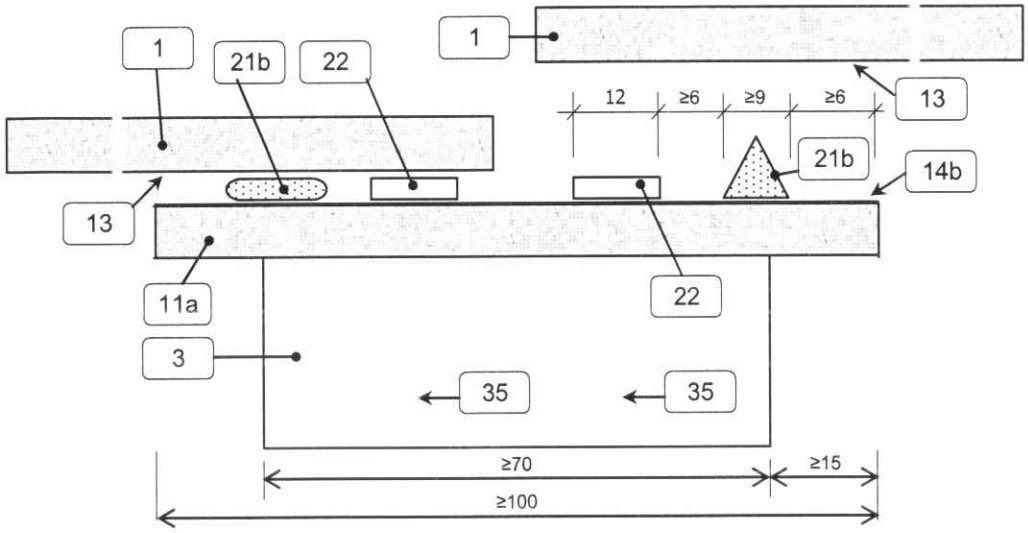
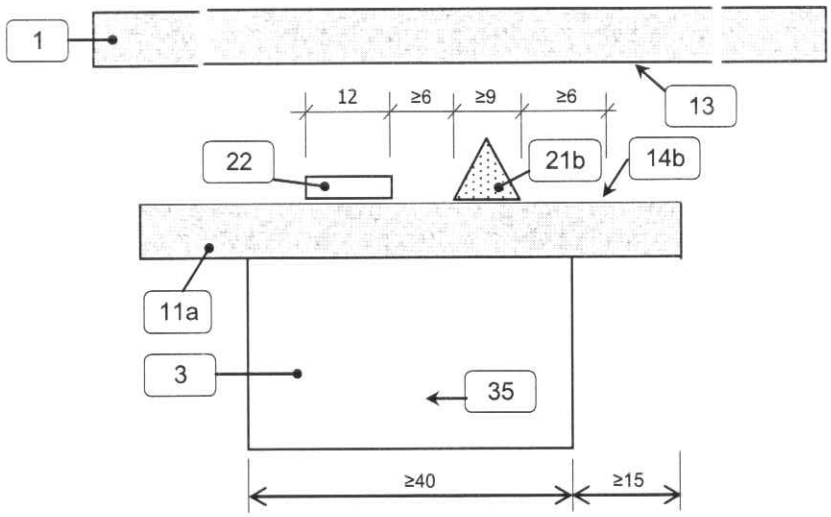


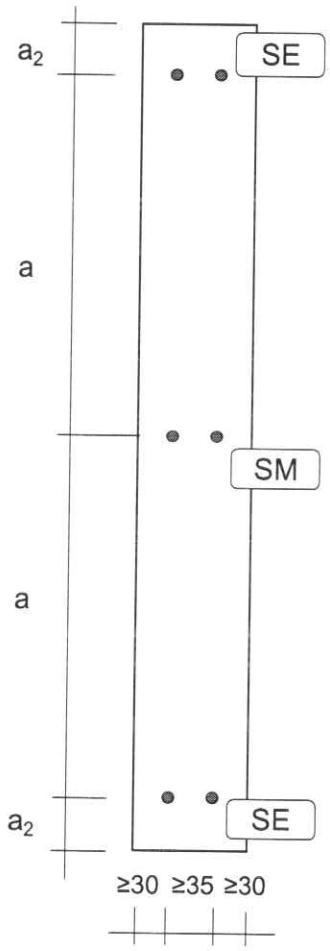
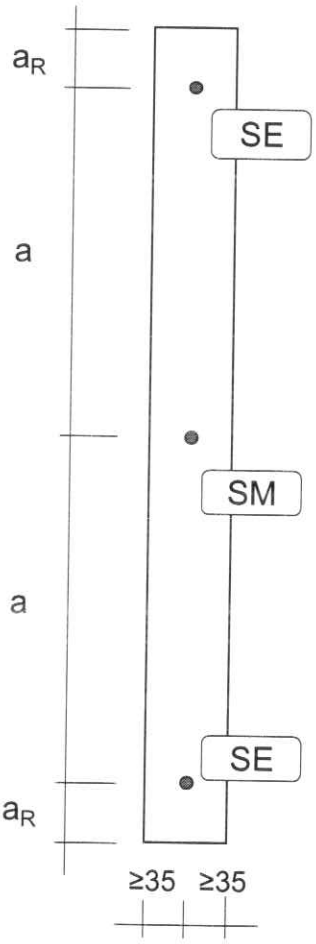
Figure 5.2 End batten and intermediate batten



1	Compressed mineral wool board with organic or inorganic finish
3	Subframe
11a	RockPanel strip (Xtreme or Durable ETA-07/0141) with specified finish mechanically fixed in accordance with Annex 2
13	'Primer MSP' applied with a roller in one layer
14b	'Liquid 1' cleaner
21b	'Tack-S' continuous triangular adhesive ridge of 9 mm
22	'FoamTape' self adhesive on two sides 3*12 mm (with a release foil on one side)
35	Mechanically fixed – screw or nail according to annex 3

Annex 2
Mechanically fixing of RockPanel strips for adhesive bonding of RockPanel boards
Minimum edge distances, fixing locations in the strip and maximum fixing distances

Figure 6. Fixing locations of RockPanel strips (Xtreme or Durable ETA-07/0141) for a wooden subframe

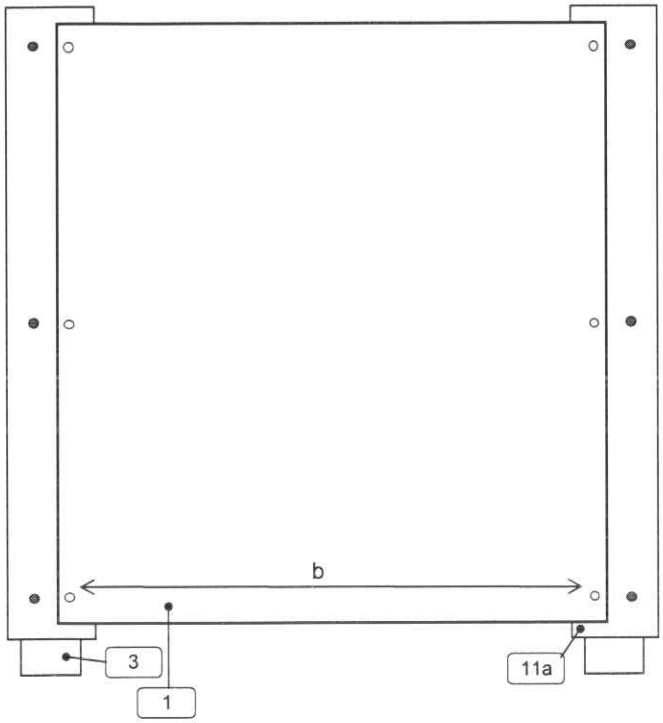
Strips located on the vertical joints	Strips located on the end of a facade and between joints of boards
	

SM: fixing on the 'middle' locations of a strip
SE: fixing on the end locations of a strip
Hole diameters in accordance with Table 7.
Fixed points in the middle of the length of a strip.

Fixing distances 8 mm RockPanel strips (for both Xtreme or Durable ETA-07/0141)		
Fixing	Fixing distance	
	a_{max}	a_2
Screw	400 mm	≥ 50 mm
Nail	300 mm	≥ 50 mm

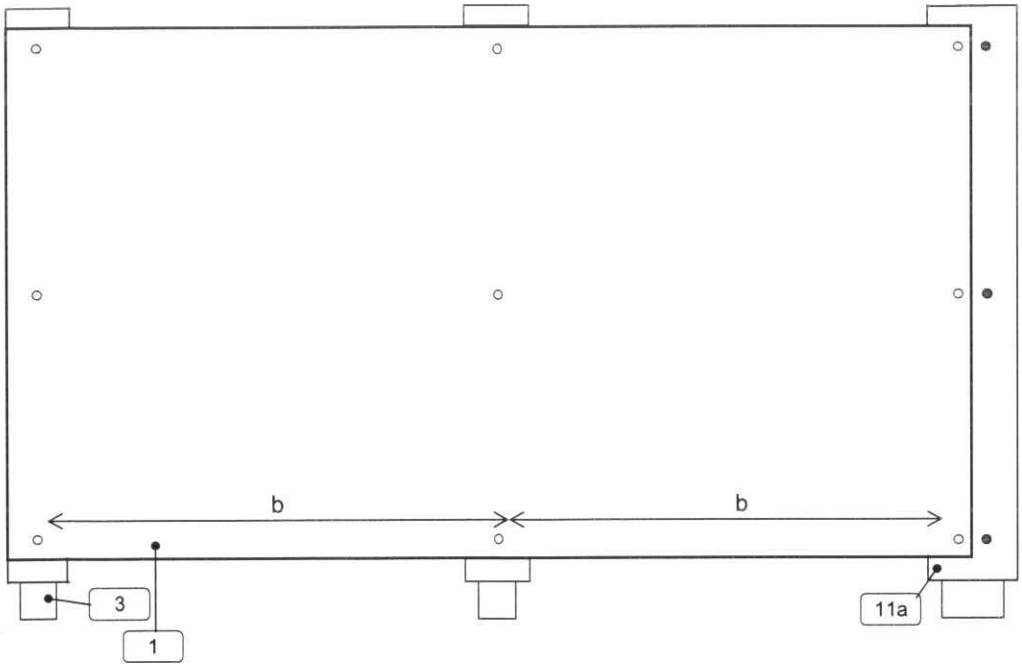
Figure 7. Examples adhesive bonding onto Rockpanel strips

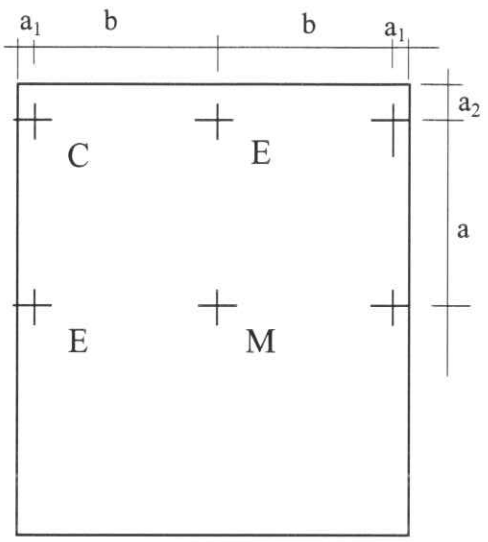
1-Field



1	RockPanel board
3	Subframe: vertical wooden battens
11a	8 mm RockPanel strip with specified finish
b	center distance adhesive ridges: max 600 mm

2-Field or more





C: Fixing in corner
E: Fixing at edge
M: Fixing at intermediate position

Table 5: Minimum edge distances and maximum distances between fastenings in mm				
Fixing type	b_{max}	a_{max}	a_1	a_2
Screw	600	600	15	50
Nail	600	400	15	50
Rivet	600	600	15	50
Adhesive	600	Continuously applied triangular adhesive ridge of 9 mm		

Table 6: Design axial load $X_d = X_k / \gamma_M$ for 8 mm board fixings
The characteristic wind load must be multiplied with $\gamma_F = 1,5$

Fixing type	Position M	Position E	Position C
Rivet [a] according to table 6.1	654 N	309 N	156 N
Screw and board fixing	see Table 6-2 row (25), (26), (27)		
Screw and the use of a 8 mm RockPanel strip [b]	see Table 6-3 row (25), (26), (27)		
combination **screw** and 8 mm intermediate strips for bonding purposes	see Table 6-6 row (21), (22), (23)		
combination **screw** and 8 mm end strips or joint strips for bonding purposes	see Table 6-5 row (21), (22), (23)		
Nail	see Table 6-4 row (25), (26), (27)		
combination **nail** and 8 mm intermediate strips for bonding purposes	see Table 6-8 row (21), (22), (23)		
combination **nail** and 8 mm end strips or joint strips for bonding purposes	see Table 6-7 row (21), (22), (23)		

Adhesive [c]		rear board onto specified finish	Characteristic axial load X_k N/mm¹	Design axial load $X_d = X_k / \gamma_M$ N/mm¹
shear	-40°C, -20°C, +23°C and +80°C	strips with ProtectPlus	7,00	0,175
		strips with Colours code 7Y		
		Aluminium	8,58	0,214
tensile	-40°C, -20°C, +23°C and +80°C	strips with ProtectPlus	6,94	1,735
		strips with Colours code 7Y	8,30	2,075
	-20°C, +23°C and +80°C	Aluminium	5,92	1,48

FoamTape		Rear board onto	Characteristic X_k N/mm¹	design X_d N/mm¹
shear	+23°C	strips with ProtectPlus and Colours code 7Y	1,00	0,05
		Aluminium	0,99	0,05
			Characteristic X_k and design X_d N/mm¹	
tensile	+23°C	strips with ProtectPlus	0,73	
		strips with Colours code 7Y	1,17	
		Aluminium	0,47	

[a] For correct fixing, a riveting tool with rivet spacer must be used
[b] With reduced withdrawal capacity because of the effective length l_{eff} of the threaded part
[c] With a triangle of 9 by 9 mm, deformed to a rectangle with a thickness of 3 mm (thickness of foam tape), see annex 1

Table 6-1: Characteristic axial load X_k and design value of the axial load $X_d = X_k / \gamma_M$ for the combination **rivet** and 8 mm boards					
board thickness		8 mm			(1)
location of the fixing in the board		M-middle	E-edge	C-corner	(2)
pull-through N					(3)
	characteristic pull-through N	1308	810	540	(4)
	material factor Rockpanel γ_M	2,0	2,0	2,0	(5)
	design value X_d of the pull-through N	**654**	405	270	(6)
wind suction					(7)
	average wind load in N/m²	2567	2769	2958	(8)
	average strength N	1449	617	311	(9)
	material factor Rockpanel γ_M	2,0	2,0	2,0	(10)
	design value X_d of the pull-through N	725	**309**	**156**	(11)
pull-out strength					(12)
	manufacturer's declaration N	2000	2000	2000	(13)
	material factor aluminium γ_M	1,3	1,3	1,3	(14)
	design value X_d of the pull-out N	1538	1538	1538	(15)
design value of the axial load $X_d = X_k / \gamma_M$ for the combination **rivet** and 8 mm boards		**654**	**309**	**156**	(16)
	board span b	600			(17)
	fixing distance a	600			(18)

[a] For correct fixing, a riveting tool with rivet spacer must be used

Table 6-2: 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]

board thickness			8 mm (with the use of a gasket)			(1)
location of the fixing in the board			M-middle	E-edge	C-corner	(2)
pull-through N						(3)
characteristic pull-through N			*1066*	*850*	*617*	(4)
material factor Rockpanel γ_M (manufacturers declaration)			*2,0*	*2,0*	*2,0*	(5)
design value X_d of the pull-through N			**533**	**425**	**309**	(6)
wind suction						(7)
average wind load in N/m²			1992	2161	2243	(8)
average strength N			*1105*	*482*	*236*	(9)
material factor Rockpanel γ_M (manufacturers declaration)			*2,0*	*2,0*	*2,0*	(10)
design value X_d of the pull-through N			**553**	**241**	**118**	(12)
withdrawal capacity						(13)
characteristic withdrawal capacity $F_{ax,k,Rk}$ [b] [c] [d]						(14)
strength class	C18	$\rho_k = 320$ kg/m³	858 [b]	858 [b]	858 [b]	(15)
wood (EN 338)	C24	$\rho_k = 350$ kg/m³	922 [b]	922 [b]	922 [b]	(16)
modification factor for k_{mod}			k_{mod} [a]			(17)
axial withdrawal capacity $F_{ax,k,Rk} \cdot k_{mod}$ [a] [b] [c] [d]						(18)
strength class	C18	$\rho_k = 320$ kg/m³	858 • k_{mod}	858 • k_{mod}	858 • k_{mod}	(19)
wood (EN 338)	C24	$\rho_k = 350$ kg/m³	922 • k_{mod}	922 • k_{mod}	922 • k_{mod}	(20)
material factor (NA to) EN 1995-1-1:2004+A1:2008			$\gamma_M = 1{,}30$ [withdrawal capacity]			(21)
design value X_d of the axial withdrawal capacity N						(22)
strength class	C18	$\rho_k = 320$ kg/m³	**660** • k_{mod}	**660** • k_{mod}	**660** • k_{mod}	(23)
wood (EN 338)	C24	$\rho_k = 350$ kg/m³	**709** • k_{mod}	**709** • k_{mod}	**709** • k_{mod}	(24)
design value of the axial load $\boldsymbol{X_d} = X_k / \gamma_M$ N			**minimum value of the rows:**			(25)
strength class	C18	$\rho_k = 320$ kg/m³	**(6) (12) (23)**	**(6) (12) (23)**	**(6) (12) (23)**	(26)
wood (EN 338)	C24	$\rho_k = 350$ kg/m³	**(6) (12) (24)**	**(6) (12) (24)**	**(6) (12) (24)**	(27)
board span b			600			(28)
fixing distance a			600			(29)

[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 1995-1-1:2004 + AC:2006 + A1:2008 (D) formula (8.38), (8.39) and (8.40)

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

Table 6-3: 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 **RockPanel strips** nominal **8** mm), with $\alpha \geq 30°$ [e]

board thickness			8 mm (with the use of a gasket)			(1)
location of the fixing in the board			M-middle	E-edge	C-corner	(2)
pull-through N						(3)
characteristic pull-through N			*1066*	*850*	*617*	(4)
material factor Rockpanel γ_M (manufacturers declaration)			*2,0*	*2,0*	*2,0*	(5)
design value X_d of the pull-through N			**533**	**425**	**309**	(6)
wind suction						(7)
average wind load in N/m²			1992	2161	2243	(8)
average strength N			*1105*	*482*	*236*	(9)
material factor Rockpanel γ_M (manufacturers declaration)			*2,0*	*2,0*	*2,0*	(10)
design value X_d of the pull-through N			**553**	**241**	**118**	(12)
withdrawal capacity						(13)
characteristic withdrawal capacity $F_{ax,k,Rk}$ [b] [c] [d]						(14)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	336 [b]	336 [b]	336 [b]	(15)
	C24	$\rho_k = 350$ kg/m³	361 [b]	361 [b]	361 [b]	(16)
modification factor for k_{mod}			k_{mod} [a]			(17)
axial withdrawal capacity $F_{ax,k,Rk} \cdot k_{mod}$ [a] [b] [c] [d]						(18)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	336 • k_{mod}	336 • k_{mod}	336 • k_{mod}	(19)
	C24	$\rho_k = 350$ kg/m³	361 • k_{mod}	361 • k_{mod}	361 • k_{mod}	(20)
material factor (NA to) EN 1995-1-1:2004+A1:2008			$\gamma_M = 1{,}30$ [withdrawal capacity]			(21)
design value X_d of the axial withdrawal capacity N						(22)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	**258** • k_{mod}	**258** • k_{mod}	**258** • k_{mod}	(23)
	C24	$\rho_k = 350$ kg/m³	**278** • k_{mod}	**278** • k_{mod}	**278** • k_{mod}	(24)
design value of the axial load $\boldsymbol{X_d} = X_k / \gamma_M$ N			**minimum value of the rows:**			(25)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	**(6) (12) (23)**	**(6) (12) (23)**	**(6) (12) (23)**	(26)
	C24	$\rho_k = 350$ kg/m³	**(6) (12) (24)**	**(6) (12) (24)**	**(6) (12) (24)**	(27)
board span b			600			(28)
fixing distance a			600			(29)

[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 ($d = l_{ef} / 6 = 16{,}75/6 = 2{,}79$ mm) ;

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

[d]: calculation in accordance with EN 1995-1-1:2004 + AC:2006 + A1:2008 (D) formula (8.38), (8.39) and (8.40)

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

Table 6-4: Characteristic axial load X_k and **design** value of the axial load $X_d = X_k / \gamma_M$ for the combination **nail** and 8 mm boards (with the use of gaskets) , with $\alpha \geq 80°$ [e]

board thickness			8 mm (with the use of a gasket)			(1)
location of the fixing in the board			M-middle	E-edge	C-corner	(2)
pull-through N						(3)
characteristic pull-through N			*752*	*674*	*577*	(4)
material factor Rockpanel γ_M (manufacturers declaration)			*2,0*	*2,0*	*2,0*	(5)
design value X_d of the pull-through N			**376**	**337**	**289**	(6)
wind suction						(7)
average wind load in N/m²			2637	4131	5162	(8)
average strength N			*1009*	*627*	*397*	(9)
material factor Rockpanel γ_M (manufacturers declaration)			*2,0*	*2,0*	*2,0*	(10)
design value X_d of the pull-through N			**505**	**314**	**199**	(12)
withdrawal capacity						(13)
characteristic withdrawal capacity $F_{ax,k,Rk}$ [c] [d]						(14)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	280	280	280	(15)
	C24	$\rho_k = 350$ kg/m³	334	334	334	(16)
modification factor for k_{mod}			k_{mod} [a]			(17)
axial withdrawal capacity $F_{ax,k,Rk} \cdot k_{mod}$ [a] [c] [d]						(18)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	280 • k_{mod}	280 • k_{mod}	280 • k_{mod}	(19)
	C24	$\rho_k = 350$ kg/m³	334 • k_{mod}	334 • k_{mod}	334 • k_{mod}	(20)
material factor (NA to) EN 1995-1-1:2004+A1:2008			$\gamma_M = 1{,}30$ [withdrawal capacity]			(21)
design value X_d of the axial withdrawal capacity N						(22)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	**215** • k_{mod}	**215** • k_{mod}	**215** • k_{mod}	(23)
	C24	$\rho_k = 350$ kg/m³	**257** • k_{mod}	**257** • k_{mod}	**257** • k_{mod}	(24)
design value of the axial load $X_d = X_k / \gamma_M$ N			**minimum value of the rows:**			(25)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	**(6) (12) (23)**	**(6) (12) (23)**	**(6) (12) (23)**	(26
	C24	$\rho_k = 350$ kg/m³	**(6) (12) (24)**	**(6) (12) (24)**	**(6) (12) (24)**	(27)
board span b			600			(28)
fixing distance a			600			(29)

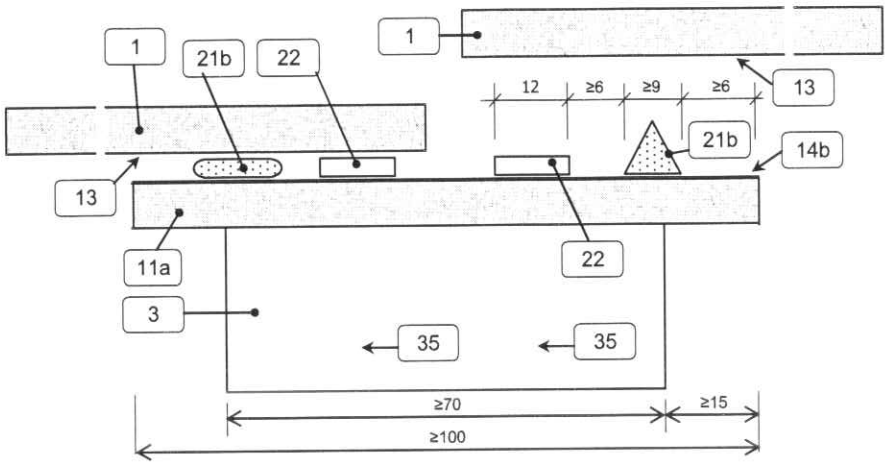
[a]: modification factor k_{mod} depends on the serviceclass (humidity conditions) and the load-duration class according to the National Annex of EN 1995-1-1

[c]: angle α between shaft and the wood grain: $\alpha \geq 80°$

[d]: calculation in accordance with EN 1995-1-1:2004 + AC:2006 + A1:2008 (D) formula (8.23-a) and DIN EN 1995-1-1/NA:2010-12 Table NA.15

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

Table 6-5: Characteristic axial load X_k and design value of the axial load $X_d = X_k / \gamma_M$ for the combination **screw** and 8 mm end strips or joint strips, with $\alpha \geq 30°$ [e]



Remark: for the explanation of the numbers see Figure 5

strip thickness			8 mm		(1)
location of the fixing in the strip (see figure 6)			middle SM	start and end SE	(2)
design value X_d of the pull-through N in accordance with Annex 2 Table 6-2 row (6)			**425** location E	**309** location C	(3)
wind suction					(4)
average wind load in N/m²			4392	4392	(5)
average strength N			*823*	*247*	(6)
material factor Rockpanel γ_M (manufacturers declaration)			*2,0*	*2,0*	(7)
design value X_d of the pull-through N			**412**	**124**	(8)
withdrawal capacity in accordance with Table 6-2 Annex 2					(9)
characteristic withdrawal capacity $F_{ax,k,Rk}$ [b] [c] [d]					(10)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	858 [b]	858 [b]	(11)
	C24	$\rho_k = 350$ kg/m³	922 [b]	922 [b]	(12)
		modification factor for k_{mod}	k_{mod} [a]		(13)
axial withdrawal capacity $F_{ax,k,Rk} \cdot k_{mod}$ [a] [b] [c] [d]					(14)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	858 • k_{mod}	858 • k_{mod}	(15)
	C24	$\rho_k = 350$ kg/m³	922 • k_{mod}	922 • k_{mod}	(16)
material factor (NA to) EN 1995-1-1:2004+A1:2008			$\gamma_M = 1{,}30$ [withdrawal capacity]		(17)
design value X_d of the axial withdrawal capacity N					(18)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	**660** • k_{mod}	**660** • k_{mod}	(19)
	C24	$\rho_k = 350$ kg/m³	**709** • k_{mod}	**709** • k_{mod}	(20)
design value of the axial load $X_d = X_k / \gamma_M$ N			**minimum value of the rows:**		(21)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	**(3) (8) (19)**	**(3) (8) (19)**	(22)
	C24	$\rho_k = 350$ kg/m³	**(3) (8) (20)**	**(3) (8) (20)**	(23)
board span b Figure 7			600		(24)
fixing distance a Figure 6			500		(25)

[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

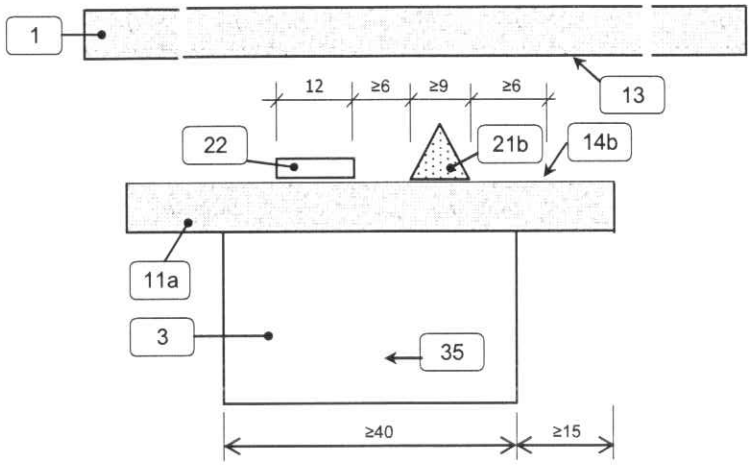
[b]: with reduced thread diameter to fulfil the minimum l_{ef} demand ($d = l_{ef} / 6 = 24{,}75/6 = 4{,}12$ mm) ;

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

[d]: calculation in accordance with EN 1995-1-1:2004 + AC:2006 + A1:2008 (D) formula (8.38), (8.39) and (8.40)

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

Table 6-6: Characteristic axial load X_k and design value of the axial load $X_d = X_k / \gamma_M$ for the combination **screw** and 8 mm intermediate strips, with $\alpha \geq 30°$ [e]



Remark: for the explanation of the numbers see Figure 5

strip thickness			8 mm		(1)
location of the fixing in the strip (see figure 6)			middle SM	start and end SE	(2)
design value X_d of the pull-through N in accordance with Annex 2 Table 6-2 row (6)			**425** location E	**309** location C	(3)
wind suction					(4)
average wind load in N/m²			4606	4606	(5)
average strength N			*1770*	*531*	(6)
material factor Rockpanel γ_M (manufacturers declaration)			*2,0*	*2,0*	(7)
design value X_d of the pull-through N			**885**	**266**	(8)
withdrawal capacity in accordance with Table 6-2 Annex 2					(9)
characteristic withdrawal capacity $F_{ax,k,Rk}$ [b] [c] [d]					(10)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	858 [b]	858 [b]	(11)
	C24	$\rho_k = 350$ kg/m³	922 [b]	922 [b]	(12)
	modification factor for k_{mod}		k_{mod} [a]		(13)
axial withdrawal capacity $F_{ax,k,Rk} \cdot k_{mod}$ [a] [b] [c] [d]					(14)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	858 • k_{mod}	858 • k_{mod}	(15)
	C24	$\rho_k = 350$ kg/m³	922 • k_{mod}	922 • k_{mod}	(16)
material factor (NA to) EN 1995-1-1:2004+A1:2008			$\gamma_M = 1{,}30$ [withdrawal capacity]		(17)
design value X_d of the axial withdrawal capacity N					(18)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	**660** • k_{mod}	**660** • k_{mod}	(19)
	C24	$\rho_k = 350$ kg/m³	**709** • k_{mod}	**709** • k_{mod}	(20)
design value of the axial load $X_d = X_k / \gamma_M$ N			**minimum value of the rows:**		(21)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	**(3) (8) (19)**	**(3) (8) (19)**	(22)
	C24	$\rho_k = 350$ kg/m³	**(3) (8) (20)**	**(3) (8) (20)**	(23)
board span b Figure 7			600		(24)
fixing distance a Figure 6			400		(25)

[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

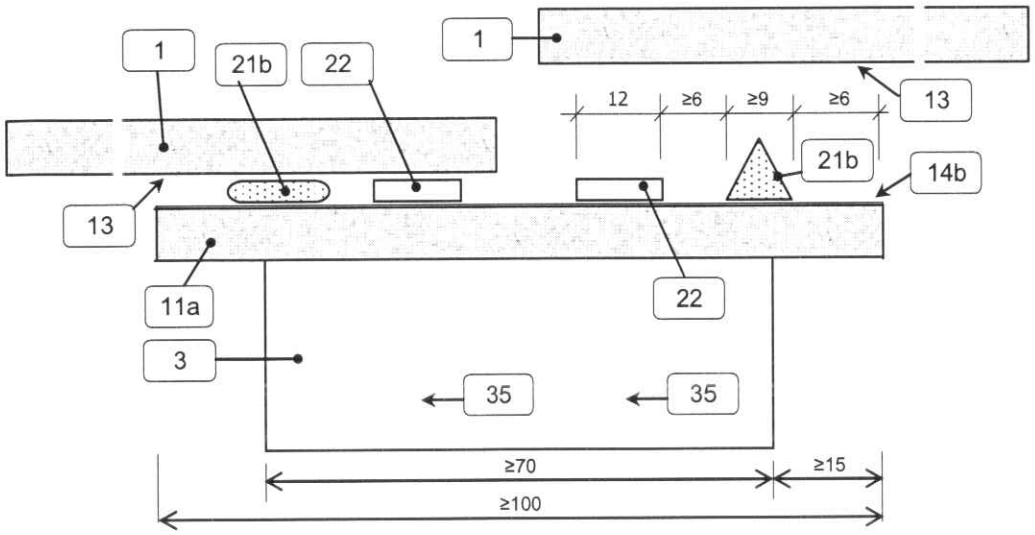
[b]: with reduced thread diameter to fulfil the minimum l_{ef} demand ($d = l_{ef} / 6 = 24{,}75/6 = 4{,}12$ mm) ;

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

[d]: calculation in accordance with EN 1995-1-1:2004 + AC:2006 + A1:2008 (D) formula (8.38), (8.39) and (8.40)

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

Table 6-7: Characteristic axial load X_k and design value of the axial load $X_d = X_k / \gamma_M$ for the combination **nail** and 8 mm end strips or joint strips, with $\alpha \geq 80°$ [e]



Remark: for the explanation of the numbers see Figure 5

strip thickness			8 mm		(1)
location of the fixing in the strip (see figure 6)			middle SM	start and end SE	(2)
design value X_d of the pull-through N in accordance with Annex 2 Table 6-4 row (6)			**337** location E	**289** location C	(3)
wind suction					(4)
average wind load in N/m²			4503	4503	(5)
average strength N			*506*	*152*	(6)
material factor Rockpanel γ_M (manufacturers declaration)			*2,0*	*2,0*	(7)
design value X_d of the pull-through N			**253**	**76**	(8)
withdrawal capacity in accordance with Table 6-4 Annex 2					(9)
characteristic withdrawal capacity $F_{ax,k,Rk}$ [c] [d]					(10)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	280	280	(11)
	C24	$\rho_k = 350$ kg/m³	334	334	(12)
	modification factor for k_{mod}		k_{mod} [a]		(13)
axial withdrawal capacity $F_{ax,k,Rk} \cdot k_{mod}$ [a] [c] [d]					(14)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	280 • k_{mod}	280 • k_{mod}	(15)
	C24	$\rho_k = 350$ kg/m³	334 • k_{mod}	334 • k_{mod}	(16)
material factor (NA to) EN 1995-1-1:2004+A1:2008			$\gamma_M = 1{,}30$ [withdrawal capacity]		(17)
design value X_d of the axial withdrawal capacity N					(18)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	**215** • k_{mod}	**215** • k_{mod}	(19)
	C24	$\rho_k = 350$ kg/m³	**257** • k_{mod}	**257** • k_{mod}	(20)
design value of the axial load $X_d = X_k / \gamma_M$ N			**minimum value of the rows:**		(21)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	**(3) (8) (19)**	**(3) (8) (19)**	(22)
	C24	$\rho_k = 350$ kg/m³	**(3) (8) (20)**	**(3) (8) (20)**	(23)
board span b Figure 7			600		(24)
fixing distance a Figure 6			300		(25)

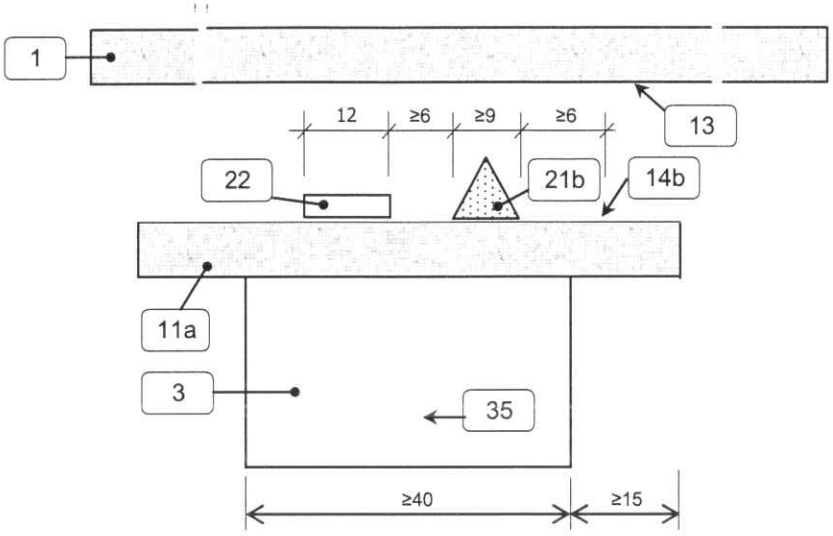
[a]: modification factor k_{mod} depends on the serviceclass (humidity conditions) and the load-duration class according to the National Annex of EN 1995-1-1

[c]: angle α between shaft and the wood grain: $\alpha \geq 80°$

[d]: calculation in accordance with EN 1995-1-1:2004 + AC:2006 + A1:2008 (D) formula (8.23-a) and DIN EN 1995-1-1/NA:2010-12 Table NA.15

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

Table 6-8: Characteristic axial load X_k and design value of the axial load $X_d = X_k / \gamma_M$ for the combination **nail** and 8 mm intermediate strips, with $\alpha \geq 80°$ [e]



Remark: for the explanation of the numbers see Figure 5

strip thickness			8 mm		(1)
location of the fixing in the strip (see figure 6)			middle SM	start and end SE	(2)
design value X_d of the pull-through N in accordance with Annex 2 Table 6-4 row (6)			**337**	**289**	(3)
wind suction					(4)
average wind load in N/m²			3078	3078	(5)
average strength N			*887*	*266*	(6)
material factor Rockpanel γ_M (manufacturers declaration)			*2,0*	*2,0*	(7)
design value X_d of the pull-through N			**444**	**133**	(8)
withdrawal capacity					(9)
characteristic withdrawal capacity $F_{ax,k,Rk}$ [c] [d]					(10)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	280 [b]	280 [b]	(11)
	C24	$\rho_k = 350$ kg/m³	334 [b]	334 [b]	(12)
		modification factor for k_{mod}	k_{mod} [a]		(13)
axial withdrawal capacity $F_{ax,k,Rk} \cdot k_{mod}$ [a] [c] [d]					(14)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	280 • k_{mod}	280 • k_{mod}	(15)
	C24	$\rho_k = 350$ kg/m³	334 • k_{mod}	334 • k_{mod}	(16)
material factor (NA to) EN 1995-1-1:2004+A1:2008			$\gamma_M = 1{,}30$ [withdrawal capacity]		(17)
design value X_d of the axial withdrawal capacity N					(18)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	**215** • k_{mod}	**215** • k_{mod}	(19)
	C24	$\rho_k = 350$ kg/m³	**257** • k_{mod}	**257** • k_{mod}	(20)
design value of the axial load $X_d = X_k / \gamma_M$ N			**minimum value of the rows:**		(21)
strength class wood (EN 338)	C18	$\rho_k = 320$ kg/m³	**(3) (8) (19)**	**(3) (8) (19)**	(22)
	C24	$\rho_k = 350$ kg/m³	**(3) (8) (20)**	**(3) (8) (20)**	(23)
board span b Figure 7			600		(24)
fixing distance a Figure 6			300		(25)

[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

[c]: angle α between shaft and the wood grain: $\alpha \geq 80°$

[d]: calculation in accordance with EN 1995-1-1:2004 + AC:2006 + A1:2008 (D) formula (8.23-a) and DIN EN 1995-1-1/NA:2010-12 Table NA.15

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

For bonded applications The RockPanel strip (item 11a on figure 3 in annex 1) must be mechanically fixed in such a way that it can move tension free on the wooden battens.

Therefore, The RockPanel strip is mounted with fixed points and with moving points. The hole diameters for the fixing points are indicated in table 7 (screw and nail fixing).

The characteristic loads which may be taken for the combination RockPanel strips and fixings (screw and nail fixing), are given in table 6-5, 6-6, 6-7 and 6-8 (position E and C).

The characteristic loads which may be taken for the combination boards and fixings (rivet, screw and nail fixing), are given in table 6-1, 6-2, 6-3 and 6-4 (position M, E and C)

hole diameter [mm]			
Fixing type	Fixed point	Moving point	Board dimension considered
Screw	3,2	6,0	1200*3050
Nail	2,5	3,8	1200*2420
Rivet	5,2	8,0	1200*3050
Edge distances: $a_1 \geq 15$ mm and $a_2 \geq 50$ mm			

Table 7. Hole diameters for RockPanel boards mechanically fixed and RockPanel strip in bonded applications

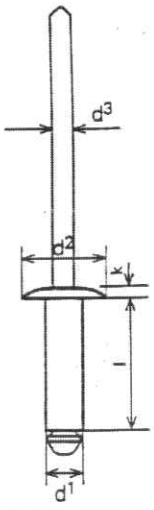
Annex 3

Table 8 - Fastener specification

Rivet AP14-50180-S

Material EN AW-5019 (AlMg5) in accordance with EN 755-2
Nail material number 1.4541 in accordance with EN 10088
Failure tensile strength Z_b = 3920 N

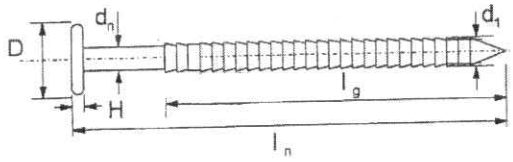
d^1 = 5
d^2 = 14
d^3 = 2,75
l = 18
k = 1,5



Ring-shank nail

Stainless steel in accordance with EN 10088
Material number 1.4401 or 1.4578

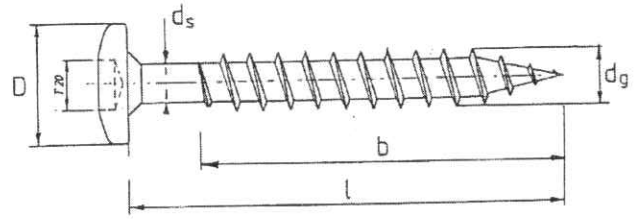
d_n = 2,6 – 2,8
d_1 = 2,8 – 3,0
l_n = 31 – 32,5
l_g = 24 – 26
D = 5,8 – 6,3
H = 0,8 – 1,0



Torx screws

Stainless steel in accordance with EN 10088
Material number 1.4401 or 1.4578

d_s = 3,3 – 3,4
d_g = 4,3 – 4,6
l = 35 -1,25
b = 26,25 – 28,5
D = 9,6 - 0,4



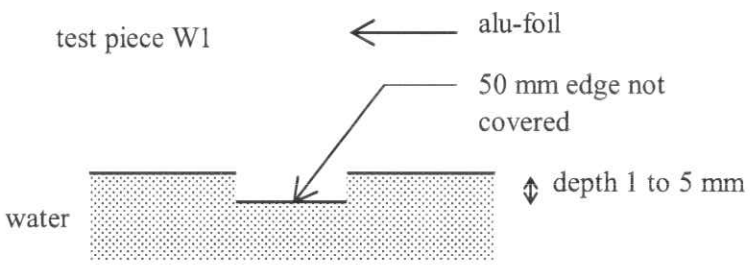
Annex 4

Table 9 - 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	8 ± 0,5 mm	40 [a]	One board for every 200 boards produced
2	Density	EN 323	1200 ±100 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	$f_{05} \geq 34,5$ N/mm^2	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 10	lowest individual strength f ≥ 28 N/mm^2	3 (length) + 2 (width)	One board for every 200 boards produced
5	Water absorption after 4 days	see table 10	≤ 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*	14,5 ± 0,5 weight %	40 [a]	One board for every 200 boards produced
7	Reaction to fire	EN 13162 loss on ignition Table B.2	Table 4 EN 13501-1	Three specimens [b]	every two years
Initial type-testing of the product (ITT) *(for system 4 only)*					
1	As described in section 4 of the CUAP				
[a] amount of samples from four different boards [b] three sets of long plus short wing (EN 13823:2003-01 clause 5.4)					

Annex 5

Table 10 - Special methods of control and testing used for the evaluation

Bending strength after ageing		
	Ageing of the 5 test pieces in (tab)water from 70°C (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 aluminium 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 aluminium 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
		

Annex 6

Table 11 - 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	The approval tests are acceptable for ITT				
Initial inspection of factory and factory production control (FPC)					
1	See table 9				
Continuous surveillance, judgment and assessment of factory production control (FPC)					
1	See table 9				

Table 12 – 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.

KOMO productcertificaat

NL/SfB: -

Kiwa N.V.
Certificatie en Keuringen
Sir Winston Churchill-laan 273
Postbus 70
2280 AB Rijswijk

Telefoon 070 – 414 44 00
Telefax 070 – 414 44 20

Geaccrediteerd door de Raad voor Accreditatie

Vormstukken, platen en stroken van minerale wol voor thermische isolatie van systeemvloeren

Nummer : **K4397/02**
Uitgegeven : 2001-06-01
Vervangt : K4397/01
d.d. 1997-06-01

Producent
Rockwool Lapinus B.V.
Industrieweg 15
6045 JG Roermond
Postbus 1160
6040 KD Roermond
Telefoon 0475-353535
Telefax 0475-353484

VERKLARING VAN KIWA

Dit productcertificaat is op basis van BRL 4304, "Platen, dekens en vormstukken van minerale wol (MW) voor thermische isolatie van systeemvloeren", conform het Kiwa-Reglement voor Productcertificatie: 2001 afgegeven door Kiwa.

Kiwa verklaart, conform §3 van EN 45011, juncto ISO/IEC Guide 2 (zie blad 2), dat de door de producent vervaardigde Platen, dekens en vormstukken van minerale wol (MW) voor thermische isolatie van systeemvloeren aan de in dit productcertificaat vastgelegde technische specificaties voldoen, mits zij zijn voorzien van het hieronder afgebeelde KOMO-merk op de wijze zoals aangegeven in dit productcertificaat.

Voor de relatie van de uitspraken van dit productcertificaat met de voorschriften van het Bouwbesluit wordt verwezen naar de lijst van kwaliteitsverklaringen zoals die halfjaarlijks door de Stichting Bouwkwaliteit (SBK) te Rijswijk wordt gepubliceerd.

ing. B. Meekma,
directeur Certificatie en Keuringen, Kiwa N.V.

Gebruikers van dit productcertificaat wordt geadviseerd om bij Kiwa te informeren of dit document nog geldig is.

Afbeelding van KOMO-merk

Dit productcertificaat bestaat uit 3 bladzijden

KOMO productcertificaat

Vormstukken, platen en stroken van minerale wol voor thermische isolatie van systeemvloeren

kiwa
Partner for progress

Nummer : **K4397/02** BLAD 2
Uitgegeven : 2001-06-01

De in de "Verklaring van Kiwa" opgenomen verwijzing naar de vigerende norm EN 45011 houdt in: handeling van derde partij, waarmee wordt aangetoond, dat er voldoende vertrouwen bestaat dat een naar behoren geïdentificeerd product in overeenstemming is met een bepaalde norm, of een ander normatief document.

PRODUCTSPECIFICATIE

Technische specificatie van het product
De beoordelingsrichtlijn onderscheidt vier toepassingstypes:
A niet op druk en niet op delaminatie te belasten;
B wel op druk en niet op delaminatie te belasten;
C niet op druk en wel op delaminatie te belasten;
D op druk en delaminatie te belasten.

De producten in deze kwaliteitsverklaring behoren tot toepassingstype C of D (zie tabel 1).

Vorm en samenstelling
Vormstukken, platen en stroken van thermoharde kunststofgebonden steenwol vezels. De producten zijn niet voorzien van een bekleding.

Afmetingen

Tabel 1 - Afmetingen in mm

Eindfabrikaat	Type	Lengte	Breedte	Dikte
416.000.5vk	C	600	1000	250
416.000.5vl	C	1000	600	250
416.000.h5k	C	600	500	250
904.416.065	C	1000	105	30, 43, 52
904.416.080	C	120	760	190
904.416.222	C	1000	280	255
		1200	492	265
417	C	450 - 2500	450 - 2500	40 - 150
418	D	450 - 2500	450 - 2500	30 - 150
904.418.000	D	1000	110	70

Toleranties type C:
- lengte ± 2%
- breedte ± 5 mm
- diktegemiddeld + 5 mm of + 6% van de laagste waarde en -1 mm: afwijking individuele waarde t.o.v. gemiddelde ± 5 mm.

Toleranties type D:
- lengte ± 2%
- breedte ± 5 mm
- diktegemiddeld ± 3 mm: afwijking individuele waarde t.o.v. gemiddelde ± 3 mm.

Warmtegeleidingscoëfficiënt:

$\lambda_{declared}$:
De gedeclareerde waarde van de warmtegeleidingscoëfficiënt ($\lambda_{declared}$) van het isolatiemateriaal is vermeld in tabel 2.
De dikte van het isolatiemateriaal gedeeld door de $\lambda_{declared}$ is de gedeclareerde waarde van de warmteweerstand van het isolatiemateriaal ($R_{declared}$).
De $R_{declared}$ verrekend met de correctiefactor voor het isolatiemateriaal uit de NEN 1068 is de rekenwaarde voor de warmteweerstand van het isolatiemateriaal (R_{reken}).

λ_{reken}:
De rekenwaarde van de warmtegeleidingscoëfficiënt (λ_{reken}) van het isolatiemateriaal is vermeld in tabel 2.
Deze waarde is ontleend aan de NEN 1068 en de Ministeriële Regeling nr. 6 (Stcrt. 1993, 249).

Vervorming bij hoge temperatuur onder belasting
De producten behorende tot type D zijn voldoende vormvast.
De dikteverandering na beproeving bij 23°C en 20 kPa is maximaal 10%. De dikteverandering na beproeving bij 80°C en 20 kPa is maximaal 5%.

Vlakheid
De afwijking ten opzichte van een plat vlak bedraagt maximaal 6 mm/m.

Haaksheid
De afwijking bedraagt maximaal 3 mm op 500 mm vanaf het hoekpunt.

Treksterkte
De producten behorende tot type D kunnen minimaal twee maal hun eigen gewicht dragen.

Waterafstotendheid
De wateropname bedraagt maximaal 1,0 kg/m².

Gedrag bij brand
De producten in deze kwaliteitsverklaring zijn onbrandbaar volgens NEN 6064.

Druksterkte bij 10% vervorming
De producten behorende tot type D zijn ingedeeld in klassen volgens de beoordelingsrichtlijn.
Zie tabel 2.

Delaminatiesterkte
De delaminatiesterkte bedraagt minimaal 3 x het eigen gewicht van het vormstuk.

Druksterkte bij 10% vervorming na waterabsorptie
De producten behorende tot type D zijn na waterabsorptie ingedeeld in klassen volgens de beoordelingsrichtlijn.
Zie tabel 2.

Delaminatiesterkte na waterabsorptie
De delaminatiesterkte na waterabsorptie bedraagt minimaal de sterkte van de bevestiging van het isolatiemateriaal aan het vloerelement.

Merken
De producten worden gemerkt met het KOMO-merk.
De uitvoering van dit merk is als volgt:
- zie voorzijde van dit productcertificaat.

Plaats van het merk:
- per verpakkingseenheid.

Overige verplichte aanduidingen:
- fabrieksnaam of gedeponeerd handelsmerk;
- afmetingen in SI-eenheden;
- aantal vierkante meters per pak;
- certificaatnummer K4397;
- productiecode.

Tabel 2

Halffabrikaat	Eindfabrikaat	Vorm	Druksterkte, klasse	Druksterkte na W.A., klasse	$\lambda_{declared}$ W/(mK)
416.055	416.000.5vk	vormstuk	-	-	0,034
	416.000.5vl	vormstuk	-	-	0,034
	416.000.h5k	vormstuk	-	-	0,034
416.065	904.416.065	strook	-	-	0,036
416.080	904.416.080	vormstuk	-	-	n.v.t.[1]
416.222	904.416.222	vormstuk	-	-	n.v.t.[2]
417	417	plaat	-	-	0,033
418	418	strook/plaat	C4	C4	0,039
418	904.418.000	vormstuk	C4	C4	0,039

[1] λ_{reken} = 0,040 W/(mK).
[2] $R_{declared}$ = 7,50 m²K/W. Hieruit volgt R_{reken} = 7,14 m²K/W.

WENKEN VOOR DE TOEPASSER

1. De producten zijn bestemd om te worden toegepast in en onder vrijdragende systeemvloeren van constructief beton waarvoor een KOMO-attest-met-productcertificaat is afgegeven.

2. Inspecteer bij aflevering of:
   2.1 geleverd is wat is overeengekomen;
   2.2 het merk en de wijze van merken juist zijn;
   2.3 de producten geen zichtbare gebreken vertonen als gevolg van transport en dergelijke.

3. Indien u op grond van het hiervoor gestelde tot afkeuring overgaat, neem dan contact op met:
   3.1 Rockwool Lapinus B.V.
   en zo nodig met:
   3.2 Kiwa N.V.

4. Wijziging ten opzichte van de vorige editie betreft verwijdering van product 422.

KOMO attest-met-productcertificaat

NL/SfB: (47)Ls1

Kiwa N.V.
Certificatie en Keuringen
Sir Winston Churchill-laan 273
Postbus 70
2280 AB Rijswijk
Telefoon 070 – 414 44 00
Telefax 070 – 414 44 20

Geaccrediteerd door de Raad voor Accreditatie
RvC

GARANTGUM bitumineuze dakbedekkingssystemen

Nummer : **K11174/02**
Uitgegeven : **2001-10-01**
Vervangt : K11174/01
d.d. **1998-01-01**

Certificaathouder
Troelstra & de Vries B.V.
Dakproductenindustrie
Geeuwkade 21
Postbus 2
8650 AA IJlst
Telefoon 0515-533000
Telefax 0515-533111
E-mail info@troelstra-devries.nl

Troelstra & de Vries

Venedak

VERKLARING VAN KIWA

Dit attest-met-productcertificaat is op basis van BRL 1511/01, "Baanvormige dakbedekkingssystemen" deel 1 "Algemene bepalingen" en deel 3 "Specifieke bepalingen voor dakbedekkingssystemen op basis van gewapende dakbanen met toplaag van APP gemodificeerd bitumen", conform het Kiwa-Reglement voor product-certificatie: 1990 afgegeven door Kiwa.

Kiwa verklaart dat 'GARANTGUM' toplagen geschikt zijn voor het vervaardigen van dakbedekkingssystemen die prestaties leveren als in dit attest-met-productcertificaat omschreven, mits:
- voldoet aan de in dit attest-met-productcertificaat vastgelegde technische specificaties;
- de vervaardiging van dakbedekkingssystemen geschiedt overeenkomstig de in dit attest-met-productcertificaat vastgelegde verwerkingsmethoden;
- voldaan wordt aan de in dit attest-met-productcertificaat omschreven toepassingsvoorwaarden.

Kiwa verklaart, conform §3 van EN 45011, juncto ISO/IEC Guide 2 (zie blad 2), dat de door de producent vervaardigde toplagen aan de in dit attest-met-productcertificaat vastgelegde technische specificaties voldoen, mits zij zijn voorzien van het hieronder afgebeelde KOMO-merk op de wijze zoals aangegeven in dit attest-met-productcertificaat.
Door Kiwa wordt in het kader van dit attest-met-productcertificaat geen controle uitgeoefend op de productie van de overige onderdelen van dakbedekkingssystemen, noch op de vervaardiging van dakbedekkingssystemen.

Voor de relatie van de uitspraken van dit attest met de voorschriften van het Bouwbesluit wordt verwezen naar de lijst van kwaliteitsverklaringen zoals die halfjaarlijks door de Stichting Bouwkwaliteit (SBK) te Rijswijk wordt gepubliceerd.

B. Meekma

ing. B. Meekma,
directeur Certificatie en Keuringen, Kiwa N.V.

Gebruikers van dit attest-met-productcertificaat wordt geadviseerd om bij Kiwa te informeren of dit document nog geldig is.

Afbeelding van KOMO-merk

Dit attest-met-productcertificaat bestaat uit 11 bladzijden