

DECLARATION OF PERFORMANCE

No. **0764-CPR-0251-DK-english-vs01**

1. *Unique identification code of the product-type:*

ROCKPANEL Natural Durable 8 mm and 10 mm
ROCKPANEL Natural Xtreme 8 mm and 10 mm

2. *Intended use / es*

External cladding for walls, fascias, soffits and ceilings

3. *Manufacturer*

ROCKWOOL B.V. / ROCKPANEL Group
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4. *System or systems of AVCP (assessment and verification of constancy of performance of the construction product) as set out in Annex V (amended by : OJ L 157, 27.5.2014, p. 76-79)*

System 1

5. *European Assessment Document:*

EAD 090001-00-0404 for Prefabricated compressed mineral wool boards with organic or inorganic finish and with specified fastening system, edition May 2015.

European Technical Assessment: ETA-13/0648 of 2015-11-02

Technical Assessment Body: ETA-Danmark A/S
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and issued: **Certificate of Constancy of performance No. 0764 - CPR – 0251**

6. Characteristics of the product

The ROCKPANEL 'Natural' panels are not surface treated with an organic or inorganic finish.

The physical properties of **ROCKPANEL 'Natural Durable'** 8 mm and 10 mm and **ROCKPANEL 'Natural Xtreme'** 8 mm and 10 mm are indicated below:

| thickness | 'Durable' | | 'Xtreme' | |
|---|-----------|-------|----------|-------|
| | 8 mm | 10 mm | 8 mm | 10 mm |
| Tolerances thickness mm | ± 0,5 | | | |
| Length mm, max | 3050 | | | |
| Width mm, max | 1250 | | | |
| Density nominal kg/m ³ | 1050 | | 1200 | |
| Bending strength length and width f ₀₅ N/mm ² | ≥ 27 | | ≥ 34.5 | |
| Modulus of Elasticity m(E) N/mm ² | ≥ 4015 | | ≥ 5260 | |
| Thermal conductivity W/(m•K) | 0,37 | | 0,43 | |

Clause 7 contains the performances of ROCKPANEL 'Natural Durable' 8 mm and 10 mm and ROCKPANEL 'Natural Xtreme' 8 mm and 10 mm.

7. Declared performance

| Essential characteristics | Performance | | | Harmonised technical specification |
|---|--|--|--|------------------------------------|
| Basic Requirements for construction works BR2 - Safety in case of fire | Table 1 - Euroclass classification of different constructions with ROCKPANEL 'Natural' boards | | | |
| | Fixing method | Ventilated or non-ventilated | vertical wooden subframe 'Natural' in the composition / thicknesses | |
| | | | 'Durable' 8 | 'Xtreme' 10 mm |
| | mechanically fixed | Ventilated with EPDM gasket on the battens [a] | B-s2,d0 open 6 mm horizontal joint | |
| | [a] width of the gasket 15 mm at both sides wider than the batten | | | |

Field of application

The following field of application applies.

Euroclass classification

The classification mentioned in Table 1 is valid for the following end use conditions:

- Mounting:
- Mechanically fixed as described in Table 1, which are attached to the sub frame mentioned below
 - The panels are backed with min. 50 mm mineral wool insulation with density 30-70 kg/m³ according to EN 13162 with a cavity between the panels and the insulation (mechanically fixed)
- Substrates:
- Concrete walls, masonry walls
- Insulation:
- Ventilated constructions: The battens are backed with min. 50 mm mineral wool insulation with density 30-70 kg/m³ with an air gap of min. 28 mm between the panels and the insulation
 - Results are also valid for all greater thickness of mineral wool insulation layer with the same density and the same or better reaction to fire classification
 - Results are also valid for the panels without insulation, if the substrate chosen according to EN 13823 is made of panel with Euro-class A1 or A2 (e.g. fibre-cement panels)
- Sub-frame:
- 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
 - Test results are also valid for the same type of panel with vertical LVL battens, without fire retardant treatment, thickness minimum 27 mm
- Fixings:
- Results are also valid with higher density of the fixing devices
 - Test results are also valid for the same type of panel fixed by rivets made of the same material of screws and vice versa
- Cavity:
- Unfilled
 - 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 (*Celdex EPDM Soft EP-4530*) as described in Table 1 and horizontal joints can be open or with an aluminium profile
 - Test results are also valid in the case of using 6 mm ROCKPANEL strips instead of EPDM foam gaskets
 - Test results are also valid for higher thicknesses of ROCKPANEL strips
 - 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 $\pm 0,5$ mm
 - Nominal 10 mm, individual tolerances $\pm 0,5$ mm
- Density:
- Nominal 1050 kg/m³
 - Nominal 1200 kg/m³

| Essential characteristics | Table 2 - Performance - Water vapour permeability and water permeability | | Harmonised technical specification |
|---------------------------------------|---|--|---|
| | Property | Declared values | |
| BR3 – Hygiene, health and environment | Water vapour permeability | 'Natural' all versions: $s_d < 0,20$ m at 23°C and 85 %RH The designer shall consider the relevant needs for ventilation, heating and insulation to minimise condensation in service. | ETA-13/0648 issued 2015-11-02 EN ISO 12572 test condition B |
| | Water tightness of joints | NPD No performance determined. | ETA-13/0648 issued 2015-11-02 |

| Essential characteristics | Table 3 - Performance - Release of dangerous substances | | Harmonised technical specification |
|---------------------------------------|--|---|------------------------------------|
| | Property | Product specification | |
| BR3 – Hygiene, health and environment | Content, emission and/or release of dangerous substances | Use category: Outdoor S/W2 The kit does not contain/release dangerous substances specified in TR 034, dated April 2013*), except Formaldehyde concentration 0,0105 mg/m ³ Formaldehyde class E1 The used fibres are not potential carcinogenic No biocides are used in the ROCKPANEL boards No flame retardant is used in the boards No cadmium is used in the boards. | ETA-13/0648 issued 2015-11-02 |

*) 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.

| Essential characteristic | Table 4a - Performance - Design value of the axial load for mechanical fixing 10 mm [g] 'Natural' boards | | | | | Harmonised technical specification | | |
|---|--|--|---|---------|---|------------------------------------|---|--|
| | For service class 2 (see 'Note') and load-duration class ' Instantaneous ' [c] For hole diameters fixings see table 5 | | | | | | | |
| BR4 – Safety in use | Design value of the axial load $X_d = X_k / \gamma_M$ | 10 mm boards [g] 'Durable' and 'Xtreme' | Span in mm [b] | | $X_d = X_k / \gamma_M$ in N Middle / Edge / Corner | Table in ETA | ETA-13/0648 issued 2015-11-02 EN 14592:2008+A1:2012 (E) | |
| | | | a fixing | b board | | | | |
| | | screw fixing [a][e] with the use of gaskets | 600 | 600 | C18/C24 [d]: 533 / 241 / 118 | 9 [c] | | |
| | | screw fixing [a][e] with the use of 8 mm ROCKPANEL strips | 600 | 600 | C18 [d]: 210 / 210 / 118 C24 [d]: 225 / 225 / 118 | 10 [c] | | |
| | | nail fixing (40 mm) [e] with the use of gaskets | 400 | 600 | C18 [d]: 250 / 250 / 199 C24 [d]: 299 / 299 / 199 | 13 [c] | | |
| | | Rivet fixing [f] | 600 | 600 | 654 / 309 / 156 | 6 | | |
| [a] with $\alpha \geq 30^\circ$: α is the angle between the screw axis and the grain direction | | | [d] Strength class EN 338 | | [e] for specifications fixings see table 8a | | | |
| [b] see Table 6 | | | [f] for specifications fixings see table 8b | | [g] for thickness reduction see table 12 | | | |
| [c] $k_{mod} = 1,10$ in accordance with Table 3.1 – 'Values of k_{mod} ' DS/ EN 1995-1-1 DK NA:2010; For 'service class' 2 ["ventilated structures protected against precipitation"] and 'load-duration class' ' Instantaneous ' [Table 2.2 DS/EN 1995-1-1 DK NA:2010-05] | | | Note (according to DS/ EN 1995-1-1 NA:2010-05 §2.3.1.3 (3)P): Service class 2 – "ventilated structures protected against precipitation, e.g. ventilated roof structures". EN 1995-1-1: In service class 2 the average moisture content in most softwoods will not exceed 20 %. | | | | | |

| Essential characteristic | Table 4b - Performance - Design value of the axial load for mechanical fixing 10 mm [g] 'Natural' boards | | | | | Harmonised technical specification | | |
|---|--|--|--|---------|---|------------------------------------|---|--|
| | For service class 3 (see 'Note') and load-duration class ' Instantaneous ' [c] For hole diameters fixings see table 5 | | | | | | | |
| BR4 – Safety in use | Design value of the axial load $X_d = X_k / \gamma_M$ | 10 mm boards [g] 'Durable' and 'Xtreme' | Span in mm [b] | | $X_d = X_k / \gamma_M$ in N Middle / Edge / Corner | Table in ETA | ETA-13/0648 issued 2015-11-02 EN 14592:2008+A1:2012 (E) | |
| | | | a fixing | b board | | | | |
| | | screw fixing [a][e] with the use of gaskets | 600 | 600 | C18 [d]: 485 / 241 / 118 C24 [d]: 521 / 241 / 118 | 9 [c] | | |
| | | screw fixing [a][e] with the use of 8 mm ROCKPANEL strips | 600 | 600 | C18 [d]: 171 / 171 / 118 C24 [d]: 184 / 184 / 118 | 10 [c] | | |
| | | nail fixing (40 mm) [e] with the use of gaskets | 400 | 600 | C18 [d]: 205 / 205 / 199 C24 [d]: 245 / 245 / 199 | 13 [c] | | |
| | | Rivet fixing [f] | 600 | 600 | 654 / 309 / 156 | 6 | | |
| [a] with $\alpha \geq 30^\circ$: α is the angle between the screw axis and the grain direction | | | [d] Strength class EN 338 | | [e] for specifications fixings see table 8a | | | |
| [b] see Table 6 | | | [f] for specifications fixings see table 8b | | [g] for thickness reduction see table 12 | | | |
| [c] $k_{mod} = 0,90$ in accordance with Table 3.1 – 'Values of k_{mod} ' DS/ EN 1995-1-1 DK NA:2010; For 'service class' 3 ["External uses fully exposed"] and 'load-duration class' ' Instantaneous ' [Table 2.2 DS/EN 1995-1-1 DK NA:2010-05] | | | Note (according to DS/ EN 1995-1-1 NA:2010-05 §2.3.1.3 (3)P): Service class 3 is characterised by climatic conditions leading to higher moisture contents than in service class 2 (compare 'Note' in Table 4a). | | | | | |

| Essential characteristic | Table 4c - Performance - Design value of the axial load for mechanical fixing 8 mm [g] 'Natural' boards | | | | | Harmonised technical specification | | |
|---|--|---|--|---------|---|------------------------------------|---|--|
| | For service class 2 (see 'Note') and load-duration class ' Instantaneous ' [c] For hole diameters fixings see table 5 | | | | | | | |
| BR4 – Safety in use | Design value of the axial load $X_d = X_k / \gamma_M$ | 8 mm boards [g] 'Durable' and 'Xtreme' | Span in mm [b] | | $X_d = X_k / \gamma_M$ in N Middle / Edge / Corner | Table in ETA | ETA-13/0648 issued 2015-11-02 EN 14592:2008+A1:2012 (E) | |
| | | | a fixing | b board | | | | |
| | | screw fixing [a][e] with the use of gaskets | 300 | 400 | C18/C24[d]: 334 / 182 / 111 | 7 [c] | | |
| | | screw fixing [a][e] with the use of 8 mm ROCKPANEL strips | 300 | 400 | C18 [d]: 293 / 182 / 111 C24 [d]: 314 / 182 / 111 | 8 [c] | | |
| | | nail fixing (32 mm) [e] with the use of gaskets | 400 | 600 | C18 [d]: 146 / 146 / 132 C24 [d]: 174 / 157 / 132 | 11 [c] | | |
| | | nail fixing (40 mm) [e] with the use 8 mm ROCKPANEL strips | 300 | 480 | C18 [d]: 146 / 146 / 132 C24 [d]: 174 / 157 / 132 | 12 [c] | | |
| [a] with $\alpha \geq 30^\circ$: α is the angle between the screw axis and the grain direction | | | [d] Strength class EN 338 | | [e] for specifications fixings see table 8a | | | |
| [b] see Table 6 | | | [g] for thickness reduction see table 12 | | | | | |
| [c] $k_{mod} = 1,10$ in accordance with Table 3.1 – 'Values of k_{mod} ' DS/ EN 1995-1-1 DK NA:2010; For 'service class' 2 ["ventilated structures protected against precipitation"] and 'load-duration class' ' Instantaneous ' [Table 2.2 DS/EN 1995-1-1 DK NA:2010-05] | | | Note (according to DS/ EN 1995-1-1 NA:2010-05 §2.3.1.3 (3)P): Service class 2 – "ventilated structures protected against precipitation, e.g. ventilated roof structures". EN 1995-1-1: In service class 2 the average moisture content in most softwoods will not exceed 20 %. | | | | | |

| Essential characteristic | Table 4d - Performance - Design value of the axial load for mechanical fixing 8 mm [g] 'Natural' boards | | | | | Harmonised technical specification | | |
|---|--|---|---|---------|---|------------------------------------|---|--|
| | For service class 3 (see 'Note') and load-duration class ' Instantaneous ' [c] For hole diameters fixings see table 5 | | | | | | | |
| BR4 – Safety in use | Design value of the axial load $X_d = X_k / \gamma_M$ | 8 mm boards [g] 'Durable' and 'Xtreme' | Span in mm [b] | | $X_d = X_k / \gamma_M$ in N Middle / Edge / Corner | Table in ETA | ETA-13/0648 issued 2015-11-02 EN 14592:2008+A1:2012 (E) | |
| | | | a fixing | b board | | | | |
| | | screw fixing [a][e] with the use of gaskets | 300 | 400 | C18/C24[d]: 334 / 182 / 111 | 7 [c] | | |
| | | screw fixing [a][e] with the use of 8 mm ROCKPANEL strips | 300 | 400 | C18 [d]: 239 / 182 / 111 C24 [d]: 257 / 182 / 111 | 8 [c] | | |
| | | nail fixing (32 mm) [e] with the use of gaskets | 300 | 480 | C18 [d]: 119 / 119 / 119 C24 [d]: 142 / 142 / 132 | 11 [c] | | |
| | | nail fixing (40 mm) [e] with the use 8 mm ROCKPANEL strips | 300 | 480 | C18 [d]: 119 / 119 / 119 C24 [d]: 142 / 142 / 132 | 12 [c] | | |
| [a] with $\alpha \geq 30^\circ$: α is the angle between the screw axis and the grain direction | | | [d] Strength class BS EN 338 | | [e] for specifications fixings see table 8a | | | |
| [b] see Table 6 | | | [g] for thickness reduction see table 12 | | | | | |
| [c] $k_{mod} = 0,90$ in accordance with Table 3.1 – 'Values of k_{mod} ' DS/ EN 1995-1-1 DK NA:2010; For 'service class' 3 ["External uses fully exposed"] and 'load-duration class' ' Instantaneous ' [Table 2.2 DS/EN 1995-1-1 DK NA:2010-05] | | | Note (according to DS/ EN 1995-1-1 NA:2010-05 §2.3.1.3 (3)P): Service class 3 is characterised by climatic conditions leading to higher moisture contents than in service class 2 (compare 'Note' in Table 4a). | | | | | |

| Essential characteristic | Table 4e - Performance - Design value of the axial load for mechanical fixing 10 mm [g] 'Natural' boards | | | | | Harmonised technical specification | | |
|--|--|--|--|---------|---|--|---|--------|
| | For service class 2 (see 'Note') and load-duration class ' Permanent ' [c] For hole diameters fixings see table 5 | | | | | | | |
| BR4 – Safety in use | Property | 10 mm boards [g] 'Durable' and 'Xtreme' | Span in mm [b] | | $X_d = X_k / \gamma_M$ in N Middle / Edge / Corner | Table in ETA | ETA-13/0648 issued 2015-11-02 EN 14592:2008+A1:2012 (E) | |
| | | | a fixing | b board | | | | |
| Design value of the axial load $X_d = X_k / \gamma_M$ | | screw fixing [a][e] with the use of gaskets | 600 | 600 | C18[d] : 324 / 241 / 118 C24[d] : 348 / 241 / 118 | 9 [c] | | |
| | | | screw fixing [a][e] with the use of 8 mm ROCKPANEL strips | 600 | 600 | C18 [d] : 114 / 114 / 114 C24 [d] : 123 / 123 / 118 | | 10 [c] |
| | | | nail fixing (40 mm) [e] with the use of gaskets | 400 | 600 | C18 [d] : 136 / 136 / 136 C24 [d] : 163 / 163 / 163 | | 13 [c] |
| | | | Rivet fixing [f] | 600 | 600 | 654 / 309 / 156 | 6 | |
| [a] with $\alpha \geq 30^\circ$: α is the angle between the screw axis and the grain direction | | | [d] Strength class EN 338 | | [e] for specifications fixings see table 8a | | | |
| [b] see Table 6 | | | [f] for specifications fixings see table 8b | | [g] for thickness reduction see table 12 | | | |
| [c] $k_{mod} = 0,60$ in accordance with Table 3.1 – 'Values of k_{mod} ' DS/ EN 1995-1-1 DK NA:2010; For 'service class' 2 ["Ventilated structures protected against precipitation"] and 'load-duration class' ' Permanent ' [Table 2.2 DS/ EN 1995-1-1 DK NA:2010-05] | | | Note (according to DS/ EN 1995-1-1 NA:2010-05 §2.3.1.3 (3)P) : Service class 2 – "ventilated structures protected against precipitation, e.g. ventilated roof structures". EN 1995-1-1: In service class 2 the average moisture content in most softwoods will not exceed 20 %. | | | | | |

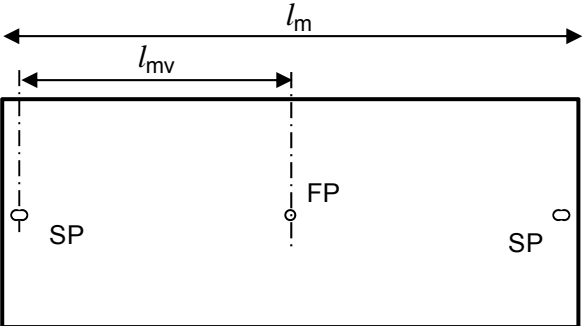
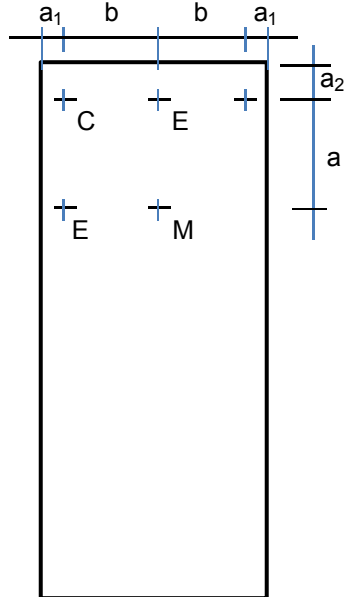
| Essential characteristic | Table 4f - Performance - Design value of the axial load for mechanical fixing 8mm [g] 'Natural' boards | | | | | Harmonised technical specification | | |
|--|--|--|--|---------|---|--|---|--------|
| | For service class 2 (see 'Note') and load-duration class ' Permanent ' [c] For hole diameters fixings see table 5 | | | | | | | |
| BR4 – Safety in use | Property | 8 mm boards [g] 'Durable' and 'Xtreme' | Span in mm [b] | | $X_d = X_k / \gamma_M$ in N Middle / Edge / Corner | Table in ETA | ETA-13/0648 issued 2015-11-02 EN 14592:2008+A1:2012 (E) | |
| | | | a fixing | b board | | | | |
| Design value of the axial load $X_d = X_k / \gamma_M$ | | screw fixing [a][e] with the use of gaskets | 300 | 400 | C18/C24 [d] : 334 / 182 / 111 | 7 [c] | | |
| | | | screw fixing [a][e] with the use of 8 mm ROCKPANEL strips | 300 | 400 | C18 [d] : 160 / 160 / 111 C24 [d] : 171 / 171 / 111 | | 8 [c] |
| | | | nail fixing (32 mm) [e] with the use of gaskets | 300 | 480 | C18 [d] : 79 / 79 / 79 C24 [d] : 95 / 95 / 95 | | 11 [c] |
| | | | nail fixing (40 mm) [e] with the use of 8 mm ROCKPANEL strips | 300 | 480 | C18 [d] : 79 / 79 / 79 C24 [d] : 95 / 95 / 95 | 12 [c] | |
| [a] with $\alpha \geq 30^\circ$: α is the angle between the screw axis and the grain direction | | | [d] Strength class EN 338 | | [e] for specifications fixings see table 8a | | | |
| [b] see Table 6 | | | [g] for thickness reduction see table 12 | | | | | |
| [c] $k_{mod} = 0,60$ in accordance with Table 3.1 – 'Values of k_{mod} ' DS/ EN 1995-1-1 DK NA:2010; For 'service class' 2 ["Ventilated structures protected against precipitation"] and 'load-duration class' ' Permanent ' [Table 2.2 DS/ EN 1995-1-1 DK NA:2010-05] | | | Note (according to DS/ EN 1995-1-1 NA:2010-05 §2.3.1.3 (3)P) : Service class 2 – "ventilated structures protected against precipitation, e.g. ventilated roof structures". EN 1995-1-1: In service class 2 the average moisture content in most softwoods will not exceed 20 %. | | | | | |

| Essential characteristic | Table 5 – Performance mechanical fixings : hole diameters for 'Natural' boards | | | | | | Harmonised technical specification |
|--------------------------|--|-------------|---------------|-----------------------------|----------------------------|-----------------|---------------------------------------|
| | Fixing type [a] | Fixed point | Moving points | Slotted points horizontally | Board dimension considered | | |
| | | | | | 'Durable' | 'Xtreme' | |
| BR4 – Safety in use | Screw | 3,2 | 6,0 | 3,4 * 6,0 | 1250 * 3050 | 1250 * 2900 [b] | ETA-13/0648 issued 2015-11-02 Table 5 |
| | Nail | 2,5 | 4,0 | 2,8 * 4,0 | 1250 * 1600 [b] | 1250 * 1400 [b] | |
| | Rivet [c] | 5,1 | 8,0 | 5,1 * 8,0 | 1250 * 3050 | 1250 * 3050 | |

[a] for specifications fixings see table 8a and 8b

[b] In the case of a larger panel length, and certain climatic conditions, a tension between shaft and panel-hole may occur.

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

| Essential characteristic | Table 6 – Performance fixings according to table 4 and 5 with the required edge distances, maximum distances and fixing method | | | | | | Harmonised technical specification | | | | |
|--|--|-----------|------------------------|---|------------------------|-----|--|-----------|---|--|----------------------|
| BR4 – Safety in use |  | | | | | |  | | ETA-13/0648 issued 2015-11-02 Table 4 and 5 | | |
| | l_{mv} : 'moving length' \leq 1510 mm l_m : length max 3050 mm | | | Fixing positions concerning loads M: fixing at intermediate position E: fixing at edge C: fixing in corner | | | | | | | |
| | | | b _{max} in mm | | a _{max} in mm | | a ₁ in mm | | | | a ₂ in mm |
| | Board thickness mm | | 8 | 10 | 8 | 10 | 8 | 10 | | | 8/10 |
| Fixing type | | Rivet [a] | --- | 600 | --- | 600 | --- | \geq 20 | \geq 50 | | |
| | | Screw | 400 | 600 | 300 | 600 | \geq 15 | \geq 20 | \geq 50 | | |
| | | Nail | 480 | 600 | 300 | 400 | \geq 15 | \geq 20 | \geq 50 | | |
| [a] : For correct fixing, a riveting tool with rivet spacer must be used | | | | | | | | | | | |

| Essential characteristic | Table 6a | Performance fixings according to table 4, 5 and 6 with the required edge distances, maximum distances and horizontal installation of 10 mm boards | Harmonised technical specification | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|---|---|---|-----------|-----------|--------------------|----------|--------------------------------|-------|---------------------|-------|---|---------|---|--|-------------|-----------------|--|-----------------|--|-------------|--|----------|---|----|---|----|---|----|------|-----------|-----|-----|-----|-----|-----|-----------|-----------|-------|-----|-----|-----|-----|-----------|-----------|-----------|------|-----|-----|-----|-----|-----------|-----------|-----------|---|
| BR4 – Safety in use | | <table border="1"> <tr> <td>FP/SP [b]</td> <td>'Fixed hole' FP and 'slotted holes' SP (according to Table 5) in the middle of the vertical part of the board</td> </tr> <tr> <td colspan="2">All the other fixing points are 'moving points'</td> </tr> <tr> <td>l_m</td> <td>length max 3050 mm</td> </tr> <tr> <td>l_{mv}</td> <td>'moving length' ≤ 1510 mm</td> </tr> </table> <p>Location of the fixing M: middle of the board E: edge of the board C: corner of the board</p> <table border="1"> <tr> <td>l_b</td> <td>Length of the board</td> </tr> <tr> <td>b_2</td> <td>max. 600 mm; b_2 in the central area of the board length l_b</td> </tr> <tr> <td>FPM [b]</td> <td>Creating a fixed point by the use of a sleeve FPM</td> </tr> </table> | FP/SP [b] | 'Fixed hole' FP and 'slotted holes' SP (according to Table 5) in the middle of the vertical part of the board | All the other fixing points are 'moving points' | | l_m | length max 3050 mm | l_{mv} | 'moving length' ≤ 1510 mm | l_b | Length of the board | b_2 | max. 600 mm; b_2 in the central area of the board length l_b | FPM [b] | Creating a fixed point by the use of a sleeve FPM | <table border="1"> <thead> <tr> <th rowspan="2">Fixing type</th> <th colspan="2">b_{max} in mm</th> <th colspan="2">a_{max} in mm</th> <th colspan="2">a_1 in mm</th> <th>a_2 mm</th> </tr> <tr> <th>8</th> <th>10</th> <th>8</th> <th>10</th> <th>8</th> <th>10</th> <th>8/10</th> </tr> </thead> <tbody> <tr> <td>Rivet [a]</td> <td>---</td> <td>600</td> <td>---</td> <td>600</td> <td>---</td> <td>≥ 20</td> <td>≥ 50</td> </tr> <tr> <td>Screw</td> <td>400</td> <td>600</td> <td>300</td> <td>600</td> <td>≥ 15</td> <td>≥ 20</td> <td>≥ 50</td> </tr> <tr> <td>Nail</td> <td>480</td> <td>600</td> <td>300</td> <td>400</td> <td>≥ 15</td> <td>≥ 20</td> <td>≥ 50</td> </tr> </tbody> </table> | Fixing type | b_{max} in mm | | a_{max} in mm | | a_1 in mm | | a_2 mm | 8 | 10 | 8 | 10 | 8 | 10 | 8/10 | Rivet [a] | --- | 600 | --- | 600 | --- | ≥ 20 | ≥ 50 | Screw | 400 | 600 | 300 | 600 | ≥ 15 | ≥ 20 | ≥ 50 | Nail | 480 | 600 | 300 | 400 | ≥ 15 | ≥ 20 | ≥ 50 | ETA-07/0141 Issued on 2014-12-15 Table 5 and fig. 8 |
| | FP/SP [b] | 'Fixed hole' FP and 'slotted holes' SP (according to Table 5) in the middle of the vertical part of the board | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| All the other fixing points are 'moving points' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| l_m | length max 3050 mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| l_{mv} | 'moving length' ≤ 1510 mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| l_b | Length of the board | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b_2 | max. 600 mm; b_2 in the central area of the board length l_b | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FPM [b] | Creating a fixed point by the use of a sleeve FPM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fixing type | b_{max} in mm | | a_{max} in mm | | a_1 in mm | | a_2 mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 8 | 10 | 8 | 10 | 8 | 10 | 8/10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rivet [a] | --- | 600 | --- | 600 | --- | ≥ 20 | ≥ 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Screw | 400 | 600 | 300 | 600 | ≥ 15 | ≥ 20 | ≥ 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nail | 480 | 600 | 300 | 400 | ≥ 15 | ≥ 20 | ≥ 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subframe aluminum : | FPM – Sleeve [a] [b] FP - 'Fixed point' FP (according to Table 6) in the central area of the vertical edge of the board | Drill hole according to Table 5 8 mm | Sleeve $\varnothing 8 \times 7,5$ – drill hole $\varnothing 5,1$ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

[a]: For correct fixing (including SP, FP and FPM) a riveting tool with rivet spacer must be used (e.g. 0,3 mm).

[b]: Subframe aluminum

| Essential characteristic | Table 6b | Performance fixings according to Table 4, 5 and 6 with the required edge distances, maximum distances and vertical installation of 10 mm boards | Harmonised technical specification | | | | | | | | | | | | | | | | |
|--|--|---|--|-----------|--|---------|--------------------------------------|---------------------------|--|---|--|-------|---------------------|----------|--------------|-------|-------------|-------|-------------|
| BR4 – Safety in use | | | <table border="1"> <tr> <td>FP/SP [b]</td> <td>'Fixed points' FP and 'slotted points' SP (according to Table 6) in the middle of the vertical part of the board</td> </tr> <tr> <td>FPM [b]</td> <td>Fixed point realized by a sleeve FPM</td> </tr> <tr> <td>SPM [b]</td> <td>Slotted hole realized by a side sleeve</td> </tr> <tr> <td colspan="2">All the other fixing points are 'moving' points</td> </tr> <tr> <td>l_b</td> <td>Length of the board</td> </tr> <tr> <td>l_{b2}</td> <td>ca $l_b / 2$</td> </tr> <tr> <td>b_3</td> <td>max. 400 mm</td> </tr> <tr> <td>b_4</td> <td>max. 600 mm</td> </tr> </table> | FP/SP [b] | 'Fixed points' FP and 'slotted points' SP (according to Table 6) in the middle of the vertical part of the board | FPM [b] | Fixed point realized by a sleeve FPM | SPM [b] | Slotted hole realized by a side sleeve | All the other fixing points are 'moving' points | | l_b | Length of the board | l_{b2} | ca $l_b / 2$ | b_3 | max. 400 mm | b_4 | max. 600 mm |
| | FP/SP [b] | 'Fixed points' FP and 'slotted points' SP (according to Table 6) in the middle of the vertical part of the board | | | | | | | | | | | | | | | | | |
| FPM [b] | Fixed point realized by a sleeve FPM | | | | | | | | | | | | | | | | | | |
| SPM [b] | Slotted hole realized by a side sleeve | | | | | | | | | | | | | | | | | | |
| All the other fixing points are 'moving' points | | | | | | | | | | | | | | | | | | | |
| l_b | Length of the board | | | | | | | | | | | | | | | | | | |
| l_{b2} | ca $l_b / 2$ | | | | | | | | | | | | | | | | | | |
| b_3 | max. 400 mm | | | | | | | | | | | | | | | | | | |
| b_4 | max. 600 mm | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th data-bbox="383 1034 763 1061">Subframe aluminum :</th> <th data-bbox="770 1034 1128 1061">Drill hole according to Table 5</th> <th data-bbox="1135 1034 1503 1061">Sleeve</th> </tr> </thead> <tbody> <tr> <td data-bbox="383 1066 763 1093">FPM – Sleeve [a] [b]</td> <td data-bbox="770 1066 1128 1093">8 mm</td> <td data-bbox="1135 1066 1503 1093">ø8 x 7,5 – hole ø5,1</td> </tr> <tr> <td data-bbox="383 1098 763 1125">SPM – Side sleeve [a] [b]</td> <td data-bbox="770 1098 1128 1125">8 mm</td> <td data-bbox="1135 1098 1503 1125">ø8 x 7,5 – hole ø5,1 x 6,2</td> </tr> </tbody> </table> | | Subframe aluminum : | Drill hole according to Table 5 | Sleeve | FPM – Sleeve [a] [b] | 8 mm | ø8 x 7,5 – hole ø5,1 | SPM – Side sleeve [a] [b] | 8 mm | ø8 x 7,5 – hole ø5,1 x 6,2 | <p>ETA-07/0141 Issued on 2014-12-15 Table 5 and fig. 8</p> | | | | | | | | |
| Subframe aluminum : | Drill hole according to Table 5 | Sleeve | | | | | | | | | | | | | | | | | |
| FPM – Sleeve [a] [b] | 8 mm | ø8 x 7,5 – hole ø5,1 | | | | | | | | | | | | | | | | | |
| SPM – Side sleeve [a] [b] | 8 mm | ø8 x 7,5 – hole ø5,1 x 6,2 | | | | | | | | | | | | | | | | | |

[a]: For correct fixing (including SP, SPM, FP and FPM) a riveting tool with rivet spacer must be used (e.g. 0,3 mm).

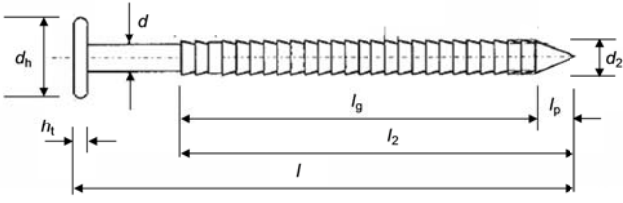
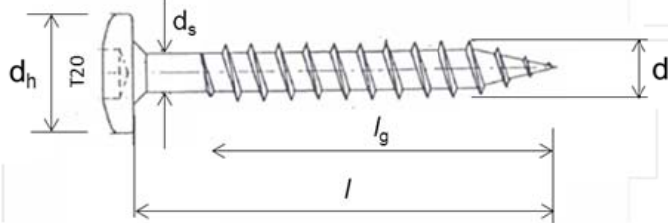
[b]: Subframe aluminum

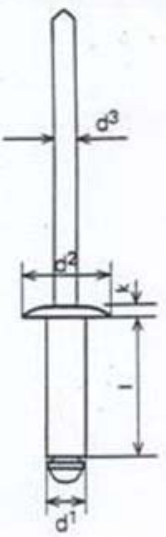
| Essential characteristic | Table 6c | Performance fixings according to table 4 and 5 with the fixing locations and installation method of 8 mm boards | Harmonised technical specification |
|--------------------------|---|---|--|
| BR4 – Safety in use | <p>l_b = length board FP – fixed point [a] [b] All the other fixing points are 'moving points'</p> | <p>C: Fixing in corner E: Fixing at edge M: Fixing at intermediate position</p> | ETA-08/0343 issued on 2014-09-16 Table 5.1 and 5.2 |

[a]: For correct fixing (including FP) a riveting tool with rivet spacer must be used (e.g. 0.3 mm).

[b]: Subframe aluminum

| Essential characteristic | Table 7 – Performance shear strength mechanical fixings | Fixing | 8 mm 'Durable'/'Xtreme' | | 10 mm 'Durable'/'Xtreme' | | Harmonised technical specification |
|--------------------------|---|--------|-------------------------|-------------|--------------------------|-------------|------------------------------------|
| | | | Failure load | Deformation | Failure load | Deformation | |
| BR4 – Safety in use | Characteristic shear strength mechanical fixings - Average values | Rivet | --- | --- | 1722 N | 1,7 mm | ETA-13/0648 issued 2015-11-02 |
| | | Screw | 1182 N | 8 mm | 1549 N | 9 mm | |
| | | Nail | 1062 N | 12 mm | 1325 N | 15 mm | |

| | | | |
|--------------------------|---|--|---|
| Essential characteristic | Table 8a - Specifications mechanical fixings | | Harmonised technical specification |
| | Ring-shank nail 2,7/2,9 x 32 and 2,7/2,9 x 40 mm Stainless steel in accordance with EN 10088 Material number 1.4401 or 1.4578 | Torx screws 4,5 x 35 mm Stainless steel in accordance with EN 10088 Material number 1.4401 or 1.4578 | |
| BR4 – Safety in use |  | | ETA-13/0648 issued 2015-11-02 Table 15 |
| | l for nail 32 = 31 – 32,5 l for nail 40 = 39 – 40,5 l_2 for nail 32 = 24 – 26 l_2 for nail 40 = 32 – 34 | $d = 2,6 - 2,8$ $d_2 = 2,8 - 3,0$ $l_p \leq 4,8$ | |
| |  | | |
| | | $l = 35 - 1,25$ $l_g = 26,25 - 28,5$ | $d = 4,3 - 4,6$ $d_s = 3,3 - 3,4$ $d_h = 9,6 - 0,4$ |

| | | | | | |
|--------------------------|---|--|--|--|--|
| Essential characteristic | Table 8b - Specifications mechanical fixings - Rivet aluminum or stainless steel [e] | | | | Harmonised technical specification |
| | BR4 – Safety in use  | Code | aluminum [d] AP14-50180-S | stainless steel A4 [a] SSO-D15-50180 | |
| Body | | aluminum EN AW-5019 (AlMg5) in accordance with EN 755-2 | stainless steel material number 1.4578 in accordance with EN 10088 | aluminum EN AW-5019 (AlMg5) in accordance with EN 755-2 | stainless steel material number 1.4567 in accordance with EN 10088 |
| Mandrel | | stainless steel material number 1.4541 in accordance with EN 10088 | stainless steel material number 1.4541 in accordance with EN 10088 | stainless steel material number 1.4541 in accordance with EN 10088 | stainless steel material number 1.4541 in accordance with EN 10088 |
| Pull-out strength | | $F_{mean,n} = 2038$ | $F_{mean,n} = 1428$ | $F_{mean,10} = 2318$ | $F_{mean,10} = 3212$ |
| | | $s = 95$ | $s = 54$ | $s = 85$ | $s = 83$ |
| | | $F_{u,5} = 1882$ | $F_{u,5} = 1339$ | $F_{u,5} = 2155$ | $F_{u,5} = 3052$ |
| d^1 | | 5 | 5 | 5 | 5 |
| d^2 | | 14 | 15 | 14 | 14 |
| d^3 | | 2,7 | 2,7 | 2,7 | 2,95 |
| l | | 18 | 18 | 18 | 16 |
| k | 1,5 | 1,5 | 1,5 | 1,5 | |
| profile | aluminum $t \geq 1,5$ mm | steel $t \geq 1,0$ mm [a] | aluminum $t \geq 1,8$ mm | steel $t \geq 1,5$ mm [b] | |

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

- [b]: The minimum thickness of the vertical steel profiles is 1,5 mm. The steel quality is EN 10025-2:2004 S235JR number 1.0038. For minimum coating thickness see [c]
- [c]: The minimum coating thickness (Z or ZA) is determined by the corrosion rate (amount of corrosion loss in thickness per year) which depends on the specific outdoor atmospheric environment (the Zinc Life Time Predictor can be used to calculate the Corrosion Rate in $\mu\text{m}/\text{y}$ for a Z coating: <http://www.galvinform.com:8080/zclp/> (copyright The International Zinc association).
The coating designation (classification which determines the coating mass) shall be agreed between the contractor and the building owner.
Alternatively a hot dip galvanized coating according to EN ISO 1461 can be used.
- [d]: The aluminum 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.
- [e]: For correct fixing, a riveting tool with rivet spacer must be used

| | | |
|---------------------------------|---|---|
| <i>Essential characteristic</i> | Table 9 – Performance Subframes | <i>Harmonised technical specification</i> |
| | Appropriate preservative treatment of subframes | |
| BR4 – Safety in use | 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). | ETA-13/0648 issued 2015-11-02 |

| | | | | | | | | |
|---------------------------------|---|-------------|--------------|-----------|-----------|--------|------------|---|
| <i>Essential characteristic</i> | Table 10 – Performance Impact resistance | | | | | | | <i>Harmonised technical specification</i> |
| | | Category | | | | | | |
| | impactor | Hard 0.5 kg | | Hard 1 kg | Soft 3 kg | | Soft 50 kg | |
| | Energy | 1 J | 3 J | 10 J | 10 J | 60 J | 300 J | 400 J |
| BR4 – Safety in use | 8 mm 'Durable' / 'Xtreme' | | III - II - I | | IV - III | | | |
| | 10 mm 'Durable' without horizontal joint | IV | III - II - I | II - I | IV - III | II - I | II | - |
| | 10 mm 'Durable' With a horizontal joint [a] | IV | III - II - I | - | | | | |
| | 10 mm 'Xtreme' without horizontal joint | IV | III - II - I | II - I | IV - III | II - I | II | I |
| | 10 mm 'Xtreme' With a horizontal joint [a] | IV | III - II - I | II - I | IV - III | II - I | II | - |
| | | | | | | | | ETA-13/0648 issued 2015-11-02 |

[a]: Panel with a horizontal joint ready accessible and vulnerable to impacts

| | | | | | | |
|---------------------------------|--|-----------|--------|----------|--------|---|
| <i>Essential characteristic</i> | Table 11 – Performance dimensional stability | | | | | <i>Harmonised technical specification</i> |
| | | 'Durable' | | 'Xtreme' | | |
| | | Length | Width | Length | Width | |
| BR4 – Safety in use | Cumulative dimensional change [a] | 0,085% | 0,084% | 0,096% | 0,098% | |
| | Coefficient of thermal expansion ($10^{-6} \text{ }^\circ\text{K}^{-1}$) | 10,5 | | 11,1 | 10,8 | |
| | Coefficient of moisture expansion (mm/m) 50% to 92% RH after 4 days | 0,288 | 0,317 | 0,320 | 0,328 | ETA-13/0648 issued 2015-11-02 |

[a] As a consequence the minimum joint width shall be 3 mm, preferably 5 mm.

| Essential characteristic | Table 12 – Resistance to Hygrothermal cycles and Xenon Arc exposure | | Harmonised technical specification |
|--|--|--|------------------------------------|
| | | Performance | |
| Aspects of durability and serviceability | Resistance to Hygrothermal cycles | Pass | ETA-13/0648 issued 2015-11-02 |
| | Resistance to Xenon Arc exposure <i>EOTA TR010 climate class S (Technical Report 010)</i> 5000 hours artificial weathering | Pass Thickness which contributes to the mechanical properties is reduced resulting from UV-radiation [a] . In mechanical calculations the nominal thickness according to “Characteristics”, page 2, shall be reduced with 2 mm | |

[a] The provisions made in this Declaration of Performance are based on an assumed intended working life of the kit of 25 years for regions with a mean annual radiant exposure not exceeding 5 GJ/m², provided that they are subject to appropriate use and maintenance. EOTA Technical Report 010 contains the map of Europa with the mean annual radiant exposure by global solar radiation: <http://www.eota.be/en-GB/content/technical-reports/11/>
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.

8. *The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.*

Signed for and on behalf of the manufacturer by:

ROCKWOOL B.V.
W.J.E. Dumoulin
Technical Director Operations DE-NL

At Roermond,
The Netherlands

on 25th January 2017



DOP in accordance with Commission Delegated Regulation (EU) No 574/2014 of 21 February 2014 amending Annex III to Regulation (EU) No 305/2011 of the European Parliament and of the Council on the model to be used for drawing up a declaration of performance on construction products, <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014R0574>, OJ L 159, 28.5.2014, p. 41-46