



KOMO®

Product certificate with attestation

K99787-9



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 Page 1 of 11

Cemfort® B65/Swisspearl W177-6.5 corrugated sheets

SWISSPEARL GROUP AG

STATEMENT BY KIWA

This product certificate with attestation is based on Guideline 1103 "profiled fibre cement panels for roofing and façade cladding" dated January 1st 2024, issued according to the Kiwa-Regulation for Certification.

The quality system and the product characteristics are checked periodically. The performance of Cemfort® B65/Swisspearl W177-6.5 corrugated sheets in roofs and/or façades as roofing and/or façade cladding is checked in relation to the Structures (Living Environment) Decree and the principles of the check are re-checked periodically. Based on this, **Kiwa declares** that there is legitimate confidence that:

- Upon delivery, the products meet the requirements:
 - Of the technical specifications laid down in this product certificate with attestation;
 - The product requirements laid down in the Guideling, provided the product/packaging are accompanied by the KOMO® quality mark in a manner set out in this product certificate with attestation.
- The roofs and façades composed with Cemfort® B65/Swisspearl W177-6.5 corrugated sheets, perform as specified in this product certificate with attestation.
- With due observance of the above Cemfort® B65/Swisspearl W177-6.5 corrugated sheets in roofs and/or façades and/or as roofing and/or façade cladding comply with the requirements of the Structures (Living Environment) Decree specified in this product certificate with attestation, provided:
 - The technical specification and the conditions of application laid down in this product certificate with attestation are fulfilled;
 - The manufacture of the roofs and façades takes place in accordance with the regulations and/or processing methods laid down in this product certificate with attestation.

The essential characteristics, as laid down in the applicable harmonised European product standard, and the corresponding checks on the quality system of these characteristics do not form part of this declaration.

Wim van Loon
 Managing Director Nederland

This product certificate with attestation is also included on the KOMO foundation websites: www.komo.nl and www.komo-online.nl.

Users of this product certificate with attestation is advised to check whether it is still valid. For this purpose consult the website of Kiwa: www.kiwa.nl.

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Structures (living environment) decree

Assessed is:

- Quality system
- Product
- Performance in the application
- Periodic control

Cemfort® B65/Swisspearl W177-6.5 corrugated sheets

INHOUDSOPGAVE

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Cemfort® B65/Swisspearl W177-6.5 corrugated sheets

1. TECHNICAL SPECIFICATION

This product certificate with attestation relates to:

- The product characteristics of corrugated sheets that can be used as roofing for pitched roofs with a roof pitch of 10° to 75° and/or facade cladding. The roofing/facade cladding can be part of a roofing, facade cladding system or a roofing/facade construction.
- The performance of the system, composed with the product for use as roofing and/or facade cladding.
- Due to the environmental hygienic properties of the corrugated sheets supplied by the certificate holder, they can be used in buildings that may come into contact with rainwater, groundwater and/or surface waters.

The certificate relates to the following scopes of the BRLs as indicated on the cover page:

- roofing,
- facade cladding.

The following products are covered by this attest-with-product certificate:

- Cemfort® B65/Swisspearl W177-6.5 profiled fibre cement sheets and accessories.

1.1.1 Form and composition

The Cemfort® B65/Swisspearl W177-6.5 corrugated sheets are composed of cement, supplemented with mineral additives and organic and synthetic fibres and fitted with a polypropylene band in each corrugation. Each Cemfort® B65/Swisspearl W177-6.5 corrugated sheet is de-watered and cut shorter to shorter formats. The profiled fibre cement sheets can overlap each other in length and width.

1.1.2 Surface treatment

The Cemfort® B65/Swisspearl W177-6.5 corrugated sheets are coated with an acrylic coating with a water basis and are available in various colours.

2. QUALITY MARK AND INDICATIONS PLACED ON THE PRODUCTS / PACKAGING

On the documents related to the certified products the indication KOMO® or the KOMO® quality mark followed by the certificate number shall be given.

Cemfort® B65/Swisspearl W177-6.5 corrugated sheets are marked with the KOMO® word mark of logo

The execution of this brand is as follows: KOMO



Word mark

Logo

The execution of this mark is in relief. Place of the mark: on each sheet.

Mandatory indications:

- certificate number **K99787**;
- factory name and/or mark;
- production location (coding);
- production date;
- category and strength classes;
- NT.

The mark and the production date are placed on the product and/or packaging and/or delivery documents.

Cemfort® B65/Swisspearl W177-6.5 corrugated sheets

3. PERFORMANCE IN THE APPLICATION

3.1 PERFORMANCE BASED ON THE STRUCTURES (LIVING ENVIRONMENT) DECREE

| Structures (Living Environment) Decree – EXISTING CONSTRUCTION | | | | | | |
|--|--------------------------------------|--------------------------------|---|---------------------------------------|--|---|
| Paragraph of Structures (Living Environment) Decree | Article | Paragraphs | Description | Determination method | Limit value | Performance |
| 3.2.1 | 3.8 3.9 3.10 | 1, 2 1, 2 | Structural safety | NEN 8700, NEN 6707, NEN-EN 1990 | No collapse | To be determined per project whereby the maximum span distances must be observed. See tables 1 and 2. |
| 3.2.6 ¹⁾ | 3.27 3.28 3.29 | 1, 2 1, 2 1, 2 | Limiting the possibility of a fire hazard situation | NEN 6064 or NEN-EN 13501-1 | Not fire hazardous or fire class ≥ A1 | Uncoated Cemfort® B65/ Swisspearl W177-6.5 corrugated sheets comply with fire class A1. |
| 3.2.7 | 3.30 3.31 3.32 3.34 3.35 | 1, 2 1 to 4 1, 3 1, 2 | Limiting the development of fire and smoke | NEN 6065, NEN 6066 | Roofs & Façades Fire class ≥ 4 or ≥ 2 (protected route), Smoke density ≤ 10 ⁻¹ or ≤ 5,4 ⁻¹ (protected route). | Uncoated Cemfort® B65/ Swisspearl W177-6.5 corrugated sheets comply with fire class A1. Coated Cemfort® B65/ Swisspearl W177-6.5 corrugated sheets comply at least with fire class A2 on both the upper and lower side and the smoke density of the Cemfort® B65 corrugated sheets comply with class s1. |
| 3.2.8 ¹⁾ | 3.36 3.40 3.41 | 1, 2 1, 2 1 | Limiting the spread of a fire | NEN 6068 | WBDBO ≥ 20 minutes | To be determined by or on behalf of the user per project on the basis of the required fire resistance of the construction. |
| 3.2.9 ¹⁾ | 3.42 3.46 3.47 | 1 | Further limiting the spread of a fire and spread of smoke | NEN 6075 NEN 6068 | WBDBO ≥ 20 minutes Resistance to smoke passage ≥ 20 minutes | To be determined by or on behalf of the user per project on the basis of the required fire resistance of the construction. |
| 3.3.1 ¹⁾ | 3.63 3.64 | 1, 2 1, 2 | Moisture resistance | NEN 2778 | Watertight | Not determined. When using the profiled fibre cement sheets as an external partition construction of an occupied space, toilet space, or bathroom space, the water tightness must be guaranteed by a water-resistant substructure. |
| 3.3.4 | 3.78 | | Exhaust of smoke and supply of combustion air | NEN 8757 | Permeability ≤ 0,006 x 10 ⁻³ m ³ /s/m ² | Not determined. |
| 3.3.5 | 3.79 3.8 | 1, 2 1, 2 | Protection against rats and mice | | No openings > 0,01 m | Not determined. No non-closable openings may be located in the external partition construction which are wider than 0.01 m. |

| Structures (Living Environment) Decree – NEW CONSTRUCTION | | | | | | |
|---|--------------------------------------|---|---|----------------------------|---|---|
| Paragraph of Structures (Living Environment) Decree | Article | Paragraphs | Description | Determination method | Limit value | Performance |
| 4.2.1 | 4.11 4.12 4.13 4.14 | 1, 2 2 1,2 | Structural safety | NEN-EN 1990 | No collapse | To be determined per project whereby the maximum span distances must be observed. See tables 1 and 2. |
| 4.2.6 | 4.37 4.38 4.39 4.40 | 1, 2 1, 2 | Limiting the possibility of a fire hazard situation | NEN-EN 13501-1 | Not fire hazardous or fire class ≥ A1 | Uncoated Cemfort® B65/ Swisspearl W177-6.5 corrugated sheets comply with fire class A1. |
| 4.2.7 | 4.42 4.43 4.44 4.46 4.47 | 1, 2 1 to 7, 9, 10 1 to 4 1 to 3 1, 2 | Limiting the development of fire and smoke | NEN-EN 13501-1 NEN 6063 | Fire class ≥ D Smoke class ≥ s2 (interior surface) | Uncoated Cemfort® B65/ Swisspearl W177-6.5 corrugated sheets comply with fire class A1. Coated Cemfort® B65/ Swisspearl W177-6.5 corrugated sheets comply at least with fire class A2 on both the upper and lower side and the smoke density of the Cemfort® B65 corrugated sheets comply with class s1. |

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| Structures (Living Environment) Decree – NEW CONSTRUCTION | | | | | | |
|---|--|--------------------------------------|---|---|--|--|
| Paragraph of Structures (Living Environment) Decree | Article | Paragraphs | Description | Determination method | Limit value | Performance |
| | | | | NEN 6063 | Roofs A roof composed of profiled fibre cement sheets and fittings is not a fire risk. Uncoated and coated fibre cement sheets and fittings are non-flammable. | A roof composed of profiled fibre cement panels and accessories is not fire hazardous. Uncoated fibre cement panels and accessories are incombustible, coated ones are not incombustible. |
| 4.2.8 | 4.49 4.53 4.54 | 1, 2 1 to 7, 9, 10 1 | Limiting the spread of a fire | NEN 6068 | WBDBO ≥ 30 minutes | To be determined by or on behalf of the user per project on the basis of the required fire resistance of the construction. |
| 4.2.9 | 4.56 4.60 4.61 4.62 | 1, 2 1, 2 1 to 4 1 to 4 | Further limiting the spread of a fire and spread of smoke | NEN 6075 NEN 6068 | WBDBO ≥ 30 minutes Smoke resistance S _a of S ₂₀₀ (protected route) | To be determined by or on behalf of the user per project on the basis of the required fire resistance of the construction. |
| 4.3.1 | 4.101 4.102 4.103 4.103b 4.103c 4.104 | 1, 2 1 to 3 1, 2 1 to 3 | Protection against outside noise | NEN 5077 | Sound insulation ≥ 20 dB | Not determined. When using profiled fibre cement panels, sound insulation must be ensured by the substructure. |
| 4.3.5 | 4.117 4.118 4.119 | 1, 2 1 | Moisture resistance | NEN 2778 | Watertight Factor of the temperature ≥ 0,5 | Not determined. When using profiled fibre cement panels, sound insulation must be ensured by the substructure. |
| 4.3.8 | 4.143 4.141 | | Exhaust of smoke and supply of combustion air | NEN 2757 | Roofs Permeability ≤ 0,006 x 10 ⁻³ m ³ /s/m ² or ≤ 3x 10 ⁻³ m ³ /s/m ² of | Not determined. |
| | 4.143 4.144 4.155 | 1, 2 1 to 3 1 to 3 | Protection against rats and mice | | No openings > 0,01 m | Not determined. No non-closable openings may be located in the external partition construction which are wider than 0.01 m. |
| 4.4.1 | 4.148 4.152 4.154 4.155 | 1, 2 1 to 9 1, 2 1, 2 | Energy efficiency | NTA 8800, NEN 2686 | Roofs Heat resistance ≥ 6.3 m ² K/W. Air volume flow of the total of occupied areas, toilet and bathroom spaces does not exceed 0.2 m ³ /s. Façades Heat resistance ≥ 4.7 m ² K/W. Air volume flow of the total of occupied areas, toilet and bathroom spaces does not exceed 0.2 m ³ /s. | When using the profiled fibre cement sheets as an external partition construction of occupied space, toilet space, or bathroom space, the heat resistance must be guaranteed by an insulating substructure and the air permeability guaranteed by a substructure which is sufficiently airtight. |
| 4.4.2 | 4.158 4.159 | 1, 2 1 to 4 | Environmental performance | Method for determining the environmental performance of buildings and civil engineering works | Milieuprestatie ≤ 1 | EPD-SWP-20230359-CCA1-EN |
| 4.5.5 | 4.171 4.173 | 1, 2 | Outdoor storage | NEN 2778 | Rain-resistant | Not specified. When using profiled fibre cement sheets, rain resistance must be ensured by a rain-resistant substructure. |

¹⁾ = Optional

| Structures (Living Environment) Decree – RENOVATION, RELOCATION OF BUILDING, CHANGE OF USE | | | | | | |
|--|---------|------------|-------------|--------------------------------------|------------------------------|-------------|
| Paragraph of Structures (Living Environment) Decree | Article | Paragraphs | Description | Determination method | Limit value | Performance |
| | 5.4 | 1 to 4 | Renovation | See chapter 4, clause 4.4.2 excepted | Meets legally obtained level | |

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| Structures (Living Environment) Decree – RENOVATION, RELOCATION OF BUILDING, CHANGE OF USE | | | | | | |
|--|---------|------------|---|----------------------------|---|---|
| Paragraph of Structures (Living Environment) Decree | Article | Paragraphs | Description | Determination method | Limit value | Performance |
| | 5.5 | 1 to 3 | Quality level | See chapter 3 | Voldoet aan eisen H3 | |
| | 5.6 | 1 | Relocation | See chapter 3 | Voldoet aan eisen H3 | |
| | 5.7 | 1 to 3 | Change of use | See chapter 3 | Voldoet aan eisen H3 | |
| | 5.9 | 1, 2 | Structural safety | NEN 8700 | No collapse | To be determined per project whereby the maximum span distances must be observed. See tables 1 and 2. |
| | 5.11 | | Limiting the possibility of a fire hazard situation | NEN-EN 13501-1 | Not fire hazardous or fire class ≥ A1 | Uncoated Cemfort® B65/ Swisspearl W177-6.5 corrugated sheets comply with fire class A1. |
| | 5.12 | | Limiting the development of fire and smoke | NEN-EN 13501-1 NEN 6063 | Fire class B | Uncoated Cemfort® B65/ Swisspearl W177-6.5 corrugated sheets comply with fire class A1. Coated Cemfort® B65/ Swisspearl W177-6.5 corrugated sheets comply at least with fire class A2 on both the upper and lower side and the smoke density of the Cemfort® B65 corrugated sheets comply with class s1. |
| | 5.13 | | Limiting the spread of a fire | NEN 6068 | WBDBO ≥ 30 minutes | To be determined by or on behalf of the user per project on the basis of the required fire resistance of the construction. |
| | 5.16 | | Exhaust of smoke and supply of combustion air | NEN 2757 | Roofs Doorlatendheid ≤ 0,006 x 10 ⁻³ m³/s/m² of ≤ 3x 10 ⁻³ m³/s/m² of | Niet bepaald. |
| | 5.20 | 1 to 4 | Energy efficiency | NTA 8800 | Heat resistance ≥ 1.4 m²K/W or legally obtained level | When using the profiled fibre cement sheets as an external partition construction of occupied space, toilet space, or bathroom space, the heat resistance must be guaranteed by an insulating substructure and the air permeability guaranteed by a substructure which is sufficiently airtight. |
| | 5.23 | | Protection against road, rail or industrial noise | NEN 5077 | Sound insulation ≥ 20 dB | Not determined. When using profiled fibre cement panels, sound insulation must be ensured by the substructure. |

3.1.1 Safety

3.1.1.1 Structural safety, SD paragraph 3.2.1, 4.2.1 and chapter 5

The support distances referred to below are based on the sheet length and overlap of the profiled fibre cement corrugated sheets and are determined in accordance with the equivalent determination method of BRL 1103.

Table 1 shows the maximum support distances for a roof or the roof covering respectively. The table applies for all wind regions in the Netherlands for buildings with a maximum height of 10 metres. These tables are based on a minimum strength class of ≥ 1X and a working life of at least 15 years.

Table 1: Maximum support distances roofs

| Sheet length (mm) | Roof incline | Support distances | | Intermediate purlin |
|-------------------|--------------|-------------------|----------------|---------------------|
| | | Overlap 150 mm | Overlap 200 mm | |
| 1220 | 14° - 75° | 1070 | 1020 | No |
| 1525 | 14° - 75° | 1375 | 1325 | No |
| 1830 | 14° - 75° | 840 | 815 | Yes |
| 2135 | 14° - 75° | 993 | 968 | Yes |
| 2440 | 14° - 75° | 1145 | 1120 | Yes |
| 2750 | 14° - 75° | 1300 | 1275 | Yes |
| 3050 | 14° - 75° | 1425 | 1400 | Yes |

Table 2 shows the maximum support distances for a façade or the wall cladding respectively. The table applies for all wind regions in the Netherlands. The façade or the wall cladding therefore complies with the Buildings Decree. These tables are based on a minimum strength class of ≥ 1X and a design life of at least 15 years.

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Table 2: Maximum support distances for façades

| Sheet length (mm) | Building height | | | |
|-------------------|-----------------------|--------|--------|--------|
| | ≤ 10 m | ≤ 20 m | ≤ 30 m | ≤ 40 m |
| | Support distance (mm) | | | |
| 1220 | 1120 | 1120 | 1120 | 1120 |
| 1525 | 1425 | 1425 | 1425 | 1425 |
| 1830 | 1730 | 865 | 865 | 865 |
| 2135 | 1020 | 1020 | 1020 | 1020 |
| 2440 | 1170 | 1170 | 1170 | 1170 |
| 2750 | 1325 | 1325 | 1325 | 1325 |
| 3050 | 1475 | 1475 | 1475 | 1475 |

3.1.1.2 Limiting the possibility of a fire hazard situation, SD paragraph 3.2.6, 4.2.6 and chapter 5

The flame spread index of the uncoated profiled fibre cement corrugated sheets complies on both sides with at least class A1, determined in accordance with NEN-EN 13501-1.

A roof composed of profiled fibre cement corrugated sheets is not a fire risk, determined in accordance with NEN 6063.

3.1.1.3 Limiting the development of fire and smoke, SD paragraph 3.2.7, 4.2.7 and chapter 5

General

The fire class of the uncoated profiled fibre cement corrugated sheets as specified in this product certificate with attestation complies on both sides with at least class A1 and at least class A2-s1, d0 for coated sheets, determined in accordance with NEN-EN 13501-1.

Explanation

Instead of fire class 4, determined according to NEN 6065, fire class D can be used, determined according to NEN-EN 13501-1.

Instead of smoke density $\leq 10 \text{ m}^{-1}$ or 5.4 m^{-1} , determined according to NEN 6066, smoke class s2 can be used, determined according to NEN-EN 13501-1.

Roofs

A roof composed of profiled fibre cement corrugated sheets is not a fire risk, determined in accordance with NEN 6063.

Façades

The coated and uncoated profiled fibre cement corrugated sheets and accessories can be used where the following requirements apply:

- A façade of a building must consist, on the outside up to a height of 13 m, of building material combinations which at least comply with class D of the flame spread index, on the understanding that the side facing the escape route must belong to at least class C.
- The outside of a façade of residential buildings of more than two stories must consist, up to 2.5 m above the adjoining land, of building material combinations which at least comply with class B of the flame spread index.
- The outside of a building façade which is not intended for residential purposes must consist, as from a height of 13 m above the adjoining land, of building material combinations which at least comply with class B of the flame spread index.
- Material (combinations) of parapet lower than 1.5 m from the floor area must belong at least to class C of the flame spread index.
- If the wall cladding is in contact with the indoor air (for example, an atrium or screened off gallery), smoke class s2 is required.
- Wherever requirements are imposed in terms of incombustibility, such as near hearths and flues, uncoated and/or coated profiled fibre cement sheets may not be used as such.
- The fire safety of (wooden) base constructions and any insulation material must be assessed on a case-by-case basis.

3.1.1.4 Limiting the spread of a fire, SD paragraph 3.2.8, 4.2.8 and chapter 5

The resistance to fire penetration and fire spread has not been determined. Whether the entire construction meets the requirement must be determined in accordance with NEN 6068.

3.1.1.5 Further limitation of fire spread, SD paragraph 3.2.9, 4.2.9 and chapter 5

When using profiled fibre cement corrugated sheets, the entire construction must meet the stated requirement. The resistance to fire penetration and fire spread has not been determined.

3.1.2 Health

3.1.2.1 Protection against external noise, SD paragraph 4.3.1 and chapter 5

When using profiled fibre cement corrugated sheets, the underlying structure must meet the requirement. The contribution of profiled fibre cement sheets has not been determined.

3.1.2.2 Resistance to moisture, SD paragraph 3.3.1, 4.3.5 and chapter 5

The profiled fibre cement corrugated sheets are at least water-resistant. When using roofs and facades with profiled fibre cement corrugated sheets as an external separating structure of a living area, a toilet or bathroom, a waterproof substructure must therefore be used.

For roofs and facades other than those described above, the requirement regarding resistance to moisture from outside does not apply.

3.1.2.3 Exhaust of smoke and supply of combustion air, SD paragraph 3.3.4, 4.3.8 and chapter 5

A roof duct shall be used as a feed-through for ventilation, gas exhaust or flue gas exhaust pipes through roofs, whereby the location of the feed-through in the plate can be determined after installation of the roof covering. The feed-through piece shall be attached to the sheet according applicable instructions.

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3.1.2.4 Protection against rats and mice, SD paragraph 3.3.5, 4.3.9 and chapter 5

When using profiled fibre cement corrugated sheets, the underlying structure may not contain any non-closable openings wider than 0.01 m.

3.1.3 Sustainability

3.1.3.1 Energy efficiency, Bbl section 3.4, section 4.4.1 and H5

When using profiled fibre cement corrugated sheets in an external partition structure of a living area, a toilet or bathroom, a substructure must be used that provides the thermal resistance and that is sufficiently airtight.

For roofs and facades other than those described above, the requirements regarding the limitation of heat loss and the limitation of air permeability do not apply.

3.1.3.2 Environmental performance Bbl section 4.4.2

For the contribution of profiled fibre cement panels to the environmental performance, reference is made to EPD-SWP-20180033-IAD2-EN, according to ISO 14025 and EN 15804+A1.

3.1.4 Usability

3.1.4.1 Outdoor storage, Bbl paragraph 4.5 and H5

When using profiled fibre cement corrugated sheets, the underlying structure must meet the stated requirement. The profiled fibre cement panels and accessories themselves are waterproof.

4. PRODUCT CHARACTERISTICS

The Cemfort® B65/Swisspearl W177-6.5 corrugated sheets meet the product requirements set out in BRL 1103. Table 3 shows the values of the product characteristics that form part of this attest-with-product certificate. These meet the values specified in the table. Detailed dimensions of the Cemfort® B65/Swisspearl W177-6.5 corrugated sheets according to figure 1, see chapter 10 of this attest-with-product certificate.

Table 3: Product characteristics

| Characteristic | Determination method | Requirement BRL / Attest | Performance |
|---|----------------------------|--|--|
| Nominal dimensions of sheets: | | | |
| - length | NEN-EN 494, § 7.2.1.2 | Nominal + 10 / - 10 mm | 1220, 1525, 1830, 2135, 2440, 2750 of 3050 ± 10 mm |
| - width | NEN-EN 494, § 7.2.1.2 | Nominal + 10 / - 5 mm | 1093 +10 / - 5 mm |
| - thickness | NEN-EN 494, § 7.2.1.3 | Nominal + 10 / - 10 % of the average thickness ≤ ± 0,6 mm the nominal thickness | 6,5 ± 0,6 mm |
| - squareness | NEN-EN 494, § 7.2.1.4 | ≤ 6,0 mm/m ¹ | Meets requirements |
| - height of the sides | NEN-EN 494, § 7.2.1.5 | Must meet requirements | Meets requirements |
| Nominal dimensions fittings: | | | |
| - length | NEN-EN 494, § 7.2.2.2 | Nominal + 10 / - 10 mm | Meets requirements |
| - width | NEN-EN 494, § 7.2.2.2 | Nominal + 10 / - 10 mm | Meets requirements |
| - thickness | NEN-EN 494, § 7.2.2.3 | Nominal + 1 / - 1 mm | Meets requirements |
| Corrugations: | | | |
| - number of (complete) corrugations | | As per specifications | 6 |
| - pitch of corrugation (nominal) | NEN-EN 494, § 7.2.1.1 | ± 2,0 mm | 177 ± 2 mm |
| - ridge of corrugation | NEN-EN 494, § 7.2.1.1 | ± 3,0 mm | 51 ± 3 mm |
| - height of descending corrugation, h _{od} | NEN-EN 494, § 7.2.1.5 | As per specifications | h _{od} 7 - 13 mm |
| - height of ascending corrugation, h _{om} | NEN-EN 494, § 7.2.1.5 | As per specifications | h _{om} 42 - 48 mm |
| Apparent density: sheets | | As per specifications | ≥ 1400 g/cm ³ |
| Fire classification | NEN-EN 494, § 7.5.1, 7.5.2 | As per specifications | Uncoated sheets are not fire hazardous. Uncoated sheets ≥ A1 Coated sheets ≥ A2-s1, d0 |
| Mechanical properties: | | | |
| - breaking load | NEN-EN 494, § 7.3.2.1 | ≥ Class 1 | Meets requirements |
| - bending moment at rupture | NEN-EN 494, § 7.3.2.2 | ≥ Class X | Meets requirements |
| Resistance to impact (not applicable to fittings) | NEN-EN 15057 | Must meet requirements | Meets requirements |
| Water impermeability | NEN-EN 494, § 7.3.3 | No water drops or damp spots allowed | Watertight, vapour permeable |

Cemfort® B65/Swisspearl W177-6.5 corrugated sheets

| Characteristic | Determination method | Requirement BRL / Attest | Performance |
|-----------------------------|----------------------|--|--------------------|
| Durability (sheets): | | | |
| - resistance to warm water | NEN-EN 494, § 7.3.4 | $R_L \geq 0,70$ | Meets requirements |
| - resistance to soak-dry | NEN-EN 494, § 7.3.5 | $R_L \geq 0,70$ | Meets requirements |
| - resistance to freeze-thaw | NEN-EN 494, § 7.4.1 | $R_L \geq 0,70$ | Meets requirements |
| - resistance to heat-rain | NEN-EN 494, § 7.4.2 | No decline in water tightness due to defects | Meets requirements |

For this product NEN- EN 494 is applicable. The product characteristics for which no performance is given in the table above the European "Construction Product Regulation" (CPR) applies. Of the relevant product characteristics it is determined that the relevant product characteristic as mentioned comply to the given limit values.

5. PROCESSING INSTRUCTIONS

5.1 TRANSPORT AND STORAGE

The corrugated sheets must be stored in a dry space on a flat and stable surface. A maximum of 2 pallets can be stacked on each other. In order to prevent damage and contamination it is advisable only to remove the packaging just before processing. During transport and storage sheets and fittings may not be slid over each other.

5.2 ASSEMBLY

The roof can be covered both horizontally and vertically. Vertical covering is the most practical and widely used method. This involves the sheets being laid in vertical rows from the gutter to the ridge, starting at the side of the roof against the prevailing wind direction. In the event of horizontal laying, the sheets must be laid horizontally from one side of the roof to the other side of the roof.

After that the next row above is laid.

Before laying the roof a check must be carried out to establish whether the roof is straight, in other words whether the purlins run parallel to the ridge purlin. The sides of the roof surface must be positioned at right angles to the ridge purlin. The sheets must always be positioned perpendicular to the ridge purlin.

If a water-retaining, vapour pervious substrate is required, a check must be carried out to see whether it is possible for moisture to be removed. If, for example, a water-retaining, vapour pervious membrane is used, this must continue into the gutter.

The substructure for the Cemfort® B65/Swisspearl W177-6.5 corrugated sheets of wood and/or steel, must be flat and provide sufficient stability to the sheets. For more specific requirements relating to the substructure and its constructional safety, please refer to the following standards:

- NEN-EN 1990
- NEN-EN 1991
- NPR 6708

The minimum (roof) incline on which corrugated sheets can be used is 14°.

The sheets must extend by at least 50 mm at the top compared to the purlin. The cantilever of the sheets must not exceed $\frac{1}{4} l$ (l = span).

The dimensions must be determined before attaching the sheets. Any fitting pieces must have a minimum width of 3 pitches.

The regulations from paragraphs 6.1.2 and 6.2.2 and must be observed for the horizontal and vertical overlap.

The corners of 2 sheets must be mitred where 4 sheets come together to ensure a proper connection between the roof covering sheets. The dimension and place of the mitring depend on the overlap length and direction in which the corrugated sheets are laid. The corrugated sheets must be sawn, cut, ground etc. using material or tools that are suitable for processing stony materials.

For the assembly on façades the same guidelines should be observed as those that apply to use on roofs. The position of the fastening materials also stays the same. However, a stainless steel support clip must be used in connection with supporting the weight of each individual sheet.

5.3 ATTACHMENT

The corrugated sheets must be attached pursuant to 6.1.3 and 6.2.3 respectively.

6. APPLICATION AND USAGE CONDITIONS

6.1 ROOFS

6.1.1 Form and composition

The roof construction can be built up of a bearing construction of wood or steel purlins to which the sheets are attached. The sheets overlap each other both lengthways and widthways. A thermal/acoustic insulation system can be fitted under the sheets.

6.1.2 Connections

See also the diagram pages in this technical-approval-with product certificate. When used as roof covering the overlap lengths referred to in table 3 apply as a function of the roof incline and the use of a sealant (sealant roll):

Table 4: Length of horizontal overlap

| Roof incline | With sealant | Without sealant |
|---|--------------|-----------------|
| $\geq 14^\circ$ and $< 20^\circ$ | 200 mm | Not permitted |
| $\geq 20^\circ$ and $< 90^\circ$ (façade) | 150 mm | 150 mm |

The vertical overlap of Cemfort® B65/Swisspearl W177-6.5 corrugated sheets is half a ridge (43 mm). The working width of the Cemfort® B65/Swisspearl W177-6.5 corrugated sheets is 1050 mm in this case.

Cemfort® B65/Swisspearl W177-6.5 corrugated sheets

For roof inclines < 20° sealant roll must be used on both the horizontal and vertical overlaps and at places where the risk of rainwater ingress has to be avoided.

One should remember that wherever sealant roll is used, natural ventilation will be limited. It is then advisable to fit extra ventilation provisions.

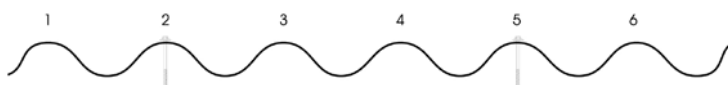
6.1.3 Attachment

Each corrugated sheet must be sufficiently attached.

An indication is given below as to where the corrugated sheet fasteners must be located. In the case of buildings of 8 metres and higher, the corrugated sheets at the roof edges must have an extra fastener. The same applies to buildings which are regularly exposed to powerful wind (for example in coastal areas).

The corrugated sheets must be attached: - with insulation in the 1st and the 4th corrugation top;
- without insulation in the 2nd and the 5th corrugation top.

Figure: Fit corrugated sheet fasteners



6.1.4 Fastening materials

The fasteners and fittings supplied do not belong with this technical-approval-with product certificate.

The corrugated sheets can be attached using self-drilling fasteners. This bolt can be used to drill and drill out the drill hole and to tighten the fastener in a single action. The type of fastener to be used depends on the substructure.

6.2 FAÇADES

6.2.1 Form and composition

In addition to using Cemfort® B65/Swisspearl W177-6.5 corrugated sheets as roof covering, the sheets can also be used as wall cladding. The structure of the underlying substructure is, in principle, the same as that of a roof. This underlying substructure must comply with the applicable NEN standards.

The façade construction can be built up of a bearing construction of wood or steel beams to which the sheets are attached. The sheets overlap each other both lengthways and widthways.

6.2.2 Connections

The standard lateral overlap is ½ pitch. The horizontal overlap is at least 100 mm.

6.2.3 Attachment

The fasteners are placed either in the corrugation valley, or in the corrugation top using a support anchor.

6.2.4 Fastening materials

The fasteners and fittings supplied do not belong with this technical-approval-with product certificate.

The corrugated sheets can be attached using self-drilling fasteners. This bolt can be used to drill the drill hole and to tighten the fastener in a single action. The type of fastener to be used depends on the substructure.

7. MAINTENANCE INSTRUCTIONS

Periodic cleaning of the roof in order to remove possible foreign bodies that forbid the regular runoff of rainwater. Periodic control and when necessary, revision of the fastening system.

8. TIPS FOR THE USER

Check on delivery of the products listed under the "technical specification" whether:

- The product(s) and material(s) ordered are delivered in accordance with the agreement you made.
- The brand and the method of marking is correct
- No defects or damage is visible (for example, resulting from the transportation).

In the context of this product certificate with attestation, no checks take place on the accuracy of the performance of the essential characteristics.

The statements in this product certificate with attestation may not be used to replace the CE marking and/or the corresponding mandatory Declaration of Performance.

If on the basis of the foregoing you decide to proceed to rejection, please contact:

- Swisspearl Group AG
- And if necessary,
- Kiwa Nederland B.V.

Cemfort® B65/Swisspearl W177-6.5 corrugated sheets

Carry out the storage, transport and processing in accordance with the provisions included in this product certificate with attestation and/or documents of the certificate holder.

Follow the application conditions and processing instructions included in this product certificate with attestation and belonging attestation and/or documents of the certificate holder.

Check whether this product certificate with attestation is still valid, consult the website www.kiwa.nl.

9. DOCUMENT LIST

| | |
|--------------------------------------|---|
| Besluit bouwwerken leefomgeving:2018 | Stbl. 2018, 291, laatst gewijzigd stbl, 2022-360. |
| NEN 1068 | Thermal insulation of buildings - Calculation methods |
| NEN 2686 | Air permeability of buildings - Measurement method |
| NEN 2778 | Moisture resistance in buildings |
| NEN 6063 | Determination of the fire behaviour of roofs |
| NEN 6068 | Determination of resistance to fire movement between spaces |
| NEN-EN 494 | Fibre-cement profiled sheets and fittings - Product specification and test methods |
| NEN-EN 1990 | Eurocode: Basis of structural design, including national annex NB:2011 |
| NEN-EN 1991-1-1 | Eurocode 1: Actions on structures - Part 1-1: General actions - Densities, self-weight, imposed loads for buildings, including national annex NB:2011 |
| NEN-EN 1991-1-3 | Eurocode 1: Actions on structures – Part 1-3: General actions - Snow loads, including national annex NB:2011 |
| NEN-EN 1991-1-4 | Eurocode 1: Actions on structures – Part 1-4: General actions - Wind actions, including national annex NB:2011 |
| NEN-EN 1991-1-5 | Eurocode 1: Actions on structures – Part 1-5: General actions - Thermal actions, including national annex NB:2011 |
| NEN-EN 13501-1 | Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests |

* For the correct version of the documents mentioned, please refer to the latest version/amendment sheet of BRL 1103.

10. DETAILED DRAWING

Figure 1

