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**Agrément Certificate**
**09/4625**
Product Sheet 5 Issue 3

# WETHERBY EXTERNAL WALL INSULATION SYSTEMS

## EPSITEC STONE WOOL EXTERNAL WALL INSULATION SYSTEM FOR STEEL FRAMED BUILDINGS

This Agrément Certificate Product Sheet (1) relates to the Epsitec Stone Wool External Wall Insulation System for steel framed buildings. The system comprises mineral wool (MW) insulation slabs, mechanically fixed to a sheathed lightweight steel framed structure using either steel spacer rails or timber battens, with a glass fibre reinforced basecoat and render finishes. The system is suitable for use, with height restrictions in some cases, on the outside of new and existing domestic and non-domestic buildings.

(1) Hereinafter referred to as 'Certificate'.

**The assessment includes**

**Product factors:**

- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

**Process factors:**

- compliance with Scheme requirements
- installation, delivery, handling and storage
- production and quality controls
- maintenance and repair

**Ongoing contractual Scheme elements†:**

- regular assessment of production
- formal 3-yearly review

**KEY FACTORS ASSESSED**

Section 1. Mechanical resistance and stability
Section 2. Safety in case of fire
Section 3. Hygiene, health and the environment
Section 4. Safety and accessibility in use
Section 5. Protection against noise
Section 6. Energy economy and heat retention
Section 7. Sustainable use of natural resources
Section 8. Durability

The BBA has awarded this Certificate to the company named above for the system described herein. This system has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Third issue: 5 January 2024
Originally certified on 9th December 2019

Hardy Giesler
Chief Executive Officer



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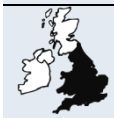
## SUMMARY OF ASSESSMENT AND COMPLIANCE

This section provides a summary of the assessment conclusions; readers should refer to the later sections of this Certificate for information about the assessments carried out.

## Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that the Epsitec Stone Wool External Wall Insulation System for steel framed buildings, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations:



### The Building Regulations 2010 (England and Wales) (as amended)

| | | |
|---|---|---|
| **Requirement:** | **A1** | **Loading** |
| Comment: | | The system can sustain and transmit wind loads to the structural frame. See section 1 of this Certificate. |
| **Requirement:** | **B3(4)** | **Internal fire spread** |
| Comment: | | The system can contribute to satisfying this Requirement. See section 2 of this Certificate. |
| **Requirement:** | **B4(1)** | **External fire spread** |
| Comment: | | The system may be unrestricted by this Requirement. See section 2 of this Certificate. |
| **Regulation:** | **C2(b)** | **Resistance to moisture** |
| Comment: | | The system provides a degree of protection against rain ingress. See section 3 of this Certificate. |
| **Regulation:** | **C2(c)** | **Resistance to moisture** |
| Comment: | | The system can contribute to minimising the risk of interstitial and surface condensation. See section 3 of this Certificate. |
| **Regulation:** | **L1(a)(i)** | **Conservation of fuel and power** |
| Comment: | | The system can contribute to satisfying this Requirement; however, compensating fabric measures may be required. See section 6 of this Certificate. |
| **Regulation:** | **7(1)** | **Materials and workmanship** |
| Comment: | | The system is acceptable. See sections 8 and 9 of this Certificate. |
| **Regulation:** | **7(2)** | **Materials and workmanship** |
| Comment: | | The system may be unrestricted by this Regulation. See section 2 of this Certificate. |
| **Regulation:** | **25B** | **Nearly zero-energy requirements for new buildings** |
| **Regulation:** | **26** | **$CO_2$ emission rate for new buildings** |
| **Regulation:** | **26A** | **Fabric energy efficiency rates for new dwellings (applicable to England only)** |
| **Regulation:** | **26A** | **Primary energy rates for new buildings (applicable to Wales only)** |
| **Regulation:** | **26B** | **Fabric performance values for new dwellings (applicable to Wales only)** |
| **Regulation:** | **26C** | **Target primary energy rates for new buildings (applicable to England only)** |
| **Regulation:** | **26C** | **Energy efficient rating (applicable to Wales only)** |
| Comment: | | The system can contribute to satisfying these Regulations; however, compensating fabric/services measures may be required. See section 6 of this Certificate. |

## The Building (Scotland) Regulations 2004 (as amended)

| | | |
|---|---|---|
| **Regulation:** | **8(1)(2)** | **Fitness and durability of materials and workmanship** |
| Comment: | | The system can contribute to a construction satisfying this Regulation. See sections 8 and 9 of this Certificate. |
| **Regulation:** | **8(3)** | **Fitness and durability of materials and workmanship** |
| Comment: | | The system may be unrestricted by this Regulation. See section 2 of this Certificate. |
| **Regulation:** | **9** | **Building standards - construction** |
| Standard: | 1.1 | Structure |
| Comment: | | The system can sustain and transmit wind loads to the structural frame. See section 1 of this Certificate. |
| Standard: | 2.4 | Cavities |
| Comment: | | The system can contribute to satisfying this Standard, with reference to clauses 2.4.2(1), 2.4.4(1) and 2.4.6(2). See section 2 of this Certificate. |
| Standard: | 2.6 | Spread to neighbouring buildings |
| Comment: | | The system may be unrestricted by this Standard, with reference to clauses 2.6.4(1)(2), 2.6.5(2) and 2.6.6(2). See section 2 of this Certificate. |
| Standard: | 2.7 | Spread on external walls |
| Comment: | | The system may be unrestricted by this Standard, with reference to clause 2.7.1(1)(2). See section 2 of this Certificate. |
| Standard: | 3.10 | Precipitation |
| Comment: | | The system can contribute to a construction satisfying this Standard, with reference to clause 3.10.1(1)(2). See section 3 of this Certificate. |
| Standard: | 3.15 | Condensation |
| Comment: | | The system can satisfy this Standard, with reference to clauses 3.15.1(1)(2), 3.15.4(1)(2) and 3.15.5(1)(2). See section 3 of this Certificate. |
| Standard: | 6.1(b)(c)(d) | Energy demand and carbon dioxide emissions |
| Comment: | | The system can contribute to satisfying these Standards, with reference to clauses 6.1.1(1) and 6.1.2(2); however, compensating fabric/services measures may be required. |
| Standard: | 6.2 | Buildings insulation envelope |
| Comment: | | The system can contribute to satisfying this Standard, with reference to clauses 6.2.1(1)(2), 6.2.3(1), 6.2.4(2), 6.2.6(1), 6.2.7(1)(2), 6.2.8(1)(2), 6.2.9(1)(2), 6.2.10(1)(2), 6.2.11(1)(2) and 6.2.13 (1)(2); however, compensating fabric measures may be required. See section 6 of this Certificate. |
| Standard: | 7.1(a)(b) | Statement of sustainability |
| Comment: | | The system can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting the bronze level of sustainability as defined in this Standard. |
| **Regulation:** | **12** | **Building standards - conversions** |
| Comment: | | All comments given for the system under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1(1)(2) and Schedule 6(1)(2). |

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).

## The Building Regulations (Northern Ireland) 2012 (as amended)

| | | |
|---|---|---|
| **Regulation:** | **23(1)(a)(i) (iii)(b)(i)(ii)** | **Fitness of materials and workmanship** |
| Comment: | | The system is acceptable. See sections 8 and 9 of this Certificate. |
| **Regulation:** | **23(2)** | **Fitness of materials and workmanship** |
| Comment: | | The system may be unrestricted by this Regulation. See section 2 of this Certificate. |
| **Regulation:** | **28(b)** | **Resistance to moisture and weather** |
| Comment: | | The system provides a degree of protection against rain ingress. See section 3 of this Certificate. |
| **Regulation:** | **29** | **Condensation** |
| Comment: | | Walls insulated with the system can contribute to satisfying the requirements of this Regulation. See section 3 of this Certificate. |
| **Regulation:** | **30** | **Stability** |
| Comment: | | The system can sustain and transmit wind loads to the structural frame. See section 1 of this Certificate. |
| **Regulation:** | **35(4)** | **Internal fire spread** |
| Comment: | | The system can contribute to satisfying this Regulation. See section 2 of this Certificate. |
| **Regulation:** | **36(a)** | **External fire spread** |
| Comment: | | The system may be unrestricted by this Regulation. See section 2 of this Certificate. |
| **Regulation:** | **39(a)(i)** | **Conservation measures** |
| Comment: | | The system can contribute to satisfying this Regulation; however compensating fabric measures may be required. See section 6 of this Certificate. |
| **Regulation:** | **40(2)** | **Target carbon dioxide emission rate** |
| **Regulation:** | **43(1)(2)** | **Renovation of thermal elements** |
| **Regulation:** | **43B** | **Nearly zero-energy requirements for new buildings** |
| Comment: | | The system can contribute to satisfying these Regulations; however, compensating fabric/services measures may be required. See section 6 of this Certificate. |

## Additional Information

### NHBC Standards 2024

In the opinion of the BBA, the Epsitec Stone Wool External Wall Insulation System for steel framed buildings, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards,* Part 6 *Superstructure (excluding roofs),* Chapter 6.9 *Curtain walling and cladding.*

## Fulfilment of Requirements

The BBA has judged the Epsitec Stone Wool External Wall Insulation System for steel framed building to be satisfactory for use in reducing the thermal transmittance (U value) of sheathed lightweight-steel-framed structures of new or existing domestic and non-domestic buildings, as described in this Certificate.

# ASSESSMENT

## System description and intended use

The Certificate holder provided the following description for the system under assessment. The Epsitec Stone Wool External Wall Insulation System for steel framed buildings comprises MW insulation slabs, mechanically fixed at a maximum of 600 mm horizontal centres to a sheathed light gauge steel-framed structure. Either steel spacer rails or timber battens are attached to the external surface of a minimum of 11 mm thickness-oriented strand board (OSB)(1), cement particle board (CPB)(1) or plywood(1) sheathing board, to create a minimum 15 mm wide drained cavity for spacer rails or a minimum 25 mm cavity for timber battens. The system is finished with a reinforced basecoat (incorporating a glass fibre reinforcement mesh) primer and a render finish (see Figure 1).

(1) Outside the scope of this Certificate.

The system comprises:

**Base rail**

- base rail — a 2500 mm long aluminium base rail for fixing to the sheathing board, with 8 mm diameter drainage holes at 300 mm centres, 200 mm from each side of the edge, creating a drained and an unventilated cavity with a ventilation rate of 191.5 $mm^2$ per metre length of wall

**Steel spacer rail**

- steel spacer rail — 48 by 15.5 mm galvanized steel top-hat rail sections made from 0.6 mm thick DX51 Z100 galvanized steel in 2300 mm lengths through which the mechanical fixings pass to create the 15 mm wide drainage cavity. Wider top hat sections can be used provided they have similar or better characteristics and have been approved by the Certificate holder

**Timber battens**

- treated timber battens (minimum dry strength grade C16 in accordance with BS EN 14081-1 : 2016) — minimum 50 by 25 mm

**Insulation**(1)

- MW Dual Density (MWDD) 036 — dual density MW slabs in sizes of up to 1200 by 600 mm and in thicknesses from 60(2) to 250 mm, with nominal densities of 160/100 $kg \cdot m^{-3}$ (outer/inner layer), a minimum compressive strength of 10 kPa and a tensile resistance perpendicular to the faces of 10 kPa. Slabs are manufactured to comply with BS EN 13162 : 2012

(1) For declared thermal conductivity values ($\lambda_D$) see section 6.1 of this Certificate.
(2) 30 - 50 mm thickness may be used at reveals.

**Mechanical fixings**(1)

- R-QCP-4550 Screws — 4.5 mm diameter by 50 mm length screws for attaching the steel spacer rails or timber battens to the sheathing boards
- Self-Drilling TKR Range Screws — 4.8 mm diameter insulation anchors made of case-hardened carbon steel with a Climadur organic coat. Used with a 60 mm diameter Bravoll TIT shaft of 0.9 $kN \cdot mm^{-1}$ stiffness and 90 mm extended KWL90 washer with a central hole to accommodate a screw of adequate length to suit the insulation thickness. Used for fastening the insulation to the timber battens or steel spacer rails (see section 1.1.5)

**Basecoat**

- Heck K+A Basecoat — a cementitious, ready mixed render supplied as a powder requiring the addition of 5 to 6.1 litres of clean water per bag. Applied in two layers to achieve a minimum thickness of 6 mm in total, with a coverage of 8 $kg \cdot m^{-2}$

**Reinforcement**

- reinforcing scrim mesh — a multi-stranded, alkali-resistant glass fibre reinforcement mesh (4 by 4 mm grid size), with a polymer coating and a nominal weight of 160 $g \cdot m^{-2}$

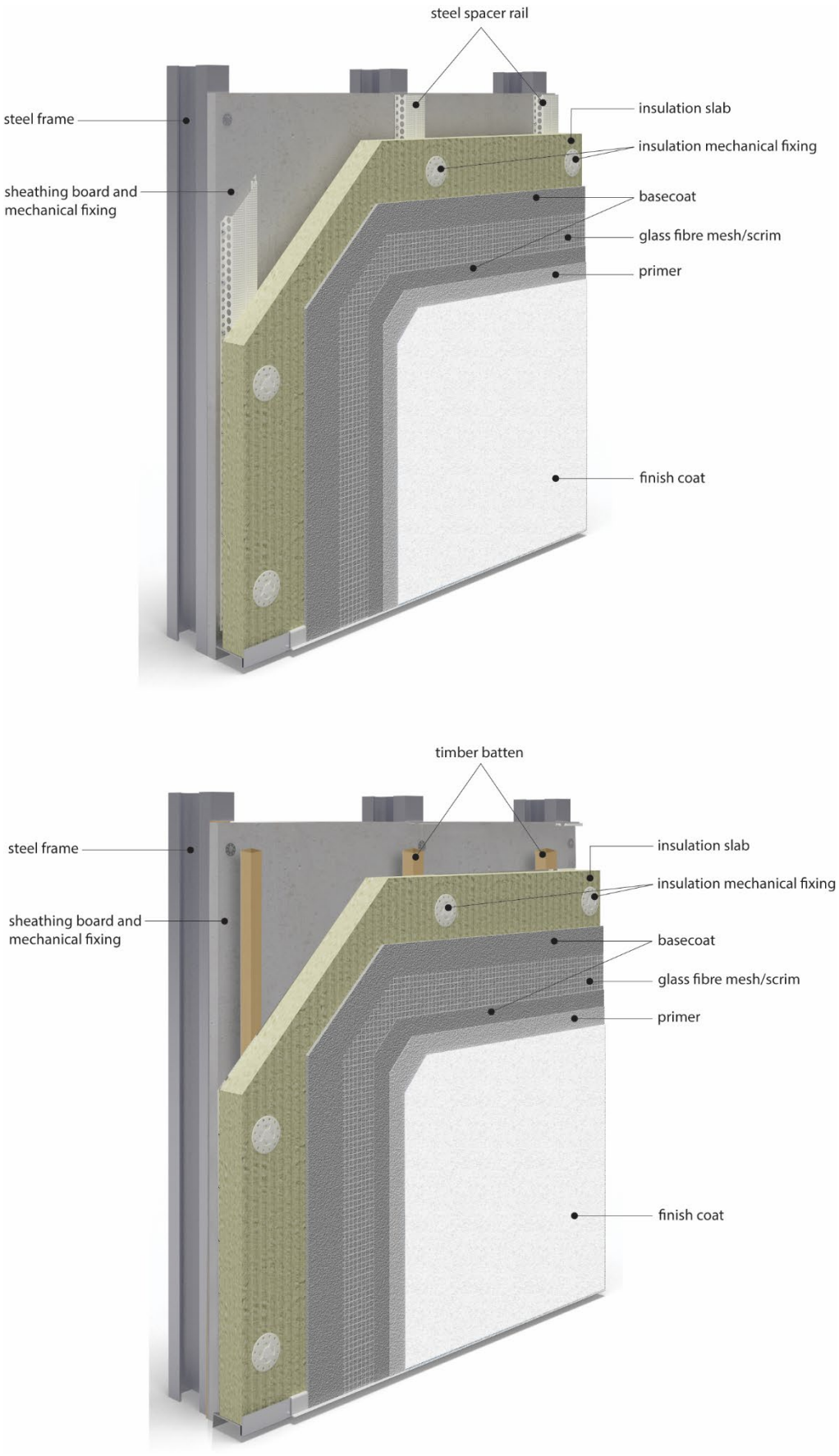
**Primer**

- Wetherby Silicone Primer — a silicone primer emulsion, used as a bonding agent and pre-coat with a coverage rate of 0.2 to 0.3 $l \cdot m^{-2}$

**Finishes**

- Heck SHP Siliconharzputz K and Heck Siliconharzputz R render topcoats — silicone ready-mixed renders supplied as pastes, with 1.0 to 3 mm particle size, with a coverage of 2.0 to 2.4 $kg \cdot m^{-2}$. If necessary, water can be added to adjust the consistency.

*Figure 1 The Epsitec Stone Wool External Wall Insulation System for steel framed buildings through steel spacer rails (top-hat sections) or timber battens*



Ancillary Items

The Certificate holder recommends the following ancillary items for use with the system, but these materials have not been assessed by the BBA and are outside the scope of this Certificate:

- aluminium edge profile, corner profile with mesh and optional PVC-U nosing and render stop profile
- treated timber battens minimum 50 by 25 mm (minimum dry strength grade C16 in accordance with BS EN 14081-1 : 2016)
- profile connectors and fixings
- basecoat adhesive — to fix the insulation around window reveals and openings
- steel-frame sheathed construction, including the exterior grade sheathing board
- fixings for timber battens
- fixings for sheathing boards
- breather membrane
- insect mesh
- cavity barriers and fire stops
- joint sealant
- polyurethane foam filler
- aluminium or PVC-U movement joints
- aluminium or PVC-U expansion joints
- water drainage deflector channels (for use above openings)
- sills
- flashings
- deflection bead profiles
- intumescent strips.

## System assessment – key factors

The system was assessed for the following key factors, and the outcome of the assessments is shown below. Conclusions relating to the Building Regulations apply to the whole of the UK unless otherwise stated.

## 1 Mechanical resistance and stability

Data were assessed for the following characteristics (see section 9.1.1 to 9.1.12).

1.1 Wind loading

1.1.1 The design pull-out resistance of the steel spacer rail or timber batten fixings from the substrate obtained from site tests ($N_{RD1}$) must not be less than the maximum design wind load ($W_e$). The characteristic pull-out resistance based on site tests is determined in accordance with the guidance given in EOTA TR051 (characteristic pull-out resistance = 0.6 x mean of 5 lowest test results).

1.1.2 A dynamic wind uplift test (see Table 1) was carried out on the system for a sheathed steel frame building with steel profiles and timber battens, forming a 15 and 25 mm cavity with insulation slabs. Insulation slabs were fixed with anchors, with the layout and spacing as shown in Figure 5. The maximum design negative wind load that can be sustained by the system as determined from the dynamic wind uplift test ($Rd_{Test}$) was equal to 2.33 $kN \cdot m^{-2}$ (1)(2).

(1) The maximum design wind load that can be resisted by the system corresponds to the maximum allowed spacing and centres of fixings and profiles and as described in 1.1.2. This fixing and profile configuration with appropriately selected fixings will also adequately transfer the system's self-weight, wind and impact loads to a suitable substrate wall.

(2) The characteristic resistance value ($N_{RK2}$) determined from the DWU test is 3.5 $kN \cdot m^{-2}$. The design wind load resistance is determined by dividing this characteristic resistance value by a partial safety factor of 1.5.

*Table 1 Dynamic wind uplift — steel spacer rails*

| System assessed | Assessment method | Requirement | Result |
|---|---|---|---|
| Substrate:<br>Lightweight 3200 x 2600 mm (W x H) steel frame with a top and bottom rail and studs at 600 mm centres sheathed with plywood | EAD 040914-00-0404 : 2018 | Value achieved | 4.12 kPa |
| System:<br>Sheathing: Plywood Sheets 9, 2400 x 1200 mm<br>Rails: 5112 Epsitec Rails 15 mm<br>Fixing 1: 50 mm R-QCP Screws | | | |
| Insulation: 60 x 600 x 1200 mm<br>MW Dual Density Slab | | | |
| Washer 1: KWL90 Washer Code 20115<br>Washer 2: TiT/FiN 60 mm capped Washers<br>Fixing 2: 60 mm TKR Screws | | | |
| Base Rail<br>Basecoat: Heck K+A | | | |
| Reinforcement: Reinforcing scrim mesh | | | |
| Primer: Wetherby silicone primer | | | |
| Render: Heck Silicone 'K' 1.5 mm render | | | |

1.1.3 Positive wind load is transferred to the substrate wall directly via compression through the render, insulation and steel spacer rail or timber battens.

1.1.4 Negative wind load is transferred to the substrate wall via :

- the bond between the insulation and the render system
- the pull-out resistance of the insulation fixing from the steel spacer rail or timber battens
- the pull-through resistance of the insulation fixing
- the pull-through resistance of the steel spacer rail or timber batten fixing from the steel spacer rails or timber battens
- the pull-out resistance of the steel spacer rail or timber batten fixing from the substrate (see sections 1.1.1 and 1.1.2).

1.1.5 The horizontal local deflection of the supporting structure due to variable loads must be within acceptable limits. The suggested limit for the maximum horizontal local deflection is the height of the storey/360, in accordance with the UK National Annex to BS EN 1993-1-1 : 2005. The Certificate holder may advise on the limiting deflection for the system, but such advice is outside the scope of this Certificate.

1.1.6 The data derived from sections 1.1.1, 1.1.2 and 9.1.8 must be assessed against the design wind load, and the following expressions must be satisfied:

For safe design:

$Rd_{Test} \geq W_e$ and $N_{RD1} \geq W_e$

Where:

$N_{RD1} = N_{Rk_1}/\gamma_m$
$Rd_{Test} = N_{Rk_2}/\gamma_m$

Where:

$Rd_{Test}$ is the negative wind load design resistance of the system based on test ($kN \cdot m^{-2}$)
$W_e$ is the maximum design wind load ($kN \cdot m^{-2}$)
$N_{RD1}$ is the design pull-out resistance based on site tests (kN)
$N_{Rk_1}$ is the characteristic resistance obtained from the pull-out test
$N_{Rk_2}$ is the characteristic resistance obtained from the wind uplift test
$\gamma_m$ is the partial safety factor (determined by the mode of failure).

1.1.7 For a system comprising timber battens, if the spacing of the fixings and vertical timber battens are identical to those in section 1.1.2, the same maximum design negative wind resistance ($Rd_{Test}$ = 2.33 kN·m$^{-2}$) can be used. Fixings must be positioned centrally along the line of the timber battens.

1.2 Resistance to impact

1.2.1 Hard body impact tests were carried out as given in Table 2.

*Table 2 System impact resistance*

| System assessed | Assessment method | Requirement | Category(1) |
|---|---|---|---|
| Epsitec External Wall Insulation System for steel framed buildings | ETAG 004 : 2013 | ETAG 004 : 2013, clause 5.1.3.3 | Categories I, II and III |

(1) The Use Categories are defined in ETAG 004 : 2013 as:

- Category I — a zone readily accessible at ground level to the public and vulnerable to hard body impacts but not subjected to abnormally rough use
- Category II — a zone liable to impacts from thrown or kicked objects, but in public locations where the height of the system 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
- Category III — a zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects.

1.2.2 On the basis of data assessed, the system is suitable for use in the Use Categories I, II and III of ETAG 004 : 2013.

1.3 Behaviour under loading

The system was tested in accordance with a BBA method for combined self-weight and wind actions, to confirm its suitability when using the maximum insulation thickness of 250 mm of minimum stiffness, heaviest insulation and render system and by adopting the fixing pattern shown in Figure 5 (minimum number of fixings) using insulation fixing type TKR Range screws with a 90 mm diameter polyethylene plate Koelner KWL 090. It is essential that movement joints, seals and interfaces with the render system are designed and detailed to accommodate all vertical displacements, see Table 3.

*Table 3 Displacement test*

| System assessed | Assessment method | Requirement | Result |
|---|---|---|---|
| Substrate: Timber battens: 2.4 m x 47 x 50 mm<br>Fixings 1: HIT M type p 8.0 x 90 mm | BBA test method based on EAD 040083-00-0404 : 2018 | Displacement less than 10 mm | Pass |
| System:<br>Sheathing: 12 x 2400 x 1200 mm Kemwell cement particle board<br>Fixings 2: TKR 4.8 x 50 | | | Pass |
| Cavity Rail: 5009HD<br>Fixing 3: LS 5.5 32 mm | | | Pass |
| Insulation: 250 x 1200 x 600 MW Dual Density<br>Fixing 4: TKR 4.8 x 260 mm | | | Pass |
| Washer 1: Koelner KWL 090<br>Washer 2: TiT FiN | | | Pass |
| Basecoat: Heck K+A Scrim | | | Pass |
| Reinforcement: Wetherby glass fibre reinforcing mesh | | | Pass |

## 2 Safety in case of fire

Data were assessed for the following characteristics.

2.1 Reaction to Fire

The reaction to fire classification of the system is given in Table 4.

*Table 4 Reaction to fire classification*

| System assessed | Assessment method | Classification report | Fire classification |
|---|---|---|---|
| Substrate:<br>CPB board to BS EN 634-2 : 2007, Class 1<br>or OSB board to BS EN 12467 : 2012, Class 2<br>or Plywood to BS EN 636 : 2012, minimum Service Class 2, all with a with a minimum fire classification of D-s2, d0 | BS EN 13501-1 : 2007 | WF 406081<br>(Exova Warringtonfire)(1) | A2-s1, d0 |
| Insulation:<br>MW Dual Density with nominal densities of 160/100 kg·m$^{-3}$ | | | |
| Basecoat:<br>Heck K+A Basecoat<br>Thickness range 6 – 8 mm | | | |
| Reinforcing mesh:<br>with a mass per unit area of 165 g·m$^{-2}$ | | | |
| Primer:<br>Wetherby Silicone Primer | | | |
| Finishing coat:<br>Heck SHP Siliconharzputz K or<br>Heck Siliconharzputz R | | | |

(1) Copies available from the Certificate holder on request.

2.1.1. The classification and permissible areas of use of other constructions must be established in accordance with the documents supporting the national Building Regulations.

2.1.2 The fire classification given in Table 4 applies to the full range of insulation thicknesses and colours covered by this Certificate.

2.1.3 The insulation component in isolation has a reaction to fire classification of A1 to BS EN 13501-1 : 2018.

2.1.4 On the basis of the data assessed, the system given in Table 4, when installed with steel spacer rails on a sheathing board with a reaction to fire classification of A2-s1, d0 or better to BS EN 13501-1 : 2018, is suitable for use on or at any distance from a relevant boundary and without height restriction.

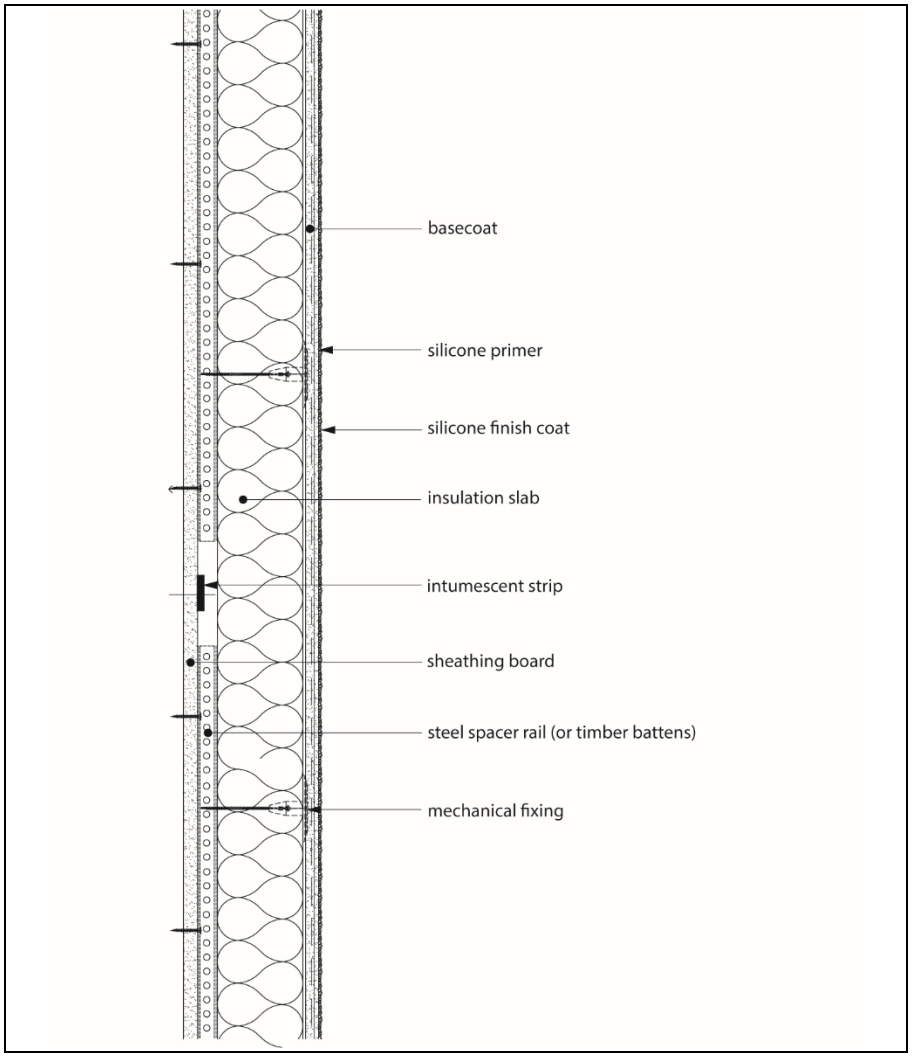
2.1.5 On the basis of the data assessed, other specifications of the system will be restricted under the documents supporting the national Building Regulations.

2.1.6 For application to second storey walls and above, the designer must consider at least one stainless steel fixing per square metre and fire barriers in line with compartment walls and floors, as given in BRE Report BR 135 : 2013 (see Figure 2 of this Certificate).

2.1.7 *NHBC Standards* 2023 require in all cases that a minimum of one non-combustible fixing through the reinforcing scrim mesh, per square metre or per insulation board, whichever provides the greater number, must be provided, in addition to the other fixings.

2.1.8 Designers must refer to the documents supporting the national Building Regulations for detailed conditions of use, particularly in respect of requirements for substrate fire performance, cavity barriers, service penetrations and combustibility limitations for other materials and components used in the overall wall construction.

*Figure 2 Example fire barrier*




## 3 Hygiene, health and the environment

Data were assessed for the following characteristics.

3.1 Water vapour permeability

The water vapour resistance ($\mu$) factor (for the insulation slab) and equivalent air layer thicknesses ($s_d$) for the render systems are shown in Table 5.

*Table 5 Water vapour resistance factor and equivalent air layer thickness*

| System assessed | Assessment method | Requirement | Result |
|---|---|---|---|
| MWI Dual Density (MWDD) (60 to 250 mm) | BS EN ISO 10456 : 2007 | — | $\mu$ = 1 |
| Heck K+A Basecoat, Wetherby Silicone Primer, HECK SHP Siliconharzputz K or Siliconharzputz R | | $s_d \leq 1$ m(1) | $s_d$ = 1 m |

(1) The $s_d$ is only representative of the tested thickness; for other thicknesses, the Certificate holder must be contacted, but such advice is outside the scope of this Certificate.

3.2 Condensation

3.2.1 The BBA has assessed the system for the risk of condensation, and the following must be implemented.

3.2.2 Designers must ensure that an appropriate condensation risk analysis has been carried out for all parts of the construction, including openings and penetrations at junctions between the insulation system, to minimise the risk of condensation. The recommendations given in BS 5250 : 2021 must be followed.

3.2.3 Walls incorporating the system will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2021, and section 3.1 of this Certificate.

## 4 Safety and accessibility in use

Not applicable.

## 5 Protection against noise

Not applicable.

## 6 Energy economy and heat retention

Data were assessed for the following characteristics.

6.1 Thermal conductivity

Calculations of the thermal transmittance (U value) must be carried out in accordance with BS EN ISO 6946 : 2017 and BRE Report BR 443 : 2019, using the insulation manufacturer's declared thermal conductivity ($\lambda_D$) given in Table 6 of this Certificate.

*Table 6 Insulation thermal conductivity*

| Insulation type | Insulation slab thickness range (mm) | Thermal conductivity ($W \cdot m^{-1} \cdot K^{-1}$) |
|---|---|---|
| MW Dual Density 036 | 60 to 250 | 0.036 |

6.2 Thermal performance

6.2.1 The U value of a completed wall will depend on the selected insulation thickness, the fixing method and type and number of fixings and the insulating value of the substrate and its internal finish. Calculated U values for sample constructions in accordance with the national Building Regulations are given in Table 7 of this Certificate and are based on the thermal conductivity values given in Table 6.

*Table 7 Insulation thickness required to achieve typical design values*(1)(2)

| U value ($W \cdot m^{-2} \cdot K^{-1}$) | Thickness of the insulation slabs (mm)(2) for steel frame construction | |
|---|---|---|
| | Using timber battens | Using steel spacer rail |
| 0.13 | —(3) | —(3) |
| 0.15 | —(3) | —(3) |
| 0.17 | 230 | 230 |
| 0.21 | 170 | 180 |
| 0.26 | 130 | 140 |
| 0.28 | 120 | 130 |
| 0.30 | 110 | 120 |

(1) Wall Construction:
- 15 mm plasterboard ($\lambda$ = 0.25 $W \cdot m^{-1} \cdot K^{-1}$)
- 100 mm air cavity bridged by 0.3 % steel top-hat sections ($\lambda$ = 50 $W \cdot m^{-1} \cdot K^{-1}$)
- 12 mm CPB board ($\lambda$ = 0.23 $W \cdot m^{-1} \cdot K^{-1}$)
- for the steel spacer rail, 15 mm drained air cavity with an opening up to 500 $mm^2$ per metre of length (in the horizontal direction) for vertical air layers of the wall
- the timber battens and steel spacer rails, provide a 25 and 15 mm, respectively, drained unvented air cavity with an open area up to 500 $mm^2$ per metre run, 7.68 galvanized steel fixings per $m^2$ with a point thermal transmittance ($X_P$) of 0.004 $W \cdot K^{-1}$ per pin
- 8 mm render ($\lambda$ = 1 $W \cdot m^{-1} \cdot K^{-1}$).

(2) Based upon incremental insulation thicknesses of 10 mm.

(3) See section 6.2.3

6.2.2 Care must be taken in the overall design and construction of junctions with other elements and openings to minimise thermal bridges and air infiltration. Detailed guidance can be found in the documents supporting the national Building Regulations.

## 7 Sustainable use of natural resources

Not applicable.

## 8 Durability

8.1 The potential mechanisms for degradation and the known performance characteristics of the materials in the system were assessed.

8.2 Specific test data were assessed as shown in Table 8.

*Table 8 Watertightness — hygrothermal behaviour*

| System assessed | Assessment method | Requirement | Result |
|---|---|---|---|
| Epsitec External Wall Insulation System for sheathed steel-framed wall substrates | EAD 040083-00-0404, Section 2.2.6. Watertightness of the system: hygrothermal behaviour | – No blistering or peeling of any finishing coat<br>– No detachment of the rendering system<br>– No failure or cracking associated with joints between insulation boards<br>– No cracking allowing water penetration to the insulating layer (normally ≤ 0.2mm) | Pass |

*Table 9 Watertightness — water penetration test*

| System assessed | Assessment method | Requirement | Result |
|---|---|---|---|
| Epsitec External Wall Insulation System for sheathed steel-framed wall substrates | EAD 040089-00-0404, Section 2.2.2.5 Watertightness of the system: simulated driven rain test in accordance with EN 12865 : 2001 | No water penetration | Pass |

8.3 Service life

8.3.1 Under normal service conditions, the system will remain effective for at least 30 years, provided any damage to the surface finish is repaired immediately, and regular maintenance is undertaken as described in section 9 of this Certificate.

8.3.2 Any render containing Portland cement may be subject to lime bloom. The occurrence of this may be reduced by avoiding application in adverse weather conditions. The effect is transient and less noticeable on lighter colours.

8.3.3 The finishes may become discoloured with time, the rate depending on the initial colour, the degree of exposure and atmospheric pollution, as well as the design and detailing of the wall. In common with traditional renders, discoloration by algae and lichens may occur in wet areas. The appearance may be restored by a suitable power wash or, if required, by over coating, provided the coating does not adversely affect the water vapour transmission or fire characteristics of the system. The advice of the Certificate holder must be sought as to the suitability of a particular system, but such advice is outside the scope of this Certificate.

8.3.4 To maintain a high-quality aesthetic appearance, it may be necessary to periodically overcoat the building using a suitable masonry coating. Care must be taken not to adversely affect the water vapour transmission or fire characteristics of the system. The advice of the Certificate holder must be sought as to the suitability of a particular system, but such advice is outside the scope of this Certificate.

## PROCESS ASSESSMENT

Information provided by the Certificate holder was assessed for the following factors:

## 9 Design, installation, workmanship and maintenance

9.1 Design

9.1.1 The design process was assessed, and the following requirements apply, in order to satisfy the performance assessed in this Certificate.

9.1.2 It is essential that the detailing techniques specified in this Certificate are carried out to a high standard if the ingress of water into the insulation is to be avoided and the full thermal benefit obtained from treatment with the system (eg the insulation must be protected by an overhang, and window sills should be designed and installed so as to direct water away from the building).

9.1.3 For improved thermal/carbon-emissions performance of the structure, the designer must consider additional/ alternative fabric and/or services measures.

9.1.4 New walls subject to national Building Regulations must be constructed in accordance with the relevant recommendations of:

- BS EN 1993-1-1 : 2005 and its UK National Annex
- BS EN 1993-1-3 : 2006 and its UK National Annex
- BS 8000-0 : 2014
- BS EN 10346 : 2015
- BS EN 634-2 : 2007.

9.1.5 New walls not subject to regulatory requirements must also be built in accordance with the Standards identified in section 9.1.4.

9.1.6 Movement joints must be incorporated into the system in line with existing movement joints in the building structure and in accordance with the Certificate holder's recommendations for the specific installation.

9.1.7 The designer must select a construction appropriate to the local wind-driven rain index, paying due regard to the design detailing, workmanship and materials to be used. The sheathing board must be of a suitable exterior grade with appropriately sealed joints, sealed penetrations, breather membrane and vapour control layer (VCL) where required. For guidance, examples of relevant detailing for external wall insulation system are given in SCI Publication P343 *Insulated Render Systems Used with Light Steel Framing* (Steel Construction Institute, 2006).

9.1.8 The design of the structural frame of the building, including the sheathing boards, is the responsibility of the building designer and is outside the scope of this Certificate. However, the structural frame (and sheathing-associated fixings) must be structurally adequate and must be designed to resist all permanent and variable load actions applied to the system (see Table 10 for the non-exhaustive minimum specifications for system installations relating to the light gauge steel and sheathing). It is essential that appropriate movement joints are incorporated into the system (see section 9.1.6).

*Table 10 Minimum steel frame construction requirements*

| Item | Characteristic | Specification |
|---|---|---|
| Steel-framed structure(1) | Cold-formed steel frame members should be in accordance with BS EN 1993-1-3 : 2006. The steel structure studs should be at least 1.2 mm thick, with 50 mm (minimum) flanges | In accordance with BS EN 10346 : 2015, type S 320 GD +Z275 |
| Sheathing board (1)(2)(3) | Cement Particle Board (CPB) Minimum 12 mm thickness | The board must be manufactured to BS EN 12467 : 2012, Class 2 |
| | OSB Minimum 11 mm thickness | The board must be manufactured to BS EN 634-2 : 2007, Class 1 |
| | Plywood Minimum 11 mm thickness | The board must be manufactured to BS EN 636 : 2012, minimum Service Class 2 |

(1) These components are outside the scope of this Certificate.
(2) The board must be of an exterior grade, with the minimum acceptable specification as indicated in Table 10.
(3) All components must meet the requirements of the documents supporting the national Building Regulations with regard to reaction to fire performance when used on constructions in excess of 18 m in height.

9.1.9 The system will improve the weather resistance of a wall and provide a decorative finish.

9.1.10 The system must include a minimum of 25 mm drained cavity for the timber battens or a minimum of 15 mm wide drained cavity(1)(2) for the steel spacer rail, between the sheathing board and the insulation slabs. Openings in the base rail profiles must provide an opening up to 500 $mm^2$ per metre of wall length (in the horizontal direction) for vertical air layers. The openings must be kept clean and free of obstructions and must be capable of draining freely.

(1) Horizontal deflection channels which obstruct the cavity must not be used to support the insulating render system.
(2) Cavities must not contain electrical cables other than meter tails.

9.1.11 The effect of the system on the acoustic performance of a construction is outside the scope of this Certificate.

9.1.12 The fixing of sanitary pipework, plumbing, rainwater goods, satellite dishes, clothes lines, hanging baskets and similar items to the system is outside the scope of this Certificate.

9.1.13 External pipework and ducts must be removed before installation, and alterations made to underground drainage to accommodate repositioning of the pipework to the finished face of the system. The Certificate holder may advise on suitable fixing methods, but these are outside the scope of this Certificate.

9.1.14 The designer must ensure that windows, doors, flashings and other similar items have been specifically designed for use with this type of system; particular attention must be paid to the prevention of water ingress into the system. For example, junctions between the system and window and door openings must avoid creating a direct path that could facilitate the transfer of water from the external surface of the wall into the wall construction or to the internal surface. In addition, opening and penetration details must be designed to deflect water away from the insulation and onto the external face of the wall.

9.1.15 The detailed provisions given in the documents supporting the national Building Regulations when the system is installed in close proximity to certain flue pipes and/or heat-producing appliances must be followed.

*Surface condensation*

9.1.16 In England and Wales, walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 0.7 $W \cdot m^{-2} \cdot K^{-1}$ at any point and the junctions with other elements and openings comply with section 6.2.2 of this Certificate.

9.1.17 In Scotland, walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 1.2 $W \cdot m^{-2} \cdot K^{-1}$ at any point.

*Resistance to weather*

9.1.18 The system will provide a degree of protection against water ingress. However, care must be taken to ensure that substrate walls are adequately weather resistant prior to application of the system. The system must only be installed where there are no signs of dampness on the inner surface of the substrate other than those caused solely by condensation.

9.1.19 Designers and installers must take particular care in detailing around openings, penetrations and movement joints to minimise the risk of water ingress.

9.1.20 The guidance given in BRE Report BR 262 : 2002 must be followed in connection with the weathertightness of the constructions. The designer must select a construction appropriate to the local wind-driven rain index, paying due regard to the design detailing, workmanship and materials to be used.

9.1.21 At the top of walls, the system must be protected by an adequate overhang or other detail designed for use with this type of system (see Annex A). On flat roofs and parapet walls, waterproofing and drainage must be adequate and in good condition.

*Structural performance*

9.1.22 The Certificate holder is ultimately responsible for the design of the system, and it is the responsibility of the company installing the system to accurately follow the installation instructions. The Certificate holder must also verify that a suitably experienced and qualified individual (with adequate professional indemnity) establishes that:

- the wind loads on the different zones of the building's elevation for the specific geographical location have been calculated correctly (see section 9.1.24)
- the system can adequately resist and safely transfer the calculated loads, accounting for all possible failure modes, to the substrate wall and supporting structure (see sections 9.1.25 to 9.1.27).

9.1.23 The substrate and supporting structure must be capable of transferring all additional loading due to the installation of the system to the ground in a satisfactory manner. The adequacy of the substrate and supporting structure must be verified by the person or party responsible for the global stability of the building to which the system is applied. Any defects must be made good prior to the system being installed.

9.1.24 The wind loads on the walls must be calculated by a suitably experienced and competent individual, taking into account all relevant factors such as location and topography, in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. All of the factors affecting wind load on each elevation and specific zones of the building must be considered. In accordance with BS EN 1990 : 2002 and its UK National Annex, a partial factor of 1.5 must be applied to the calculated characteristic wind pressure values to establish the design wind load to be resisted by the system.

9.1.25 Installations correctly designed in accordance with this Certificate will safely accommodate the applied loads due to the self-weight of the system, wind and impact.

9.1.26 Negative wind load is transferred to the substrate wall via:

- the bond between the insulation and render system (see section 1.1.3)
- the pull-out resistance of the fixing from the substrate sheathing board
- the pull-through resistance of the fixing (see section 1.1.2 and 1.1.4).

9.1.27 The horizontal local deflection of the supporting structure due to variable loads must be within acceptable limits. The suggested limit for the maximum horizontal local deflection is the height of the storey/360, in accordance with the UK National Annex to BS EN 1993-1-1 : 2005. The Certificate holder may advise on the limiting deflection for the system, but such advice is outside the scope of this Certificate.

9.2 Installation

9.2.1 Installation instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate.

9.2.2 Installation must be carried out in accordance with this Certificate and the Certificate holder's instructions. A summary of instructions and guidance is provided in Annex A of this Certificate.

9.2.3 Weather conditions must be monitored to ensure correct application and curing conditions. If exposure to frost is likely or in damp/wet conditions, the render must be protected. The system must not be applied at temperatures below 5°C or above 30°C.

9.2.4 All rendering must be in accordance with the relevant recommendations of BS EN 13914-1 : 2016.

9.3 Workmanship

Practicability of installation was assessed on the basis of the Certificate holder's information. To achieve the performance described in this Certificate, the system must only be installed by installers who have been trained and approved by the Certificate holder. Details of Approved Installers are available from the Certificate holder. Such an installer is a company:

- employing operatives who have been trained and approved by the Certificate holder to install the system
- which has undertaken to comply with the Certificate holder's application procedure, containing the requirement for each application team to include at least one member-operative trained by the Certificate holder
- subject to at least one inspection per annum by the Certificate holder to ensure suitable site practices are being employed. This may include unannounced site inspections.

Note: The BBA operates a UKAS-accredited Approved Installer Scheme for external wall insulation; details of approved installer companies are included on the BBA website (www.bbacerts.co.uk).

9.4 Maintenance and repair

9.4.1 An initial inspection must be made within 12 months and regularly thereafter to include:

- visual inspection of the render for signs of damage. Cracks in the render exceeding 0.2 mm must be repaired
- visual inspection of architectural details designed to shed water to confirm that they are performing properly
- visual inspection to ensure that water is not leaking from external downpipes or gutters, as such leakage could penetrate the rendering
- necessary repairs effected immediately and the sealant joints at window and door frames replaced at regular intervals
- maintenance schedules, which should include the replacement and resealing of joints (for example, between the insulation system and window and door frame).

9.4.2 Damaged areas must be repaired using the appropriate components and procedures detailed in the Certificate holder's installation instructions and in accordance with BS EN 13914-1 : 2016.

## 10 Manufacture

10.1 The production processes for this system have been assessed, and provide assurance that the quality controls are satisfactory according to the following factors:

10.1.1 The manufacturer has provided documented information on the materials, processes, testing and control factors.

10.1.2 The quality control operated over batches of incoming materials has been assessed and deemed appropriate and adequate.

10.1.3 The quality control procedures and system testing to be undertaken have been assessed and deemed appropriate and adequate.

10.1.4 The process for management of non-conformities has been assessed and deemed appropriate and adequate.

10.1.5 An audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

† 10.2 The BBA has undertaken to review the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

## 11 Delivery and site handling

11.1 The Certificate holder stated that the system components are delivered to site in the packaging and quantities listed in Table 11. Each package carries the system identification and manufacturer's batch number.

*Table 11 Component supply details*

| Component | Quantity/packaging |
|---|---|
| MW Dual Density | Polythene wrapped |
| Base rail | 2500 mm lengths |
| Reinforcing scrim mesh | 50 by 1 m rolls |
| Steel spacer rail | Banded together |
| Timber battens | Banded together |
| Heck K+A Basecoat | 25 kg bags |
| Wetherby Silicone Primer | 23 kg tubs |
| Finishes: Heck SHP Siliconharzputz K and Heck Siliconharzputz R render topcoats | 25 kg tubs |
| Mechanical Fixings: R-QCP-4550 Screws and self-Drilling TKR Range Screws | Boxed by manufacturer |

11.2 Delivery and site handing must be performed in accordance with the Certificate holder's instructions and this Certificate, including:

11.2.1 The insulation must be stored on a firm, clean, level base, off the ground and under cover until required for use. Care must be taken when handling to avoid damage.

11.2.2 The insulation must be protected from prolonged exposure to sunlight, either by storing opened packs under cover or re-covering with opaque polythene sheeting. Care must be taken to avoid contact with solvents or materials containing volatile organic components. Slabs that become damaged, soiled or wet must be discarded.

11.2.3 The basecoat must be stored in dry conditions between 5 and 30°C, off the ground and protected from moisture. Contaminated materials must be discarded.

11.2.4 The primer and finishes must be stored in a safe area, under cover, and protected from excessive heat and frost at all times.

## ANNEX A – SUPPLEMENTARY INFORMATION †

Supporting information in this Annex is relevant to the system but has not formed part of the material assessed for the Certificate.

### Construction (Design and Management) Regulations 2015
### Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

### CLP Regulations

The Certificate holder has taken the responsibility of classifying and labelling the components under the *GB CLG Regulation* and *CLP Regulation (EC) No 1272/2008 - classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

### Management Systems Certification for production

The management system of Wetherby Building Systems Limited has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 and BS EN ISO 14001 : 2015 by Alcumus (Certificates 16512-QMS-001 and 16512-EMS-001 respectively).

### Additional information on installation

**A.1 Site survey and preliminary work**

A.1.1 A pre-installation survey of the property must be carried out to determine whether repairs are required to the sheathing board or steel frame; any repairs should be carried out before application of the system. A specification is prepared for each elevation of the building indicating, for example:

- the position of beads
- detailing around windows, doors and at eaves
- damp-proof course (DPC) level
- exact position of expansion joints, if required
- where required, additional corner mesh and reinforcement
- areas where flexible seal must be used
- any alterations to external plumbing, if required.

A.1.2 The survey must include tests conducted on the walls of the building by the Certificate holder or their approved installers (see section 9.3) to determine the pull-out resistance of the proposed mechanical fixings for the appropriate substrate. An assessment and recommendation are made on the type and number of fixings required to withstand the building's expected wind loading based on calculations using the test data and pull-out resistance (see section 1.1.1).

A.1.3 Surfaces must be sound, clean and free from loose material. The flatness of surfaces must be checked; this may be achieved by using a straight edge spanning the storey height. Excessive irregularities, ie, greater than 10 mm, must be made good prior to installation to ensure that the insulation slabs are installed with a smooth, in-plane finished surface.

A.1.4 Where surfaces are covered with an existing render, it is essential that the bond between the background and the render is adequate. All loose areas must be hacked off and reinstated.

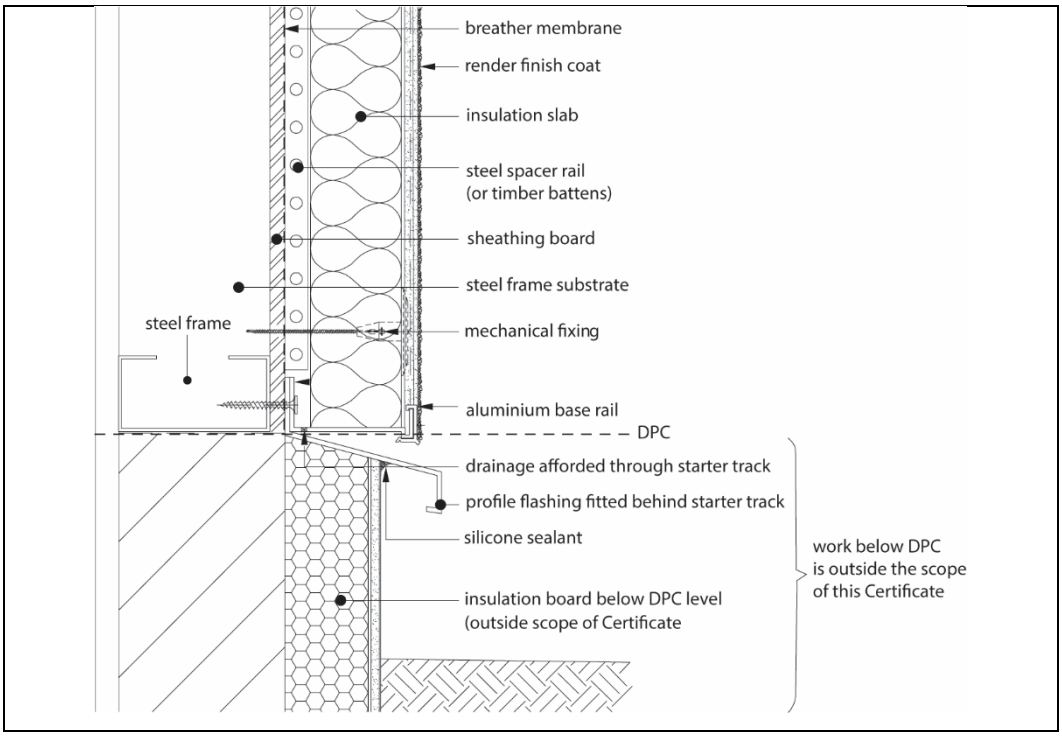
A.1.5 On existing buildings, purpose-made window sills must be fitted to extend beyond the finished face of the system. New buildings should incorporate suitably deep sills.

A.1.6 All modifications, such as alterations to external plumbing and necessary repairs to the building structure, must be completed before installation of the system commences.

**A.2 Installation**

A.2.1 The base rail is mechanically fixed and secured to the sheathing board above the DPC using profile fixings (see Figures 3 and 4).

*Figure 3 Typical section at base rail*




A.2.2 Vertical steel spacer rails or timber battens are mechanically fixed at maximum 600 mm horizontal centres to the sheathing board and at a maximum of 300 mm centres either side of the rail. Rails may need packing to ensure they are true to line and level. Deflection bead profiles(1) are mechanically fixed into sheathing boards above all window and door openings (see Figure 3). Intumescent strips(1) are correctly installed by following the Certificate holder's current installation instructions.

(1) Outside the scope of this Certificate.

A.2.3 The first insulation slab is positioned on the starter track and secured into the steel spacer rail using a self-drilling, self-tapping fastening. Subsequent slabs are positioned so that the joints are staggered and overlapped at the building corners (see Figures 5 and 6). Care must be taken to ensure the fixings are not overdriven.

A.2.4 The fixings are installed at slab joints and within the slab as per the fixing pattern shown in Figure 5, which equates to 6 fixings per slab and approximately 7.68 fixings per square metre.

*Figure 4 Section of base rail (all dimensions in mm)*

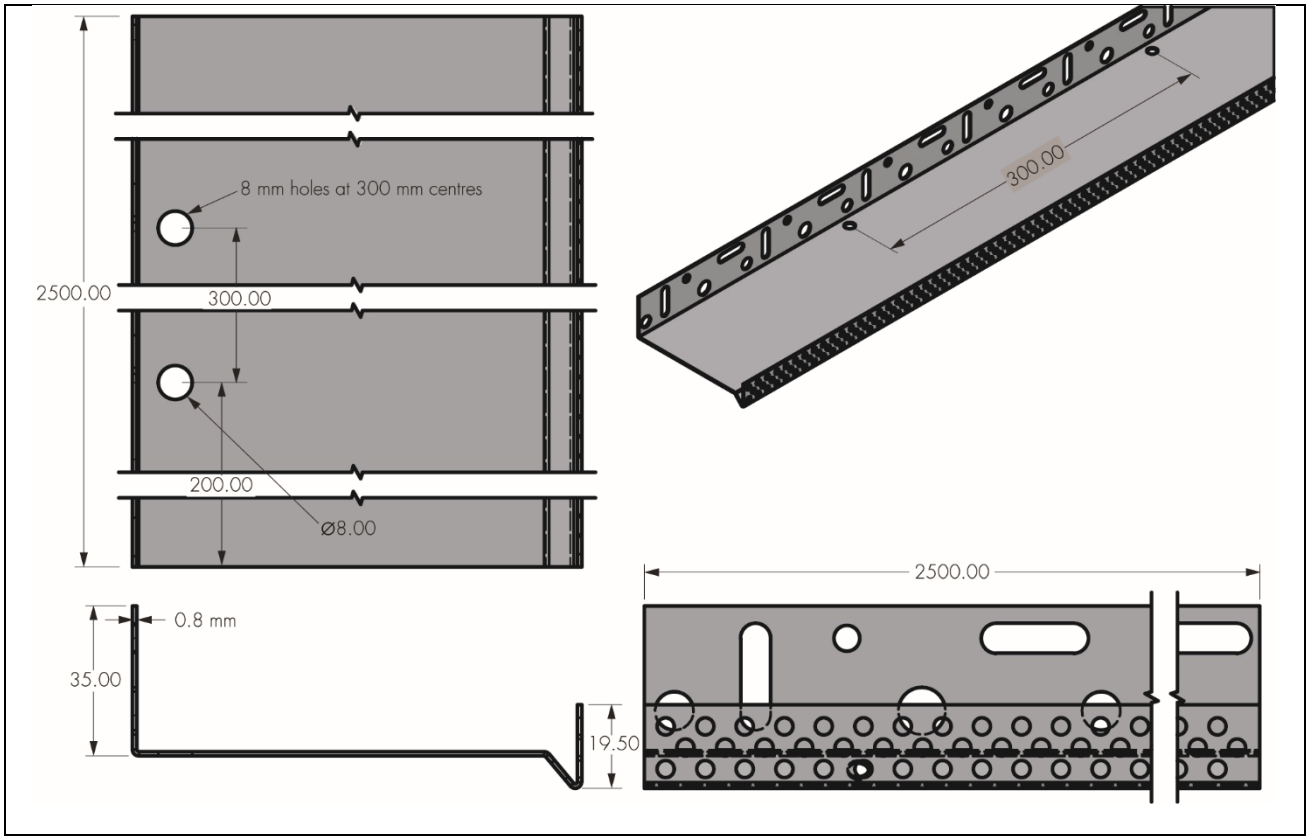


*Figure 5 Arrangement of insulation slabs and typical fixing pattern*

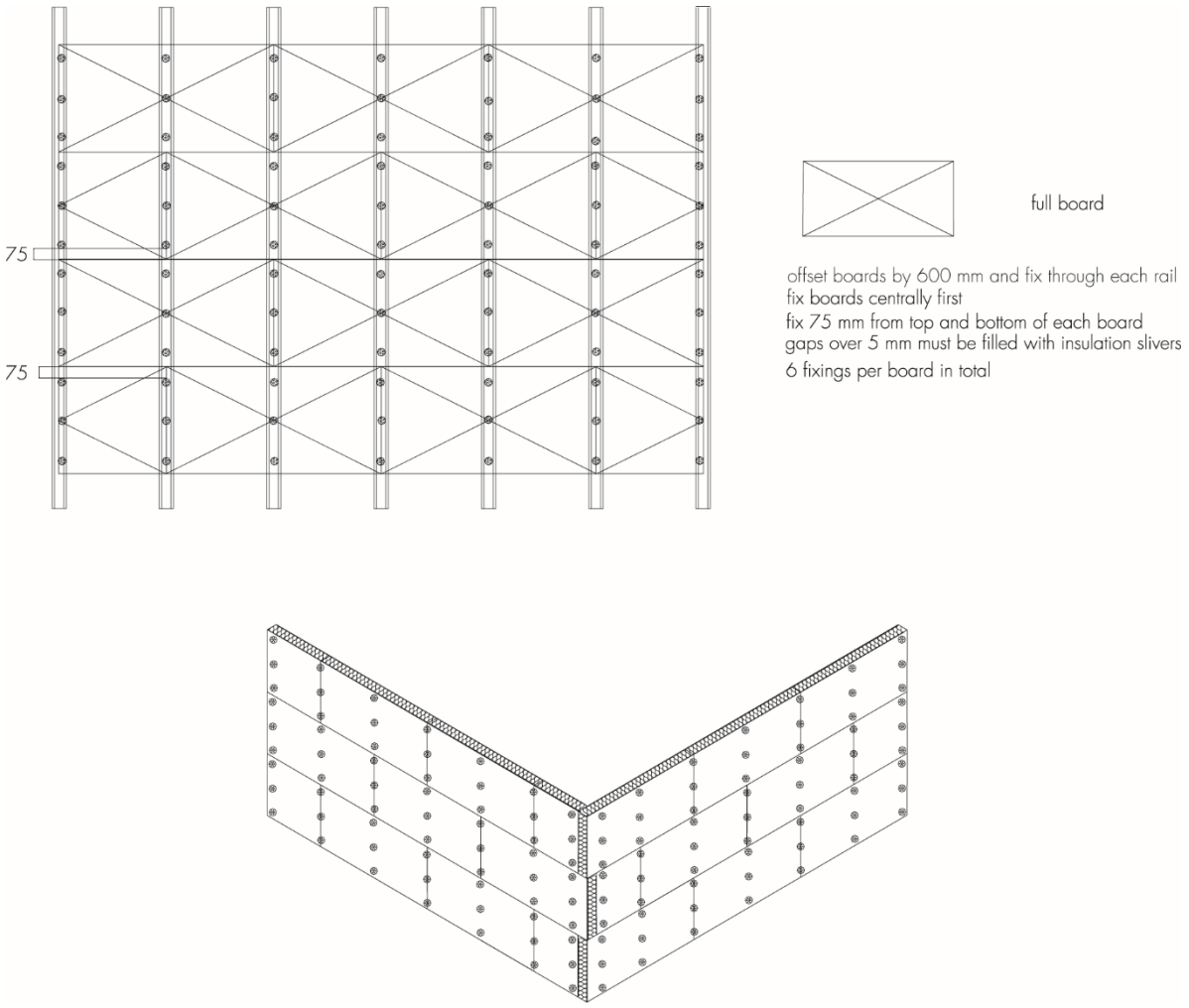
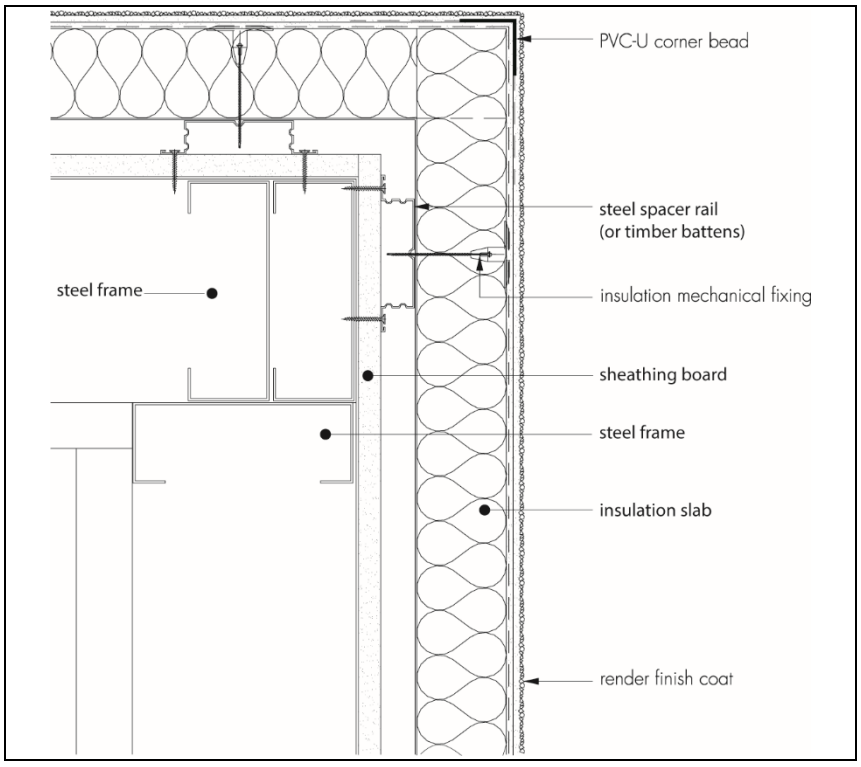



*Figure 6 Typical corner detail*

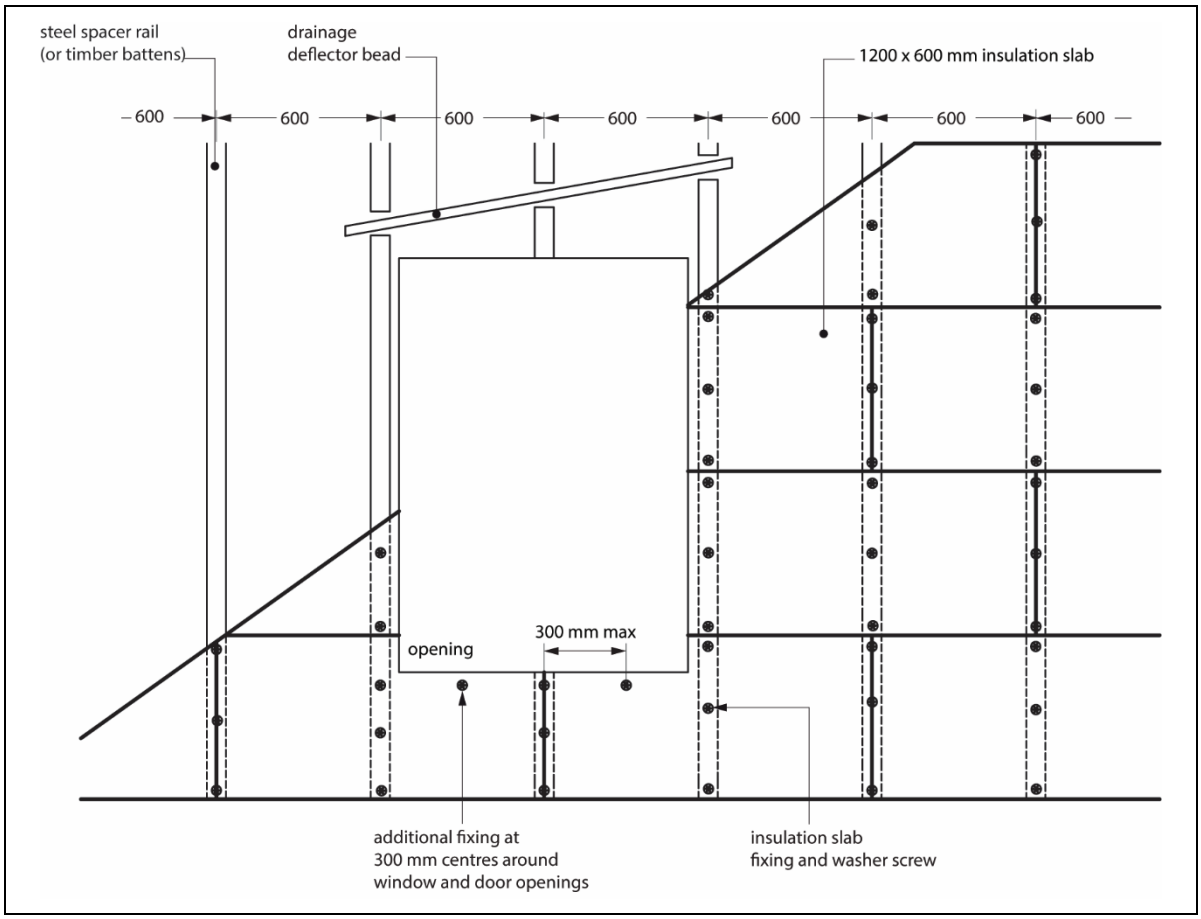


A.2.5 Care must be taken to ensure that all insulation slab edges are butted tightly together, and alignment must be checked as work proceeds. The surface of the slabs must be smooth without high spots or irregularities. Fire barriers must be installed where required by the national Building Regulations.

A.2.6 To fit around details such as doors and windows, insulation slabs may be cut with a sharp knife or a fine-tooth saw. Purpose-made window sills and seals should be installed to prevent water ingress and to ensure water is shed clear of items bridging the cavity (see Figure 7). Corner profiles (see Figure 6) are fixed to all building corners and frame rails are fitted to door and window heads and jambs.

A.2.7 Installation continues until the substrate is completely covered including, where appropriate, the building soffits.

*Figure 7 Typical opening details showing deflection channel (all dimensions in mm)*




**A.3 Movement joints**

A.3.1 The system incorporates provision for movement joints (see Figure 8).

A.3.2 Expansion beads are fixed horizontally and vertically in predetermined positions, according to the installation specification and the individual requirements of each project.

A.3.3 Surface-mounted PVC render beads are fixed with firtree fixings to the insulation slabs where required.

*Figure 8 Vertical and horizontal movement joint details*

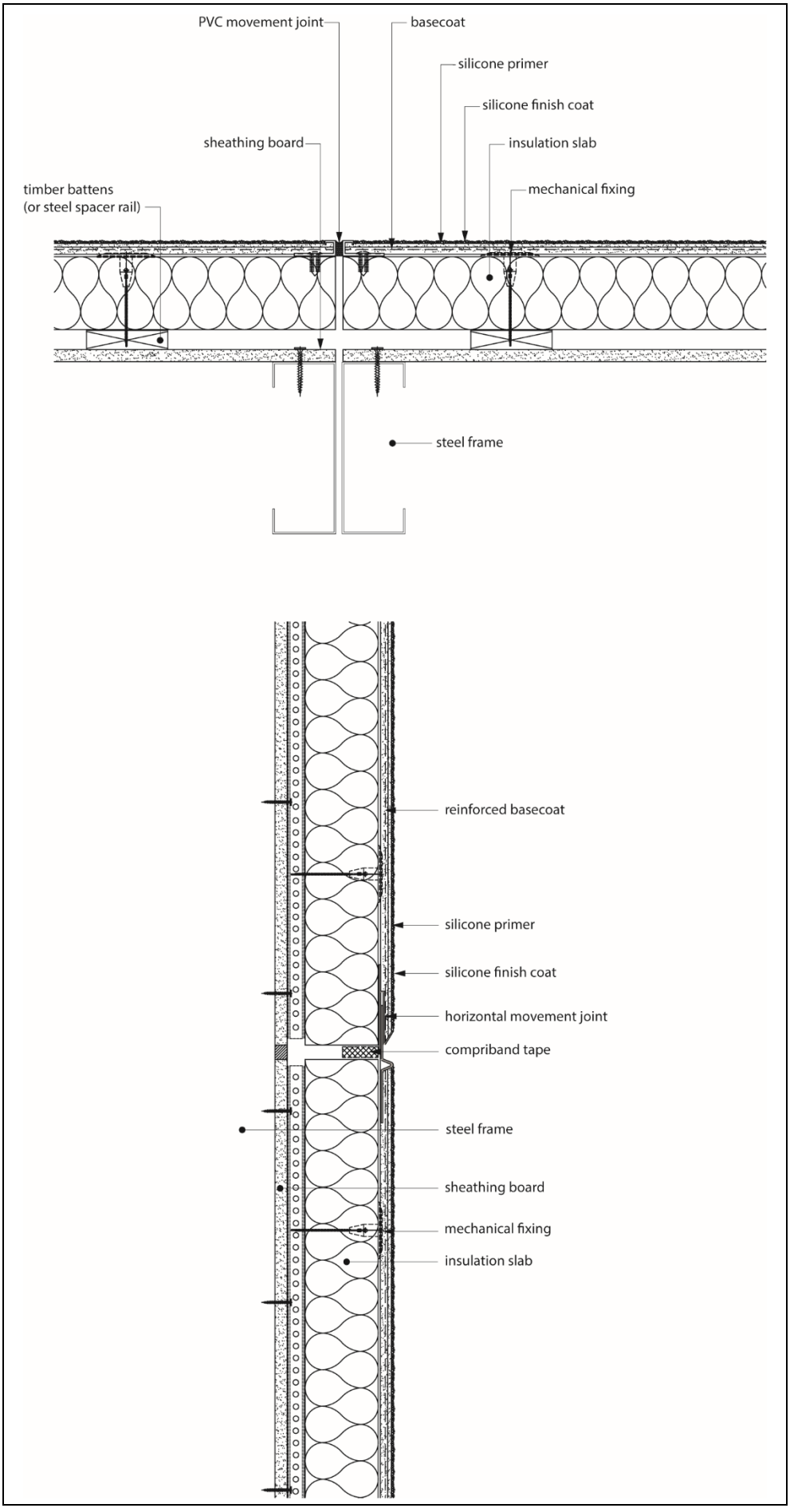
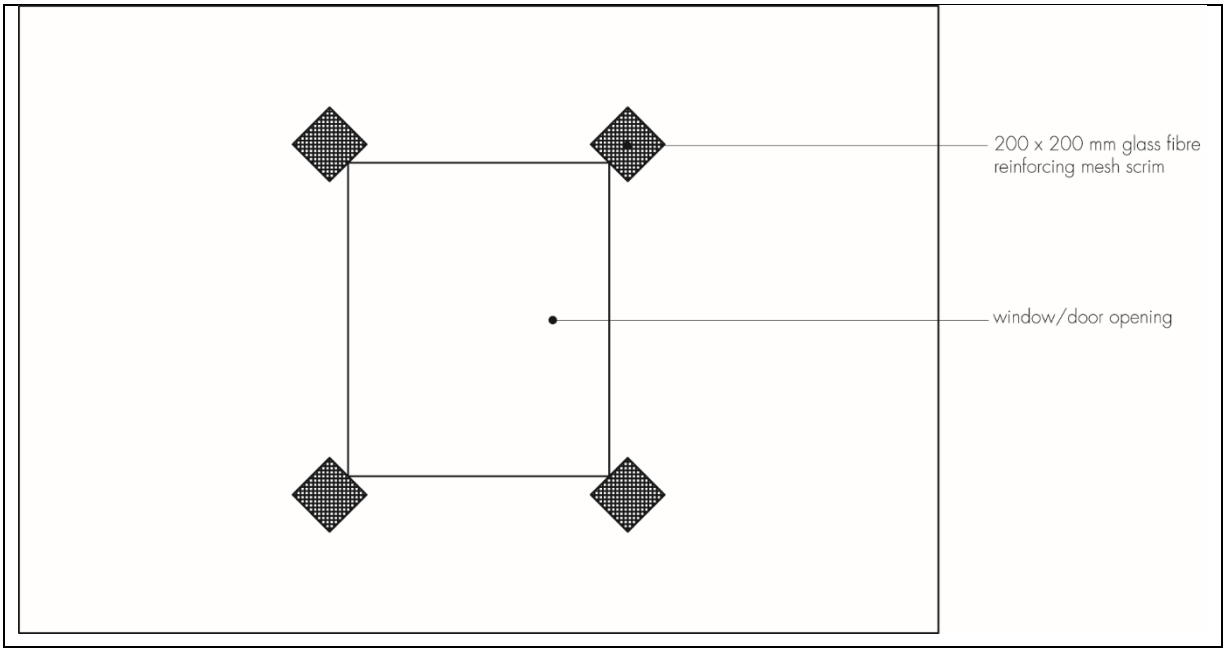


*Figure 9 Corner reinforcement*




**A.4 Application of basecoat and reinforcement mesh**

A.4.1 Heck K+A Basecoat render is prepared by mixing the contents of each 25 kg bag with approximately 5 to 6 litres of cold, clean water, using a paddle mixer. Mixing time should be at least five minutes after the addition of the last bag of render, to allow an even dispersion of resins.

A.4.2 The mixed basecoat render is trowel-applied to the surface of dry insulation slabs to a thickness of 4 to 6 mm. The reinforcing scrim mesh is bedded into the basecoat with 75 mm laps at joints, ensuring all PVC wings of beading are overlapped with reinforcing scrim mesh. Additional reinforcement should be applied at the corners of windows and doors or similar openings, as shown in Figure 9.

A.4.3 The PVC meshed corner beads are bedded into the basecoat at external corners and around openings as required.

A.4.4 The drying period of the basecoat will depend on weather conditions; however, once applied, it must be left to harden for at least one day before application of a further layer.

A.4.5 The second coat is applied to a thickness of between 2 and 3 mm and finished smooth.

A.4.6 Continuous surfaces should be completed without a break.

A.4.7 In multi-storey buildings, holes are drilled at 1 m centres for additional fixings before the basecoat hardens, and stainless-steel fixings are inserted through the reinforcing scrim mesh, insulation and into the substrate wall. Reinforcing scrim mesh patches, 100 by 100 mm, are required over each stainless-steel fixing head.

A.4.8 When the basecoat render is dry, a silicone primer emulsion, is applied at a coverage rate of 0.2 to 0.3 $l \cdot m^{-2}$.

**A.5 Application of finishing coats**

A.5.1 The topcoat is supplied ready-mixed in a tub and is lightly mixed and then trowel-applied in a continuous motion to a wet edge, to produce an even thickness appropriate to the grain size.

A.5.2 Prior to setting, the render is polished with a plastic float to give an even texture and to remove all trowel lines. Elevations should be completed in one application and finished to natural breaks in the render, ie, beads or building corners. The texture should be checked to ensure the same batches are applied to each elevation; where necessary drums can be batch-mixed to ensure colour consistency.

A.5.3 Relevant seals are positioned and installed at all openings (for example, windows and doors), overhanging eaves, gas and electric meter boxes, and wall vents or where the render abuts any other building material or surface.

A.5.4 Care should be taken in the detailing of the system around such features as openings, projections and at eaves (see Figures 10 and 11), to ensure adequate protection against water ingress and to limit the risk of water penetrating the system.

A.5.6 On completion of the installation, external fittings, eg, rainwater goods, are securely fixed to timber grounds or extended fixings that have been built into the system during installation.

*Figure 10 Typical roof eaves detail*

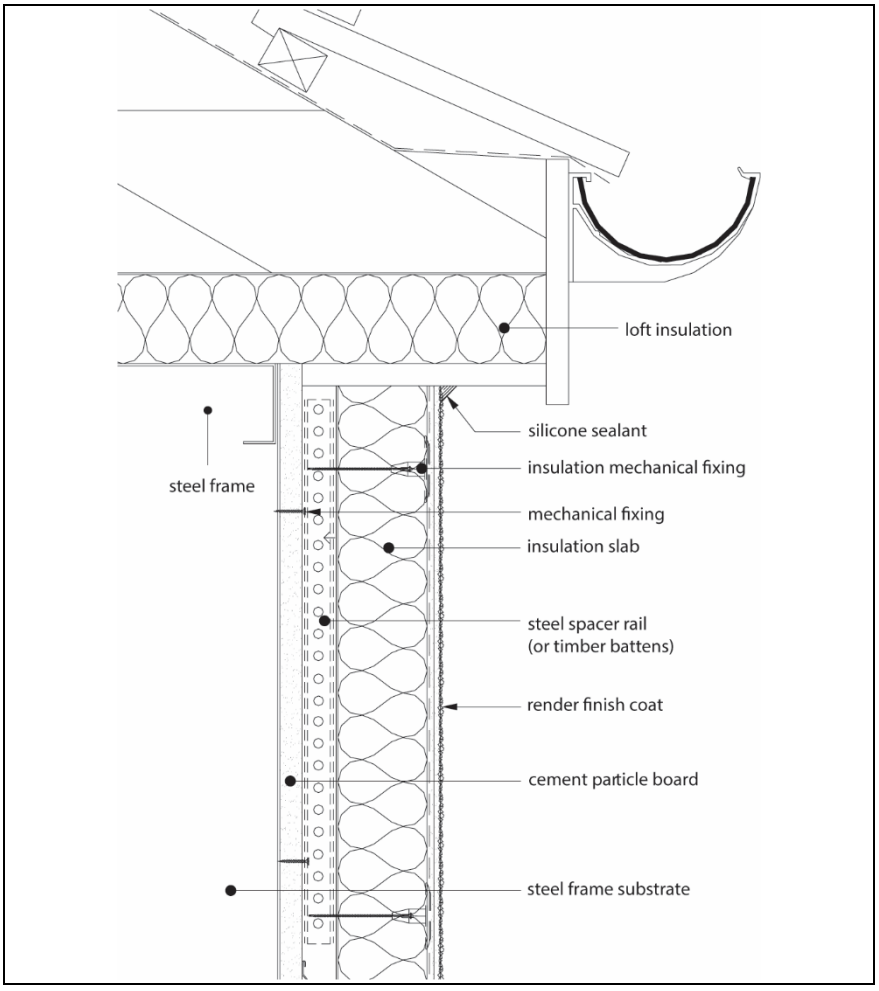
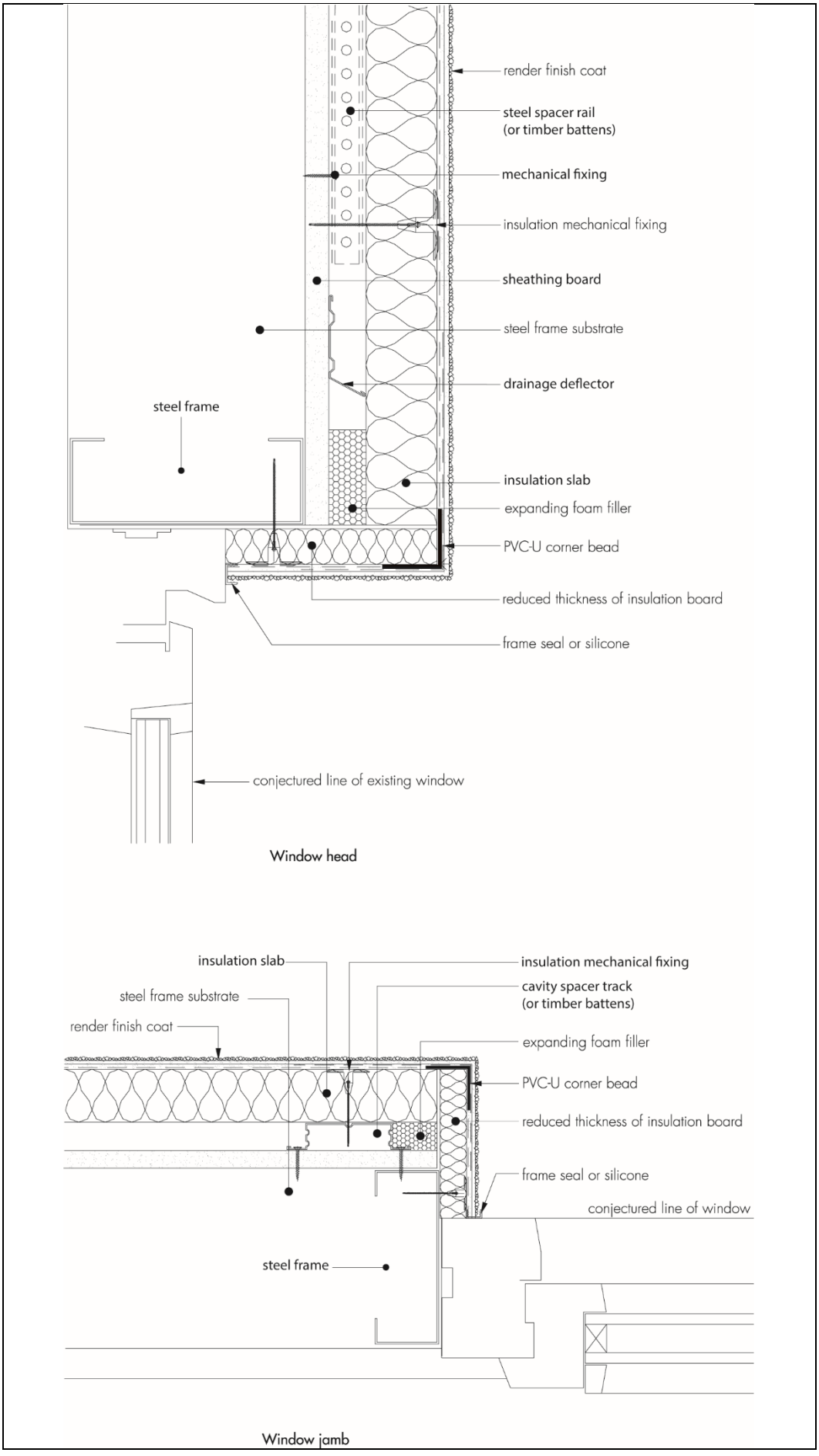


*Figure 11 Typical window head and jamb details*



## Bibliography


BRE Report BR 135 : 2013 *Fire performance of external insulation for walls of multistorey buildings*

BRE Report BR 262 : 2002 *Thermal insulation: avoiding risks*

BRE Report BR 443 : 2019 *Conventions for U-value calculations*

BS 5250 : 2021 *Code of practice for control of condensation in buildings*

BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*

BS EN 634-2 : 2007 *Cement bonded particleboards — Specifications —Requirements for OPC bonded particle boards for use in dry, humid and exterior conditions*

BS EN 636 : 2012 + A1 : 2015 *Plywood — Specifications*

BS EN 1990 : 2002 + A1 : 2005 *Eurocode: Basis of structural design*

BS EN 1991-1-4 : 2005 *Eurocode 1: Actions on structures — General actions — Wind actions*

BS EN 1993-1-1 : 2005 *Eurocode 3: Design of steel structures — General rules and rules for buildings*
NA to BS EN 1993-1-1 : 2005 UK National Annex to *Eurocode 3: Design of steel structures — General rules and rules for buildings*
BS EN 1993-1-3 : 2006 *Eurocode 3: Design of steel structures — General rules — Supplementary rules for cold-formed members and sheeting*
NA to BS EN 1993-1-3 : 2006 UK National Annex to *Eurocode 3: Design of steel structures — General rules — Supplementary rules for cold-formed members and sheeting*

BS EN 10346 : 2015 *Continuously hot-dip coated steel flat products for cold forming — Technical delivery conditions*

BS EN 12467 : 2012 *Fibre-cement flat sheets — Product specification and test methods*

EN 12865 : 2001 *Hygrothermal performance of building components and building elements — Determination of the resistance of external wall systems to driving rain under pulsating air pressure*

BS EN 13162 : 2012 + A1 : 2015 *Thermal insulation products for buildings — Factory made mineral wool (MW) products – Specification*

BS EN 13914-1 : 2016 *Design, preparation and application of external rendering and internal plastering — External rendering*

BS EN 13501-1 : 2018 *Fire classification of construction products and building elements — Classification using data from reaction to fire tests*

BS EN 14081-1 : 2016 *Timber structures – Strength graded structural timber with rectangular cross section — General requirements*

BS EN ISO 6946 : 2017 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

BS EN ISO 10456 : 2007 *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values*

BS EN ISO 14001 : 2015 *Environmental Management systems — Requirements with guidance for use*

ETAG 004 : 2013 *Guideline for European Technical Approval of External Thermal Insulation Composite Systems with Rendering*

SCI Publication P343 *Insulated Render System Used With Light Steel Framing (Steel Construction Institute, 2006)*

## Conditions

1 This Certificate:

- relates only to the system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

3 This Certificate will be displayed on the BBA website, and the Certificate Holder is entitled to use the Certificate and Certificate logo, provided that the system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the system or any other system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the system
- actual installations of the system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to UKCA marking and CE marking.

6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this system which is contained or referred to in this Certificate is the minimum required to be met when the system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

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