Saint-Gobain Construction Products UK Limited
t/a Saint-Gobain Weber
Dickens House
Enterprise Way
Flitwick
Bedfordshire MK45 5BY

Tel: 01525 718877 Fax: 0800 0142995
e-mail: mail@netweber.co.uk
website: www.uk.weber

Agrément Certificate
91/2691
Product Sheet 7

WEBER EXTERNAL WALL INSULATION SYSTEMS

WEBERTHERM XM EXTERNAL WALL INSULATION SYSTEMS

This Agrément Certificate Product Sheet(1) relates to the Webertherm XM External Wall Insulation Systems, comprising mineral wool insulation slabs mechanically fixed to a sheathed timber- or steel-framed building substrate; a reinforced basecoat and either render or brick slip finishes. The system is suitable for use on the outside of permanent single storey new and existing park homes or static caravans.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Mobile Park Home Legislation requirements
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Thermal performance — the systems can be used to improve the thermal performance of external walls and can contribute to satisfying the requirements of the national Building Regulations (see section 6).

Strength and stability — the systems can resist certain wind loads and impact damage (see section 7).

Behaviour in relation to fire — the systems have an A2-s1, d0 or B-s1, d0 reaction to fire classification in accordance with BS EN 13501-1 : 2018, depending on the system configuration and their use is restricted (see section 8).

Water resistance — the systems can contribute to providing a degree of protection against rain ingress (see section 10).

Risk of condensation — the systems can contribute to limiting the risk of interstitial and surface condensation (see section 11).

Durability — when installed and maintained in accordance with the Certificate holder's recommendations and the terms of this Certificate, the systems will remain effective for at least 30 years (see section 13).

The BBA awarded this Certificate to the company named above for the systems described herein. These systems have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 8 November 2020

Hardy Giesler
Chief Executive Officer

Park Home/Caravan Requirements

In the opinion of the BBA, the Webertherm XM External Wall Insulation Systems, if installed, used and maintained in accordance with the provisions of this Certificate, can satisfy or contribute to satisfying the relevant Regulatory requirements (see section 4.4).

Regulations

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.

See section: 3 *Delivery and site handling* (3.1) of this Certificate.

Technical Specification

1 Description

1.1 Webertherm XM External Wall Insulation Systems comprise mineral wool insulation slabs fixed to a 12 mm (minimum) thick exterior grade plywood sheathing board on timber structures or a 12 mm (minimum) thick exterior grade cement particle sheathing board on steel-framed structures (see Table 1 and Figure 1).

1.2 After a breather membrane has been applied (see section 16.5), insulation slabs are mechanically fixed to the substrate with the required number of fixings. The first layer of basecoat is trowel-applied over the insulation slabs, followed by a reinforcing mesh, which is fully embedded within a second layer of basecoat. After the basecoat has cured, primer and finishes are applied in accordance with the Certificate holder's installation instructions.

Table 1 Options for the Webertherm XM systems

Layer	Option 1	Option 2 (weberwall fast brick)	Option 3
Insulation	webertherm MFD	webertherm MFD	webertherm MFD
Basecoat	weberend LAC	weberwall brick external adhesive	weberend LAC Rapid
Reinforcement	weber mesh	weber mesh	weber mesh
Primer	weber PR310	—	—
Finishes	weberplast TF webersil TF webermineral TF	weberwall brick pointed with weberwall brick pointing mortar	weberplast TF webersil TF webermineral TF

1.3 The systems comprise:

Insulation

- webertherm MFD (mineral fibre dual-density) Insulation Slabs(1) — 1200 by 600 mm in a range of thicknesses between 50 and 200 mm, with an average density of 110 kg·m^{-3}, a minimum compressive strength of 10 kPa and a minimum tensile strength perpendicular to the faces of 10 kN·m^{-2}. Slabs are manufactured to comply with BS EN 13162 : 2012

(1) For declared thermal conductivity (λ_D) values, see section 6.1.

Mechanical fixings

- EJOT SW8-R fixing(1) — self-drilling case hardened carbon steel fixings with a Climadur organic coating with a shaft diameter of 4.8 mm and a head diameter of 12 mm, and used in conjunction with the EJOT SBH-T 65/25 washer (65 mm diameter polyethylene fixing head). Suitable for use with cement particle board, plywood sheathing board and the steel/timber substrates.

(1) Other stainless steel, electro-galvanized or corrosion-resistant steel screws of similar or better characteristics (including shear strength ≥ 6.4 KN, fixing shaft diameter size ≥ 4.8 mm and fixing head diameter size 12 mm), approved by the Certificate holder and which are compatible for use with the EJOT SBH-T 65/25 washer, can be used.

Basecoat

- weberend LAC — a polymer-modified cementitious basecoat mortar, supplied as a powder to which 5 litres of clean water is added. Applied in two passes at a coverage of 6.5 $kg \cdot m^{-2}$ to give a thickness an overall thickness of 6 mm
- weberend LAC Rapid — a polymer-modified cementitious basecoat mortar, supplied as a powder to which 5 litres of clean water is added. Applied in two passes at a coverage of 6.5 $kg \cdot m^{-2}$ to give a thickness an overall thickness of 6 mm
- weberwall brick external adhesive — a polymer-modified cementitious basecoat/adhesive mortar, supplied as a powder to which 5 litres of clean water is added. Applied in two passes at a coverage of 6.5 $kg \cdot m^{-2}$ to give a thickness an overall thickness of 6 mm

Reinforcement

- weber mesh — a woven glass fibre reinforcing mesh (3.8 by 3.5 mm) with a polymer coating and a nominal weight of 160 $g \cdot m^{-2}$

Primer

- weber PR310 — a ready to use, white styrene-acrylic-resin-based emulsion containing fine filters and coalescing agent (see Table 1 for compatibility with the system components). Applied at a coverage of 0.25 $l \cdot m^{-2}$

Finishes

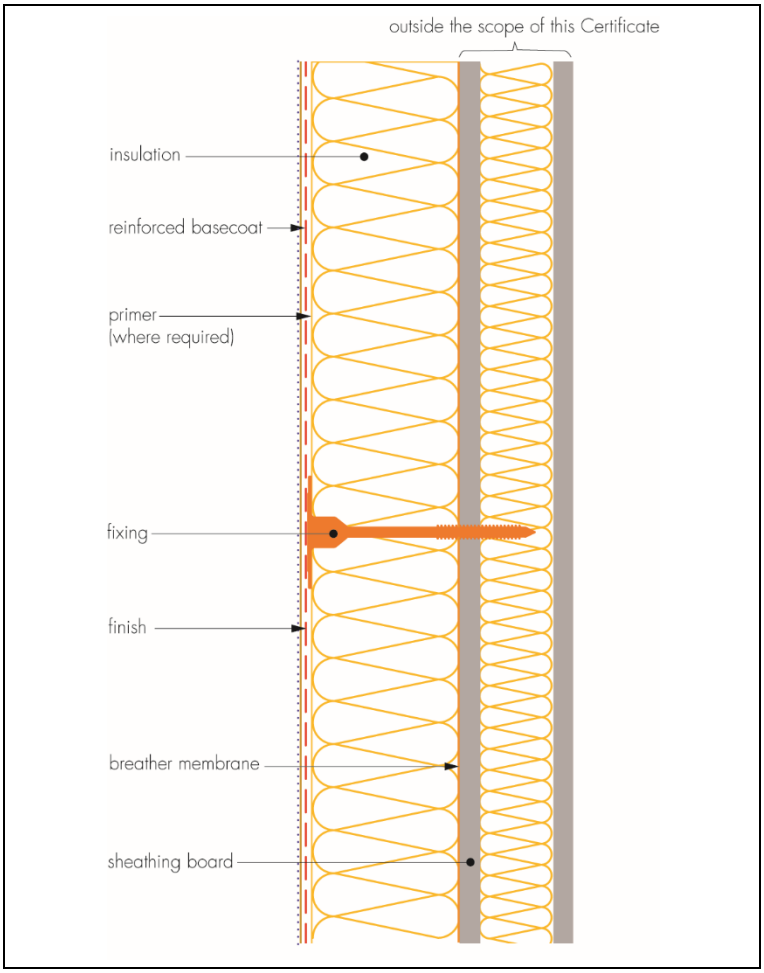
Render finishes

- weberplast TF — an acrylic-bonded, textured render supplied as a paste containing aggregates of 1.5 mm. Applied at a coverage of 2.8 $kg \cdot m^{-2}$ to give a thickness of 1.5 mm. Available in a range of colours
- webersil TF — a silicone-bonded, textured render supplied as a paste containing aggregates of 1.5 mm. Applied at a coverage of 2.7 $kg \cdot m^{-2}$ to give a thickness of 1.5 mm. Available in a range of colours
- webermineral TF — a polymer-modified mineral finishing coat containing aggregates of 1.5 mm, requiring the addition of 3.4 to 4.4 litres of clean water per 20 kg bag. Applied at a coverage of 2.7 $kg \cdot m^{-2}$ to give a thickness of 1.5 mm. Available in a range of colours

Brick slip finish with pointing mortar

- weberwall brick — flexible mineral brick slips, supplied in standard size of dimensions 65 mm by 215 mm by 5 mm with a nominal weight of 6 $kg \cdot m^{-2}$ and formed of a sheet comprising brick slips prepressed on glass fibre mesh-reinforcement. Available as straight brick-slips and corner brick-slips, in a range of colours
- weberwall brick pointing mortar— a polymer-modified, dry powder, cement-based mortar for use with weberwall brick.

Figure 1 Webertherm XM External Wall Insulation Systems



1.4 Ancillary materials also used with the systems, but outside the scope of this Certificate, are:

- a range of aluminium, PVC-U or stainless steel profiles, comprising:
  — base profile
  — edge profile
  — corner profile with optional PVC-U nosing
  — render stop profile
- profile connectors and fixings
- park home/caravan timber-/steel-frame insulated sheathed structure
- breather membrane
- silicone sealant in accordance with BS EN ISO 11600 : 2003.

2 Manufacture

2.1 The systems' components are manufactured by the Certificate holder or bought in from suppliers, to an agreed specification.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out 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.

2.3 The management system of Saint-Gobain Construction Products UK Limited t/a Saint-Gobain Weber has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BSI (Certificates FM 641234 and FM 01209).

3 Delivery and site handling

3.1 The components of the systems are delivered to site in the packaging and quantities listed in Table 2. Each package carries the product identification and batch number.

Table 2 Component supply details

Component	Quantity and packaging
webertherm MFD	Shrink-wrapped in polyethylene (on pallets)
weberend LAC adhesive and basecoat	20 kg bags
weberend LAC Rapid basecoat	20 kg bags
weberwall brick external adhesive	20 kg bags
weber mesh	1 m wide by 50 m lengths
weber PR310	10 litre containers
weberplast TF	15 kg plastic pails
webersil TF	15 kg plastic pails
webermineral TF	20 kg bags
weberwall brick slips	boxed by manufacturer
weberwall brick pointing mortar pointing mortar	25 kg bags
mechanical fixings	boxed by manufacturer, 100 per box

3.2 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.

3.3 Slabs that become damaged, soiled or wet should be discarded.

3.4 The powder and paste components must be stored in dry conditions between 5 and 30°C, off the ground and protected from moisture. Contaminated materials should be discarded.

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

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Webertherm XM External Wall Insulation Systems.

Design Considerations

4 General

4.1 Webertherm XM External Wall Insulation Systems, when installed in accordance with the Certificate holder's instructions and this Certificate, are satisfactory for use in reducing the thermal transmittance (U-value) of external walls of new and existing single storey domestic park homes/caravans that are used as permanent residential units. 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 system 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).

4.2 For improved thermal/carbon-emissions performance, the designer should consider additional/alternative fabric and/or services measures. When adding the system, the continuity of insulation must be maintained around the roof, wall and floor structures.

4.3 The systems are for application to the outside of the external face of timber/steel frame substrates, on new or existing single storey park homes/caravans. Prior to installation of the systems, wall surfaces should comply with section 14.

4.4 Park home structures should comply with the Mobile Park Home Act and be manufactured in accordance with the relevant recommendations of:

- Model Standards 2008 for Caravan Sites in England: Caravan Sites and Control of Development Act 1960 – Section 5
- Mobile Homes Act 2013
- Caravan Sites Act 1968, Chapter 52 – Provisions for Protection of Residential Occupiers
- Caravan Sites and Control of Development Act 1960, as amended
- Caravan Sites Act 1968 and Social Landlords (Permissible Additional Purposes) (England) Order 2006 (Definition of Caravan) (Amendment) (England) Order 2006
- BS EN 1992-1-1 : 2004 and its UK National Annex
- BS EN 1996-1-1 : 2005 and its UK National Annex
- BS EN 1996-2 : 2006 and its UK National Annex
- BS EN 14081-1 : 2016 and its UK National Annex
- BS 3632 : 2015
- BS 8000-0 : 2014
- BS EN 335 : 2013
- BS EN 338 : 2016
- BS EN 634-2 : 2007
- BS EN 636 : 2012
- BS EN 10346 : 2015
- BS EN 13986 : 2004.

4.5 The systems are for direct fix to the sheathed timber-/steel-framed residential park home unit; they do not provide a cavity between the sheathing board and the insulation panels.

4.6 Movement joints should 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. The designer should make provision for cumulative vertical shrinkage and/or creep deformation within the timber substrate. This aspect of performance is outside the scope of the Certificate and guidance should be sought from the Certificate holder on such requirements for each application.

4.7 The structural frame of the residential park home/caravan, including the sheathing boards, is the responsibility of the building designer/contractors and is outside the scope of this Certificate. However, the structural frame (and sheathing-associated fixings) must be structurally adequate, designed to resist wind and other forces, and be able to withstand the loads applied from the insulation system (see Table 3 for the non-exhaustive minimum specifications for system installations relating to the light gauge steel, timber-frame and sheathing).

Table 3 Minimum specification for the timber/steel-frame construction

Item	Characteristic	Specifications
Timber-framed structure	The timber structure should be at least 37 mm wide, with a minimum depth of 72 mm or 0.026 times the panel height in mm, whichever is greater	In accordance with BS EN 338 : 2016 and BS EN 14081-1 : 2016 and dry graded and marked in accordance with BS 4978 : 2007.
Steel-framed structure	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 (cement particle board — CPB)(1)	12 mm minimum thickness	Manufactured to BS EN 634-2 : 2007 Class 1, a minimum density of 450 kg·m^{-3} with a reaction to fire classification of D-s2, d0 or better in accordance with BS EN 13501-1 : 2018
Sheathing board (plywood)(1)	12 mm minimum thickness	Manufactured to BS EN 636 : 2012 and BS EN 13986 : 2004 for use in humid conditions (service Class 2 or better) in accordance with BS EN 335 : 2013, with a minimum density of 450 kg·m^{-3} and a reaction to fire classification of D-s2, d0 or better in accordance with BS EN 13501-1 : 2018

(1) The board must be of an exterior grade, with the minimum acceptable specification as indicated in the above Table. These components are outside the scope of this Certificate.

4.8 Before installation of the systems takes place, the chassis, together with the other subsections and axle system (with steel joist supports), must be level in order to avoid cracks in the render system and interfaces after the system is installed.

4.9 Care should be taken not to block either the air gap separation between the brickwork skirting and the lower edge of the park home unit, or the low-level air bricks which provide ventilation underneath the chassis on the concrete base or hardstanding.

4.10 The designer should ensure that windows, doors, flashings and other similar items have been specifically designed for use with these types of systems.

4.11 Where necessary, movement joints should be incorporated into the systems in accordance with the Certificate holder's recommendations for the specific installation in question.

4.12 The effect of the systems on the acoustic performance of a construction is outside the scope of this Certificate.

4.13 The fixing of external plumbing, satellite dishes, clothes lines, hanging baskets and similar items to the system is outside the scope of this Certificate, (see also section 4.15).

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

4.15 The designer should 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 and vapour control layers (VCL) where required.

4.16 The designer should make sure that windows, doors, flashings and other similar items have been specifically designed for use with these types of systems – particular attention should be paid to the prevention of water ingress into the systems. For example, junctions between the systems 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 should be designed to deflect water away from the insulation and onto the external face of the wall.

4.17 For timber frames, the moisture content of the timber should be established prior to installation. Levels between 14 and 18% may require further investigation as this could indicate the presence of a source of moisture ingress to the frame and any necessary corrective action must be taken prior to work commencing. Installations should not take place on structures found to be above this level unless the source of the moisture ingress is identified and eliminated.

4.18 It is essential that the systems are installed and maintained in accordance with the conditions set out in this Certificate.

5 Practicability of installation

The systems should only be installed by specialist contractors who have successfully undergone training and registration by the Certificate holder (see section 15).

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

6 Thermal performance

6.1 Calculations of thermal transmittance (U value) should be carried out in accordance with BS EN ISO 6946 : 2017, BS EN ISO 10211 : 2017, BRE Digest 465 : 2002 and BRE Report BR 443 : 2006, using the declared thermal conductivity (λ_D) value of 0.036 $W \cdot m^{-1} \cdot K^{-1}$ for the insulation.

6.2 The U value of a completed wall will depend on the selected insulation thickness, fixing method and type of fixing, and the insulating value of the substrate and its internal finish. Calculated U values for a sample construction compared with the values given in the national Building Regulations are given in Table 4 and are based on the thermal conductivity value given in section 6.1.

Table 4 Insulation thickness required to achieve design U values given in the national Building Regulations(1)(2)(3)

U-value ($W \cdot m^{-2} \cdot K^{-1}$)	Insulation thickness requirement (75 mm timber frame, fully filled with insulation (λ = 0.038 $W \cdot m^{-1} \cdot K^{-1}$)) (mm)
0.18	170
0.19	160
0.25	100
0.26	90
0.27	80
0.28	80
0.30	70
0.35	50

(1) Wall construction inclusive of: 12.5 mm plasterboard (λ = 0.25 $W \cdot m^{-1} \cdot K^{-1}$), 500 gauge PE VCL, 75 mm timber frame, fully filled with insulation (λ = 0.038 $W \cdot m^{-1} \cdot K^{-1}$), bridged with 15% timber (λ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$), 6 mm timber sheathing board (λ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$), 6.5 mm external render (λ = 1.0 $W \cdot m^{-1} \cdot K^{-1}$), 12 mm timber sheathing board (λ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$), webertherm MFD insulation (λ = 0.036 $W \cdot m^{-1} \cdot K^{-1}$) and 6.5 mm external render (λ = 1.0 $W \cdot m^{-1} \cdot K^{-1}$).

(2) The external insulation (webertherm MFD) is assumed to have an air gap correction (ΔU) of 0.01 $W \cdot m^{-2} \cdot K^{-1}$ and incremental thicknesses of 10 mm.

(3) A U value correction should be included for the external insulation for mechanical fixings at 5 fixings per slab with a point thermal transmittance (X*p*) of 0.004 $W \cdot K^{-1}$ per fixing.

6.3 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 Strength and stability

General

7.1 The Certificate holder is ultimately responsible for the design of the systems and it is the responsibility of the company installing the systems to accurately follow the installation instructions (also see section 5 of this Certificate). 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 7.3)
- the systems can adequately resist and safely transfer the calculated loads, accounting for all possible failure modes, to the substrate wall and supporting structure (see sections 7.3 to 7.6).

7.2 The substrate and supporting structure must be capable of transferring all additional loading due to the installation of the systems, 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 systems are applied. Any defects should be made good prior to the systems being installed.

7.3 The wind loads on the walls should be calculated, 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 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 systems.

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

7.5 Positive wind load is transferred to the substrate wall directly via compression through the render and insulation systems.

7.6 Negative wind pressure (suction) is transferred to the substrate wall via(1):

- the bond between the insulation and render system (see section 7.7)
- the pull-out resistance of the fixing from the substrate sheathing board (see section 7.8)
- the pull-through resistance of the fixing (see section 7.10).

(1) Further guidance is available from BBA Guidance Note 1, available on the BBA website (www.bbacerts.co.uk).

7.7 The characteristic bond strength between the insulation and render interface derived from the tests results was 10 $kN \cdot m^{-2}$. The design resistance of the bond between the insulation and render (N_{RD1}) should be taken as the characteristic bond resistance divided by a partial factor of 9.

7.8 The characteristic pull-out resistance must be established from site-specific pull-out tests conducted on the sheathing board of the building to ascertain the minimum resistance to pull-out failure of the fixings, which is determined in accordance with the guidance given in EOTA TR051 (minimum test characteristic pull out resistance (N_{RK1}) = 0.6 x mean of 5 lowest test results). To obtain the design pull-out resistance of the fixings (N_{RD2}), this characteristic pull-out resistance value should then be divided by the partial factor given in Table 5.

7.9 The typical characteristic pull-out resistance for the fixing tested on a sheathing board is as per Table 5, and can be used as a reference guide.

Table 5 Typical characteristic pull-out resistance values of profile fixings from the substrate

Fixing type	Substrate facing	Characteristic pull-out resistance[1] (kN)	Partial factor[2]
EJOT SW8-R fixing	12 mm thick cement particle board	0.895	2
	12 mm thick plywood	0.846	

(1) Values obtained from tests.
(2) To obtain the typical design pull-out resistance ($N_{rd.Typ}$) of the fixing, the characteristic pull-out resistance should be divided by the partial factor given.

7.10 The characteristic pull-through resistance of the fixings was determined from tests using a 65 mm diameter fixing plate and minimum insulation thicknesses of 50 and 110 mm. The design resistance per fixing (N_{RD3}) is obtained by applying an appropriate partial factor as shown in Table 6.

Table 6 Design pull-through resistances

Factor (unit)	Mineral wool insulation 1200 x 600 mm			
	Pull through			
Tensile resistance of the insulation ($kN \cdot m^{-2}$)	≥ 10			
Fixing type[1]	EJOT SW8-R fixing in conjunction with the EJOT SBH-T 65/25 washer			
Fixing plate diameter (mm)	65			
Insulation thickness (mm)	≥ 50		≥ 110	
Characteristic pull-through resistance[2] per fixing (kN)	At panel	0.217	At panel	0.355
Partial factor[3]	2.5		2.5	
Design pull-through resistance[2] per fixing (kN)	At panel	0.087	At panel	0.142
Design pull-through resistance per slab (kN) (based on minimum number of fixings)[4]	0.435		0.71	
Design pull-through resistance per slab (kN) (based on maximum number of fixings)[5]	0.696		1.136	

(1) See Table 5 for typical characteristic pull-out resistance of the fixings.
(2) Characteristic pull-through resistance of insulation over the head of the fixing, in accordance with BS EN 1990 : 2002, Annex D7.2 and its UK National Annex.
(3) The partial factor is based on the assumption that all insulation slabs are quality controlled and tested to establish tensile strength perpendicular to the face of the slab.
(4) The minimum design pull through resistance per slab is based on a minimum of 5 fixings per slab (1200 x 600 mm), which equates to approximately 7 fixings per m^2. The design resistance for the minimum number of fixings is based on the fixing pattern provided in Figure 3 and minimum insulation thickness specified in Table 6. The fixing pattern and interaction of the fixings should be considered when calculating the design resistance per slab.
(5) The maximum design pull through resistance per slab is based on a maximum of 8 fixings per slab (1200 x 600 mm) which equates to approximately 11 fixings per m^2. The design resistance for the maximum number of fixings is only applicable to the minimum insulation thickness tested and as specified in Table 6. The fixing pattern, insulation thickness and interaction of the fixings should be considered when calculating the design resistance per slab.

7.11 The number and spacing of the fixings should be determined by the Certificate holder. The number of fixings must not be less than the minimum specified for the systems and the fixings should be symmetrically positioned and evenly distributed about the centre of the board both vertically and horizontally except at openings and building corners.

7.12 Dry fix installations correctly designed in accordance with this Certificate will safely accommodate the applied loads due to the self-weight of the systems, wind (see section 7.13) and impact when using insulation with a maximum thickness of 200 mm, any render system and EJOT SW8-R fixing with SBH-T 65/25 washer.

7.13 The data obtained from sections 7.6 to 7.12 must be assessed against the design wind load and the following expression must be satisfied:

For safe design:

$Rd \geq W_e$

$Rd_{b.ins/rend} = A_r * N_{RD1}$
$Rd_{pull\text{-}out} = n * N_{RD2}$
$Rd_{pull\text{-}through} = (N_{RD3panel} * n_{panel}) + (N_{RD3joint} * n_{joint})/A_{board}$

Where:

Rd	is the design ultimate resistance ($kN \cdot m^{-2}$) taken as the minimum of $Rd_{b.ins/rend}$, $Rd_{pull\text{-}out}$ and $Rd_{pull\text{-}through}$
W_e	is the maximum design wind load ($kN \cdot m^{-2}$)
$Rd_{b.ins/rend}$	is the design bond resistance between the insulation and render ($kN \cdot m^{-2}$)
$Rd_{pull\text{-}out}$	is the design pull-out resistance of the insulation fixings per metre square ($kN \cdot m^{-2}$)
$Rd_{pull\text{-}through}$	is the design pull-through resistance of the insulation fixings per metre square ($kN \cdot m^{-2}$)
A_r	is the reinforced basecoat bond area (based on % area covered)
N_{RD1}	is the design adhesive bond resistance between the insulation and render, based on test ($kN \cdot m^{-2}$)
N	is the number of fixings per m^2
N_{RD2}	is the design pull-out resistance per fixing based on test (kN)
$N_{RD3panel}$	is the design pull-through resistance per fixing not placed at the panel joint, based on test (kN)
$N_{RD3joint}$	is the design pull-through resistance per fixing placed at the panel joint, based on test (kN)
n_{panel}	is the number of internal fixings in a panel
n_{joint}	is the number of joint fixings in a panel
A_{slab}	is the area of the slab (m^2).

7.14 The insulation systems are mechanically fixed to the substrate wall with a minimum of 5 fixings per slab or approximately 7 fixings per square metre, as per the fixing patterns shown in Figure 3 (see section 16). Additional fixings may be required, depending on the results of the calculations detailed above for the specific site.

Impact resistance

7.15 Hard body impact tests were carried out in accordance with ETAG 004 : 2013. The systems are suitable for use in the Use Categories up to and including those specified in Table 7 of this Certificate(1).

Table 7 Systems' impact resistance

Render systems: basecoat + finishing coats indicated below:	Use Category(1)
weberend LAC + weber PR310 + weberplast TF weberend LAC Rapid + weberplast TF	I
weberend LAC + weber PR310 + webersil TF weberend LAC Rapid + webersil TF weberend LAC Rapid + weberplast TF weberend LAC Rapid + webermineral TF weberend LAC + weber PR310 + webermineral TF weberwall brick external adhesive + weberwall brick + weberwall brick pointing mortar	II

(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.

8 Behaviour in relation to fire

8.1 The reaction to fire classifications of the systems in accordance with BS EN 13501-1 : 2018(1) are given in Table 8 of this Certificate.

(1) Warringtonfire Testing and Certification Ltd. Report numbers 417450, 417451, 417463, 428391, 429117, 428357, 429352, 428235 and 429118

Table 8 Systems' fire classifications

Rendering system comprising:	Render colour	Classification
webermineral TF webersil TF	Any	A2-s1, d0
weberwall brick	Any	A2-s1, d0
weberplast TF	Any	B-s1, d0

8.2 These classifications apply to the full range of thicknesses, finishes and colour combinations covered by this Certificate.

8.3 The mineral wool insulation material is classified as 'non-combustible', but the systems are restricted for use to park homes of one storey (see section 4.3).

8.4 In England, Wales and Northern Ireland, the systems are generally suitable for use with a minimum 5.25 m separation from the neighbouring mobile home, but additional restrictions may be imposed by the individual park site licence.

8.5 In Scotland, the systems are suitable for use with a minimum 6 m separation from the neighbouring mobile home, but additional restrictions may be imposed by the individual park site licence.

9 Proximity of flues and appliances

Where the systems are installed in close proximity to certain flue pipes, the relevant provisions of the national Building Regulations should be satisfied.

10 Water resistance

10.1 The systems will provide a degree of protection against rain ingress. However, care should be taken to ensure that walls and openings are adequately watertight prior to application of the systems. The systems 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.

10.2 Designers and installers should take particular care in detailing around openings, penetrations and movement joints to minimise the risk of rain ingress.

10.3 Guidance given in BRE Report BR 262 : 2002 should be followed in connection with the water tightness of wall constructions. The designer should select a construction appropriate to the local wind-driven rain index, paying due regard to the design detailing, workmanship and materials to be used.

10.4 At the top of walls, the systems should be protected by a coping, overhang or other detail designed for use with these types of systems (see section 16).

11 Risk of condensation

11.1 The use of an appropriate dynamic modelling package to assess individual constructions should be considered. 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 and windows, to minimise the risk of condensation. The recommendations of BS 5250 : 2011 should be followed.

Surface condensation

11.2 Walls in England and Wales will limit the risk of surface condensation adequately 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 6.3 of this Certificate.

11.3 Walls in Scotland 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. Guidance may be obtained from BS 5250 : 2011 Section 4, and BRE Report BR 262 : 2002.

Interstitial condensation

11.4 Walls incorporating the systems will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2011 (Section 4 and Annexes D and G) and sections 11.5 and 11.6 of this Certificate.

11.5 The water vapour resistance (μ) factor (for the insulation slab) and equivalent air layer thickness (s_d) (for the render systems) are shown in Table 9.

Table 9 Water vapour resistance factor and equivalent air layer thickness

	(s_d) (m)	(μ)
Mineral wool thicknesses: 50 to 200 mm		1
Rendering system: weberend LAC (6 mm thick) + render system (specific particle size), as indicated below:		
weber PR310 + weberplast TF (particle size 1.5 mm)	0.69	—
weber PR310 + webersil TF (particle size 1.5 mm)	0.67	—
weber PR310 + webermineral TF (particle size 1.5 mm)	0.41	—
Rendering system: weberend LAC Rapid (6 mm thick) + rendering system (specific particle size), as indicated below:		
weberplast TF (particle size 1.5 mm)	0.47	—
webersil TF (particle size 1.5 mm)	0.46	—
webermineral TF (particle size 1.5 mm)	0.44	—
Rendering system: weberend LAC Rapid (3 mm thick) + rendering system, as indicated below:		
weberwall brick external adhesive (3 mm) + weberwall brick + weberwall brick pointing mortar	0.42	—

12 Maintenance and repair

12.1 An initial inspection should 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
- examination of the sealant around openings and service entry points
- 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; 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 systems and window and door frame).

12.2 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 : 2005.

13 Durability

13.1 The systems applied to the external wall of park home substrates will have a service life of at least 30 years, provided any damage to the surface finish is repaired immediately and regular maintenance (as described in section 12) is undertaken, and the park home unit is not moved.

13.2 The performance on a park home may be adversely affected by the condition of the substrate and by the quality of the maintenance applied to it and this may result in a corresponding reduction in the service life achieved.

13.3 The park home/caravan unit must not be moved from its position for means of transportation and the chassis level and condition must be maintained.

13.4 Renders containing 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 is less noticeable with lighter colours.

13.5 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 too adversely affect the water vapour transmission or fire characteristics of the system. The advice of the Certificate holder should be sought as to the suitability of a particular product.

Installation

14 Site survey and preliminary work

14.1 A pre-installation survey of the property must be carried out to determine suitability for treatment and any repairs necessary to the building structure before application of the systems. A specification must be prepared for each unit indicating:

- any need for replacement of components of the structure
- the moisture content of the timber-framed structure
- that the hardstanding on which the home is based is in good condition
- that the substrate is level (adjusting using the axle stand and steel joist supports as necessary)
- the position of beads and detailing around windows, doors and at eaves
- exact position of expansion joints between two park home units
- areas where flexible sealants must be used
- any alterations to external plumbing.

14.2 The survey should include tests conducted on the walls of the building by the Certificate holder or their approved installers (see section 15) to determine the pull-out resistance of the specified mechanical fixings for the substrate to withstand the building's expected wind loading, based on calculations using the fixing's pull-off resistance test data. In addition, the type and minimum number of fixings are selected (see section 7). The advice of the Certificate holder should be sought to ensure the proposed fixing pattern is sufficient.

14.3 Purpose-made window sills must be fitted to extend beyond the finished face of the systems.

14.4 All modifications and necessary repairs to the building structure must be completed before installation commences.

15 Approved installers

Application of the systems, within the context of this Certificate, must be carried out by approved installers recommended or recognised by the Certificate holder. Such an installer is a company:

- employing operatives who have been trained and approved by the Certificate holder to install the systems
- 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.

16 Procedure

General

16.1 Installation of the systems should be carried out in accordance with the Certificate holder's current installation instructions and this Certificate.

16.2 Weather conditions should be monitored to ensure correct application and curing conditions. Application of coating materials must not be carried out at temperatures below 5°C or above 30°C, or if exposure to frost is likely, and the coating must be protected from rapid drying. Installation should not take place during rainfall or if rain is anticipated. In addition, cementitious-based renders must not be applied if the temperature will fall below 0°C within 24 hours of completion.

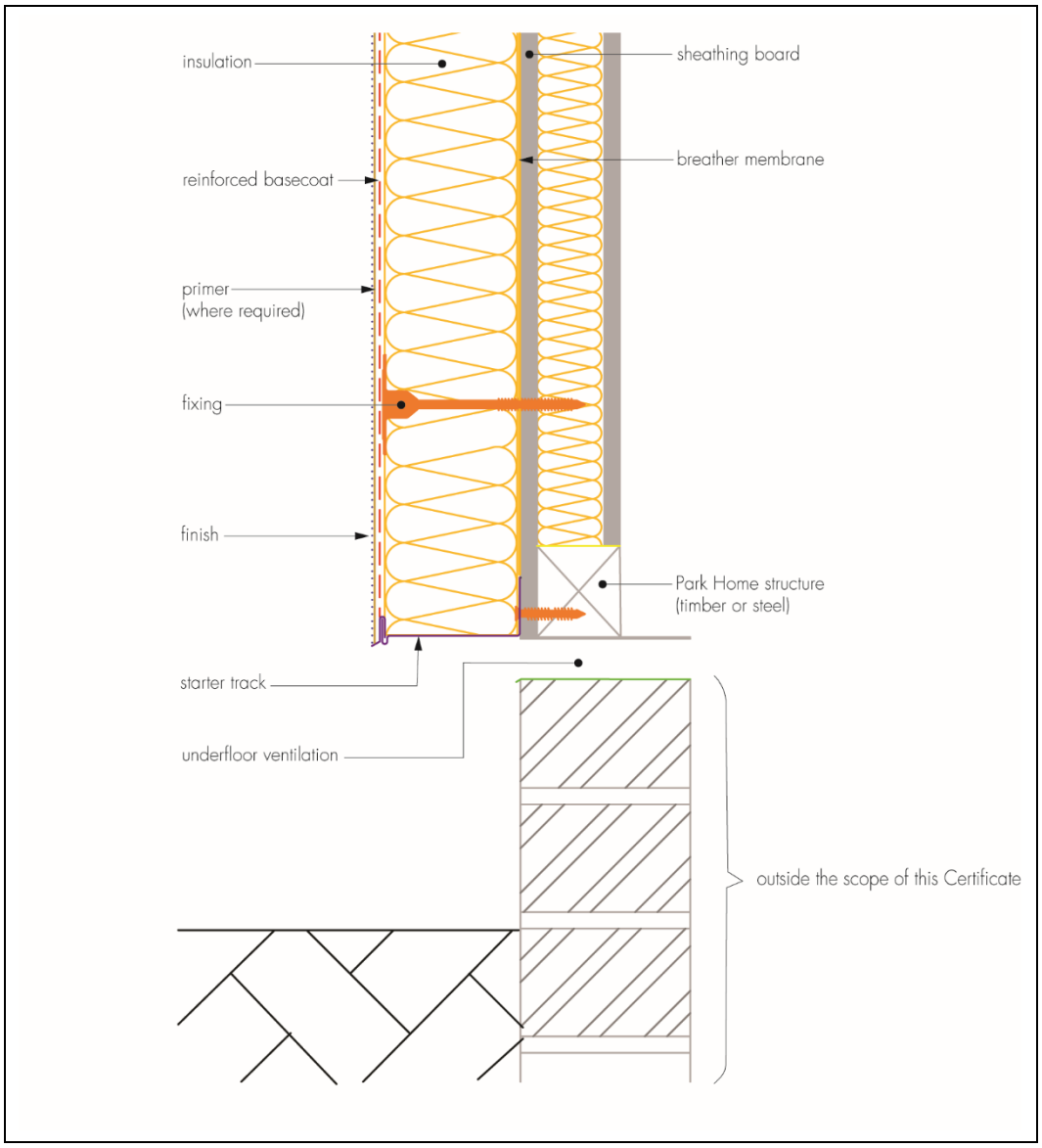
16.3 All rendering should be in accordance with the relevant recommendations of BS EN 13914-1 : 2005.

16.4 Before installation takes place, the building designer must confirm where items such as rainwater goods, satellite dishes, clothes lines and hanging baskets will be placed. The fixing points for these items must be specifically designated and built into the systems as the insulation is installed. This is outside the scope of this Certificate.

Positioning and securing insulation slabs

16.5 The base profile is secured to the sheathing board at the bottom of the structure (see Figure 2) using mechanical fixings at approximately 300 mm centres. Base profile connectors are installed at all profile joints. Extension profiles are fixed at the front lip of the base profile or stop end profile as appropriate. Depending on survey results, if the existing structure and weatherproof is found to be watertight, in good condition with no degradation to the structure and meet the minimum specification for the sheathing board and timber/steel-frame construction, then no breather membrane is required. Should the outer cladding be found to be in poor condition and needing to be replaced with a new sheathing layer, then a breather membrane must be installed.

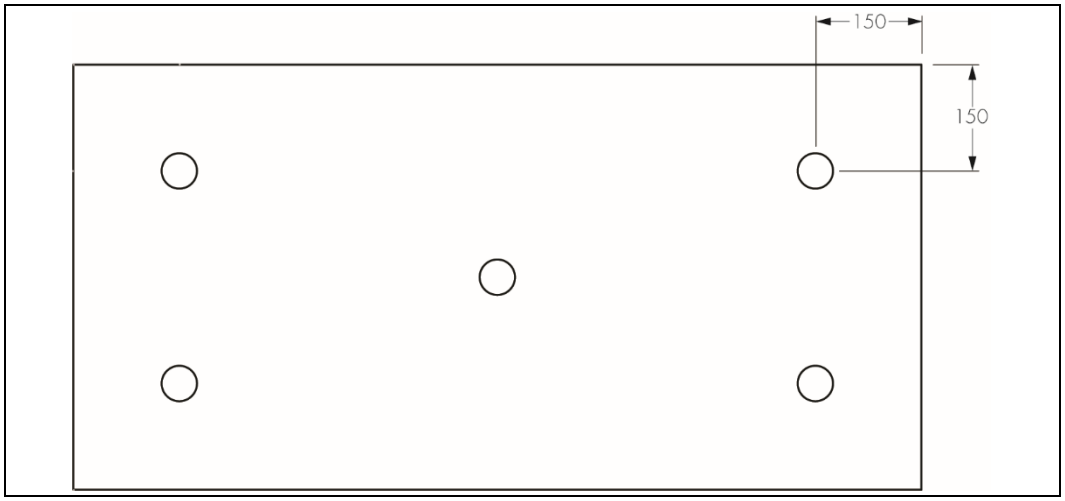
Figure 2 Typical section of starter/base



16.6 The first insulation slab is positioned onto the base profile. Care must be taken to ensure that all slab edges are butted tightly together, and that the Dual Density slab is correctly orientated with the denser layer facing outwards (see manufacturer's installation instructions) . Alignment must be checked as work proceeds.

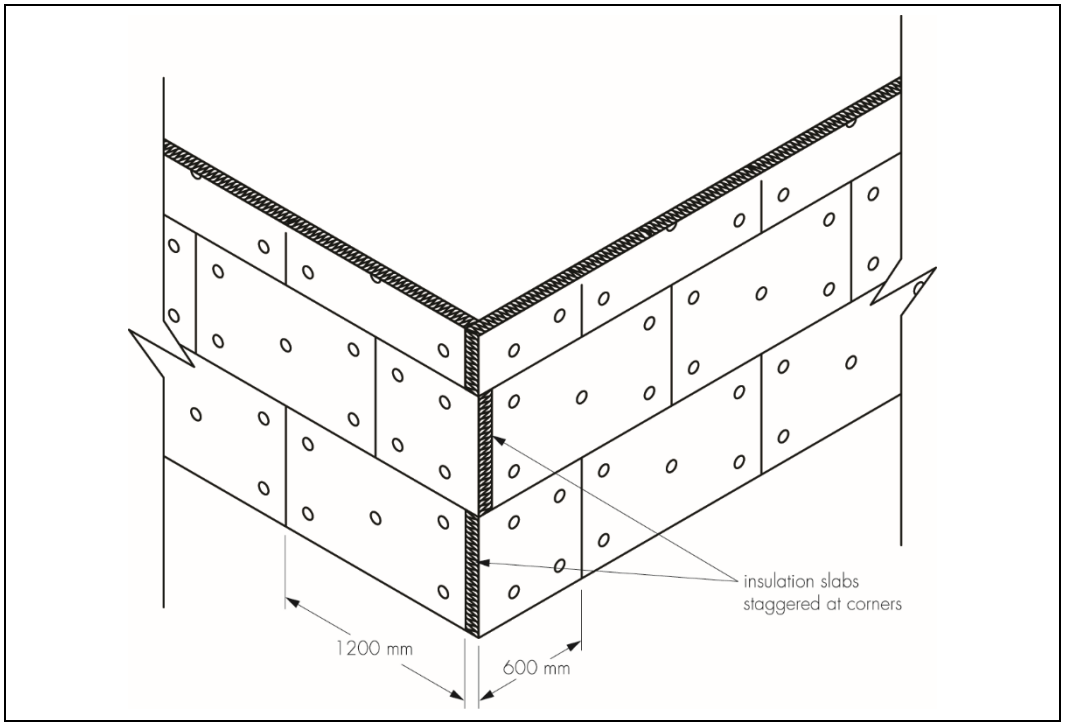
16.7 Details of mechanical fixings (including their arrangement in the insulation slabs) must be specified in the project specific design requirements based on pull-out test results, substrate type and wind loading data. A minimum of 7 fixings per m^2 should be installed, unless otherwise specified in the project-specific design (see Figure 3). If required, extra fixings can be applied at the edge zones to satisfy the wind load conditions. Holes are drilled into the substrate through the insulation, and the fixings are installed, fixing tightly to the insulation slab using the dedicated driving system to ensure there is no risk of pull-off. Care must be taken to ensure that the fixings are not overdriven.

Figure 3 Fixing pattern



16.8 Subsequent rows of slabs are positioned so that the vertical slab joints are staggered and overlapped at the building corners (see Figure 4).

Figure 4 Slab layout on the wall and at corners of a building



16.9 Joints between slabs up to 10 mm can be filled with slivers of insulation slab. Gaps greater than 10 mm should be closed by repositioning or, where appropriate, by cutting slabs to fit.

16.10 To fit around details such as doors and windows, insulation slabs may be cut with a sharp knife or a fine-tooth saw.

16.11 At all locations where there is a risk of insulant exposure (eg window reveals or eaves), the systems must be protected, eg by an adequate overhang or by purpose made sub-sills, seals or flashing.

16.12 Building corners, door and window heads, and jambs are formed using corner profiles, in accordance with the Certificate holder's instructions. Corner profiles are fixed to all building corners.

16.13 Installation continues until the whole wall is completely covered including, where appropriate, the building soffits.

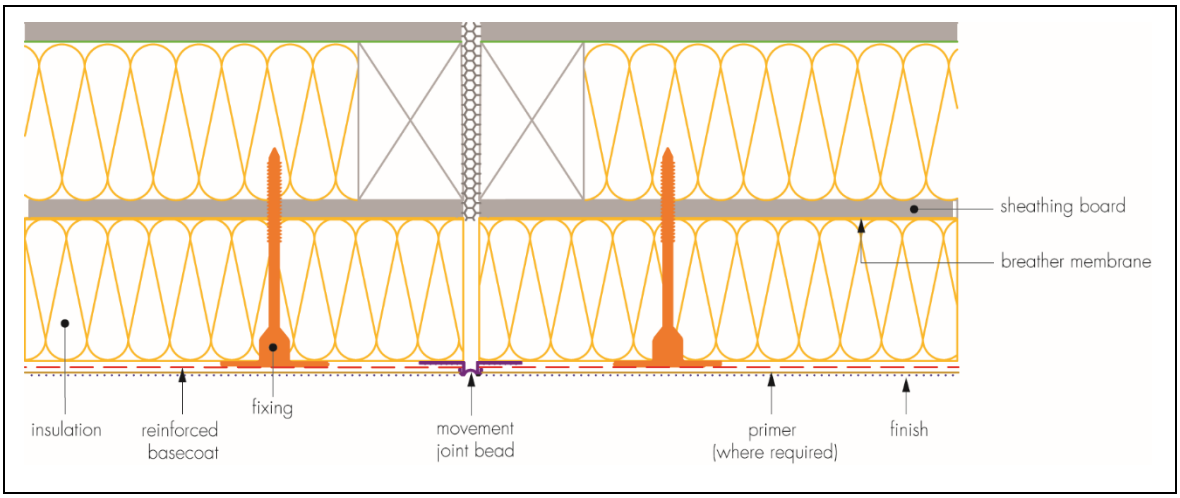
16.14 Window and door reveals should be insulated to minimise the effects of cold bridging. Where clearance is limited, strips of insulation should be installed to suit available margins and details.

Movement joints

16.15 Generally, movement joints are not required for a single unit in the systems, but if such a joint is already incorporated in the substrate, a movement joint must be provided.

16.16 The systems must incorporate provision for movement joints between park home partitions or when another park home unit is added to the structure (see Figure 5).

Figure 5 Movement joint detail

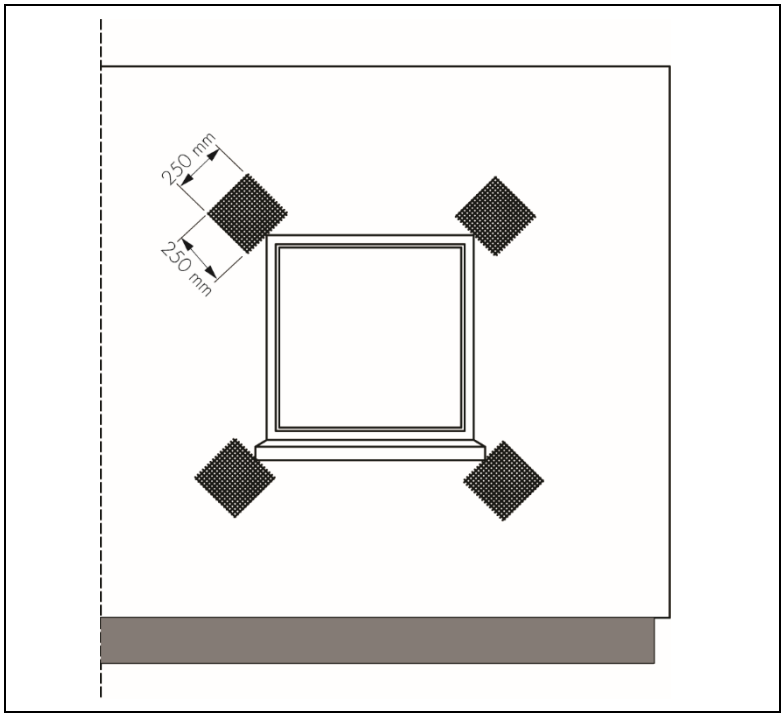


Application of basecoat and reinforcement mesh

16.17 The basecoats (20 kg of weberend LAC, weberend LAC Rapid or weberwall brick external adhesive to 5 litres of potable water) are prepared.

16.18 To provide the necessary reinforcement, stress patches of reinforcing mesh (approximate size 250 by 250 mm) are applied with basecoat, diagonally over the insulation slabs at the corners of openings (see Figure 6). Angle beads and stop beads are positioned in accordance with the Certificate holder's installation instructions.

Figure 6 Additional reinforcement at openings



16.19 The basecoat is applied in two passes. The first layer of basecoat is applied progressively by trowel or spray machine to the surface of the dry insulation to achieve an approximate thickness of 3 mm.

16.20 Reinforcing mesh is applied and immediately embedded into the basecoat using the trowel, and overlapped at all mesh joints by not less than 100 mm. For systems other than the weberwall brick system, a further layer of basecoat is applied to give an overall minimum thickness of 6 mm, and the surface ruled level. For synthetic finish applications, the basecoat must be finished with a sponge float as the basecoat starts to 'take up', working in a figure-of-eight motion. The basecoat must be allowed to dry/cure (minimum 24 hours for weberend LAC Rapid basecoat and a minimum of 3 days for weberend LAC basecoat) before the application of the primer/finishing coat (weberend LAC rapid does not require a primer).

16.21 For the weberwall brick system, a 3 mm thick layer of weberwall brick external adhesive is applied over the wet first layer of basecoat to give an overall minimum thickness of 6 mm using a 10 mm square notched trowel to comb through the adhesive, to prepare the wet adhesive for application of weberwall brick.

16.22 It is important to make sure that the reinforcing mesh is free of wrinkles and completely covered, and that the required minimum thickness of basecoat is achieved.

Rendering and finishing

16.23 When applicable, the primer coat is applied by brush, roller or spray and allowed to dry (minimum 24 hours) prior to the application of the render finish (see Table 1).

16.24 Prior to applying the finishes, sealant should be applied as required, in accordance with the Certificate holder's installation instructions.

16.25 To prevent the finishes from drying too rapidly, they should not be applied in direct sunlight. The finished render surface should be protected from rain and frost until the material is dry and hard (approximately 24 hours in favourable conditions; in winter, this may take at least 48 hours). Continuous surfaces must be completed without a break.

Render finishes

weberplast TF and webersil TF

16.26 Where used, weberplast TF and webersil TF must each be mixed thoroughly before application. The chosen finish is applied with a steel trowel to a uniform thickness, and immediately worked with a thin plastic or wooden float to produce the desired texture.

webermineral TF

16.27 The webermineral TF is prepared and mixed to a smooth, workable consistency then trowel-applied onto the basecoat to a thickness of approximately 1.5 mm.

weberwall brick slips with weberwall brick pointing mortar

16.28 The weberwall brick is immediately pressed into the wet adhesive, ensuring the mesh is fully immersed in adhesive. Weberwall brick pointing mortar is then applied in joints once the adhesive has set in accordance with the Certificate holder's instructions. Excess mortar is removed with a dry brush.

16.29 Care should be taken in the detailing of the systems around features such as openings, projections and at eaves (see Figures 7 to 10) to ensure adequate protection against water ingress and to limit the risk of water penetrating the systems.

16.30 On completion of the installation, external fittings, eg rainwater goods, must be securely fixed to timber grounds or brackets and extended to the face of the systems during installation.

Figure 7 Roof eaves detail

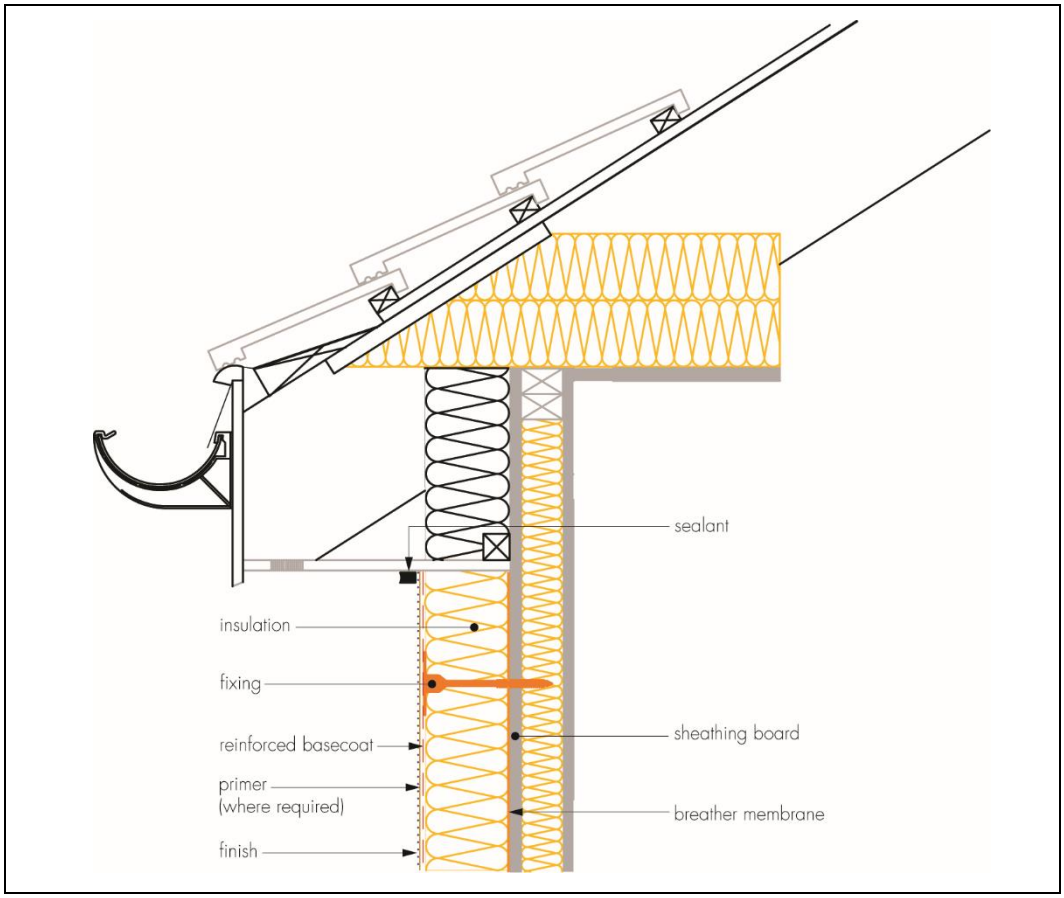


Figure 8 Insulated window head detail

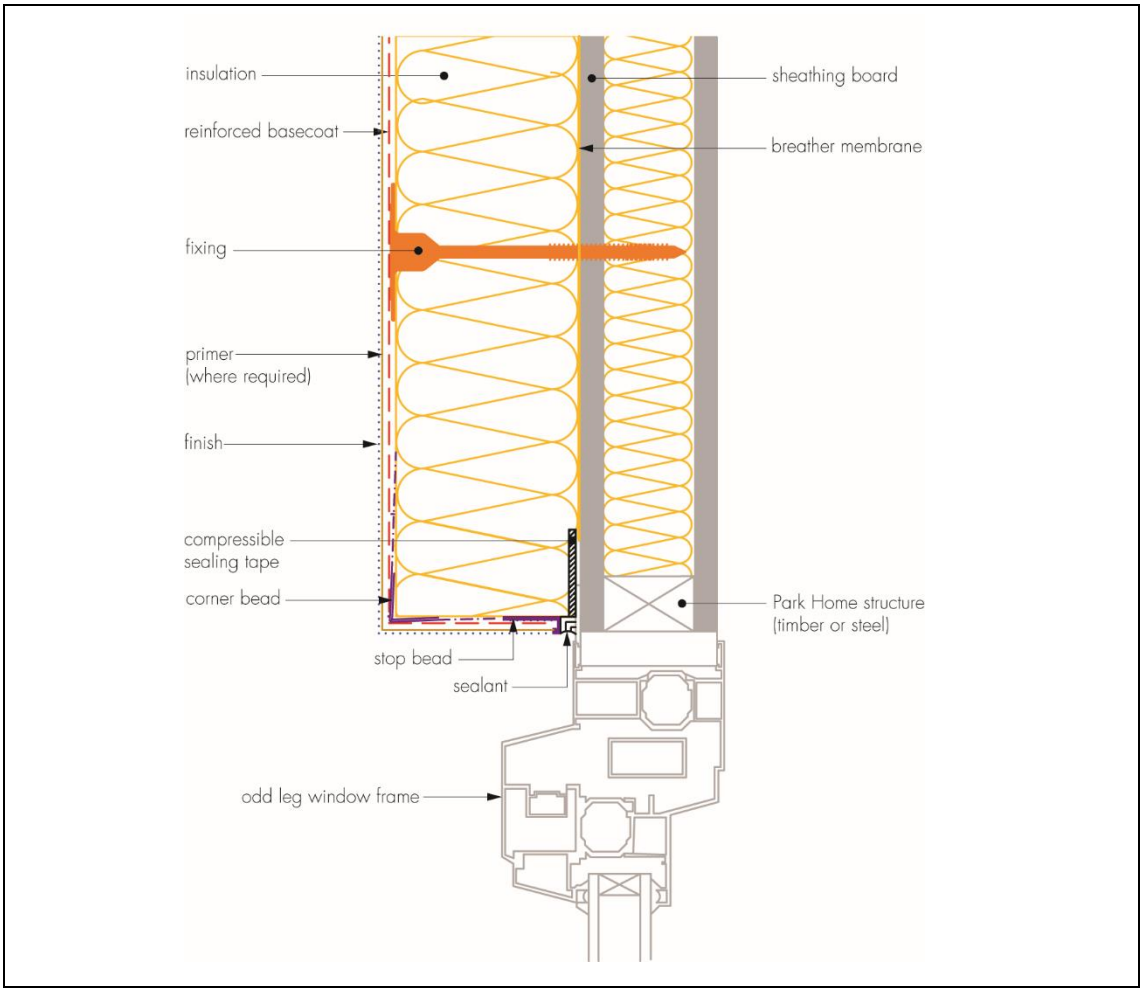


Figure 9 Insulated window reveal detail

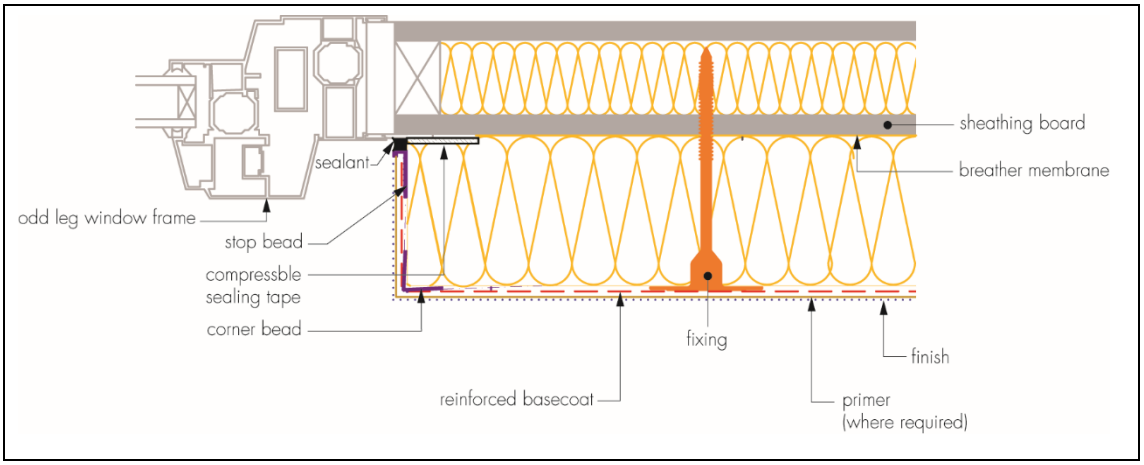
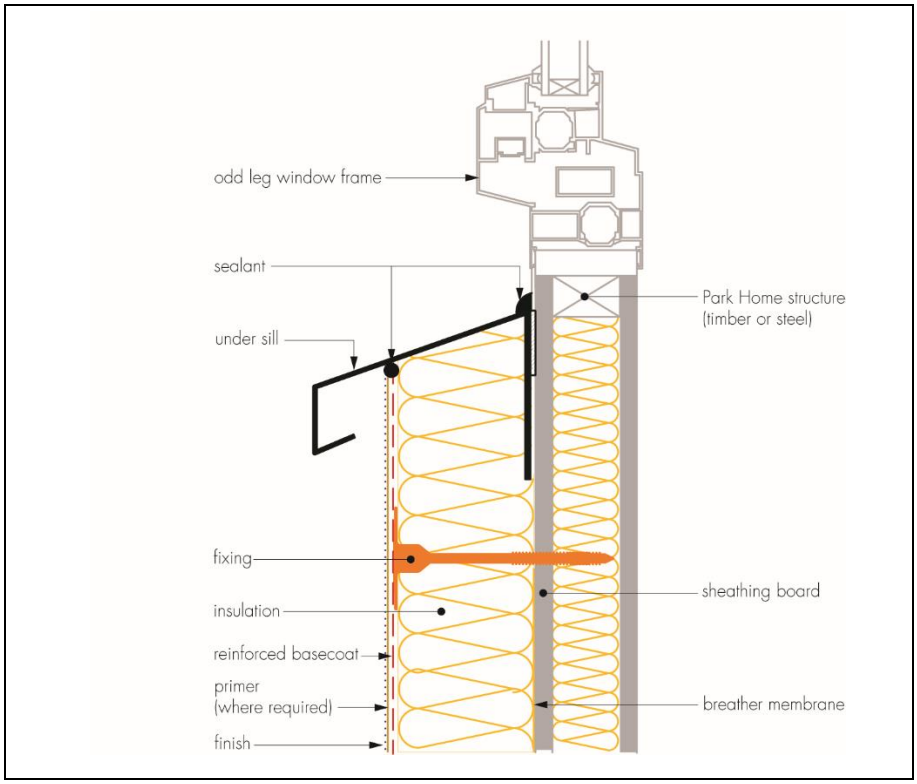


Figure 10 Window sill detail



Technical Investigations

17 Investigations

17.1 Tests were conducted and the results assessed to determine:

- reaction to fire
- bond strength
- hygrothermal performance and resistance to freeze-thaw
- resistance to hard body impact
- water absorption of render and water vapour permeability
- wind load resistance
- pull-through resistance of fixings
- water penetration test.

17.2 An assessment was made of data relating to:

- durability
- adequacy of fixing system
- the risk of interstitial condensation including WUFI analysis (transient heat and moisture transport)
- thermal conductivity.

17.3 The practicability of installation and the effectiveness of detailing techniques were assessed.

17.4 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

Bibliography

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

BRE Report 443 BR 443 : 2006 *Conventions for U-value calculations*

BS 3632 : 2015 *Residential park homes — Specification*

BS 4978 : 2007 + A1 : 2001 *Visual strength grading of softwood — Specification*

BS 5250 : 2011 + A1 : 2016 *Code of practice for control of condensation in buildings*

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

BS EN 338 : 2016 *Structural timber — Strength classes*

BS EN 335 : 2013 *Durability of wood and wood-based products — Use classes : definitions, application to solid wood and wood-based products*

BS EN 634-2 : 2007 *Cement-bonded particleboards. Specifications. Requirements for OPC bonded particleboards for use in dry, humid and external conditions*

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

BS EN 1990 : 2002 + A1 : 2016 *Eurocode — Basis of structural design*

BS EN 1991-1-4 : 2005 + A1 : 2010 *Eurocode 1— Actions on structures — General actions. Wind actions*
NA to BS EN 1991-1-4 : 2005 + A1 : 2010 *UK National Annex to Eurocode 1— Actions on structures. General actions — Wind actions*

BS EN 1992-1-1 : 2004 + A1 : 2014 *Eurocode 2 — Design of concrete structures — General rules and rules for buildings*
NA + A2 : 14 to BS EN 1992-1-1 : 2004 + A1 : 2014 UK National Annex to *Eurocode 2 — Design of concrete 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*

BS EN 1996-1-1 : 2005 + A1 : 2012 *Eurocode 6 : Design of masonry structures — General rules for reinforced and unreinforced masonry structures*
NA to BS EN 1996-1-1 : 2005 + A1 : 2012 UK National Annex to *Eurocode 6 : Design of masonry structures — General rules for reinforced and unreinforced masonry structures*
BS EN 1996-2 : 2006 *Eurocode 6 : Design of masonry structures — Design considerations, selection of materials and execution of masonry*
NA to BS EN 1996-2 : 2006 UK National Annex to *Eurocode 6 : Design of masonry structures — Design considerations, selection of materials and execution of masonry*

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

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

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

BS EN 13914-1 : 2005 *Design, preparation and application of external rendering and internal plastering — External rendering*

BS EN 13986 : 2004 + A1 : 2015 *Wood-based panels for use in construction — Characteristics, evaluation of conformity and marking*

BS EN 14081-1 : 2016 *Timber structures — Strength graded structural timber with rectangular cross section — General requirements*
NA to BS EN 14081-1 : 2016 UK National Annex to *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 10211 : 2017 *Thermal bridges in building construction — Heat flows and surface temperatures — Detailed calculations*

BS EN ISO 11600 : 2003 + A1 : 2011 *Building construction - Jointing products - Classification and requirements for sealants*

BRE Digest 465 : 2002 *U-values for light steel-frame construction 2002*

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

18 Conditions

18.1 This Certificate:

- relates only to the product/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.

18.2 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.

18.3 This Certificate will remain valid for an unlimited period provided that the product/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.

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

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

18.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/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.