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Agrément Certificate
98/3548
Product Sheet 10

DRYVIT EXTERNAL WALL INSULATION SYSTEMS

DRYVIT ROXSULATION PRO EXTERNAL WALL INSULATION SYSTEMS (LAMELLA)

This Agrément Certificate Product Sheet[1] relates to Roxsulation Pro External Wall Insulation Systems (Lamella), adhesively fixed, with supplementary mechanical fixings, comprising stone wool lamella, a reinforced basecoat and render finishes. The systems are suitable for use, without height restrictions, on the outside of external masonry walls in new or existing domestic and non-domestic buildings.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- 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 adequately resist wind loads and impact damage. The resistance to impact is dependent on the finish chosen (see section 7).

Performance in relation to fire — the systems are classified as A2-s1, d0 in accordance with BS EN 13501-1 : 2007 (see section 8).

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 has 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: 6 July 2020

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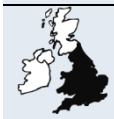
Regulations

In the opinion of the BBA, Dryvit Roxsulation Pro External Wall Insulation Systems (Lamella), 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 presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



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

Requirement: A1 Loading
Comment: The systems can sustain and transmit wind loads to the substrate wall. See sections 7.1 to 7.12 of this Certificate.

Requirement: B4(1) External fire spread
Comment: The systems are unrestricted by this Requirement. See sections 8.1 to 8.4 of this Certificate.

Requirement: C2(b) Resistance to moisture
Comment: The systems can provide a degree of protection against rain ingress. See section 10.1 of this Certificate.

Requirement: C2(c) Resistance to moisture
Comment: The systems can contribute to minimising the risk of interstitial and surface condensation. See sections 11.2 and 11.4 of this Certificate.

Requirement: L1(a)(i) Conservation of fuel and power
Comment: The systems can contribute to satisfying this Requirement. See sections 6.1 and 6.2 of this Certificate.

Regulation: 7(1) Materials and workmanship
Comment: The systems are acceptable. See section 13.1 and the *Installation* part of this Certificate.

Regulation: 7(2) Materials and workmanship
Comment: The systems are unrestricted by this Regulation. See sections 8.1 to 8.4 of this Certificate.

Regulation: 26 CO_2 emission rates for new buildings
Regulation: 26A Fabric energy efficiency rates for new dwellings (applicable to England only)
Regulation: 26A Primary energy consumption rates for new buildings (applicable to Wales only)
Regulation: 26B Fabric performance values for new dwellings (applicable to Wales only)
Comment: The systems can contribute to satisfying these Regulations. See sections 6.1 and 6.2 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2) Durability, workmanship and fitness of materials
Comment: The systems can contribute to a construction satisfying this Regulation. See sections 12 and 13.1 and the *Installation* part of this Certificate.

Regulation: 9 Building standards applicable to construction
Standard: 1.1 Structure
Comment: The systems can sustain and transmit wind loads to the substrate wall. See sections 7.1 to 7.12 of this Certificate.

Standard: 2.6 Spread to neighbouring buildings
Comment: The systems are unrestricted by this Standard, with reference to clauses 2.6.4(1)(2), 2.6.5(1) and 2.6.6(2). See sections 8.1 to 8.4 of this Certificate.

Standard:	2.7	Spread on external walls
Comment:		The systems are unrestricted by this Standard, with reference to clauses 2.7.1[(1)(2)] and 2.7.2[(2)]. See sections 8.1 to 8.4 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The systems can contribute to a construction satisfying this Standard, with reference to clauses 3.10.1[(1)(2)] and 3.10.2[(1)(2)]. See section 10.1 of this Certificate.
Standard:	3.15	Condensation
Comment:		The systems can contribute to satisfying this Standard, with reference to clauses 3.15.1[(1)(2)], 3.15.4[(1)(2)] and 3.15.5[(1)(2)]. See sections 11.3 and 11.4 of this Certificate.
Standard:	6.1(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		The systems can contribute to satisfying these Standards, with reference to clauses or parts of, 6.1.1[(1)], 6.1.2[(1)(2)], 6.1.3[(1)(2)], 6.1.6[(1)], 6.1.10[(2)], 6.2.1[(1)(2)], 6.2.3[(1)], 6.2.4[(2)], 6.2.5[(2)], 6.2.6[(1)], 6.2.7[(1)], 6.2.8[(2)], 6.2.9[(1)(2)], 6.2.10[(1)], 6.2.11[(1)], 6.2.12[(2)] and 6.2.13[(1)(2)]. See sections 6.1 and 6.2 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The systems 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. In addition, the systems can contribute to a construction meeting a higher level of sustainability as defined in this Standard with reference to clauses 7.1.4[(1)(2)] [Aspect 1[(1)(2)] and 2[(1)]], 7.1.6[(1)(2)] [Aspect 1[(1)(2)] and 2[(1)]] and 7.1.7[(1)(2)] [Aspect 1[(1)(2)]]. See section 6.2 of this Certificate.
Regulation:	**12**	**Building standards applicable to conversions**
Comment:		All comments given for the systems 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**	**Fitness of materials and workmanship**
Comment:		The systems are acceptable. See section 13.1 and the *Installation* part of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The systems provide a degree of protection against rain ingress. See section 10.1 of this Certificate.
Regulation:	**29**	**Condensation**
Comment:		The systems can contribute to minimising the risk of interstitial condensation. See section 11.4 of this Certificate.
Regulation:	**30**	**Stability**
Comment:		The systems can sustain and transmit wind loads to the substrate wall. See sections 7.1 to 7.12 of this Certificate.
Regulation:	**36(a)**	**External fire spread**
Comment:		The systems are unrestricted by this Regulation. See sections 8.1 to 8.4 of this Certificate.
Regulation:	**39(a)(i)**	**Condensation measures**
Regulation:	**40**	**Target carbon dioxide emission rate**
Comment:		The systems can contribute to satisfying these Regulations. See sections 6.1 and 6.2 of this 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.

See sections: 3 *Delivery and site handling* (3.2) and 12 *Maintenance* of this Certificate.

Additional Information

NHBC Standards 2020

In the opinion of the BBA, Roxsulation Pro External Wall Insulation Systems (Lamella), 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*.

Technical Specification

1 Description

1.1 Roxsulation Pro External Wall Insulation Systems (Lamella) comprise stone wool insulation slabs which are adhesively fixed to the substrate wall (ensuring a minimum 40% coverage), with supplementary mechanical fixings. After the slabs have been secured to the wall, basecoat is trowel-applied to the required thickness, and the reinforcing mesh is applied and fully embedded. After the reinforced basecoat has cured, the primer is applied, if required for the finish being applied, followed by the application of the finish.

1.2 The systems are made up of:

Adhesives

- Dryvit Roxhesive/Dryvit Fibercoat/Dryvit Genesis DM Plus — polymer-modified cementitious powder adhesives requiring the addition of 5.5 to 6 litres of clean water per 25 kg bag, applied at a coverage of 3.5 to 8 $kg \cdot m^{-2}$

Insulation

- Dryvit Lamella Stone Wool Insulation Slabs — 1000 by 200 mm in a range of thicknesses between 50[(1)] and 250 mm in 10 mm increments, with a nominal density of 95 $kg \cdot m^{-3}$, a minimum compressive strength of 50 kPa and a tensile strength perpendicular to the faces of 80 kPa. The slabs comply with BS EN 13162 : 2012

(1) Thicknesses less than 50 mm are for use as reveal insulation.

Mechanical fixings (supplementary)

- mechanical fixings — anchors with adequate length to suit the substrate and insulation thickness and selected from:
  - EJOT H1 eco — polyethylene with an electro-galvanized pin and a polyamide, PA GF 50 mounting plug
  - EJOT H4 eco — polyethylene anchor sleeve with an electro-galvanized centre pin (polyamide PA GF 50 mounting plug)
  - EJOT STR U/EJOT STR U 2G — polyethylene anchor sleeve with a stainless steel or electro-galvanized centre screw and an anchor cap made of polystyrene
  - Koelner TFIX-8M — polypropylene anchor sleeve with an electro-galvanized centre pin (with a head covering of polyamide PA6)
  - Koelner TFIX-8S — polypropylene anchor sleeve with an electro-galvanized centre screw (with head covering of polyamide PA6)
  - LMX-8/LMX-10 — polyethylene anchor sleeve with an electro-galvanized centre pin
  - R-TFIX-8S — polyethylene anchor sleeve with a stainless steel or electro-galvanized centre screw, available with or without a polyamide covering
  - WKTherm ø 8 — polyethylene anchor sleeve with an electro-galvanized centre pin (with head covering of polyamide PA6)

- WKTherm S — polyethylene anchor sleeve with an electro-galvanized centre screw
- Fischer Termoz CS 8 — polypropylene anchor sleeve and an insulation plate made of glass fibre-reinforced polyamide (PA 6 GF) with a compound screw consisting of two parts, one made of glass fibre-reinforced polyamide (for the shaft element) and the other of galvanized steel
- Bravoll PTH-S — polypropylene anchor sleeve with a stainless steel or electro-galvanized centre screw (with head covering of polyamide)
- Bravoll PTH-KZ — polypropylene anchor sleeve with a stainless steel or electro-galvanized centre pin (with head covering of polyamide)

Basecoat

- Dryvit Fibercoat — a polymer-modified cementitious powder requiring the addition of 5.5 to 6 litres of clean water per 25 kg bag. The basecoat is applied to a thickness of between 3 and 5 mm, at a coverage of approximately 3 to 8 $kg \cdot m^{-2}$

Reinforcement

- Alkali-resistant glass fibre mesh:
  - Dryvit Standard Plus 150 — 1 or 1.22 m wide, with a nominal weight of 150 $g \cdot m^{-2}$ and 3.6 by 4.3 mm grid size
  - Dryvit Standard Plus 160 — 1 m wide, with a nominal weight of 160 $g \cdot m^{-2}$ and 3.6 by 3.8 mm grid size
  - Dryvit Panzer 260 Mesh(1)— 1 m wide, with a nominal weight of 260 $g \cdot m^{-2}$ and 6 by 6 mm grid size
  - Dryvit Panzer 500 Mesh(1) — 1.22 m wide, with a nominal weight of 522 $g \cdot m^{-2}$ and 4 by 3.3 mm grid size
  - Dryvit Panzer 700 Mesh(1) — 1.22 m wide, with a nominal weight of 700 $g \cdot m^{-2}$ and 4.3 by 4.3 mm grid size

(1) Heavy duty mesh, which is applied to a maximum height of 2 m.

Primers(1)

- Dryvit Color Prime Plus — a ready-to-use water-based acrylic primer, for use with the acrylic, silicone and silicone-silicate finishing coats only
- Dryvit Demandit Smooth — a ready-to-use water-based acrylic primer, for use with Dryvit Custom Brick Effect finishing coat only
- Dryvit Wood Prime — a ready-to-use water-based acrylic primer, for use with Dryvit Drytex Wood Effect only

(1) Dryvit Drytex finishing coat does not require a primer.

Finishing coats(1)

(1) Thickness is regulated by the grain size, unless otherwise stated.

Mineral

- Dryvit Drytex — polymer-modified mineral, requiring the addition of 5 to 6 litres of clean water per 25 kg bag. Available in seven textures, with grain sizes of 3 mm (Sandpebble 3), 2 mm (Quarzputz, and Sandpebble 2), 1.6 mm (Sandpebble), 1.2 mm (Quarzputz Fine, and Sandblast) and 0.6 mm (Freestyle). Applied at a coverage of 1.1 to 3.8 $kg \cdot m^{-2}$
- Dryvit Drytex Wood Effect — polymer-modified mineral, requiring the addition of 5.5 to 6.5 litres of clean water per 25 kg bag. Available in a 0.5 mm grain size and applied to a thickness of between 4 and 5 mm at a coverage of 4.5 to 5 $kg \cdot m^{-2}$. The product is overcoated with the Dryvit Wood Glaze or Dryvit Wood Glaze Matt decorative coats.

Acrylic

- Dryvit Ameristone — an acrylic-based emulsion containing aggregates. Available in grain sizes from 0.8 to 2.5 mm. Applied at a coverage of 3.9 to 4.5 $kg \cdot m^{-2}$
- Dryvit TerraNeo — an acrylic-based emulsion containing aggregates and mica. Available in grain sizes from 0.8 to 2.5 mm. Applied at a coverage of 3 to 3.5 $kg \cdot m^{-2}$
- Dryvit Stonemist and Dryvit Stonemist T — acrylic-based emulsion containing aggregates (Dryvit Stonemist T additionally contains mica). Available in grain sizes from 0.6 to 0.8 mm (application thickness 1.6 to 2.5 mm). The products are applied to a thickness of between 1.6 and 2.5 mm at a coverage of 2.6 to 3.5 $kg \cdot m^{-2}$

- Dryvit PMR — acrylic-based emulsion containing aggregates and coalescing and thickening agents. Available in seven textures, with grain sizes of: 2 mm (Quarzputz, and Sandpebble 2), 1.6 mm (Sandpebble), 1.2 mm (Sandpebble Fine, and Sandblast), 0.6 mm (Freestyle, and Lymestone). Applied at a coverage of 1 to 3.8 $kg \cdot m^{-2}$

Silicone

- Dryvit TR — acrylic-based emulsion containing silicone resin. Available in seven textures, with grain sizes of: 2 mm (Quarzputz, and Sandpebble 2), 1.6 mm (Sandpebble), 1.2 mm (Sandpebble Fine, and Sandblast), 0.6 mm (Freestyle, and Lymestone). Applied at a coverage of 1 to 3.8 $kg \cdot m^{-2}$
- Dryvit HDP — silicone emulsion with hydrophobic additives and aggregates. Available with a grain size of: 1.6 mm (Sandpebble). Applied at a coverage of 2.6 to 2.8 $kg \cdot m^{-2}$

Silicone-silicate

- Dryvit Hybrid — silicate-silicone-acrylic based emulsion. Available in seven textures, with grain sizes of: 2 mm (Sandpebble 2), 1.5 mm (Sandpebble), 1.2 mm (Quarzputz Fine), 1.2 mm (Sandpebble Fine), 1.2 mm (Sandblast), 0.6 mm (Freestyle) and 0.6 mm (Lymestone). Applied at a coverage of 1 to 3.8 $kg \cdot m^{-2}$

Custom Brick Effect

- Dryvit Custom Brick Effect — acrylic-based emulsion, with a 0.6 m grain size. The product is applied to a thickness of between 1.2 and 2 mm at a coverage of 1.2 to 2 $kg \cdot m^{-2}$ over Dryvit Demandit Smooth decorative coat(1); a self-adhesive cardboard template is used to form the brick effect

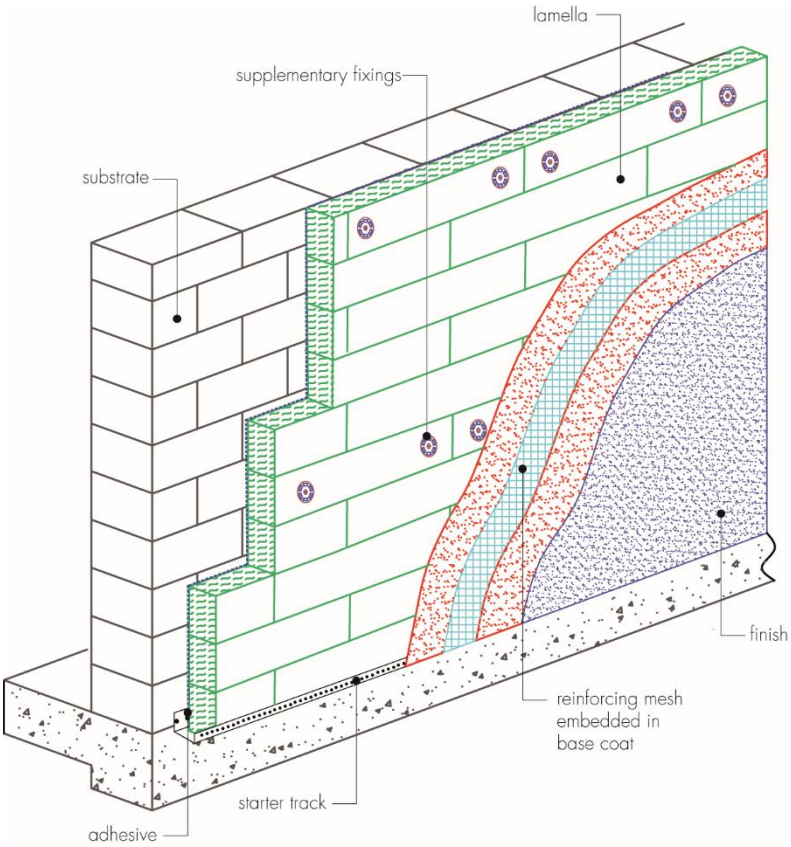
(1) Ameristone, TerraNeo, Stonemist and Stonemist T can also be used to form a custom brick effect.

Decorative coats

- Dryvit Demandit Smooth — acrylic emulsion(1)
- Dryvit Silstar/Dryvit Silstar Pro — silicone resin emulsion(1)
- Dryvit Demandit Smooth — acrylic emulsion(1)
- Dryvit HyDroPhobic — silicone resin emulsion(1) with hydrophobic additives
- Dryvit Wood Glaze and Dryvit Wood Glaze Matt — acrylic emulsions, available in a range of colours, for use with the Dryvit Drytex Wood Effect finishing coat only. Applied at a coverage of 0.1 to 0.2 $kg \cdot m^{-2}$.

(1) Available in a range of colours, for use with mineral finishing coats excluding Dryvit Drytex Wood Effect. Applied at a coverage of 0.35 to 0.4 $kg \cdot m^{-2}$,

Figure 1 Typical profile of Roxsulation Pro External Wall Insulation Systems (Lamella)



1.3 Ancillary materials used with the system are aluminium or PVC-U profiles, comprising:

- starter track (base profile)
- edge, corner bead with mesh, movement and render stop profiles
- frame seal beads with mesh
- connector profile and fixings.

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

- fungicidal wash
- silicone sealant
- expanding polyurethane (PU) foam
- compressible seals
- close-cell backer rods
- extruded polystyrene insulation boards [for use under the damp proof course (dpc) level]
- stainless steel mechanical fixing.

2 Manufacture

2.1 The systems' components are either 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 the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by Centrum Certyfikacji Jakości (Certificate 24/S/2018).

3 Delivery and site handling

3.1 The insulation slabs are wrapped in plastic film and delivered in sealed packs, with the product identification and manufacturer's batch numbers.

3.2 The other components are delivered in the quantities and packaging listed in Table 1. Each package carries the product identification and manufacturer's batch number.

Table 1 Component supply details

Component	Quantity and packaging
Dryvit Roxhesive (adhesive) Dryvit Fibercoat (adhesive/basecoat) Dryvit Genesis DM Plus (adhesive) Dryvit Drytex (finishing coat) Dryvit Drytex Wood Effect (finishing coat)	25 kg bags
Dryvit Stonemist (finishing coat) Dryvit Stonemist T (finishing coat)	23 kg pails
Dryvit PMR (finishing coat) Dryvit HDP (finishing coat) Dryvit TR (finishing coat) Dryvit Hybrid (finishing coat) Dryvit Custom Brick Effect (finishing coat)	24.72 kg pails
Dryvit Ameristone (finishing coat)	24 kg pails
Dryvit TerraNeo (finishing coat)	22 kg pails
Dryvit Color Prime Plus (primer) Dryvit Demandit Smooth (primer and decorative coat) Dryvit Wood Prime (primer) Dryvit Silstar and Silstar Pro (decorative coat) Dryvit HyDroPhobic (decorative coat)	17.36 kg pails
Dryvit Wood Glaze and Dryvit Wood Glaze Matt (decorative coat)	12.7 or 3.17 kg pails
Dryvit Standard Plus 150 mesh	Rolls, 1 m wide by 50 m length Rolls, 1.22 m wide by 45.7 m length
Dryvit Standard Plus 160 mesh	Rolls, 1 m wide by 50 m length
Dryvit Panzer 260 mesh	Rolls, 1 m wide by 50 m length
Dryvit Panzer 500 mesh	Rolls, 1.22 m wide by 22.9 m length
Dryvit Panzer 700 mesh	Rolls, 1.22 m wide by 22.9 m length
Mechanical fixings	Boxed by manufacturer

3.3 The insulation slabs must be kept dry and should be stored on a firm, clean, level base, off the ground and under cover until required for use. Care must be taken during handling to avoid damage.

3.4 The powder adhesives and mineral renders must be stored in dry conditions, off the ground, and protected from moisture. Contaminated materials should be discarded.

3.5 The primers and finishes must be stored in tightly closed original packaging in cool, dry conditions and protected from excessive heat and frost.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Roxsulation Pro External Wall Insulation Systems (Lamella).

Design Considerations

4 General

4.1 Roxsulation Pro External Wall Insulation Systems (Lamella), when installed in accordance with this Certificate, are satisfactory for use in reducing the thermal transmittance (U value) of external masonry or concrete walls of new and existing buildings. 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 systems (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 of the structure, the designer should consider additional/alternative fabric and/or services measures.

4.3 The systems are for application to the outside of external walls of masonry, normal weight concrete, lightweight concrete, autoclaved concrete and no-fines concrete construction, on new or existing domestic and non-domestic buildings (with or without existing render) with no height restriction. Prior to the installation of the systems, wall surfaces should comply with section 14.

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

- 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 8000-0 : 2014
- BS 8000-2.2 : 1990
- BS 8000-3 : 2001
- PD 6697 : 2019.

4.5 New walls not subject to regulatory requirements should also be built in accordance with the Standards identified in section 4.4.

4.6 Movement joints should be incorporated into the systems in line with existing expansion joints in the building structure and in accordance with the Certificate holder's recommendations for the specific installation.

4.7 The systems will improve the weather resistance of a wall and provide a decorative finish. However, for existing buildings, they should only be installed where there are no signs of dampness on the inner surface of the wall other than those caused solely by condensation.

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

4.9 The fixing of sanitary pipework, plumbing, rainwater goods, satellite dishes, clothes lines, hanging baskets and similar items to the systems is outside the scope of this Certificate (see section 4.10).

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

4.11 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.

4.12 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 values) should be carried out in accordance with BS EN ISO 6946 : 2017 and BRE Report BR 443 : 2006, using the declared thermal conductivity (λ_D) value of 0.042 $W \cdot m^{-1} \cdot K^{-1}$ for the insulation.

6.2 The U value of a completed wall will depend on the insulation thickness, the type and number of fixings, and the insulating value of the substrate masonry and its internal finish. Calculated U values for sample construction in accordance with the national Building Regulations are given in Table 2, and are based on the thermal conductivity given in section 6.1.

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

U value(4) ($W \cdot m^{-2} \cdot K^{-1}$)	Thickness of Insulation (mm)	
	215 mm brickwork, $\lambda = 0.56\ W \cdot m^{-1} \cdot K^{-1}$	200 mm dense blockwork, $\lambda = 1.75\ W \cdot m^{-1} \cdot K^{-1}$
0.18	210	220
0.19	200	210
0.25	140	150
0.26	140	150
0.28	130	140
0.30	120	130
0.35	100	110

(1) Wall construction inclusive of 13 mm plaster ($\lambda = 0.57\ W \cdot m^{-1} \cdot K^{-1}$), brickwork (protected) with 17.1% mortar or dense blockwork with 6.7% mortar ($\lambda = 0.88\ W \cdot m^{-1} \cdot K^{-1}$). Declared thermal conductivity (λ_D) value of the insulation is as shown in section 6.1. An adhesive layer, 5 mm thick with $\lambda = 1\ W \cdot m^{-1} \cdot K^{-1}$ covering 40% of the area is also included, and a slab emissivity of 0.9, together with an external render thickness of 5 mm with $\lambda = 1\ W \cdot m^{-1} \cdot K^{-1}$.

(2) Calculations based on a system that included 2 fixings per square metre with a point thermal transmittance (X_p) of 0.002 $W \cdot K^{-1}$. Use of other types of fixings should be calculated in accordance with BS EN ISO 6946 : 2017. A gap correction ($\Delta U''$) of zero is assumed.

(3) Based upon an incremental insulation thickness of 10 mm.

(4) When applying the maximum available insulation thickness, these walls can achieve U values from 0.15 $W \cdot m^{-2} \cdot K^{-1}$ to 0.16 $W \cdot m^{-2} \cdot K^{-1}$ depending on the wall type.

6.3 Care must be taken in the overall design and construction of the systems, particularly at the 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). 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 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 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 each elevation and specific zone of the building must be considered. In accordance with BS EN 1990 : 2002, a partial factor of 1.5 must be applied to the calculated characteristic wind load 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 system.

7.6 Negative wind load is transferred to the substrate wall via(1)(2):

- the bond between the insulation and render system (see section 7.7)
- the tensile strength of the insulation (see section 7.8)
- the bond between the adhesive and the insulation interface(3) (see section 7.9)
- the bond between the substrate and adhesive interface(3) (see section 7.10).

(1) For adhesively fixed systems with supplementary mechanical fixings, the contribution of the fixings is not considered when calculating resistance to wind load.
(2) Further guidance is given in BBA Guidance Note 1, available on the BBA website (www.bbacerts.co.uk).
(3) The percentage of adhesive coverage should be considered.

7.7 The characteristic bond resistance between the insulation and render interface derived from test results was 80 $kN \cdot m^{-2}$. 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 tensile resistance of the insulation material may be taken as 80 $kN \cdot m^{-2}$ and should be divided by a partial material factor of 2.5 to establish the ultimate design resistance of the insulation ($Rd_{t.ins}$).

7.9 The characteristic bond resistance between the adhesive and the insulation derived from test results was 80 $kN \cdot m^{-2}$(1). The design resistance of the bond between the adhesive and insulation (N_{RD2}) should be taken as this value divided by a partial factor of 9.

(1) The minimum bonded surface area (A_{min}) should not be less than 40%.

7.10 The characteristic bond resistance between the substrate and the adhesive derived from test results was 250 $kN \cdot m^{-2}$(1)(2)(3). The design resistance of the bond between the substrate and the adhesive (N_{RD3}) should be taken as the characteristic resistance divided by a partial factor of 9.

(1) The bond between the substrate and the adhesive from the test should have a minimum failure resistance of 250 $kN \cdot m^{-2}$ after the adhesive has fully cured, and in dry conditions, in accordance with ETAG 004 : 2013. The minimum failure resistance value is based on a minimum 28 day curing time of the test sample.
(2) The results from tests carried out on site for the bond (while the adhesive is curing) between the substrate and the adhesive should be at least equal to 80 $kN \cdot m^{-2}$.
(3) The minimum bonded surface area (A_{min}) should not be less than 40%.

7.11 The number and spacing of the supplementary fixings should be determined by the Certificate holder. Provided the substrate wall is suitable and the supplementary fixings are covered by an appropriate ETA, they will initially transfer the weight of the insulation system to the substrate wall while the adhesive is curing. However, since the characteristic pull-out resistance values are dependent on the substrate type, the fixing must be selected to suit the specific loads and substrate(1).

(1) To qualify as suitable data, the age and condition of the substrate must be equivalent to that used to establish the values in the ETA. If this not the case, site-specific pull out tests must be carried out.

7.12 The data obtained from sections 7.6 to 7.9 must be assessed against the design wind load and the following expression must be satisfied[1][2]:

For safe design

$Rd \geqslant W_e$

$Rd_{b.ins/rend} = A_r * N_{RD1}$
$Rd_{t.ins}$ = characteristic tensile strength of insulation/2.5
$Rd_{b.adh/ins} = A_{min} * N_{RD2}$
$Rd_{b.sub/adh} = A_{min} * N_{RD3}$

where:

Rd	is the design ultimate resistance ($kN \cdot m^{-2}$) taken as the minimum of $Rd_{b.ins/rend}$, $Rd_{t.ins}$, $Rd_{b.adh/ins}$ and $Rd_{b.sub/adh}$
W_e	is the maximum design wind load ($kN \cdot m^{-2}$)
$Rd_{b.ins/rend}$	is the bond design resistance between the insulation and render ($kN \cdot m^{-2}$)
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 tests ($kN \cdot m^{-2}$)
$Rd_{b.adh/ins}$	is the bond design resistance between the insulation and adhesive ($kN \cdot m^{-2}$)
A_{min}	is the minimum bonded surface area (based on % area covered)
N_{RD2}	is the design bond resistance between insulation and adhesive based on tests ($kN \cdot m^{-2}$)
$Rd_{b.sub/adh}$	is the design bond resistance between the substrate and adhesive ($kN \cdot m^{-2}$)
N_{RD3}	is the design bond resistance between the substrate and adhesive based on tests ($kN \cdot m^{-2}$).

(1) If the minimum design resistance (Rd) calculated in sections 7.6 to 7.10 is less than the design wind pressure, the bonded surface area (A_{min}) should be increased.
(2) If the minimum bonded surface area required to resist the design wind load is higher than 100%, the system would need to be mechanically fixed and therefore should not be installed: mechanically fixed system requirements have not been assessed with this Certificate.

Impact resistance

7.13 Hard body impact tests were carried out in accordance with ETAG 004 : 2013. The systems are suitable for the Use Categories up to and including those specified in Table 3 of this Certificate.

Table 3 System impact resistance

Render systems: Dryvit Fibercoat basecoat with primer + finishing coats + decorative coats, as indicated below:	Particle size (mm)	Category[1] Any single mesh
Mineral finishing coats Drytex + Demandit Smooth	0.6 to 3	I
Mineral finishing coats Drytex + Silstar/Silstar Pro	0.6 to 3	I
Mineral finishing coats Drytex + Hydrophobic	0.6 to 3	I
Mineral finishing coat Drytex Wood Effect + Wood Prime + Wood Glaze	0.5	II
Mineral finishing coat Drytex Wood Effect + Wood Prime + Wood Glaze Matt	0.5	II
Color Prime Plus + Ameristone, TerraNeo, Stonemist or Stonemist T	0.6 to 2.5	II
Color Prime Plus + Acrylic finishing coats PMR	0.6 to 2	II
Color Prime Plus + Silicone finishing coats TR	0.6 to 2	II
Color Prime Plus + Silicone finishing coats HDP	1.6	I
Color Prime Plus + Silicone-silicate finishing coats Hybrid	0.6 to 2	I
Demandit Smooth + Custom Brick Effect using Ameristone, TerraNeo, Stonemist and Stonemist T	0.6 to 2.5	I
Demandit Smooth + Custom Brick Effect using Custom Brick	0.6	II

Notes:
- 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 kicked objects.

7.14 For high impact zones susceptible to damage (that is, 2 m from ground level), the use of Dryvit Panzer mesh is recommended.

8 Behaviour in relation to fire

8.1 The reaction to fire classification for the systems in accordance with BS EN 13501-1 : 2007 is A2-s1, d0[(1)].

(1) Institute of Ceramics and Building Materials Test Report Numbers 151/18/SG/N.

8.2 The classification applies to the full range of thicknesses, finish colours and mesh combinations covered by this Certificate.

8.3 The lamella insulation material in isolation is classified as 'non-combustible'.

8.4 The systems are not subject to any restriction on building height or proximity to boundaries.

8.5 For application to second storey walls and above, it is recommended that the designer considers at least one stainless steel mechanical fixing per square metre as advised in BRE Report BR 135 : 2013.

8.6 NHBC Standards require in all cases that a minimum of one non-combustible fixing through the reinforcement mesh, per square metre or per insulation slab, whichever provides the greater number, should be provided, in addition to the other fixings.

8.7 Designers should refer to the relevant national Building Regulations and guidance 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.

9 Proximity of flues and appliances

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

England and Wales — Approved Document J
Scotland — Mandatory Standard 3.19, clause 3.19.4[(1)(2)]

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

Northern Ireland — Technical Booklet L.

10 Water resistance

10.1 The systems will provide a degree of protection against water ingress. However, care should be taken to ensure that walls 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 water ingress.

10.3 The guidance given in BRE Report BR 262 : 2002 should be followed in connection with the watertightness of solid 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 an adequate coping, overhang or other detail designed for use with these types of systems (see section 16).

11 Risk of condensation

11.1 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 systems and windows, to minimise the risk of condensation. The recommendations of BS 5250 : 2011 should be followed.

Surface condensation

11.2 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 6.3.

11.3 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. Guidance may be obtained from BS 5250 : 2011 Section 4 and Annex G, 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, Annexes D and G, and Table 7.

11.5 The water vapour resistance (μ) factor (for the insulation slabs) and equivalent air layer thickness (s_d) (for the render systems) is shown in Table 4.

Table 4 Water vapour resistance factor and equivalent air layer thickness

	S_d (m)	(μ)
Lamella Stone Wool Insulation Slab thickness 50 to 250 mm	—	1
Rendering systems: 5 mm thick Fibercoat basecoat with primer + finishing coats (specific particle size) + decorative coats, as indicated below		
Mineral finishing coats Drytex (particle size 3 mm) + Demandit Smooth	0.4	—
Mineral finishing coats Drytex (particle size 3 mm) + Silstar/Silstar Pro	0.4	—
Mineral finishing coats Drytex (particle size 3 mm) + HyDroPhobic	0.4	—
Mineral finishing coat Drytex Wood Effect (application thickness 5 mm) + Wood Prime + Wood Glaze	0.4	—
Mineral finishing coat Drytex Wood Effect (application thickness 5 mm)+ Wood Prime + Wood Glaze Matt	0.4	—
Color Prime Plus + Ameristone, TerraNeo, Stonemist or Stonemist T (application thickness 2.5 mm)	0.5	—
Color Prime Plus + Acrylic finishing coats PMR (particle size 2 mm)	0.5	—
Color Prime Plus + Silicone finishing coats TR (particle size 2 mm)	0.5	—
Color Prime Plus + Silicone finishing coats HDP (particle size 1.6 mm)	0.4	—
Color Prime Plus + Silicone-silicate finishing coats HYBRID (particle size 2 mm)	0.5	—
Demandit Smooth + Custom Brick Effect using Ameristone, TerraNeo, Stonemist and Stonemist T (application thickness 2.5 mm)	0.3	—
Demandit Smooth + Custom Brick Effect using Custom Brick (application thickness 2 mm)	0.3	—

12 Maintenance

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 system 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 : 2016.

13 Durability

13.1 The systems will have a service life of at least 30 years, provided any damage to the surface finish is repaired immediately and regular maintenance is undertaken, as described in section 12.

13.2 The base coat and finishes 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 on lighter colours. Any lime bloom on the base coat layer must be removed prior to applying the primer or finish.

13.3 The finishes and coatings 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, fungicidal treatment or, if required, by overcoating, provided the coating does not adversely affect the water vapour transmission or fire characteristics of the systems. The advice of the Certificate holder should be sought as to the suitability of a particular product.

13.4 To maintain a high quality aesthetic appearance, it may be necessary to periodically overcoat the building using a compatible Dryvit coating (ie one covered by a valid BBA Certificate for this purpose). Care should be taken not to 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 the need for any necessary repairs to the building structure before application of the systems. A specification is prepared for each elevation of the building indicating:

- the position of beads
- detailing around windows and doors, and at eaves
- dpc level
- exact position of expansion joints, if required
- 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 to determine the bond strength between the adhesive and the substrate, and demonstrate that the pull-out resistance of the proposed supplementary mechanical fixings from substrate is adequate. An assessment and recommendation should be made on the minimum bond strength and type and number of fixings required to withstand the building's expected wind loading based on calculations using the test site data in accordance with section 7.

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

14.4 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 should be hacked off and reinstated.

14.5 On existing buildings, purpose-made window sills must be fitted to extend a minimum of 40 mm beyond the finished face of the systems. New buildings should incorporate suitably deep sills.

14.6 In new buildings, internal wet work (eg screed or plastering) should be completed and allowed to dry prior to the application of the systems.

14.7 All modifications, such as provision for cavity barriers and fire stopping (see section 8) 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 installers approved, 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 must 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. If exposure to frost is likely or in damp/wet conditions, the render must be protected. The systems should not be applied at temperatures below 5°C or above 25°C, except for the following:

- Dryvit Demandit Smooth, Dryvit Stone Mist, Dryvit Stone Mist T and Dryvit Silstar Pro should only be applied at temperatures from 7 to 25°C
- Dryvit Ameristone and Dryvit TerraNeo should only be applied at temperatures from 10 to 25°C.

16.3 Where required, a fungicidal wash is applied to the entire surface of the external wall by brush, roller or spray.

16.4 The planarity of the substrate must be checked, and any protrusions exceeding 10 mm removed.

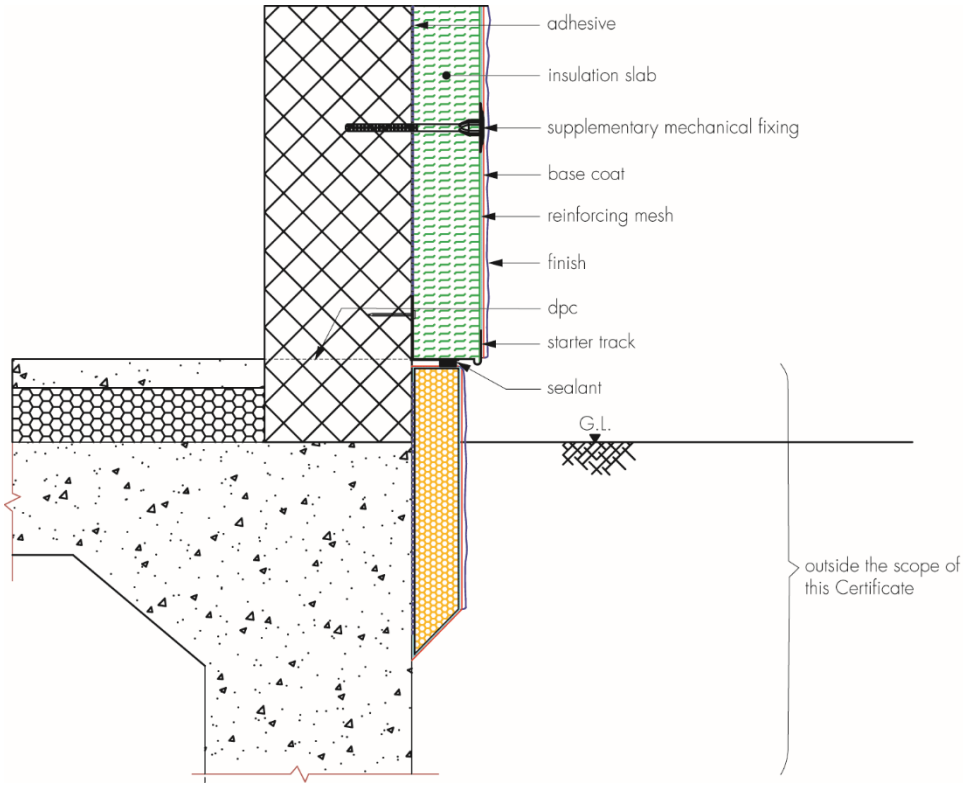
16.5 All rendering should be in accordance with the relevant recommendations of BS EN 13914-1 : 2016.

16.6 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

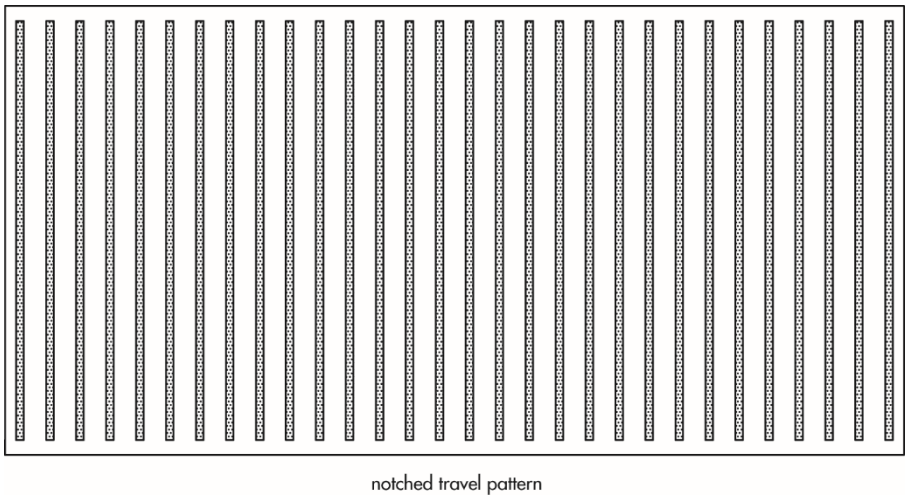
16.7 The starter track is secured to the external wall above the dpc using mechanical fixings at a minimum of 300 mm centres. Profiles and expansion joints are fitted as specified (see Figure 2).

Figure 2 Typical section of base profile



16.8 The adhesive is mixed in a suitable container using potable water and a high-power drill and paddle to create a paste-like mortar, ensuring there are no lumps in the mixed material, in accordance with the Certificate holder's instructions (see section 1.2). The material must rest for 5 minutes before being mixed again to the required consistency. The adhesive is applied over the face of the insulation slab using a notched trowel; at least 40% of the slab should be covered (see Figure 3).

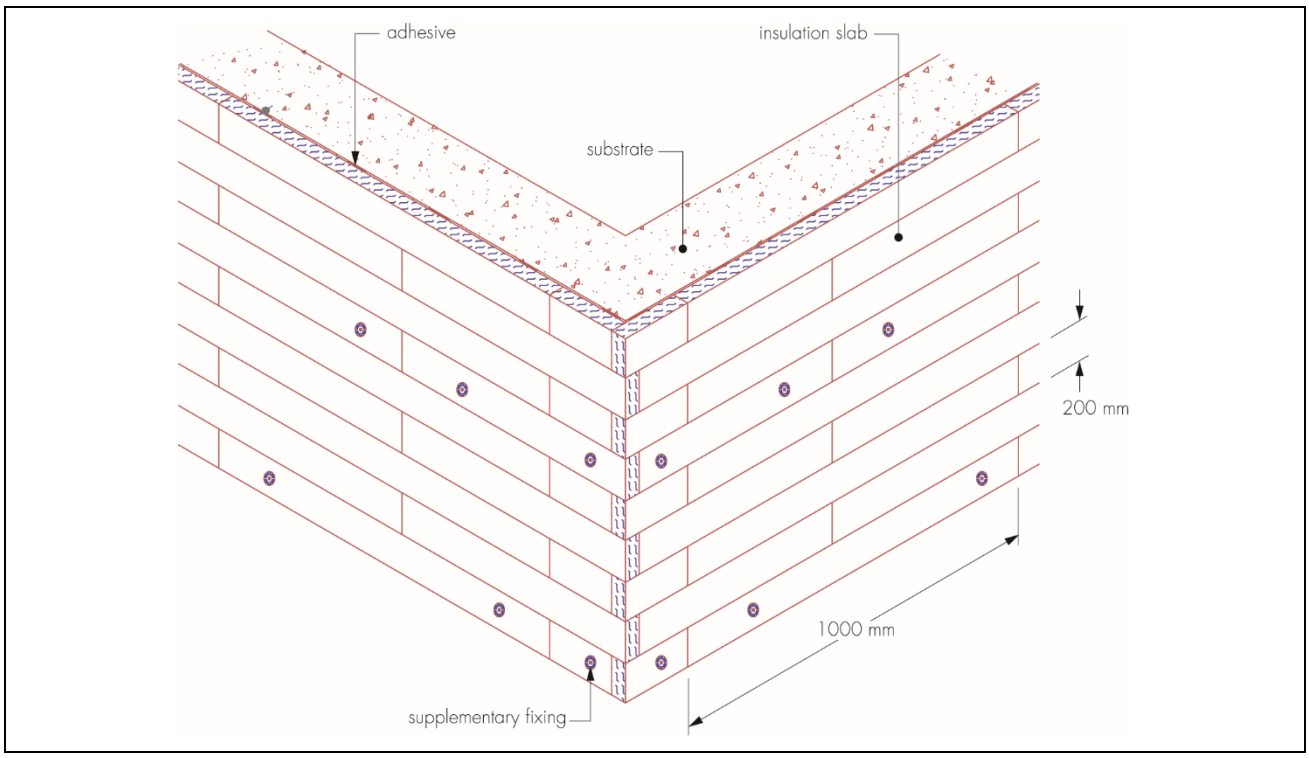
Figure 3 Insulation slabs adhesive pattern



16.9 The first run of insulation slabs is positioned on the base profile and pressed firmly against the wall. Care should be taken to ensure that all insulation slab edges are butted tightly together, and alignment checked as work proceeds (to achieve a flush finish).

16.10 Subsequent rows of slabs are positioned so that the vertical slab joints are staggered at the building corners and all slab joints overlap by a minimum of 200 mm (see Figure 4).

Figure 4 Typical arrangement of insulation slabs



16.11 Two supplementary mechanical fixings are applied through the insulation slab every fifth row, resulting in approximately 2 fixings per square metre. The mechanical fixings are inserted and tapped or screwed firmly into place, securing the slabs to the substrate.

16.12 Gaps between 1.5 and 7 mm must be filled with expanding polyurethane foam; gaps greater than 7 mm must be filled with strips of the lamella insulation material.

16.13 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, designed to prevent water ingress and incorporating drips to shed water clear of the systems, are also fitted but their performance is outside of the scope of this Certificate.

16.14 At all locations where there is a risk of insulant exposure (eg window reveals or eaves), the systems must be protected, eg by a minimum 40 mm adequate overhang or by purpose-made sub-sills, seals or flashing.

16.15 Building corners, door and window heads and jambs are formed using corner beads with mesh, in accordance with the Certificate holder's instructions. Alternatively, where corner beads are not specified, the reinforcing mesh must be continuous at corners and must not be lapped within 200 mm of a building corner.

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

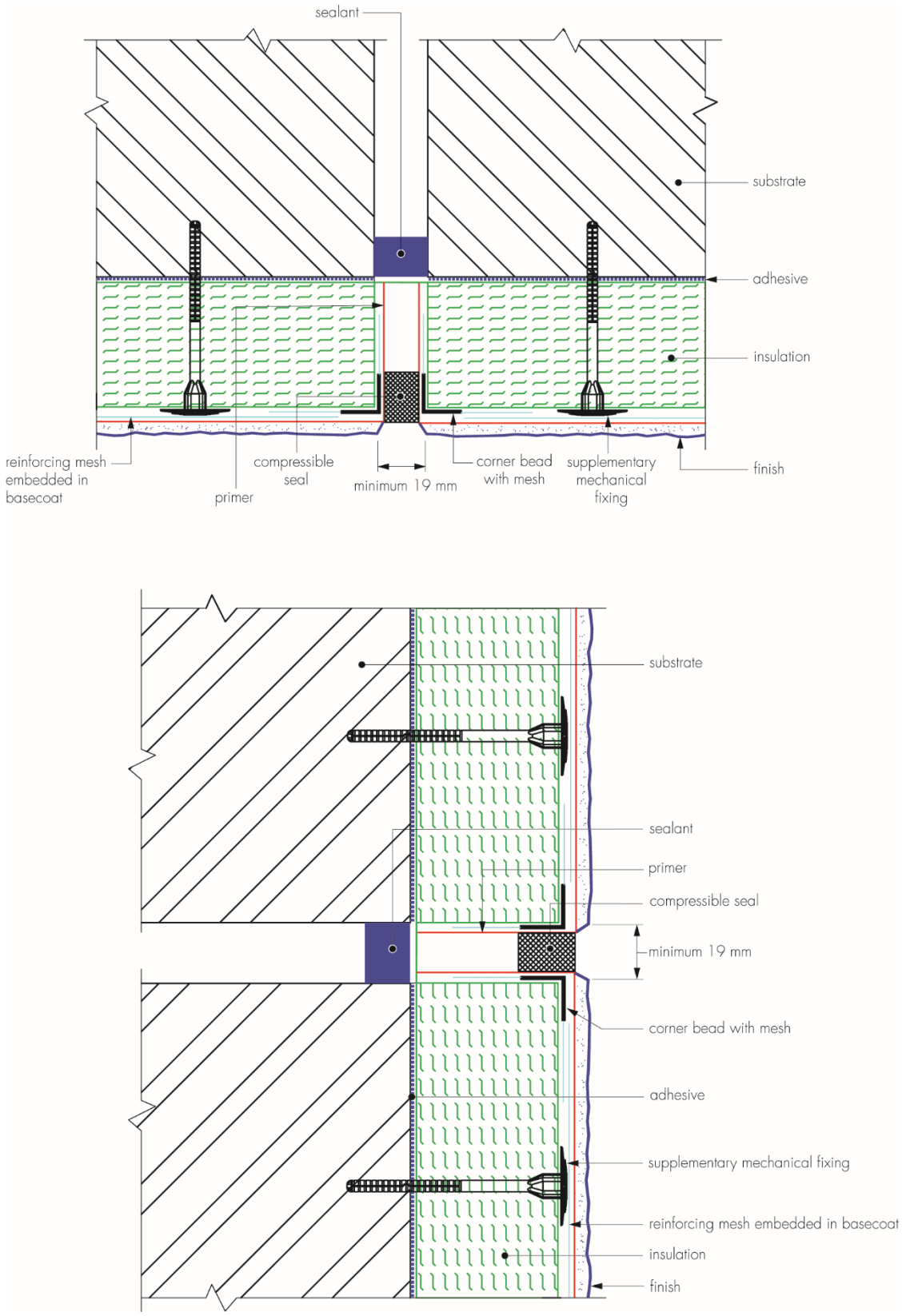
16.17 Window and door reveals should be insulated to minimise the effects of cold bridging. Where clearance is limited, strips of insulation should be installed to suit available margins and details.

16.18 After sufficient stabilisation of the installed insulation and prior to application of the basecoat (during which time the insulation should be protected from exposure to extreme weather conditions to prevent degradation), the surface of all the boards should be rasped smooth to remove any high spots or irregularities.

Movement joints

16.19 Movement joints should be incorporated where required. Existing structural expansion joints should be extended through to the surface of the insulation systems (see Figure 5).

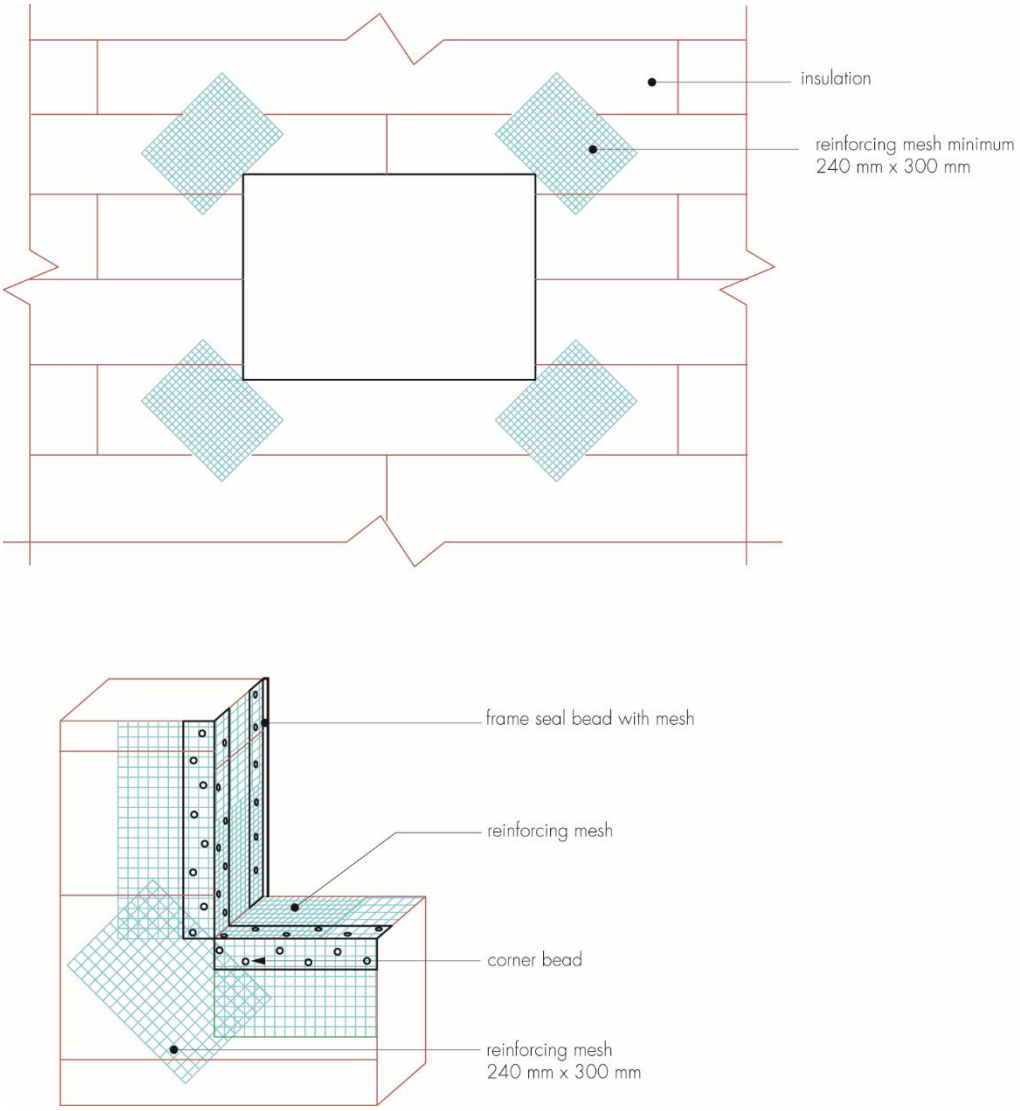
Figure 5 Example movement joint detail (horizontal and vertical)



16.20 Prior to the application of the basecoat, the frame seal beads and other relevant seals are positioned and installed at all openings (eg windows and doors), overhanging eaves, gas and electric meter boxes, wall vents or where the render abuts any other building material or surface.

16.21 To provide the necessary reinforcement, stress patches of reinforcing mesh (approximate size 240 by 300 mm) are applied with basecoat, diagonally over the insulation slabs at the corners of openings (see Figure 6).

Figure 6 Additional reinforcement at openings



Application of basecoat and reinforcing mesh

16.22 Using a steel trowel, a skim coat of basecoat is applied over the entire surface of insulation slabs, followed by a further coat applied, using an angled 8 mm notched trowel, to achieve a uniform thickness of approximately 2 to 3 mm once trowelled flat. The reinforcing mesh is applied and immediately embedded into the basecoat, ensuring the mesh is overlapped at joints by a minimum of 100 mm. A second layer of basecoat (1 to 2 mm thick, approximately) is applied, to obtain a smooth and uniform surface of approximately 3 to 5 mm overall thickness.

16.23 In situations where Dryvit Panzer mesh (heavy duty mesh) is required, a skim coat of basecoat is applied with a steel trowel over the entire surface of the insulation slabs, followed by a further layer of basecoat, to a uniform thickness of approximately 2 to 3 mm and the mesh embedded.

16.24 Dryvit Panzer mesh should not be overlapped but fitted with closely butted joints. The drying period for the basecoat will depend on weather conditions; however, the basecoat (with embedded mesh) should be allowed to dry/cure for at least 24 hours. Dryvit Standard Plus mesh should then be applied in the manner described in section 16.21.

Rendering and finishing

16.25 The basecoat must be allowed to dry/cure (24 to 48 hours) before the application of the primer/finish coat. Where specified, primers must be allowed to dry in accordance with the Certificate holder's instructions. The drying time is dependent on ambient conditions, but will typically be a minimum of 4 hours. After the primer is dry but prior to the application of the finishing coat, sealant or compressible seals should be applied as required, as defined in the project-specific site package and in accordance with the Certificate holder's instructions.

16.26 Once the primer is dry, the finishes and decorative coats are applied, using the methods described below.

Dryvit Stonemist and Dryvit Stonemist T

16.27 An initial skim coat is applied, using a stainless steel trowel. A second coat is then applied to the wet initial coat with a suitable spray machine (the Certificate holder can advise on suitable equipment). Alternatively, to achieve a flatter texture finish, the products may be applied with a stainless steel trowel.

Dryvit Ameristone

16.28 The product is applied in two passes (one horizontally, one vertically) to achieve a uniform finish, with a suitable spray machine.

Dryvit TerraNeo

16.29 The product is applied with a steel trowel, to an approximate 1.6 to 2.5 mm thickness. The surface is lightly floated using a plastic float, in a tight figure eight pattern. Floating over the finish lightly several times will bring the large mica flakes to the surface and enhance the granite appearance.

Dryvit Drytex Wood Effect

16.30 Dryvit Drytex Wood Effect render is applied to the required thickness (see section 1.2), using an 8 to 10 mm notched trowel to create a smooth finish and is left to dry for approximately 20 to 30 minutes. The imprint surface of a Dryvit Wood Mould is coated with a clean food-grade cooking oil and gently pressed onto the surface of the render, and then pressed with a 150 mm rubber roller to create the desired wood effect. The mould is immediately removed, and the process repeated until the entire wall area is covered. After 24 hours, shallow grooves are cut between the wood-effect imprints using a handheld narrow-bladed electric precision mini circular saw, to create the panel effect. The render is left to dry for a minimum of 48 hours and any oil is removed with a warm mild detergent before applying Dryvit Wood Prime with a suitable roller. Once the primer has dried, two coats of Dryvit Wood Glaze or Dryvit Wood Glaze Matt are applied using a suitable brush.

Dryvit Custom Brick Effect

16.31 The process entails coating the basecoat with Dryvit Demandit Smooth to create a mortar joint effect and then applying a self-adhesive cardboard template over it, and then the selected finishing coat, to form the brick effect. The acrylic finish is applied with a stainless steel trowel flush with the top surface of the template. An impressed texture appearance may be developed on the surface of the freshly applied acrylic finish by using a textured roller. Once dry, the template is removed to reveal the mortar joints. The cardboard template is for single use only; it provides joints of 10 mm width. The surface area of the joints must be less than 30%.

Other textured finishes

16.32 The other finishes are applied to the required thicknesses (see section 1.2) using a stainless steel trowel and finished with a plastic float to create the desired finish. The drying time is dependent on conditions. Dryvit Drytex is overcoated with Dryvit Demandit Smooth, Dryvit Silsta/Dryvit Silstar Pro or the Dryvit HyDroPhobic decorative coat using a brush, roller or a suitable spray machine.

16.33 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.

16.34 The systems should be allowed to dry thoroughly before painting any of the surrounding features.

16.35 At the top of walls, the systems must be protected by a coping, adequate overhang or adequately sealed, purpose-made flashing.

Figure 7 Typical roof eaves detail

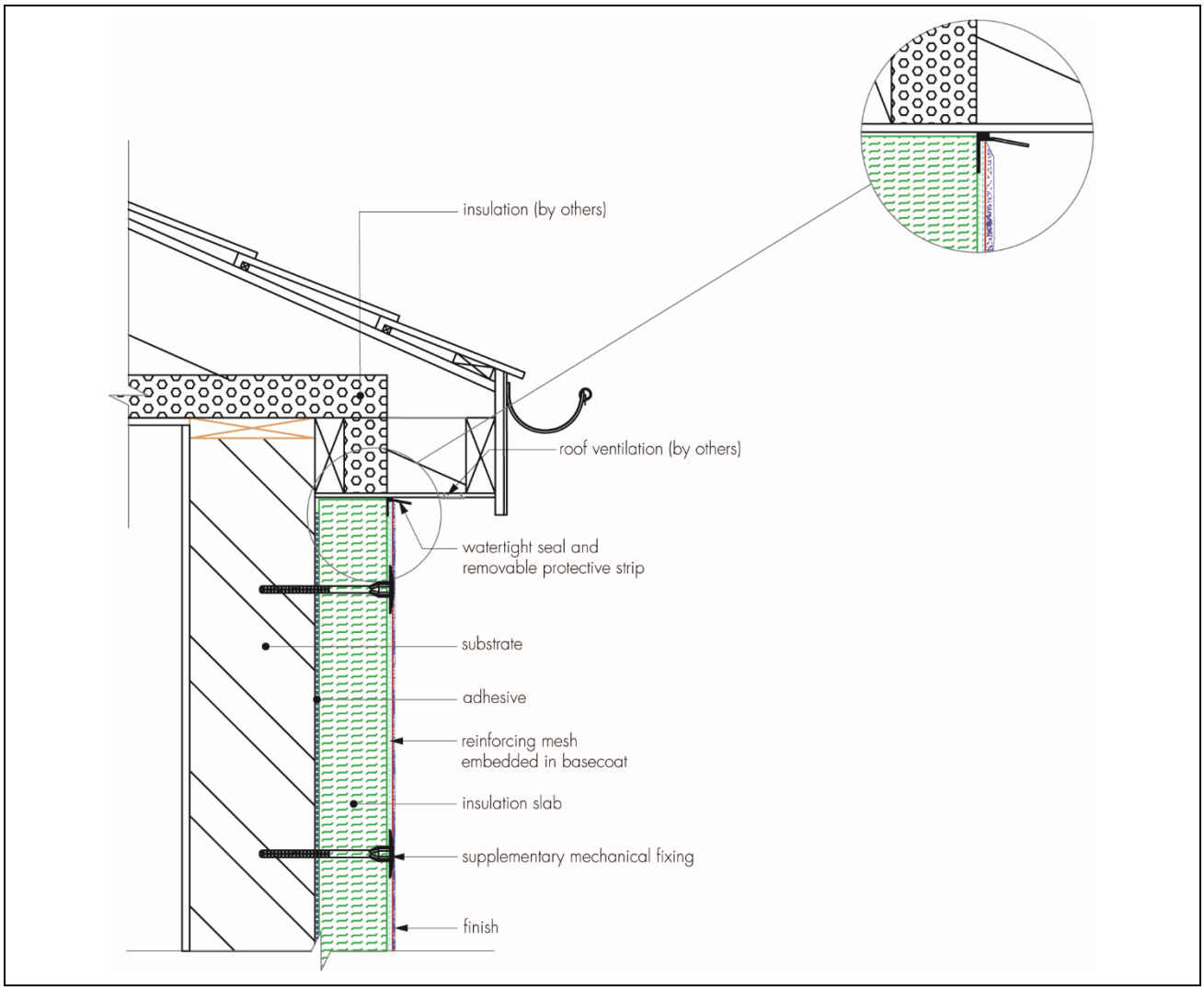


Figure 8 Insulated reveal detail

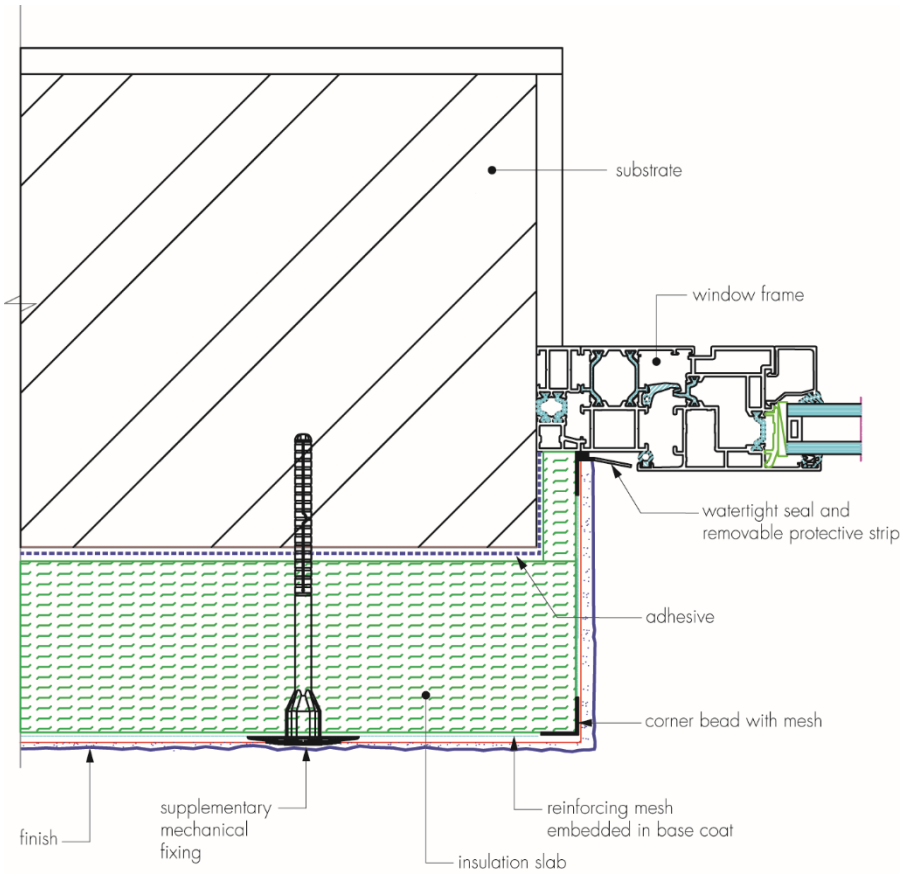


Figure 9 Insulated window head detail

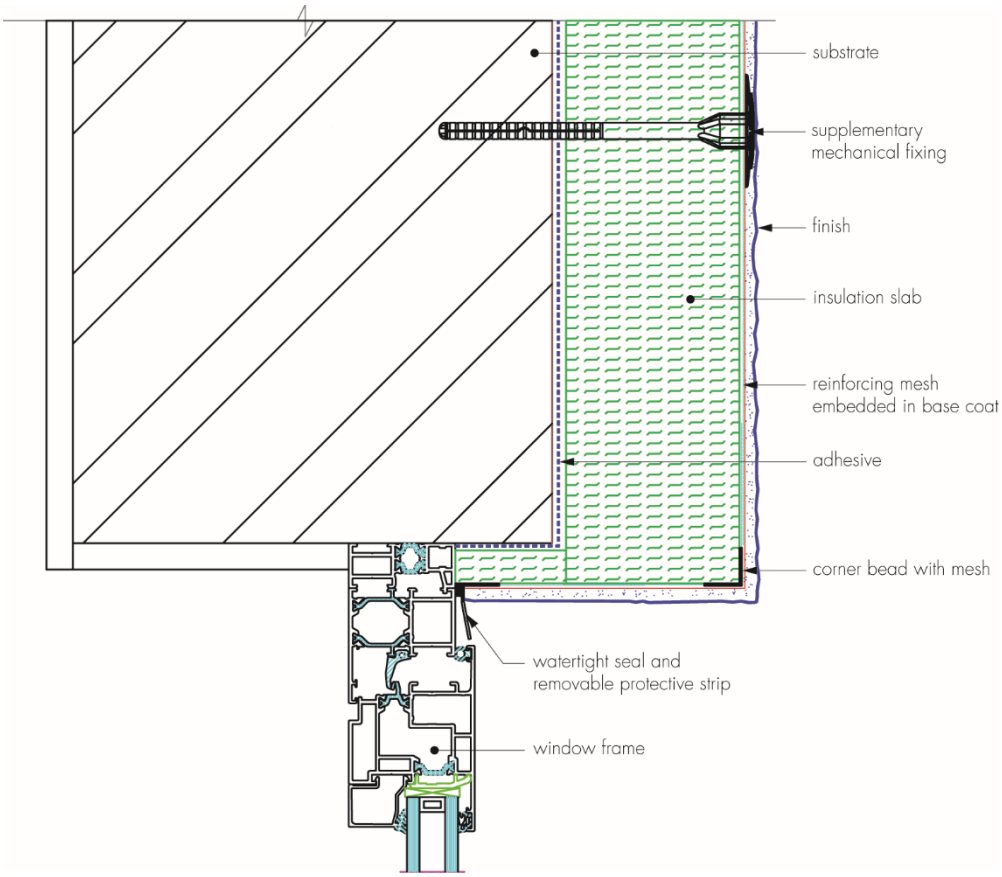
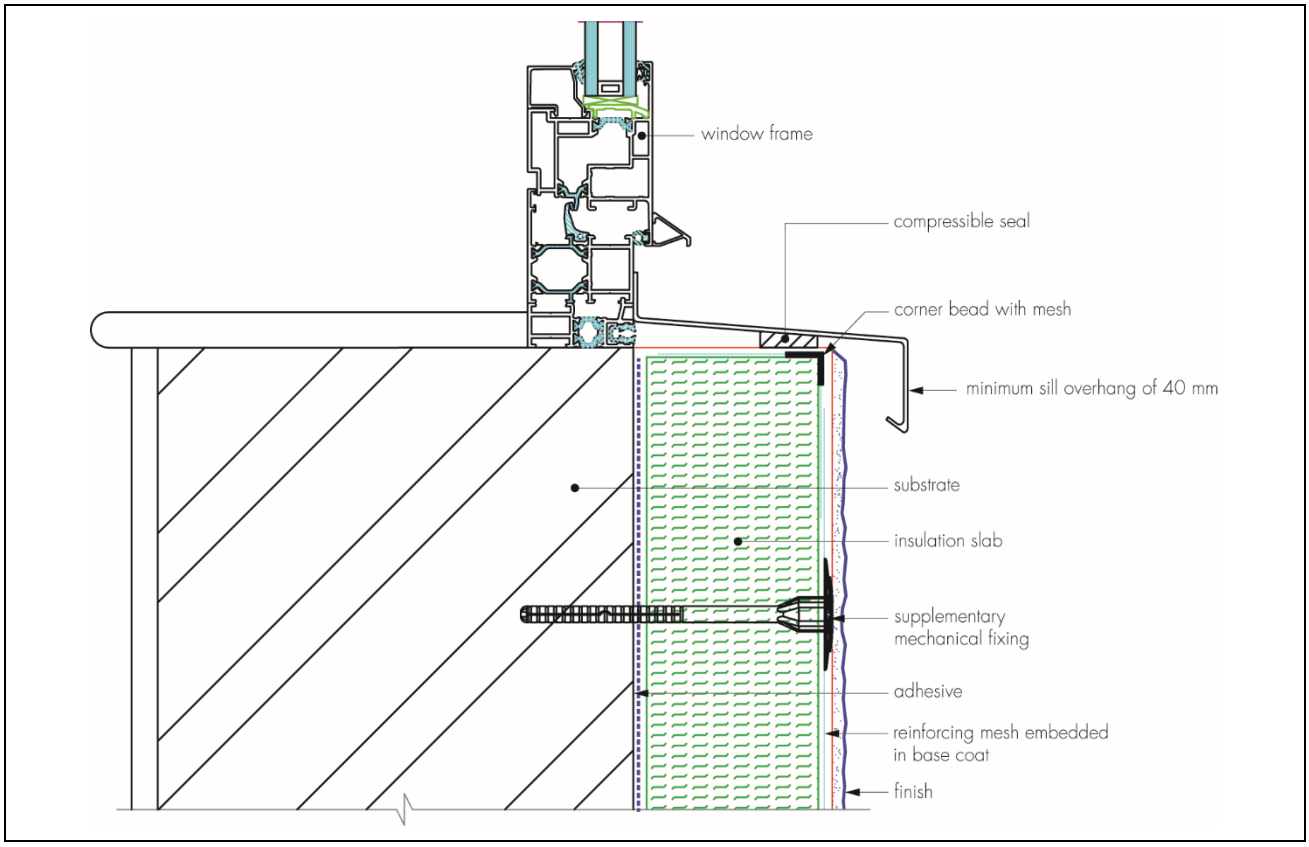


Figure 10 Window sill detail



Technical Investigations

17 Tests

An examination was made of data relating to:

- component characterisation
- water vapour permeability
- water absorption
- bond strength
- reaction to fire
- durability of finish coatings
- heat/spray cycling (hygrothermal)
- impact resistance.

18 Investigations

18.1 An examination was made of data relating to:

- reaction to fire performance of the systems
- thermal conductivity and the risk of interstitial condensation
- component characterisation
- durability of finishing coats
- component characterisation
- strength and stability of the systems, including wind load.

18.2 The practicability of installation and the effectiveness of detailing techniques were examined.

18.3 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.

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BS 8000-3 : 2001 *Workmanship on building sites — Code of practice for masonry*

BS EN 1990 : 2002 + A1 : 2005 *Eurocode — Basis of structural design*
NA to BS EN 1990 : 2002 + A1 : 2005 UK National Annex to *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 : 2014 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 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 13162 : 2012 + A1 : 2015 *Thermal insulation products for buildings — Factory made mineral wool (MW) products — Specification*

BS EN 13501-1 : 2007 + A1 : 2009 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

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

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*

ETAG 004 : 2013 *Guideline for European Technical Approval of Plastic Anchors for fixing of External Thermal*

PD 6697 : 2019 *Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2*

19 Conditions

19.1 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
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19.3 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.

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

19.5 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:

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