

Fassa S.r.l.

Via Lazzaris, 3
31027 Spresiano (TV)
Italy

Tel: +39 (0) 4227222 Fax: +39 (0) 422887509
e-mail: fassa@fassabortolo.it
website: www.fassabortolo.it



Agrément Certificate
14/5091
Product Sheet 1

FASSATHERM EXTERNAL WALL INSULATION SYSTEMS

FASSATHERM BONDED EPS EXTERNAL WALL INSULATION SYSTEMS

This Agrément Certificate Product Sheet⁽¹⁾ relates to the Fassatherm Bonded EPS External Wall Insulation Systems comprising white or grey EPS insulation boards, adhesively fixed with supplementary mechanical fixings, with a reinforced basecoat and render finishes. They are suitable for use on the outside of external walls in new and 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 meeting the requirements of the national Building Regulations (see section 6).

Strength and stability — the systems can adequately resist wind loads and has sufficient resistance to impact-damage (see section 7).

Behaviour in relation to fire — the systems have a reaction to fire classification of B-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 the 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

Brian Chamberlain

Head of Approvals — Engineering

Claire Curtis-Thomas

Chief Executive

Date of Second issue: 20 January 2015

Originally certificated on 11 February 2014

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

British Board of Agrément
Bucknalls Lane
Watford
Herts WD25 9BA

©2015

tel: 01923 665300
fax: 01923 665301
clientservices@bba.star.co.uk
www.bbacerts.co.uk

Regulations

In the opinion of the BBA, the Fassatherm Bonded EPS External Wall Insulation Systems, if installed, used and maintained in accordance with this Certificate, will 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 section 7.4 of this Certificate.
Requirement: B4(1)	External fire spread
Comment:	The systems can satisfy 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 sections 4.3 and 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 11.1, 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 6.2 and 6.3 of this Certificate.
Regulation: 7	Materials and workmanship
Comment:	The systems are acceptable. See section 13.1 and the <i>Installation</i> part of this Certificate.
Regulation: 26	CO₂ 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 6.2 and 6.3 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 <i>Installation</i> 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 section 7.4 of this Certificate.
Standard:	2.6 Spread to neighbouring buildings
Comment:	The systems can satisfy 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 8.6 of this Certificate.
Standard:	2.7 Spread on external walls
Comment:	The systems can satisfy this Standard, and are acceptable for use more than one metre from a boundary, with reference to clauses 2.7.1 ⁽¹⁾⁽²⁾ and 2.7.2 ⁽²⁾ . See sections 8.1 to 8.6 of this Certificate.
Standard:	3.10 Precipitation
Comment:	The systems will contribute to a construction satisfying this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.2 ⁽¹⁾⁽²⁾ . See sections 4.3 and 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 6.2 and 6.3 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

Regulation:	23	Fitness of materials and workmanship
Comment:		The systems are acceptable. See section 13.1 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		Walls insulated with the systems will satisfy this Regulation. See sections 4.3 and 10.1 of this Certificate.
Regulation:	29	Condensation
Comment:		Walls insulated with the systems will satisfy the requirements of this Regulation. See section 11.4 of this Certificate.
Regulation:	30	Stability
Comment:		The systems can sustain and transmit wind loads to the substrate wall. See section 7.4 of this Certificate.
Regulation:	36(a)	External fire spread
Comment:		The systems have a 'low risk' surface and can satisfy this Regulation. See sections 8.1 to 8.4 of this Certificate.
Regulation:	39(a)(i)	Conservation measures
Regulation:	40	Target carbon dioxide emission rate
Comment:		The systems can contribute to satisfying these Regulations. See sections 6.2 and 6.3 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 3 *Delivery and site handling* (3.2 and 3.4) of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of the Fassatherm Bonded EPS External Wall Insulation Systems, provided they are installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards, Part 6 Superstructure, Chapter 6.9 Curtain Walling and Cladding*.

Technical Specification

1 Description

1.1 Fassatherm Bonded EPS External Wall Insulation Systems consists of insulation boards which are fixed to the external surface of the wall using adhesive plus supplementary mechanical fixings (see Figure 1). The adhesive layer should be at least 50% of the bonded area of the insulation board. The mechanical fixings should be applied at a rate of 4 fixings per m² for the 1200 mm by 600 mm boards and 6 fixings per m² for the 1000 mm by 500 mm boards. The boards are protected by a basecoat containing glassfibre reinforcement mesh. After allowing the basecoat to dry, a primer and topcoat are applied to the required thickness.

1.2 The systems are made up of the following components:

Adhesives

A range of cement-based adhesives, supplied as powder to which clean water is added and should cover at least 50% of the bonded area of the insulation board. The range comprises:

- Fassatherm A50 adhesive, requiring the addition of approximately 5 litres of clean water per 25 kg of adhesive
- Fassatherm A96 adhesive, requiring the addition of approximately 6.5 litres of clean water per 25 kg of adhesive
- Fassatherm AL88 adhesive, requiring the addition of approximately 8 litres of clean water per 25 kg of adhesive.

Insulation

White and graphite-enhanced (grey) expanded polystyrene (EPS) insulation boards – 1200 mm by 600 mm or 1000 mm by 500 mm, in a range of thicknesses between 30 mm to 300 mm, with a nominal density of 15 kg·m⁻³ for white EPS and 17 kg·m⁻³ for grey EPS, minimum compressive strength of 70 kN·m⁻² and tensile strength perpendicular to the faces of 100 kN·mm⁻². Boards are manufactured in accordance with BS EN 13163 : 2012, and classified as Euroclass E in accordance with BS EN 13501-1 : 2007.

Fixings (supplementary)

Mechanical fixings — anchors with adequate length to suit the substrate and insulation thickness and selected from:

- EJOT H1-ECO (Combi Fix) — polyethylene, PE-HD with an electro-galvanized pins and a polyamide, PA GF 50 mounting plug
- EJOT STR U (Top Fix) — polyethylene, PE-HD with stainless steel or electro-galvanized screws
- EJOT NTK U (Telefix) — polyethylene, PE-HD with a polyamide, PA GF 50 centre pin.

Basecoat

- Fassatherm A50 basecoat, a cement-based powder requiring the addition of approximately 5 litres of clean water per 25 kg of basecoat. The basecoat is applied to a thickness of between 3 mm and 5 mm and is for use with any render finish
- Fassatherm A96 basecoat, a cement-based powder requiring the addition of approximately 6.5 litres of clean water per 25 kg of basecoat. The basecoat is applied to a thickness of between 4 mm and 6 mm and is for use with any render finish
- Fassatherm AL88 basecoat, cement-based powder requiring the addition of approximately 8 litres of clean water per 25 kg of basecoat. The basecoat is applied to a thickness of between 4 mm and 6 mm and is for use with render finish RTA 549 only.

Reinforcement

Fassanet 160 — 1.0 m wide alkali-resistant glassfibre mesh with a nominal weight of 155 g·m⁻² and mesh size of 3.8 mm by 4.1 mm.

Primers

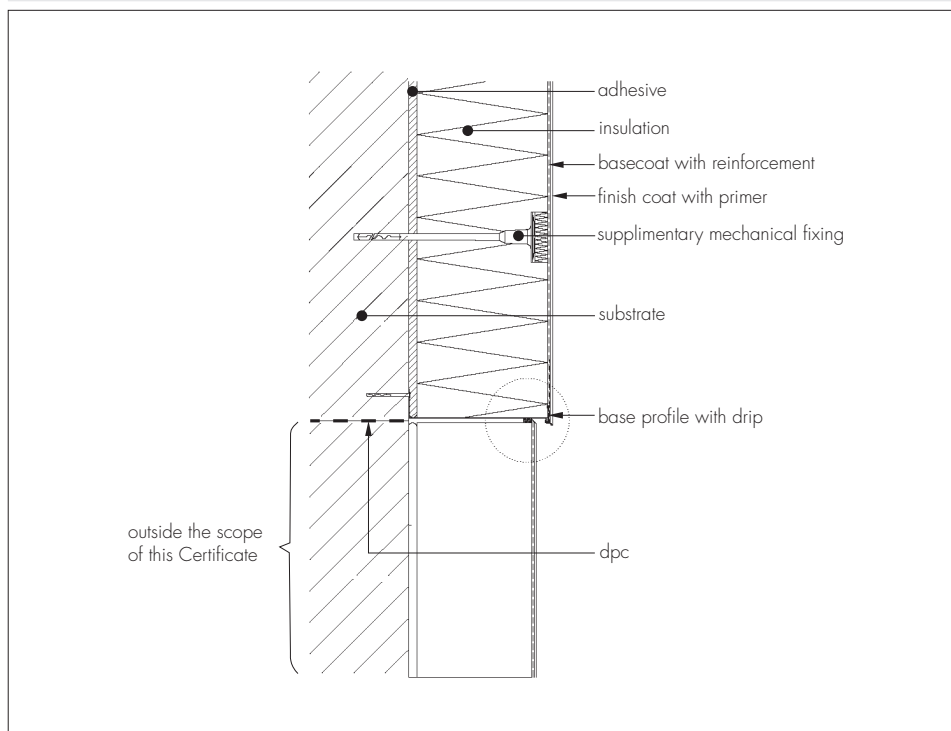
- Fassatherm FA 249 — liquid acrylic primer to which water is added, for use with Fassatherm RTA 549 render
- Fassatherm FS 412 — liquid silicone primer to which water is added, for use with Fassatherm RSR 421 render
- Fassatherm F328 — liquid silicate primer to which water is added, for use with Fassatherm R336 render
- Fassatherm FX 526 — liquid acrylic/siloxane primer to which water is added, for use with Fassatherm RX 561 render.

Render finishes

- Fassatherm RTA 549 — an acrylic render available in a range of colours, with 1.0 mm, 1.5 mm, 2.0 mm and 3.0 mm grain sizes⁽¹⁾
- Fassatherm RSR 421 — a silicone render available in a range of colours, with 1.0 mm, 1.5 mm, 2.0 mm and 3.0 mm grain sizes⁽¹⁾
- Fassatherm R336 — a silicate render available in a range of colours, with 1.0 mm, 1.5 mm, 2.0 mm and 3.0 mm grain sizes⁽¹⁾
- Fassatherm RX 561 — an acrylic/siloxane render available in a range of colours, with 1 mm, 1.5 mm and 2.0 mm grain sizes⁽¹⁾.

(1) Thickness is regulated by the grain size.

Figure 1 Fassatherm Bonded EPS External Wall Insulation Systems



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

- profiles — a range of standard profiles (beading) for wall base, end stop, corner mesh, expansion joints. Profiles are available in aluminium or PVC
- profile fixings — driven pins with plastic expansion sleeves, as approved by the Certificate holder
- algae and fungi wash
- silicone sealant
- expanding tape — polyurethane soft foam tape for sealing around window sills
- waterproofing profile — PVC profile with an integral polyurethane tape, used to waterproof around windows and doors
- rigid supports for fixing elements outside the insulation. Supports are available in polypropylene, EPS or polyurethane
- extruded polystyrene insulation boards.

2 Manufacture

2.1 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 Fassa S.r.l. has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by IQNet (Certificate IT-67055).

3 Delivery and site handling

3.1 The insulation boards are 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
Fassatherm adhesives and Fassatherm basecoats	25 kg bag
Supplementary mechanical fixings	boxed by manufacturer
Reinforcement mesh	1 m wide rolls x 50 m length
Fassatherm primers	5 litre or 16 litre tubs
Fassatherm render finishes	25 kg tubs

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

3.4 The boards should be protected from prolonged exposure to sunlight, either by storing opened packs under cover or re-covering with opaque polythene sheeting. The boards should not be exposed to open flame or other ignition sources.

3.5 Care must be taken when handling the boards to avoid contact with solvents or materials containing volatile organic components.

3.6 The powder adhesive and render must be stored in dry conditions, off the ground, and protected from moisture. Contaminated materials should be discarded.

3.7 The primers and renders must be stored in tightly-closed original packaging in cool dry conditions and protected from excessive heat and frost at times.


Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Fassatherm Bonded EPS External Wall Insulation Systems.

4 General

4.1 Fassatherm Bonded EPS External Wall Insulation Systems, when installed in accordance with this Certificate, are effective in reducing the thermal transmittance (U value) of external masonry 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 system. Only details specified by the Certificate holder should be used.

4.2 The systems are for application to the outside of external walls of masonry, or dense or no-fines concrete construction, on new or existing domestic and non-domestic buildings (with or without existing render) up to 18 metres in height. Prior to installation of the system, wall surfaces should comply with section 14 of this Certificate.

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

- BS EN 1996-2 : 2006, in that 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
- BS 8000-3 : 2001.

4.4 Other new buildings, not subject to regulatory requirements should also be built in accordance with the Standards identified in section 4.3.

4.5 The systems will improve the weather resistance of a wall and provide a decorative finish. However, it 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.

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

4.7 The fixing of rainwater goods, satellite dishes, clothes lines, hanging baskets and similar items is outside the scope of this Certificate.

4.8 External plumbing should be removed before installation and alterations made to underground drainage, where appropriate, to accommodate repositioning of the plumbing to the finished face of the system.

4.9 It is essential that these 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 specialised contractors who have successfully undergone training and registration by the Certificate holder (see section 14).

Note: The BBA operates a UKAS Accredited Approved Installer Scheme for external wall insulation; 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 : 2007 and BRE Report BR 443 : 2006, using the declared thermal conductivities values (λ_D) of the insulations given in Table 2.

Table 2 Declared thermal conductivities values (λ_D) and available thicknesses

Insulation types	Thickness (mm)	Thermal conductivity ($W \cdot m^{-1} \cdot K^{-1}$)
EPS 70 white	30 to 300	0.038
EPS 70 grey		0.032


 6.2 The U value of a completed wall will depend on the insulation type and 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 3, and are based on the thermal conductivities given in Table 2.

Table 3 Insulation thickness required to achieve design U values^{1)|2)|3)} given in the national Building Regulations

U value ⁴⁾ (W·m ⁻² ·K ⁻¹)	Thickness of Insulation (mm)			
	215 mm brickwork, $\lambda = 0.56 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$		200 mm dense blockwork $\lambda = 1.75 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$	
	EPS 70 white 038	EPS 70 grey 032	EPS 70 white 038	EPS 70 grey 032
0.18	200	170	210	180
0.19	190	160	200	170
0.25	140	120	150	130
0.26	130	110	140	120
0.28	120	100	130	110
0.30	110	100	120	100
0.35	90	80	100	90

- (1) Wall construction inclusive of 13 mm plaster ($\lambda = 0.57 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), brickwork (protected) with 17.1% mortar or dense blockwork with 6.7% mortar ($\lambda = 0.88 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$). Declared thermal conductivity of insulation values (λ_D) is as shown in Table 2. An adhesive layer, 5 mm thick with $\lambda = 0.43 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ covering 50% of the area is also included, and a board emissivity of 0.9, together with an external render thickness of 4 mm with $\lambda = 1 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$.
- (2) Calculations based on a bonded system that included 6 polyethylene fixings per square metre with a point thermal transmittance ($X_p = 0.002 \text{ W}\cdot\text{K}^{-1}$) per steel pin. Use of other types of fixings should be calculated in accordance with BS EN ISO 6946 : 2007. A gap correction (ΔU^g) 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 0.11 to 0.13 W·m⁻²·K⁻¹ depending on insulation type and wall type.

6.3 The systems can maintain, or contribute to maintaining, continuity of thermal insulation at junctions between external walls and other elements. Details shown in section 16 will allow use of the default ψ -values (Psi) for Accredited Construction Details in Emission Rate calculations to SAP 2009 or the Simplified Building Energy Model (SBEM). Detailed guidance can be found in the documents supporting the national Building Regulations.


7 Strength and stability

General

7.1 When installed on suitable walls, the systems can adequately transfer to the wall the self-weight and negative (suction) and positive (pressure) wind loads normally experienced in the United Kingdom.

7.2 Positive wind load is transferred to the substrate wall directly via bearing and compression of the render and insulation.

7.3 Negative wind pressure is resisted by the bond between each component. The insulation boards are retained by the adhesive and supplementary fixings.

7.4  The wind loads on the wall should be calculated in accordance with BS EN 1991-1-4 : 2005. Special consideration should be given to locations with high wind-load pressure coefficients, as additional fixings may be necessary. In accordance with BS EN 1990 : 2002, it is recommended that a load factor of 1.5 is used to determine the ultimate wind load to be resisted by the systems.

7.5 Assessment of structural performance for individual installations should be carried out by a suitably qualified and experienced individual to confirm that:

- the substrate wall has adequate strength to resist the additional loads that may be applied as a result of installing the systems, ignoring any positive contribution that may occur from the systems
- the proposed systems (with associated supplementary fixing layout) provides adequate resistance to negative wind loads
- an appropriate number of site-specific pull-off (bond strength) tests have been conducted on the substrate of the building to determine the minimum resistance to failure of the bond strength.

7.6 The bond strength between the adhesive and the substrate should be determined on site and taken as the mean of the five results divided by a safety factor of nine and multiplied by the minimum bond area.

7.7 The minimal admissible calculated bonded surface area (S) for the systems is 50%⁽¹⁾, in accordance with ETAG 004 : 2013.

(1) This bonded area should be increased if the bond strength between the adhesive and the substrate is less than the ultimate wind load.

7.8 The initial adhesive bond between the insulation and the substrate will have a minimum failure resistance of $\geq 30 \text{ KN} \geq \text{m}^2$. For calculating the design resistance, a minimum bonded area should be considered and a safety factor of nine applied.

7.9 The number of supplementary fixings, and the span between them, should be determined by the systems designer. The mechanical fixings, which must be covered by an appropriate ETA, will initially transfer the weight of the systems to the substrate wall. The fixing must be selected to give adequate support to the weight of the systems at the minimum spacing.

Impact resistance

7.10 Hard body impact tests were carried out in accordance with ETAG 004 : 2000 (amended 2013). The systems are suitable for the Use Categories listed in Table 4 of this Certificate.

Table 4 Fassatherm Bonded EPS External Wall Insulation Systems impact resistance

Render	Use Category ⁽¹⁾
Fassatherm RTA 549	I
Fassatherm RSR 421, Fassatherm R336, Fassatherm RX 561	II

(1) These categories are defined in ETAG 004 : 2000 (amended 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 classification is B-s1, d0 in accordance with BS EN 13501-1 : 2007 (see Table 5).

Table 5 Fire classification

Basecoat	Render	Classification
Fassatherm A50 or Fassatherm A96 basecoats	Fassatherm RTA 549, Fassatherm RSR 421, Fassatherm R336 and Fassatherm RX 561	B-s1, d0
Fassatherm AL88 basecoat	Fassatherm RTA 549	

8.2 The fire classification applies to the full range of thicknesses covered by this Certificate.

8.3 The systems are restricted for use in buildings up to 18 metres in height.

8.4 For houses in Scotland, and for all buildings in England and Wales and Northern Ireland, the systems are considered suitable for use on, or at any distance from, the boundary.

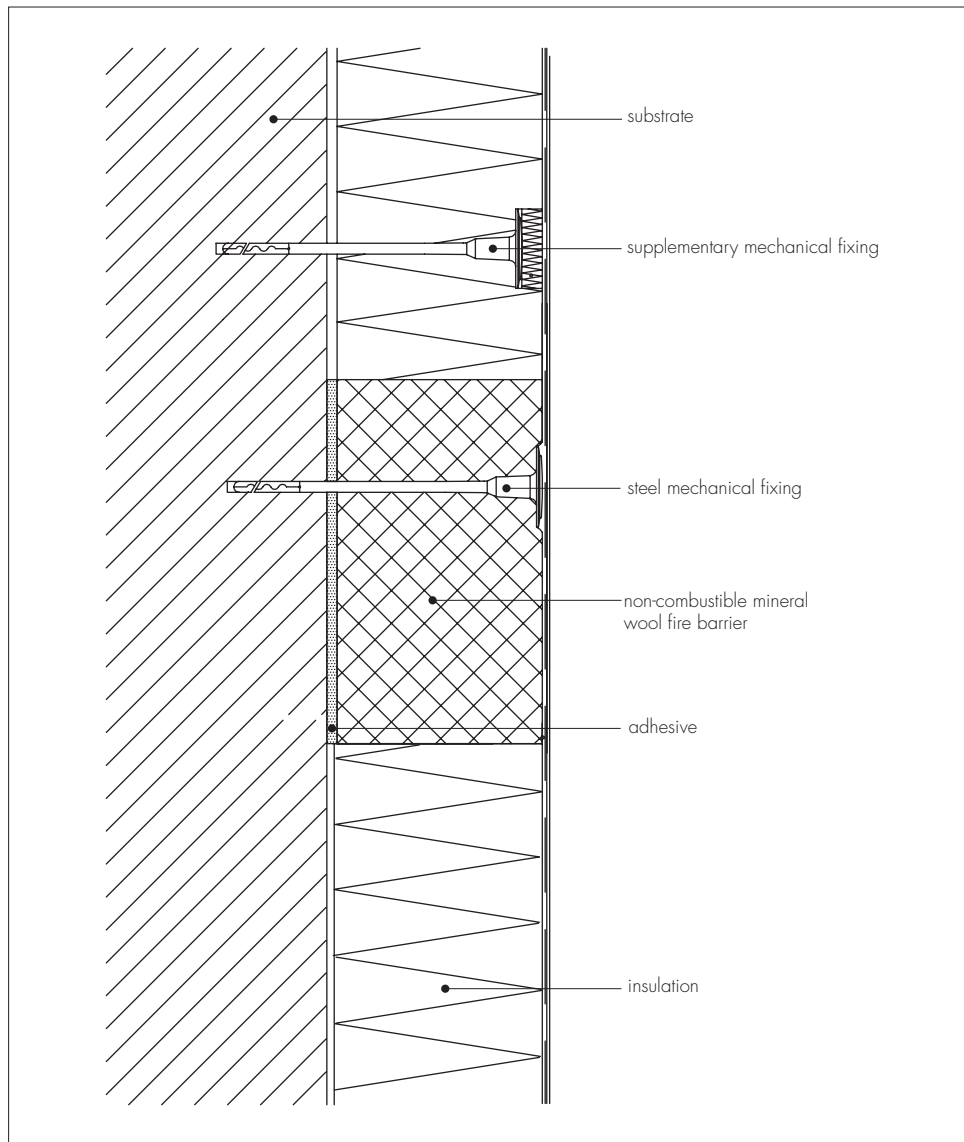


8.5 For flats and maisonettes and non-domestic building in Scotland, the systems are suitable only for use more than one metre from the boundary.

8.6 The systems are not classified as 'non-combustible' therefore, calculations for unprotected areas may apply dependent on the fire resistance characteristics of the wall.

8.7 For application to second storey walls and above, it is recommended that the designer considers at least one stainless steel fixing per square metre and fire barriers in line with compartment walls and floors as advised in BRE Report BR 135 : 2013 (see Figure 2 of this Certificate).

Figure 2 Fire barrier details



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 met:

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 is no sign of dampness on the inner surface of the substrate other than that 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 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 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 $0.7 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ at any point and the junctions with other elements and openings comply with section 6.3 of this Certificate.



11.3 Walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $1.2 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ 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 and Annexes D and G.

11.5 The water vapour resistance (μ) factor (for the insulation boards) and equivalent air layer thickness (s_d) (for the render systems) is shown in Table 6 of this Certificate.

Table 6 Water vapour resistance factor and equivalent air layer thickness

	s_d (m)	(μ)
Expanded polystyrene – insulation thickness 30 mm to 300 mm (white and grey EPS 70)	—	20 – 40 ⁽¹⁾
Rendering system : Fassatherm A50 basecoat ⁽²⁾ + primer + finish coat (specific particle size), as indicated below	0.445	—
Fassatherm FA 249 + Fassatherm RTA 549 (particle size 1.0 mm)	0.461	—
Fassatherm FA 249 + Fassatherm RTA 549 (particle size 1.5 mm)	0.537	—
Fassatherm FA 249 + Fassatherm RTA 549 (particle size 2.0 mm)	0.561	—
Fassatherm FA 249 + Fassatherm RTA 549 (particle size 3.0 mm)	0.406	—
Fassatherm FS 412 + Fassatherm RSR 421 (particle size 1.0 mm)	0.433	—
Fassatherm FS 412 + Fassatherm RSR 421 (particle size 1.5 mm)	0.434	—
Fassatherm FS 412 + Fassatherm RSR 421 (particle size 2.0 mm)	0.508	—
Fassatherm FS 412 + Fassatherm RSR 421 (particle size 3.0 mm)	0.326	—
Fassatherm F238 + Fassatherm R336 (particle size 1.0 mm)	0.510	—
Fassatherm FX 526 + Fassatherm RX 561 (particle size 1.0 mm)		
Rendering system : Fassatherm A96 basecoat ⁽³⁾ + primer + finish coat (specific particle size), as indicated below	0.299	—
Fassatherm FA 249 + Fassatherm RTA 549 (particle size 1.0 mm)	0.333	—
Fassatherm FA 249 + Fassatherm RTA 549 (particle size 1.5 mm)	0.416	—
Fassatherm FA 249 + Fassatherm RTA 549 (particle size 2.0 mm)	0.421	—
Fassatherm FA 249 + Fassatherm RTA 549 (particle size 3.0 mm)	0.290	—
Fassatherm FS 412 + Fassatherm RSR 421 (particle size 1.0 mm)	0.281	—
Fassatherm FS 412 + Fassatherm RSR 421 (particle size 1.5 mm)	0.325	—
Fassatherm FS 412 + Fassatherm RSR 421 (particle size 2.0 mm)	0.410	—
Fassatherm FS 412 + Fassatherm RSR 421 (particle size 3.0 mm)	0.215	—
Fassatherm F238 + Fassatherm R336 (particle size 1.0 mm)	0.510	—
Fassatherm FX 526 + Fassatherm RX 561 (particle size 1.0 mm)		
Rendering system: Fassatherm Al88 basecoat ⁽³⁾ + primer + finish coat (specific particle size), as indicated below		
Fassatherm FA 249 + Fassatherm RTA 549 (particle size 1.0 mm)	0.293	—
Fassatherm FA 249 + Fassatherm RTA 549 (particle size 1.5 mm)	0.311	—
Fassatherm FA 249 + Fassatherm RTA 549 (particle size 2.0 mm)	0.395	—
Fassatherm FA 249 + Fassatherm RTA 549 (particle size 3.0 mm)	0.411	—

(1) It is recommended that the lower figure is used when assessing the interstitial condensation risk.

(2) Applied to a thickness of 3 mm.

(3) Applied to a thickness of 4 mm.

12 Maintenance and repair



12.1 Regular checks should be made on the installed system, including:

- 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 will have a service life of not less than 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 finishes may break up the flow of water on the surface and reduce the risk of discoloration by water runs. The finish may become discoloured with time, the rate depending on locality, 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.

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, doors and at eaves
- damp-proof course (dpc) level
- exact position of expansion joints, if required
- areas where flexible sealants must be used
- any alterations to external plumbing
- the position of fire barriers.

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 pull-out resistance of the proposed supplementary mechanical fixings. An assessment and recommendation is made on the type and number of fixings required to withstand the building's expected wind loading based on calculations using the test data and pull-out resistance (see section 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 tool spanning the storey height. Any excessive irregularities, ie greater than 10 mm, must be made good prior to installation, to ensure that the insulation boards are installed with a smooth, in-plane finished surface.

14.4 Where surfaces are covered with an existing rendering, 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 sills must be fitted to extend beyond the finished face of the system. New buildings should incorporate suitably deep sills.

14.6 Internal wet work, eg screeding or plastering, should be completed and allowed to dry prior to the application of the system.

14.7 All modifications, such as provision for fire barriers (see section 8) and necessary repairs to the building structure, must be completed before installation of the systems commences.

15 Approved Installers

Application of the system, within the context of this Certificate, must be carried out by installers approved by the Certificate holder. A Certificate holder approved 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 Application is carried out in accordance with the Certificate holder current installation instructions.

16.2 Weather conditions should be monitored to ensure correct application and curing conditions. The systems should not be applied at temperatures below 5°C or above 30°C, if exposure to frost is likely or in damp/wet conditions and the render must be protected from rapid drying.

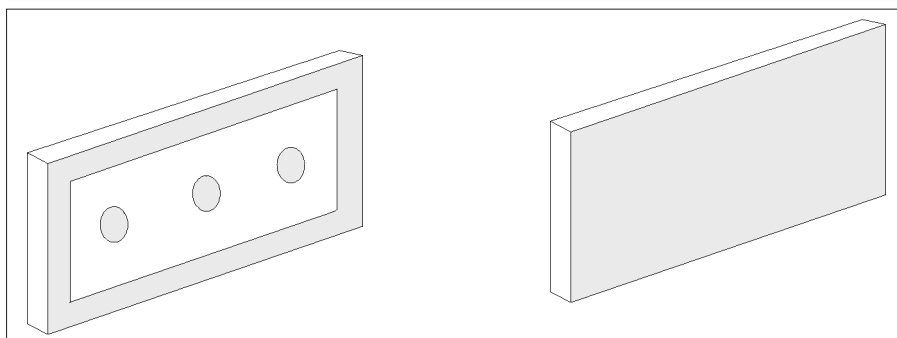
16.3 All rendering should be in accordance with the relevant recommendations of BS EN 13914-1 : 2005.

Positioning and securing insulation boards

16.4 The base profile 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.

16.5 The adhesive is mixed in a suitable container using potable water and a high power drill and mixer spiral to create a paste-like mortar, whilst ensuring there are no lumps in the mixed material. The insulation boards are positioned on the starter track and bonded to the wall by applying the approved adhesive to the boards using the strip and dot method or full surface application. A circumferential strip of adhesive at least 5 to 10 cm wide is applied to the insulation boards. Three evenly distributed patches of adhesive 5 to 10 cm in diameter are then applied to the boards so that an adhesive surface of at least 50% is achieved (see Figure 3). The insulation panel should be immediately placed on the substrate and pressed into place.

Figure 3 Insulation boards adhesive pattern



16.6 Subsequent rows of boards are positioned so that the vertical board joints are staggered and overlapped at the building corners.

16.7 Care must be taken to ensure that all insulation board edges are butted tightly together, and alignment is checked as work proceeds. Gaps shall be filled with strips of the insulation material.

16.8 A minimum of 4 or 6 mechanical fixings per square metre should be installed for board sizes 1200 mm by 600 mm and 1000 mm by 500 mm respectively, unless otherwise specified in the project specific design.

16.9 Details of supplementary mechanical fixings (including their arrangement in the insulation boards) are specified in the project specific design requirements based on pull-out test results, substrate type and wind loading data. Installation of mechanical fasteners shall commence no earlier than 24 hours after the insulation panels have been adhesively fixed, and in any case after the adhesive has hardened.

16.10 The surface of the boards should be smooth without high spots or irregularities. Any high spots or irregularities should be removed by lightly planing with a rasp. After sufficient stabilisation of the installed insulation (normally 2 days in warm and dry conditions, or a maximum of one week in cold and damp conditions, during which time the insulation should be protected from exposure to extreme weather conditions to prevent degradation), the wall is ready for the application of the basecoat.

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. Building corners, door and window heads and jambs are formed using profiles in accordance with the manufacturer's instructions.

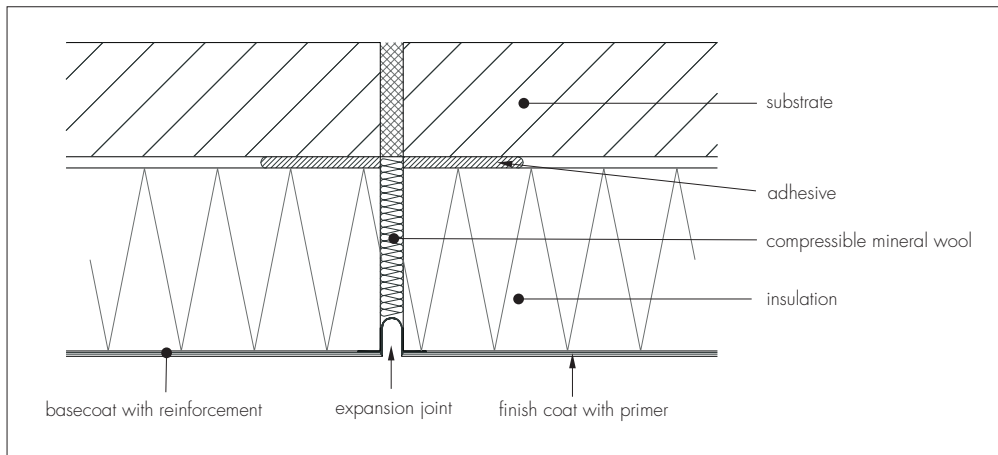
16.12 To fit around details such as doors and windows, insulation boards may be cut with a sharp knife or a fine tooth saw. Purpose-made window sills, seals and deflection channels designed to prevent or manage water ingress

and allow water to be shed clear of items bridging the cavity should be fitted. The performance of these components is outside the scope of this Certificate.

Movement joints

16.13 Movement joints should be incorporated where required. Existing structural expansion joints should be extended through to the surface of the insulation systems (see Figure 4).

Figure 4 Movement joint detail

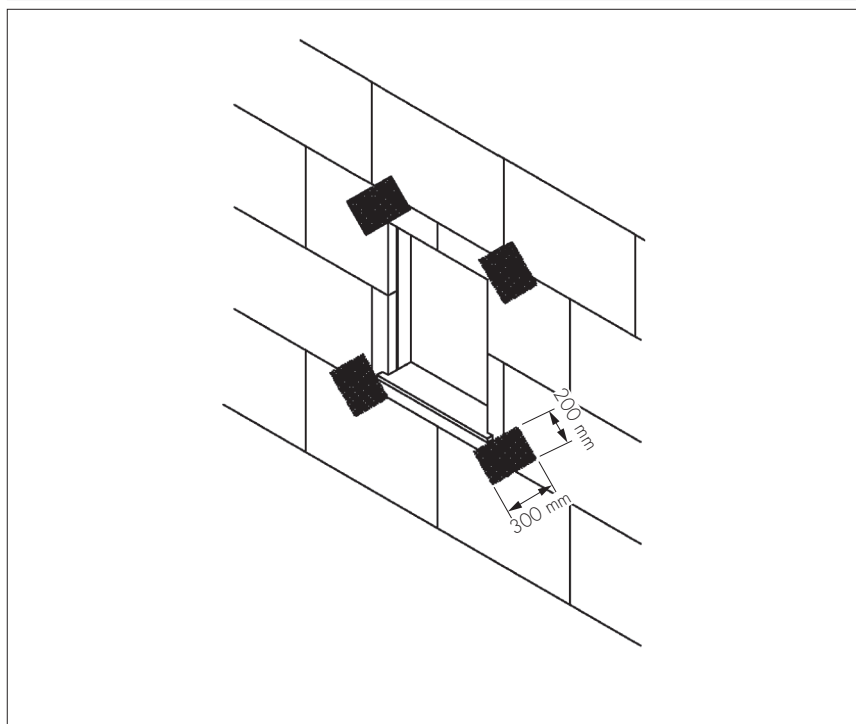


Basecoat and reinforcing

16.14 The basecoat is prepared as described previously for the adhesive. The material is applied over the insulation boards, using a steel trowel to a thickness between 3 mm and 4 mm when using the Fassatherm A50 basecoat and 4 mm to 5 mm when using the Fassatherm A96 and Fassatherm AL88 basecoats. The reinforcement mesh is immediately embedded into the coat, ensuring the mesh is overlapped at joints by a minimum coverage of 100 mm. Once the first coat has dried, a second coat of approximately 1 mm thickness is applied to obtain a smooth and uniform surface.

16.15 Additional pieces of reinforcing mesh are applied diagonally at the corners of openings to provide the necessary reinforcement in accordance with the Certificate holder's instructions (see Figure 5). Additional layers of mesh may be applied to improve impact resistance.

Figure 5 Additional reinforcement at openings



Rendering and finishing

16.16 Prior to the render coat, the 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. This helps to reduce the risk of water ingress into the structure.

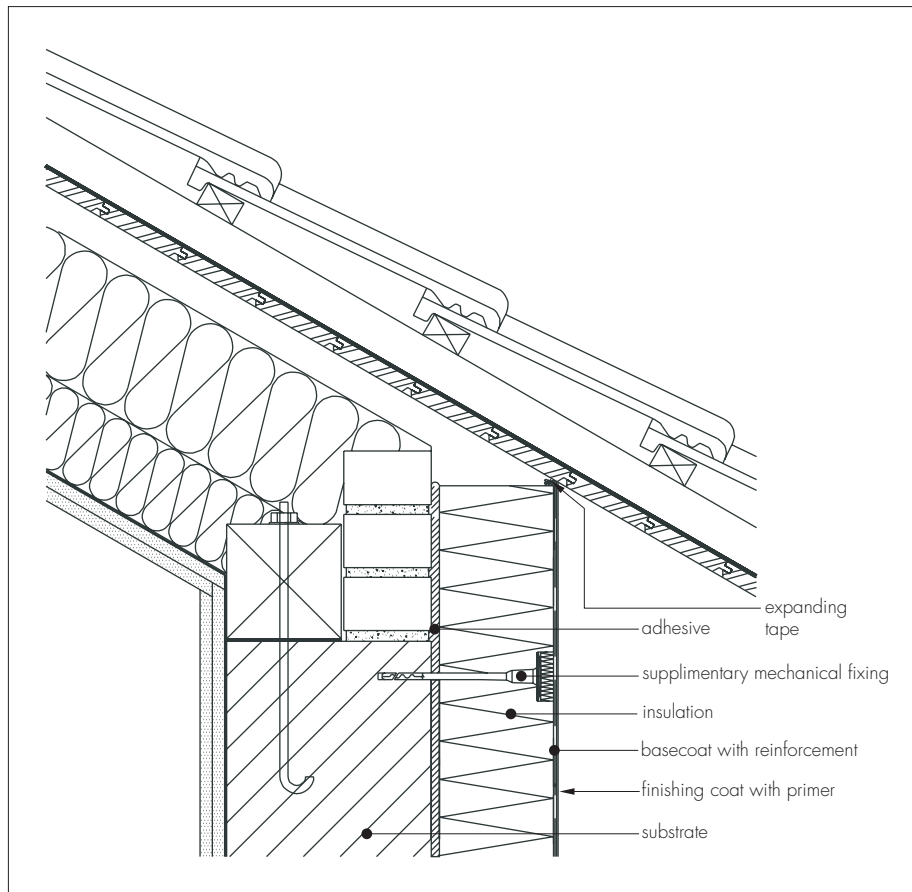
16.17 The basecoat must be allowed to dry/cure (approximately 2 to 3 weeks) prior to the application of the primer/finish coat. Prior to the application of the finishing coat, sealant should be applied as required, as defined in the project specific site package in accordance with the Certificate holder's instructions.

16.18 Primers (see section 1.1 for list of primers and their compatibility with the finishing coats) shall be applied in accordance with the Certificate holder's instructions and allowed to dry for approximately 24 hours prior to the application of the finishing coat.

16.19 Finishing coats are applied in accordance with the Certificate holder's instructions.

16.20 Care should be taken in the detailing of the systems around features such as openings, projections and at eaves (see Figure 6) to ensure adequate protection against water ingress and to limit the risk of water penetrating the systems.

Figure 6 Typical roof eaves detail



Technical Investigations

17 Tests

17.1 An examination was made of data relating to:

- component characterisation
- water vapour permeability
- water absorption
- bond strength
- reaction to fire
- pull-out strength of fixings
- durability of finish coatings
- heat/spray cycling
- impact resistance.

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

17.3 An assessment of the risk of interstitial condensation was undertaken.

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

Bibliography

- BS 5250 : 2011 *Code of practice for control of condensation in buildings*
- BS 8000-3 : 2001 *Workmanship on building sites — Code of practice for masonry*
- BS EN 1990 : 2002 *Eurocode — Basis of structural design*
- BS EN 1991-1-4 : 2005 *Eurocode 1 : Actions on structures — General actions — Wind actions*
- BS EN 1996-2 : 2006 *Eurocode 6 : Design of masonry structures — Design considerations, selection of materials and execution of masonry*
- BS EN 13163 : 2012 *Thermal insulation products for buildings — Factory made products of expanded polystyrene (EPS) — Specification*
- BS EN 13501-1 : 2007 *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 ISO 6946 : 2007 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*
- BS EN ISO 9001 : 2008 *Quality management systems — Requirements*
- BRE Report (BR 135 : 2013) *Fire performance of external thermal insulation for walls of multistorey buildings*
- BRE Report (BR 262 : 2002) *Thermal insulation : avoiding risk*
- BRE Report (BR 443 : 2006) *Conventions for U-value calculations*
- ETAG 004 : 2000 *Guideline for European Technical Approval of External Thermal Insulation Composite Systems (ETICS) with Rendering*
- 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.