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Agrément Certificate
13/5018
Product Sheet 2

ATLAS/AVAL EXTERNAL WALL INSULATION SYSTEMS

ATLAS/AVAL ROKER MW EXTERNAL WALL INSULATION SYSTEMS

This Agrément Certificate Product Sheet^[1] relates to the Atlas/Aval Roker MW External Wall Insulation System, comprising mechanically fixed mineral wool insulation slabs with supplementary adhesive, with a glassfibre-mesh-reinforced basecoat and render finishes. It is suitable for use on the outside of external 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 system 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 system can adequately resist wind loads and impact damage. The impact resistance is dependent on the finish chosen (see section 7).

Behaviour in relation to fire — the system has a reaction to fire classification of either Class A2-s2, d0 or B-s1, d0 in accordance with BS EN 13501-1: 2007 (see section 8).

Risk of condensation — the system 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 system will remain effective for at least 30 years.

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

On behalf of the British Board of Agrément

Date of First issue: 15 October 2014

John Albon — Head of Approvals

Energy and Ventilation

Claire Curtis-Thomas

Chief Executive

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.

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Regulations

In the opinion of the BBA Atlas/Aval Roker MW External Wall Insulation System, if installed, used and maintained in accordance with the provisions of 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 system 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 system can satisfy this Requirement. See sections 8.1 to 8.6 of this Certificate.

Requirement: C2(b) Resistance to moisture

Comment: The system provides a degree of protection against rain ingress. See sections 4.4 and 10.1 of this

Certificate.

Requirement: C2(c) Resistance to moisture

Comment: The system 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 system can contribute to satisfying this Requirement. See sections 6.2 and 6.3 of this Certificate.

Regulation: 7 Materials and workmanship

Comment: The system is acceptable. See section 13.1 and the *Installation* part of this Certificate.

Regulation: 26 CO₂ emission rate for new buildings

Regulation: 26A Fabric energy efficiency rates for new dwellings (applicable to England only)
Regulation: 26A Primary energy consumption rates for buildings (applicable to Wales only)
Regulation: 26B Fabric performance values for new dwellings (applicable to Wales only)

Comment: The system can contribute to satisfying these Regulations. See sections 6.2 and 6.3 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

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Regulation:	8(1)(2)	Durability, workmanship and f	ritness of materials

Comment: The system 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

26

Standard:

Comment: The system can sustain and transmit wind loads to the substrate wall. See section 7.4 of this Certificate.

Spread to neighbouring buildings

Comment: The system 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 8.5 and 8.7 to 8.9 of this Certificate.

Standard: 2.7 Spread on external walls

Comment: The system can satisfy this Standard, and is acceptable for use more than one metre from a boundary, with

reference to clauses $2.7.1^{(1)(2)}$ and $2.7.2^{(1)(2)}$ and Annex $2A^{(1)}$. See sections 8.1 to 8.5 and 8.7 to 8.9 of

this Certificate.

Standard: 3.10 Precipitation

Comment: The system 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 4.4 and 10.1 of this Certificate.

Standard: 3.15 Condensation

Comment: The system 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 Buildings insulation envelope

Comment: The system can contribute to satisfying these Standards, with reference to clauses (or parts of) 6.1.1^{[1][2]},

 $6.1.2^{(1)(2)}$, $6.1.3^{(1)}$, $6.1.6^{(1)}$, $6.1.10^{(2)}$, $6.2.1^{(1)(2)}$, $6.2.3^{(1)}$, $6.2.4^{(2)}$, $6.2.5^{(2)}$, $6.2.6^{(1)}$, $6.2.7^{(1)}$, $6.2.8^{(2)}$, $6.2.9^{(1)(2)}$, $6.2.10^{(1)}$, $6.2.11^{(1)}$, $6.2.12^{(2)}$ 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 system can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and

therefore will contribute to a construction meeting the bronze level of sustainability as defined in this Standard. In addition, the product can contribute to a construction meeting a higher level of sustainability as defined in these Standards, 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 system under Regulation 9, Standards 1 to 6, also apply to this Regulation, with

reference to 0.12.1(1)(2) and Schedule 6(1)(2).

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

The

The Building Regulations (Northern Ireland) 2012

Regulation: 23 Fitness of materials and workmanship

Comment: The system is acceptable. See section 13.1 and the *Installation* part of this Certificate.

Regulation: 28(b) Resistance to moisture and weather

Comment: Wall insulated with the system will satisfy this Regulation. See sections 4.4 and 10.1 of this Certificate.

Regulation: 29 Condensation

Comment: Wall insulated with the system will satisfy this Regulation. See sections 11.2 and 11.4 of this Certificate.

Regulation: 30 Stability

Comment: The system 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 system can satisfy this Regulation. See sections 8.1 to 8.6 of this Certificate.

Regulation: 39(a)(i) Conservation measures

Regulation: 40 Target carbon dioxide emission rate

Comment: The system will contribute to a building satisfying its target emission rate. 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 (3.1) of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of the Atlas/Aval Roker MW External Wall Insulation System, provided it is installed, used and maintained in accordance with this Certificate, in relation to NHBC Standards, Part 6 Superstructure (excluding roofs), Chapter 6.9 Curtain walling and cladding.

Technical Specification

1 Description

1.1 The Atlas/Aval Roker Mineral Wool External Wall Insulation System is mechanically fixed, with a reinforced base coat and render finishes (see Figure 1). The system comprises the following components, from inside to outside:

Supplementary adhesive

 Atlas Roker W-20 and Aval Roker KT 190 – cement-based powder requiring the addition of 0.20 to 0.25 litres of clean water per kg.

Insulation

 mineral wool fibre insulation — available as low density slabs (MW Slab 036), in sizes up to 1200 mm by 600 mm and in a range of thicknesses from 40 mm to 250 mm, with a nominal density of 105 kg·m⁻³, minimum compressive strength of 30 kN·m⁻² and tensile resistance perpendicular to the faces of > 10 kN·m⁻². Slabs are manufactured to comply with BS EN 13162: 2012.

Mechanical fixings

- mechanical fixings⁽¹⁾ anchors with adequate length to suit the substrate and the insulation thickness, and selected from:
- Wkret-met LTX 10 polypropylene with polyamide-fibre-reinforced expansion pin
- Ejot STR U/SDK U polyethylene with steel or electro-galvanized nails
- Ejot NT U/NK U polyamide with steel or electro-galvanized nails
- Ejot SDMT Plus U polyamide with steel or electro-galvanized nails
- Termoz 8N/8NZ polyamide with steel or electro-galvanized nails
- Koelner TFIX-8M polypropylene with steel or electro-galvanized nails
- Koelner KI-10N polypropylene with steel or electro-galvanized nails
- Hilti SD-FV 8 polyamide with polyamide-fibre-reinforced expansion pin.
- (1) Other fixings may be used provided they can be demonstrated to have equal or higher pull-out and plate diameter and plate stiffness characteristics.

Basecoat

• Atlas Roker W-20 and Aval KT 190 — cement-based powder requiring the addition of 0.20 to 0.25 litres of clean water per kg, and applied to a thickness of 4 mm to 5 mm.

Reinforcement

- SSA 1363 SM (100) Mesh multi-stranded, alkali-resistant glassfibre with a polymer coating, supplied in 1.0 m wide rolls 3.5 mm by 3.5 mm mesh size) with a nominal weight of 145 g·m⁻²
- Vertex 145, AKE 145 and R 117 A 101 Meshes multi-stranded, alkali-resistant glassfibre with a polymer coating, supplied in 1.0 m wide rolls (4.5 mm by 4 mm mesh size) with a nominal weight of 150 g·m⁻².

Key coat

- Atlas Cerplast and Aval KT 16 a ready-to-use acrylic-based liquid binders, with mineral fillers and additives. To
 be used with Atlas Cermit Aval KT 137 and KT 35
- Atlas Silkat ASX and Aval KT 15 a ready-to-use silicone-based liquid binders, with mineral fillers, pigments and additives. To be used with Atlas Silkat, Aval KT 72 and KT 73
- Atlas Silkon ANX and Aval KT 76 a ready-to-use silicone-based liquid binders, with mineral fillers, pigments and additives. To be used with Atlas Silkon, Aval KT 74 and KT 75.

Finishing coat

Mineral finishing coats

- Atlas Cermit SN and Aval KT 137 mineral-based powder, requiring the addition of 0.18 to 0.26 litres of clean water per kg, with particle sizes of 1.5 mm, 2.0 mm, 2.5 mm or 3.0 mm, with the applied thickness regulated by particle size
- Atlas Cermit DR and Aval KT 35 mineral-based powder, requiring the addition of 0.18 to 0.26 litres per kg of clean water, ribbed structure with particle sizes of 2.0 mm and 3.0 mm, with the applied thickness regulated by particle size

Silicate finishing coats

- Atlas Silkat N and Aval KT 72 ready-to-use silicate-based pastes with 1.5 mm to 2.0 mm particle grain sizes.
 Thicknesses are regulated by particle size
- Atlas Silkat R and Aval KT 73 ready-to-use silicate-based pastes with 2 mm particle grain size. Thicknesses are regulated by particle size

Silicone finishing coats

- Atlas Silkon N and Aval KT 74 ready-to-use silicone-based pastes with 1.5 mm to 2.0 mm particle grain sizes.
 Thicknesses are regulated by particle size
- Atlas Silkon R and Aval KT 75 ready-to-use silicone-based pastes with 2 mm particle grain size. Thicknesses are regulated by particle size.

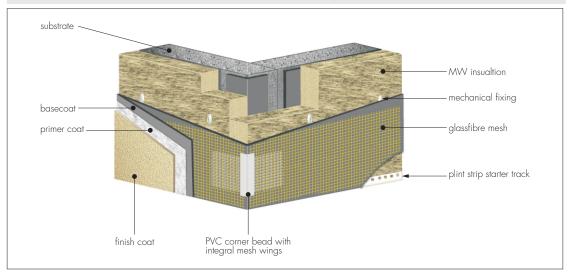
Primer

- Atlas Arkol SX and Aval KT 52 ready-to-use liquid, silicone-emulsion-based binders with mineral fillers and additives, to be used with Atlas Arkol S and Aval KT 54
- Atlas Arkol NX and Aval KT 47 ready-to-use liquid, silicone-emulsion-based binder with mineral fillers and additives, to be used with Atlas Arkol N, Atlas Fastel and Fastel Nova Aval KT 48 and KT 46.

Paints

- Atlas Arkol E and Aval KT 44 ready-to-use acrylic-based coating with pigments and additives, to be used
 optionally with all finishing coats
- Atlas Arkol S and Aval KT 54 ready-to-use silicate-based coating with pigments and additives to be used
 optionally with all finish coats
- Atlas Arkol N and Aval KT 48 ready-to-use silicone-based coating, with pigments and additives, to be used
 optionally with all finishing coats
- Atlas Fastel, Fastel Nova and Aval KT 46 ready-to-use liquid, silicone-based resin with pigment and additives to be used optionally with all finishing coats.
- 1.2 Ancillary materials used with the system, but outside the scope of the Certificate:
- base, corner mesh, edge and stop end profiles
- expansion joint profiles.
- algae and fungicidal wash
- silicone sealant
- polyurethane foam filler
- sealant tape.

Figure 1 Atlas/Aval Roker MW External Wall Insulation System



1.3 The insulation slabs are fixed to the external surface of the wall using mechanical fixings with supplementary adhesive. When all slabs have been secured to the wall, basecoat is applied to their surface to a uniform thickness and the reinforcing mesh immediately embedded, and the surface smoothed with a trowel, working from the centre towards the edges. When dry, and after the key coat is applied, the surface is ready for the application of the selected finishes. Additionally, an optional decorative coat can be used with the relevant primer.

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 ATLAS SP. Z O.O. has been assessed and registered as meeting the requirements of BS EN ISO 9001: 2008 by DQS GmbH (Certificate 062002 QM08/UM).

3 Delivery and site handling

3.1 Each package carries the product identification, manufacturer's batch number and the BBA logo incorporating the number of this Certificate. The components are delivered to site in the packaging and quantities listed in Table 1.

ltem	Component	Packaging/quantity/size
Insulation slabs	Insulation	Sealed packs
Adhesive	Atlas Roker W-20 Atlas Aval KT 190	25 kg bag
Reinforcement	SSA 1363 SM (100) Vertex 145/AKE 145/R 117 A101	50 m roll, 1.0 m wide
Key coats	Atlas Cerplast and Aval KT 16 Atlas Silkat ASX and Aval KT15 Atlas Silkon ANX and Aval KT76	5 kg, 10 kg, 15 kg, 25 kg bucket 15 kg bucket 15 kg bucket
Finish coats	Atlas Cermit SN and Aval KT 137 Atlas Cermit DR and Aval KT 35	25 kg bag
	Atlas Silkat N and Aval KT 72 Atlas Silkat R and Aval KT 73 Atlas Silkon N and Aval KT 74 Atlas Silkon R and Aval KT 75	25 kg bucket
Primer	Atlas Arkol SX and Aval KT 52 Atlas Arkol NX and Aval KT 47	5 kg plastic container
Decorative coat (paints)	Atlas Arkol E and Aval KT 44 Atlas Arkol S and Aval KT 54 Atlas Arkol N and Aval KT 48 Atlas Fastel/Fastel Nova and Aval KT 46	10 L bucket

- 3.2 The insulation slabs 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.
- 3.3 The powder and paste render components must be stored in dry conditions, off the ground, and protected from moisture. Contaminated materials should be discarded.
- 3.4 The primer and paint should be stored in a safe area, under cover, and protected from excessive heat and frost at all times.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Atlas/Aval Roker MW External Wall Insulation System.

Design Considerations

4 General

- 4.1 The Atlas/Aval Roker MW External Wall Insulation System, when installed in accordance with this Certificate, is 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 the system. Only details specified by the Certificate holder should be used.
- 4.2 For improved thermal/carbon-emissions performance, the designer should consider additional/alternative fabric and/or services measures.
- 4.3 The system is 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 up to 18 metres in height. Prior to installation of the system, the wall should comply with section 14 of this Certificate.



- 4.4 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.
- 4.5 Other new buildings not subject to regulatory requirements should also be built in accordance with the Standards identified in section 4.4.
- 4.6 The system 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
- 4.7 The effect of the installation on the acoustic performance of a construction is outside the scope of this Certificate.
- 4.8 The fixing of rainwater goods, satellite dishes, clothes lines, hanging baskets and similar items is outside the scope of this Certificate.
- 4.9 External plumbing should also 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.
- 4.10 It is essential that the insulation system is installed and maintained in accordance with the conditions set out in this Certificate.

5 Practicability of installation

The system should only be installed by specialised contractors who have successfully undergone training and registration by the Certificate holder.

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 conductivity value (λ_D) of 0.036 W·m⁻¹·K⁻¹.



🦅 6.2 The U value of a completed wall will depend on the selected insulation thickness, the type and number of fixings, and the insulating value of the substrate masonry and its internal finish. Figures for typical design tixings, and the insulating value of the substitute massing and the insulating value of the substitute of the substitute

Table 2 Insulation thickness required to achieve design U values[1][2][3]

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 $\lambda = 1.75 \text{ W} \cdot \text{m}^{-1} \cdot \text{K}^{-1}$	
0.18	220	230	
0.19	210	210	
0.25	150	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 ($\lambda = 0.57 \text{ W} \cdot \text{m}^{-1} \cdot \text{K}^{-1}$), 5 mm render $\lambda = 1.0 \text{ W} \cdot \text{m}^{-1} \cdot \text{K}^{-1}$), brickwork (protected) with 17.1% mortar or dense blockwork with 6.7% mortar ($\lambda = 0.88 \text{ W} \cdot \text{m}^{-1} \cdot \text{K}^{-1}$), and 5 mm adhesive ($\lambda = 0.43 \text{ W} \cdot \text{m}^{-1} \cdot \text{K}^{-1}$) covering 40% of the area. Insulation λ_D as per 6.1.
- (2) Calculations based on a system that included 8 galvanized steel fixings per m², with a point thermal transmittance (χ_0) of 0.004 W·K⁻¹ per steel pin. Use of other types of fixings should be calculated in accordance with BS EN ISO 6946 : 2007.
- (3) Based upon an incremental insulation thickness of 10 mm.
- (4) When applying the maximum available insulation thickness, these walls can achieve U values of 0.17 W·m⁻²·K⁻¹.
- 6.3 The system can maintain, or contribute to maintaining, continuity of thermal insulation at junctions between external walls and junctions. 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 system can adequately transfer to the wall the self-weight and negative (suction) and positive (pressure) wind loads normally experienced in the UK.
- 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 slabs are retained by the external wall insulation system anchors.
- 7.4 The wind loads on the walls 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 system.
- 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 system, ignoring any positive contribution that may occur from the system itself
- the proposed system and associated fixing layout provides adequate resistance to negative wind loads, based on the results of site investigations and test results
- an appropriate number of site-specific pull-out tests are conducted on the substrate of the building to determine the
 minimum resistance to failure of the fixings. The characteristic pull-out resistance should be determined in accordance
 with the guidance given in ETAG 014: 2011, Annex D.
- 7.6 The number and centres of fixings should be determined by the system designer. Provided the substrate wall is suitable and an appropriate fixing is selected, the mechanical fixings will adequately support and transfer the weight of the render insulation system to the substrate wall at the minimum spacing given in this Certificate.
- 7.7 Typical characteristic pull-out strengths for the fixings taken from the corresponding European Technical Approval (ETA) are given in Table 3; however, these values are dependent on the substrate, and the fixing must be selected to suit the loads and substrate concerned.

Table 3 Fixings — typical characteristic pull-out strengths

Fixing type	ETA number	Substrates	Drill diameter (mm)	Effective anchorage depth (mm)	Typical pull-out strength (kN) ⁽¹⁾
Wkret-MET LTX 10	08/0172	Concrete C12/15 Clay brickwork	10	50	0.60
Ejotherm STR U and SDK U	04/0023	Concrete C12/15 Clay brickwork	8	25	1.50
Ejotherm NT U and NK U	05/0009	Concrete C12/15 Clay brickwork	8	25	1.20 1.50
Ejot SDM T Plus U	04/0064	Concrete C12/15 Clay brickwork	8	70	1.50
TERMOZ 8N	03/0019	Concrete C16/20 Clay brickwork	8	50	- 1.20
TERMOZ 8NZ	03/0019	Concrete C12/15 Clay brickwork	8	35	1.50
Koelner TFIX-8M	07/0336	Concrete C12/15 Clay brickwork	8	25	1.20
Koelner KI-10N	07/0221	Concrete C12/15 Clay brickwork	10	60	- 0.75
Hilti SD-FV 8	03/0028	Concrete C12/15 Clay brickwork	8	30	0.60 0.90

⁽¹⁾ Values are determined in accordance with ETAG 014: 2011 and are dependent on the substrate.

7.8 The resistance forces data given in Table 4 are the results of calculations based upon pull-through resistances determined by the BBA from tests on anchors with 60 mm diameter plates.

Table 4 Design pull-through resistances		
Fixings plate diameter (mm)	60	
Fixings types	See Table 4	
Insulation thickness (mm)	>50	
Pull-through resistance $^{(1)}$ per fixing (N)	400	
Factor of safety ⁽²⁾	2.5	
Design pull-through resistance per fixing (N)	160	

⁽¹⁾ Pull-through resistance of insulation over the head of the fixing, in accordance with BS EN 1990 : 2002, Annex D7.2.

Impact resistance

7.9 Hard body impact tests were carried out in accordance with ETAG 004 : 2013, which indicate that the system is suitable for use in the categories listed in Table 5 of this Certificate.

Table 5 Atlas/Aval Roker MW External Wall Insulation System impact resistance		
Rendering system : basecoat + key coat(2) + finish coat	Category ⁽¹⁾	
Atlas Roker W-20 + Atlas Cermit DR (3 mm particle size) Atlas Roker W-20 + Atlas Cermit SN (3 mm particle size) Aval KT 190 + Aval KT 137 / KT 35 (3 mm particle size)	Category III	
Atlas Roker W-20 + Atlas Silkat N (2 mm particle size) Atlas Roker W-20 + Atlas Silkat R (2 mm particle size) Atlas Roker W-20 + Atlas Silkon N (2 mm particle size) Atlas Roker W-20 + Atlas Silkon R (2 mm particle size) Aval KT 190 + Aval KT 72/KT 73/KT 74 /KT 75 (2 mm particle size)	Category II	

⁽¹⁾ Defined in ETAG 004: 2013 as:

- Category I a zone readily accessible at ground level to the public and vulnerable to hard body impacts but not subjected to abnormally rough use
- Category II a zone liable to impacts from thrown or kicked objects, but in public locations where the height of the
 system will limit the size of the impact; or at lower levels where access to the building is primarily to those with some
 incentive to exercise care
- ullet Category III a zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects.
- (2) Relevant keycoats, in accordance with section 1.1 of this Certificate

⁽²⁾ The safety factor of 2.5 is based on the assumption that all insulation slabs are quality controlled and tested to establish tensile strength perpendicular to the face of the slab, and failure mode.

8 Behaviour in relation to fire



8.1 The reaction to fire classifications for the system are stated in Table 6.

Table 6 Reaction to fire classification

Rendering system : basecoat + keycoat ⁽¹⁾ + finish coat + primer ⁽²⁾ + (decorative coat)	Standard	Fire classification
Atlas Roker W-20 + Atlas Cermit DR + (Atlas Arkol S/N/Fastel/Fastel Nova) Atlas Roker W-20 + Atlas Cermit SN + (Atlas Arkol S/N/Fastel/Fastel Nova) Atlas Roker W-20 + Atlas Silkat N + (Atlas Arkol S/N/Fastel/Fastel Nova) Atlas Roker W-20 + Atlas Silkat R+ (Atlas Arkol S/N/Fastel/Fastel Nova) Aval KT 190 + Aval KT 137 + (Aval KT 54 / KT 48/KT 46) Aval KT 190 + Aval KT 35 + (Aval KT 54 / KT 48/KT 46) Aval KT 190 + Aval KT 72 + Aval KT 54 / KT 48/KT 46) Aval KT 190 + Aval KT 73 + Aval KT 54 / KT 48/KT 46)	BS EN 13501-1 : 2007	A2-s2, d0
Atlas Roker W-20 + Atlas Silkon N + (Atlas Arkol N/Fastel/Fastel Nova) Atlas Roker W-20 + Atlas Silkon R + (Atlas Arkol N/Fastel/Fastel Nova) Aval KT 190 + Aval KT 74 + (Aval KT 48/KT 46) Aval KT 190 + Aval KT 75 + (Aval KT 48/KT 46)	BS EN 13501-1 : 2007	B-s 1 , d0

- (1) All the combination tested to be used with the relevant keycoat, as in section 1.1 of this Certificate.
- (2) The optional primers were used in accordance with section 1.1 of this Certificate.
- 8.2 These classifications apply to the full range of insulation thicknesses and finishes covered by this Certificate (see section 1.1).
- 8.3 The mineral wool insulation materials in isolation are classified as non-combustible.

System with a A2-s2, d0 reaction to fire classification (see Table 6 of this Certificate)

8.4 The system is considered suitable for use on or at any distance from the boundary without height restrictions.

System with a B-s1, d0 reaction to fire classification (see Table 6 of this Certificate)



8.5 For houses in Scotland, and for all buildings in England and Wales and Northern Ireland, the system is suitable for use on, or at any distance from, the boundary.



8.6 The system is suitable for use in buildings without any height restrictions.



- 8.7 For flats and maisonettes and non-domestic buildings in Scotland, the system is suitable only for use more than one metre from the boundary.
- 8.8 The system is restricted for use in buildings up to 18 metres in height.
- 8.9 The system is not classified as 'non combustible'; therefore, calculations for unprotected areas may apply dependent on the fire resistance characteristics of the wall.
- 8.10 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.

9 Proximity of flues and appliances

Where a system is 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 system will provide a degree of protection against rain ingress. However, care should be taken to ensure that walls are adequately watertight prior to its application. The system must only be installed where there are no signs of dampness on the inner surface of the substrate other than those caused solely by condensation.
- 10.2 Designers and installers should take particular care in detailing around openings, penetrations and movement joints to minimise the risk of rain ingress.

- 10.3 Guidance given in BRE Report 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 tops of walls, the system should be protected by an adequate overhang or other detail designed for use with this type of system (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 system, 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·m $^{-2}$ ·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 $_{
m X}$ not exceed 1.2 W·m $^{-2}$ ·K $^{-1}$ at any point. Guidance may be obtained from BS 5250 : 2011, section 4, and BRE Report 262 : 2002.

Interstitial condensation



11.4 Walls incorporating the system will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with this Certificate.

11.5 The water vapour resistance factor (μ) for the insulation slabs is 1. The equivalent air layer thicknesses (s_a) of the various reinforced basecoats with finish coats are as listed in Table 7.

Table 7 Air layer thicknesses	
Basecoat and finishes	s _d
Atlas Roker W-20 ^[1] + Atlas Cermit SN (finish coat with particle size 3.0 mm)	0.21
Atlas Roker W-20 ^[1] + Atlas Cermit DR (finish coat with particle size 2.0 mm)	0.12
Atlas Roker W-20 ^[1] + Atlas Silkat N (finish coat with particle size 2.0 mm)	0.20
Atlas Roker W-20 ^[1] + Atlas Silkat R (finish coat with particle size 2.0 mm)	0.20
Atlas Roker W-20 ^[1] + Atlas Silkon N (finish coat with particle size 2.0 mm)	0.75
Atlas Roker W-20 ^[1] + Atlas Silkon R (finish coat with particle size 2.0 mm)	0.75
Aval KT 190 ⁽¹⁾ + Aval KT 137 (finish coat with particle size 2 mm)	0.12
Aval KT 190 ⁽¹⁾ + Aval Kt 35 (finish coat with particle size 2 mm)	0.20
Aval KT 190 ⁽¹⁾ + Aval KT 72 (finish coat with particle size 2 mm)	0.20
Aval KT 190(1) + Aval KT 73 (finish coat with particle size 2 mm)	0.20
Aval KT 190 ⁽¹⁾ + Aval KT 74 (finish coat with particle size 2 mm)	0.75
Aval KT 190 ⁽¹⁾ + Aval KT 75 (finish coat with particle size 2 mm)	0.75
Decorative coats (paints)	≤ 0.14

(1) With the relevant key coat in accordance with section 1.1 of this Certificate.

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
- 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 system will remain effective for at least 30 years, provided any damage to the surface finish is repaired immediately and regular maintenance is undertaken, as described in section 12 of this Certificate.

- 13.2 Any render containing Portland cement may be subject to lime bloom. The occurrence of this may be reduced by avoiding application in adverse weather conditions. The effect is transient and is less noticeable on lighter colours.
- 13.3 The render may become discoloured with time, the rate depending on the initial colour, the degree of exposure and atmospheric pollution, as well as the design and detailing of the wall. In common with traditional renders, discoloration by algae and lichens may occur in wet areas. The appearance may be restored by a suitable power wash or, if required, by over coating.
- 13.4 To maintain a high quality aesthetic appearance, it may be necessary to periodically overcoat the building using a suitable masonry 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 any repairs necessary to the building structure before application of the system. 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, where required
- 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 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 All necessary repairs to the building structure must be completed before installation of the system commences.
- 14.4 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 20 mm, must be made good prior to installation, to ensure that the insulation slabs are installed with a smooth, in-plane finished
- 14.5 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.
- 14.6 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.
- 14.7 Internal wet work, eg screeding or plastering, should be completed and allowed to dry prior to the application of the system.

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 system and which has operatives who, upon completion of their training, have been issued with an appropriate identification card by the Certificate holder
- · 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 system must be carried out in accordance with the Certificate holder's current installation instructions.

- 16.2 Weather conditions should be monitored to ensure correct application and curing conditions. Application of coating materials must not be carried out at temperatures below 5°C or above 25°C, nor if exposure to frost is likely, and the coating must be protected from rapid drying. Installation should not take place during rainfall or if rain is anticipated.
- 16.3 All rendering should be in accordance with the relevant recommendations of BS EN 13914-1: 2005.

Positioning and securing insulation slabs

16.4 The base profile is secured to the external wall above the dpc using approved profile fixings at 300 mm maximum centres (see Figure 2). Beads and expansion joints are incorporated as specified. Base rail connectors are inserted at all rail joints. Extension profiles are fixed to the front lip of the base rail or stop end channel where appropriate.

mechanical fixing
insulation

render

substrate

plint strip starter track
is outside the scope of this Certificate

- 16.5 Where supplementary adhesive is used, it is prepared with approximately 6 litres of clean water per 25 kg bag, mixed with a slow speed mixer for three to four minutes until homogeneous. The adhesive is applied in a continuous ribbon at least 3 cm wide around the perimeter of the slab with six to eight evenly-distributed patches of adhesive (8 to 12 cm in diameter) over the remaining surface a minimum of 40% of the slab should be covered, to achieve 60% after application. Alternatively, the adhesive can be applied over the entire face of the insulation slab using a notched trowel, to produce a coat 2 mm to 5 mm thick.
- 16.6 The slabs must be pressed firmly against the wall and butted tightly together with the vertical joints staggered by at least 200 mm and overlapped at building corners (see Figure 3). Joints between slabs greater than 2 mm should be filled. Gaps greater than 10 mm should be closed by repositioning or, where appropriate, by cutting slabs to fit. Alignment should be checked as work proceeds.

Figure 3 Typical arrangement of insulation slabs



16.7 The first run of insulation slabs is positioned on the base profile. Holes are drilled into the substrate to the required depth through the insulation and at positions which allow a minimum of eight fixings per square metre and at positions which will allow a minimum of six fixings per insulation slab in the main area of the wall (see Figure 4). Around openings, additional fixings should be used at 300 mm centres. The mechanical fixings are inserted and tapped or screwed firmly into place, securing the insulation to the substrate. Subsequent rows of slabs are positioned so that the vertical slab joints are staggered and overlapped at the building corners and the slab joints do not occur within 200 mm of the corners of openings

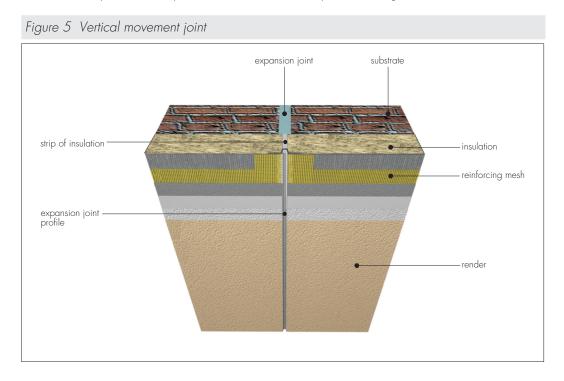
Figure 4 Insulation slab fixing pattern

- 16.8 Any high spots or irregularities should be levelled by pressing the adhesive into place until a level surface is achieved. This will ensure the application of an even thickness of basecoat. After sufficient stabilisation of the installed insulation (normally 2 days, during which time the insulation should be protected from exposure to extreme weather conditions to prevent degradation), the insulated wall is ready for the application of the base coats.
- 16.9 To fit around details such as doors and windows, the insulation slabs may be cut with a sharp knife or a fine-tooth saw. If required, purpose-made window sills are fitted. They are designed to prevent water ingress and incorporate drips to shed water clear of the system.
- 16.10 Installation continues until the whole wall is completely covered including, where appropriate, the building soffits and eaves.

- 16.11 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.
- 16.12 Beads are fixed to all building corners and to door and window heads and jambs using the basecoat renders

Movement joints

16.13 Generally, movement joints are not required in the system but, if an expansion joint is already incorporated in the substrate, a movement joint must be provided in the insulation system (see Figure 5).



Basecoat and reinforcement

- 16.14 The basecoat is prepared with approximately 6 litres of clean water per 25 kg bag, mixed with a mechanical mixer and trowel-applied to the surface of the insulation slabs at approximately two thirds of the final basecoat thickness.
- 16.15 A 10 mm toothed trowel, held at 45° to the insulation slab, is used to leave castellations in the basecoat. A layer of alkali-resisting glassfibre mesh is then applied either vertically or horizontally, ensuring the mesh is overlapped at joints by a minimum of 100 mm, and 150 mm in quoins. The mesh should be pressed into the basecoat using a float, taking care to avoid direct contact with the insulation.
- 16.16 The remaining one third of thickness of basecoat is then applied, ensuring the mesh is completely covered and the minimum basecoat thickness achieved.
- 16.17 Where a second layer of mesh is needed to achieve the required impact resistance, application of the basecoat and mesh layers should be performed in two operations. The first layer of the mesh is applied as described above. After a minimum of 24 hours, a second layer of basecoat and mesh is applied to provide a combined total basecoat thickness of approximately 8 mm.
- 16.18 Additional pieces of reinforcing mesh (approximately 300 mm by 200 mm strips) are applied diagonally at a 45° angle to the corners of openings (prior to the application of the basecoat or, if applying a double layer of base coat, prior to the application of the second coat) to provide the necessary reinforcement in the corners of window/door openings in accordance with the Certificate holder's instructions (see Figure 3).
- 16.19 The mesh should be free of wrinkles and fully embedded in the basecoat.
- 16.20 The basecoat must be allowed to dry/cure before application of the keycoat and finish coat.

Key coats

16.21 The keycoat is roller-applied and left to dry for a minimum of 12 hours, first making sure it is free from any irregularities and is in accordance with the Certificate holder's instructions.

Finishing

- 16.22 Finishes are applied directly over the keycoat to an approximate render thickness of between 1.5 mm and 3.0 mm, depending on the finishes and reinforcing mesh application.
- 16.23 All rendering should be in accordance with the relevant recommendations of BS 8000–10: 1995 and BS EN 13914-1: 2005 and the Certificate holder's instructions.

- 16.24 Continuous surfaces should be completed without a break to minimise colour shade variations and to avoid dry line jointing. If breaks cannot be avoided they should be made where services or architectural features, such as reveals or lines of doors and windows, help mask cold joints. Where long, uninterrupted runs are planned, containers of the finishing coat should be checked for batch numbers. Bags with different batch numbers should be checked for colour consistency.
- 16.25 It is imperative that weather conditions are suitable for the application and curing of the finishing coats. In wet weather, the finished walls should be protected to prevent wash-off. It is also advisable that protective covers remain in place until required.
- 16.26 At the tops of walls, the system should be protected by an adequate overhang (see Figure 6) or by an adequately sealed purpose-made flashing. Care should be taken in the detailing of the system around openings and projections (see Figures 7 and 8).

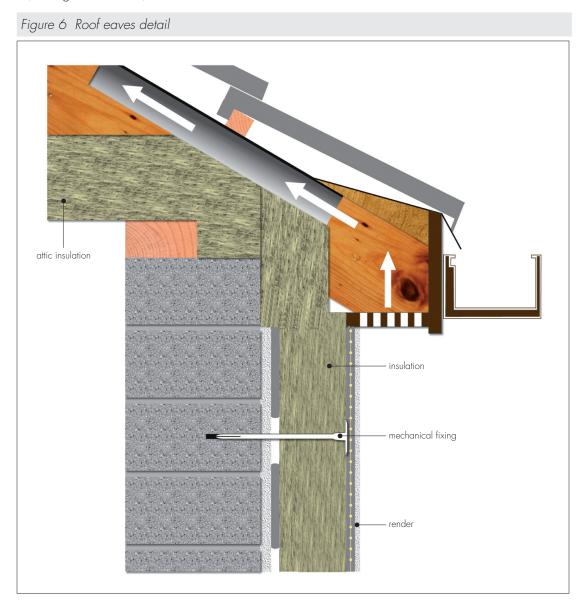


Figure 7 Window sill and reveal

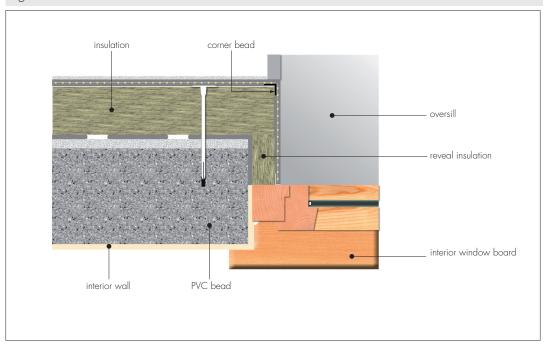
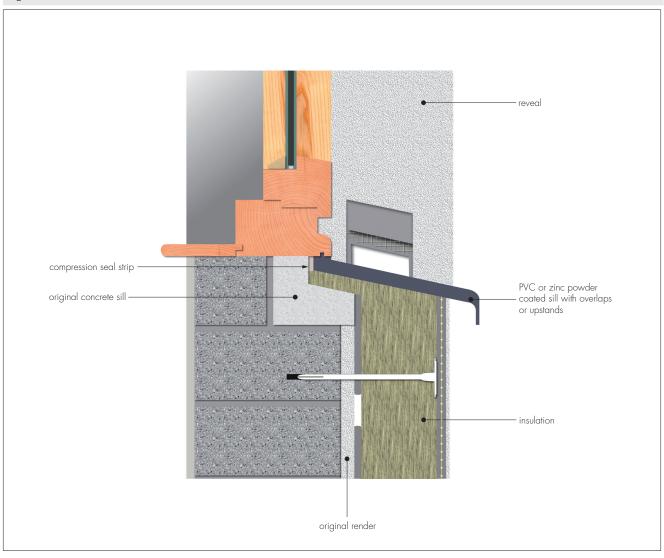


Figure 8 Window sill detail— metal or PVC sill



16.27 On completion of the installation, external fittings are refixed to the substrate.

Technical Investigations

17 Investigations

17.1 Tests were carried out on the system to determine:

- fire performance
- bond strength
- hygrothermal performance
- resistance to frost
- resistance to impact
- water vapour permeability.

17.2 An examination was made of data relating to:

- fire performance
- adequacy of fixing system
- the risk of interstitial condensation.

17.3 The practicability of installation and the effectiveness of detailing techniques were examined

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

Bibliography

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 13162 : 2012 Thermal insulation products for buildings — Factory made mineral wool (MW) products — 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

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

ETAG 014 : 2011 Guideline for European Technical Approval of Plastic Anchors for fixing of External Thermal Insulation Composite Systems with Rendering

BRE Report 135 (BR 135 : 2013) Fire performance of external thermal insulation for walls of multistorey buildings

BRE Report 262 (BR 262 : 2002) Thermal insulation: avoiding risks

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

Conditions of Certification

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.