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**BAW-23-283-S-A-UK**  
**BDA Agrément®**  
**LicataTherm LGSF Insulated**  
**System**  
**External Thermal Insulation**  
**Composite System (ETICS)**

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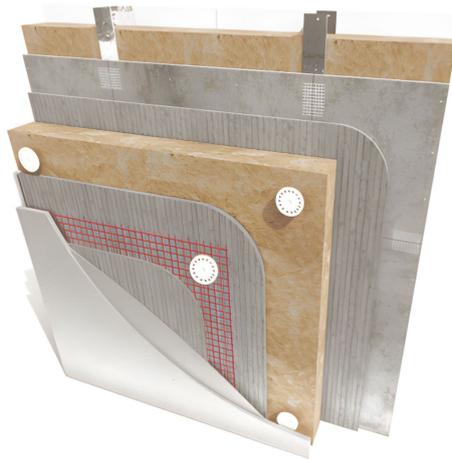
**SCOPE OF AGRÉMENT**

This BDA Agrément® (hereinafter 'Agrément') relates to LicataTherm LGSF Insulated System (hereinafter the 'System'). The System is a mechanically and adhesively fixed, mineral wool (hereinafter 'MW') insulated, external thermal insulation composite system (ETICS) with render or brick slip finishes. The System is for installation above damp-proof course (hereinafter 'DPC') level on external sheathed light gauge steel frame (hereinafter 'LGSF') supporting walls. The System is for existing and new residential non-residential buildings.

**DESCRIPTION**

The System consists of MW insulation boards which are adhesively and mechanically fixed through the basecoat and reinforcement mesh to the supporting wall. A secondary layer of basecoat is applied, followed by primer before the application of silicone finish or adhesive before the application of brick slips. The System can incorporate either silicone, mineral brick slips or clay brick slip finishes.

**ILLUSTRATION**



**THIRD-PARTY ACCEPTANCE**

None requested by the Agrément holder.

**STATEMENT**

It is the opinion of Kiwa Ltd. that the System is safe and fit for its intended use, provided it is specified, installed and used in accordance with this Agrément.

Craig Devine  
 Operations Manager, Building Products

Alpheo Mlotha CEng FIMMM MBA  
 Business Unit Manager, Building Products

## SUMMARY OF AGRÉMENT

This document provides independent information to specifiers, specialists, engineers, building control personnel, contractors, installers and other construction industry professionals who are considering the safety and fitness for purpose of the System. This Agrément covers the following:

- Conditions of use;
- Production Control, Quality Management System and the Annual Verification Procedure;
- System components and ancillary items, points of attention for the Specifier and examples of details;
- Installation;
- Independently assessed System characteristics and other information;
- Compliance with national Building Regulations, other regulatory requirements and Third-Party Acceptance, as appropriate;
- Sources.

## MAJOR POINTS OF ASSESSMENT

**Moisture control** - see Section 2.2.7 - the System:

- can contribute to limiting the risk of interstitial and surface condensation;
- will provide a degree of protection against rainwater ingress.

**Strength** - see Section 2.2.8 - the System has adequate strength and is designed to adequately resist impact damage and wind loads normally encountered in the UK.

**Fire performance** - see Section 2.2.9 - the System is classified as European Classification A2-s1, d0, in accordance with BS EN 13501-1.

**Thermal performance** - see Section 2.2.10 - the System improves the thermal performance of external walls and can contribute to satisfying the requirements of the national Building Regulations.

**Durability** - see Section 2.2.11 - the service life durability of the System will be dependent upon the environment (operating conditions) in which the System will be used.

**UKCA, UKNI and CE marking** - see Section 2.2.12 - the manufacturers of the constituent products used within the System have responsibility for conformity marking, in accordance with all relevant British and European Product Standards.

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## 1 GENERAL CONSIDERATIONS

### 1.1 CONDITIONS OF USE

#### 1.1.1 Limitations

This Agrément has been prepared in accordance with the mandatory requirements defined in the relevant Kiwa Technical Requirement. Some information in this Agrément is provided for guidance or reference purposes only; this information falls outside the scope of the Technical Requirement.

#### 1.1.2 Application

The assessment of the System relates to its use in accordance with this Agrément and the Agrément holder's requirements.

#### 1.1.3 Assessment

Kiwa Ltd. has assessed the System in combination with relevant test reports, technical literature, the Agrément holder's quality plan, DoPs and site visit, as appropriate.

#### 1.1.4 Installation supervision

The quality of installation and workmanship shall be controlled by a competent person who shall be an employee of an Approved Installer.

The System shall be installed strictly in accordance with the instructions of the Agrément holder and the requirements of this Agrément.

#### 1.1.5 Geographical scope

The validity of this document is limited to England, Wales, Scotland and Northern Ireland, with due regard to Section 3 of this Agrément (CDM, national Building Regulations and Third-Party Acceptance).

#### 1.1.6 Validity

The purpose of this Agrément is to provide well-founded confidence to apply the System within the scope described. The validity of this Agrément is as published on [www.kiwa.co.uk/bda](http://www.kiwa.co.uk/bda).

### 1.2 PRODUCTION CONTROL AND QUALITY MANAGEMENT SYSTEM

Kiwa Ltd. has conducted an audit of the Agrément holder and determined that they fulfil all their obligations in relation to this Agrément in respect of the System.

The initial audit demonstrated that the Agrément holder has a satisfactory Quality Management System (QMS) and is committed to continuously improving their quality plan. Document control and record-keeping procedures were deemed satisfactory. A detailed Production Quality Specification (PQS) has been compiled to ensure traceability and compliance under the terms of this Agrément.

### 1.3 ANNUAL VERIFICATION PROCEDURE - CONTINUOUS SURVEILLANCE

To demonstrate that the System conforms with the requirements of the technical specification described in this Agrément, an Annual Verification Procedure has been agreed with the Agrément holder in respect of continuous surveillance and assessment, and auditing of the Agrément holder's QMS.

## 2 TECHNICAL ASSESSMENT

This Agrément does not constitute a design guide for the System. It is intended only as an assessment of safety and fitness for purpose.

### 2.1 SYSTEM COMPONENTS AND ANCILLARY ITEMS

#### 2.1.1 Components included within the scope of this Agrément

The components listed in Table 1 below are integral to the use of the System.

**Table 1** - Integral components

Component		Description	Dimensions
adhesive and basecoat	Raso Top 800 Scrim Adhesive	fibre-reinforced mineral adhesive/skim coating made with hydraulic binders and polymer-modified resins used as an adhesive and basecoat	
MW insulation	Rockwool DD	dual density MW slabs, with minimum compressive strength of 10 kPa and tensile strength of 10 kPa, in accordance with BS EN 13162, $\lambda_D$ 0.036 W/mK	1,200 mm by 600 mm, available in thicknesses from 50 to 250 mm
	Rocksilk EWI Slab	rock MW slabs, with minimum compressive strength of 30 kPa and tensile strength of 10 kPa, in accordance with BS EN 13162, $\lambda_D$ 0.036 W/mK	1,200 mm by 600 mm, available in thicknesses from 50 to 260 mm
reinforcement mesh	LicataTherm mesh 160	alkali-resistant, glass-fibre reinforcing mesh with a nominal weight of 160 g/m <sup>2</sup>	50 m by 1 m, 3.5 mm by 4.7 mm grid size
	mechanical fixings	Ejot SW8-RT carbon steel self-drilling screw with washer <sup>^</sup>	80 to 280 mm long by 4.8 mm diameter with 60 mm diameter washer <sup>^^</sup>
mineral brick slip	adhesive	organically-bound, water-based, polymer dispersion adhesive consisting of liquid pigments and fillers, for use with mineral brick slips	
	brick slips	organically-bound, water-based, polymer dispersion, cement-free flexible brick slips consisting of liquid pigments and fillers	215 mm by 65 mm by 4 mm thick
silicone finish	Isolante LG primer	a white coloured primer comprising acrylic copolymer and inert silica materials for use with silicone finish	
	Siloxan Color	thin, ready-mixed silicone render consisting of water-dispersed siloxane binder paste and fillers, with grain sizes of 1 to 2 mm	
clay brick slip finish	Super S1 Brick Slip Adhesive	deformable cementitious adhesive, classified as C2TE-S1, in accordance with BS EN 12004-1 and BS EN 12004-2	
	Licata Clay Brick Slip	ceramic brick slips/pistols/corners and decorative slips, in accordance with BS EN 14411 and BS EN 771-1, available in range of colours	215 mm long by 65 mm high, 9 to 15 mm thick brick slips <sup>§</sup> or 22 to 25 mm thick decorative slips
	Natural Lime Mortar - pointing mortar	natural hydraulic lime jointing mortar comprising of graded sands, with pigments added for colour in accordance with BS EN 998-2	

<sup>^</sup> alternative fixings may be used provided it can be demonstrated that they have equivalent (or greater) pull-out strength, plate diameter, plate stiffness and load-resistance characteristics

<sup>^^</sup> length is dependent on the thickness of the insulation

<sup>§</sup> thickness of the brick slips have a  $\pm$  2 mm tolerance

#### 2.1.2 Ancillary items falling outside the scope of this Agrément

The following ancillary items detailed in this Section may be used in conjunction with the System, but fall outside the scope of this Agrément:

- external sheathed supporting walls - LGSF;
- profiles - a range of standard profiles for starter track, end stop, corner mesh and expansion joints, available in stainless steel, aluminium, PVC-U or organic polyester powder-coated galvanized steel, provided to the specifier's requirements;
- under-and-over cills, cill extenders;
- roof verge extenders;
- sealing tape;
- silicone sealant;
- fire resistant mechanical fixings.

**2.2.1 Design****2.2.1.1 Design responsibility**

A Specifier may undertake a project-specific design, in which case it is recommended that the Specifier co-operates closely with the Agrément holder. The Specifier or Installer is responsible for the final as-built design.

**2.2.1.2 Basis of design**

The characteristics detailed in the section titled 'Major Points of Assessment' shall be considered during the use of the System.

**2.2.1.3 General design considerations**

A project-specific design is required. This shall be developed in close co-operation with the Agrément holder.

This Agrément covers the use of the System in sheltered and moderate exposure zones detailed in BRE Report 262, taking into consideration the appropriate local wind-driven rain index in accordance with BS 8104. However, for severe and very severe exposure zone areas, the Agrément holder shall determine the suitability of the System, taking in consideration the appropriate local wind-driven rain index using BS 8104 and water permeability of the existing materials.

The System shall be installed above DPC level and a minimum of 150 mm above ground level.

Assessment of the structural performance of the System shall be carried out by the Specifier to confirm that the System can:

- resist the design impact, wind, dead and imposed loads;
- safely transfer loads to the building;
- accommodate all anticipated thermal movements without damage.

Supporting walls incorporating the System shall be:

- detailed to reduce the risk of damage due to movement in the supporting wall, taking into consideration differential movement in dissimilar materials;
- designed in accordance with the relevant Standards to limit mid-span deflections - see Section 2.2.8.

LGSF supporting walls shall be designed in accordance with BS EN 1993-1-1 and BS EN 1993-1-3; the steel structure shall be not less than 1.2 mm thick with a minimum of 50 mm flanges.

Sheathing boards shall be a minimum of 12 mm thick, weather resistance category A and bending strength Class 2 or 3, in accordance with BS EN 12467.

If required, the sheathing board shall be covered with a Class W1 breather membrane, in accordance with BS EN 13859-2. The breather membrane shall have adequate resistance to tearing and be regularly inspected during installation to ensure it is not damaged. If damage occurs to the membrane, it shall be repaired appropriately in accordance with the manufacturer's instructions.

Butt joints, fasteners and penetrations (e.g. flues, ducts) shall be sealed and taped to ensure that water does not penetrate into a wall.

Buildings incorporating the System shall be designed and constructed to prevent moisture penetration and air infiltration, in accordance with the relevant Codes and Standards.

Care is needed for design detailing of joints around openings, butt joints, fasteners, penetrations (e.g. flues, ducts) and movement joints, to minimise the risk of wind-driven rainwater ingress and shall be in accordance with BS 6093.

The System shall be secured to the supporting wall with mechanical fixings through the reinforcement mesh and MW insulation.

Where required, properly constructed movement joints (designed to cater for the calculated degree of movement to control expansion, contraction, and cracking without reducing the stability and weathertightness of the wall) shall be carried through the System using movement beads of PVC, aluminium, powder-coated galvanised steel or stainless steel. Movement joints within the System shall be installed as follows:

- reflected through sheathing board joints;
- to allow for horizontal movement, vertical expansion joints shall be provided at 7.5 m intervals when the length of a wall exceeds 12 m; for existing buildings, expansion joints shall be provided to align with existing expansion joints within the building structure;
- in accordance with the project-specific design.

Examples of relevant detailing for EWI systems applied on LGSF can be found in SCI Publication P343.

**2.2.1.4 Project-specific design considerations**

The project-specific design shall:

- be determined by the Specifier;
- consider the exposure zones where the System is installed;
- take into account the requirements of the relevant national Building Regulations - see Section 3.2;
- take into account the service life durability required - see Section 2.2.11.

A pre-installation survey is required to allow determination of the project-specific design - see Section 2.4.1.

The Agrément holder shall ensure that the following considerations are included by the Specifier in the development of a project-specific design:

- thermal transmittance (hereinafter 'U-value') requirements;
- thermal expansion effects of the supporting wall and the System;
- likely local impact resistance;

- pull-through of fixings;
- pull-out of fixings;
- effect of wind actions on the System;
- accommodation of structural movement.

The local spell index method for assessing the exposure zones to wind-driven rain, on Systems installed on LGSF supporting walls, shall be considered at the project-specific design phase, taking into consideration:

- geographical location and orientation of the proposed wall;
- terrain upwind;
- obstructions;
- characteristics of the proposed wall.

The number of fixings required through the reinforcement mesh and MW insulation is a variable design value and shall be equal to or greater than that needed to achieve the required project-specific design wind load - see Section 2.2.8.

During the assessment and survey, fixing pull-out strength (kN) tests shall be conducted on the supporting wall surface in accordance with EOTA TR 051 and EAD 330196-01-0604. The results of the assessment and survey shall assist the Agrément holder in determining the type, size and minimum number of fixings required per m<sup>2</sup>. When using pull-out data for fixings, the material safety factor  $\gamma_m$  shall be considered.

### 2.2.2 Applied building physics (heat, air, moisture)

A Specialist shall check the hygrothermal behaviour of a project-specific design incorporating the System and, if necessary, offer advice on improvements to achieve the final specification. The Specialist can be either a qualified employee of the Agrément holder or a suitably qualified consultant (in which case it is recommended that the Specialist co-operates closely with the Agrément holder).

### 2.2.3 Permitted applications

Only applications designed according to the specifications given in this Agrément are permitted. In each case, the Specifier and Installer shall co-operate closely with the Agrément holder.

### 2.2.4 Installer competence level

The System shall be installed strictly in accordance with the instructions of the Agrément holder and the requirements of this Agrément.

Installation shall be by an Approved Installer, trained and approved by the Agrément holder.

### 2.2.5 Delivery, storage and site handling

The System components are delivered in suitable packaging bearing relevant identification information (such as the System name, production identification date or batch number, the Agrément holder's name, etc.) and, where applicable, the BDA Agrément® logo incorporating the number of this Agrément.

Prior to installation, the System components shall be stored in accordance with the Agrément holder's requirements. Good housekeeping protocols shall be followed to avoid damage.

Where required, particular care shall be taken to:

- avoid exposure to direct sunlight for extended periods of time;
- avoid exposure to high or low temperatures for extended periods of time;
- store System components in a well-ventilated covered area to protect them from rain, frost and humidity;
- store System components away from sources of ignition.

For storage of liquid and powder components, minimum and maximum temperatures shall be observed, including limitations of the shelf life, in accordance with the manufacturer's recommendations.

### 2.2.6 Maintenance and repair

Once installed, the System requires regular maintenance. For 60-year durability, a bespoke extended repair and maintenance protocol will apply. For advice in respect of repair and maintenance, consult the Agrément holder.

The maintenance schedule for the installed System shall include regular visual inspection checks for:

- signs of damaged areas and cracks in the render exceeding 0.2 mm;
- signs of disbandment in brick slips; dislodged brick slips shall be re-fixed using adhesive;
- signs of damage in brick slips; damaged brick slips shall be removed and replaced with new ones;
- integrity of the sealant around openings and service entry points;
- adequate performance of architectural details designed to shed water away;
- leaks from external plumbing and fittings, guttering and drainpipes.

Maintenance shall include regular replacement and resealing of joints at window and door frames to prevent failure. Failed elements such as sealants, joint seals and corroded materials shall be replaced to ensure that water ingress does not occur.

Any damage to the render system shall be repaired immediately, in accordance with BS EN 13914-1 and the Agrément holder's Maintenance and Repair Manual.

The System finish may become discoloured by algae and lichens in damp areas. Cleaning with fresh warm water and light brushing or by overcoating will mitigate this. A mild detergent or traffic-film remover can be applied and washed off. Any surface algae can be cleaned off using an algicide.

## Performance factors in relation to the Major Points of Assessment

### 2.2.7 Moisture control

External walls incorporating the System can adequately limit the risk of surface and interstitial condensation when designed in accordance with BS 5250 and BRE Report 262.

A condensation risk analysis shall be completed at the project-specific design stage for all elements of the construction, including at junctions, openings and penetrations, to minimise the risk of surface and interstitial condensation. When correctly installed on an occupied building, no condensation will form on the internal wall.

### Resistance to precipitation including wind-driven rain

The project-specific design shall include detailing around openings, penetrations and movement joints to minimise the risk of wind-driven rainwater ingress, in accordance with BS 6093.

The System will provide a degree of protection against rainwater ingress. However, care shall be taken to ensure that supporting walls are adequately weathertight prior to installation of the System.

The guidance given in BRE Report 262 shall be followed in connection with the weathertightness of wall constructions. The Agrément holder shall select a construction appropriate to the local wind-driven rain index, in accordance with BS 8104, with due consideration to the design detailing, workmanship and materials to be used.

At the top of walls, the System shall be protected by an adequate coping, overhang or other project-specific detail.

The System has adequate resistance to artificial weathering and resistance to thermal shock, in accordance with EAD 040083-00-0404.

### 2.2.8 Strength

The supporting wall shall have sufficient strength to withstand all wind, dead and imposed loads applied to and from the System, including racking and any temporary loads that could be applied during installation. The strength of the supporting wall shall be verified by a suitably qualified engineer. The project-specific design shall ensure that:

- the System attachment to the supporting wall has adequate fixing pull-out capacity for the calculated wind loads;
- thermal expansion effects of the metal rails, metal structural frames and the cladding to be supported are taken into consideration in the design and detailing.

The System shall be designed to withstand wind action loads in accordance with BS EN 1991-1-4. Account shall be taken of the location, shape and size of the building. The average yearly wind action load data for the site location shall be collated and used to calculate the required design wind resistance (positive and negative) of a given support spacing and fixing pattern. Special consideration shall be given to locations with high wind-load pressure coefficients, as extra fixings may be required.

The supporting wall shall be designed in accordance with the relevant Standards to limit mid-span deflections to L/260 (mid-span) and L/150 (cantilever).

The System has adequate wind-load resistance and suitable mechanical strength, in accordance with EAD 040083-00-0404. For the calculation of the wind-load resistance of the System, the design pull-through value given in Table 2 shall be used.

**Table 2** - Design wind load values

Design wind load (kN/m <sup>2</sup> )	Number of fixings per m <sup>2</sup>	Design fixing pull-through resistance (kN) <sup>a</sup>
1.75	6	0.30
2.00	7	
2.35	8	

<sup>a</sup> derived from static foam block test on 100 mm thick MW insulation with EJOT DMH 8 x 140-E Metal Insulation Plug with EJOT DMT 80-E Stress Plate and reinforcement mesh. Partial factor of 2.5 has been applied

The qualified structural engineer shall ensure that the maximum design wind load achieved by the System, as per Table 2, shall be equal to or less than the design pull-out resistance strength of the mechanical fixings from the supporting wall obtained from site tests.

Positive wind load is transferred to the supporting wall directly via bearing and compression through the MW insulation and System finish. Negative wind load is resisted by the bond between the MW insulation and the System finish reinforced with reinforcement mesh. The MW insulation is retained by reinforcement mesh and mechanical fixings, which are fixed through reinforcement mesh and insulation to the supporting wall.

### Impact resistance

When tested for hard-body impact resistance, in accordance with EAD 040083-00-0404, the System is categorised as Use Category I.

The Use Categories in accordance with EAD 040083-00-0404 are as follows:

- I - a zone readily accessible at ground level to the public and vulnerable to hard-body impacts but not subjected to abnormally rough use;
- 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;
- III - a zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects.

### 2.2.9 Fire performance

The reaction to fire of the System is classified as European Classification A2-s1, d0, in accordance with BS EN 13501-1.

The following components are classified as European Classification A1, in accordance with the relevant national Building Regulations:

- LGSF supporting walls;
- MW insulation;
- clay brick slips.

Sheathing boards shall be classified as European Classification A1 or A2-s1, d0, in accordance with BS EN 13501-1, when the height of the project-specific design is over:

- 18 m for all buildings in Wales and Northern Ireland, and non-residential buildings in England;
- 11 m for residential buildings in England;
- 11 m for all buildings in Scotland.

The System can be used on buildings without any restrictions on building height or boundaries, in accordance with national Building Regulations.

Construction materials, components and associated attachments used in the overall wall construction shall satisfy the requirements of Regulations 7(2) and 7(3) for England and Wales, Regulations 8(3) and 8(4) for Scotland, and Regulations 23(2) and 23(3) for Northern Ireland. Designers shall refer to the national Building Regulations for further details.

The fire resistance of walls is based on the occupancy, size and use of a building and shall be a minimum of 30 minutes. It is then specified in 30-minute intervals thereafter.

Walls shall be designed and constructed to adequately resist the passage and penetration of fire.

In addition to the MW insulation fasteners normally specified, the System shall include a minimum of one stainless steel fixing per m<sup>2</sup> of insulation or one stainless steel fixing per MW insulation board, whichever is lesser, for application to second storey walls and above, fixed through the reinforcement mesh and MW insulation as per the guidance given in BRE Report 135.

For detailed conditions of use regarding requirements for supporting wall fire performance and fire barriers, fire stopping of service penetrations and combustibility limitations for other materials and components used in the overall wall construction, designers shall refer to the relevant national Building Regulations.

### 2.2.10 Thermal performance

The System can assist in reducing the U-value of external walls. It is essential that detailing is carried out to a high standard if the ingress of water into the MW insulation is to be avoided and the full thermal benefit is to be obtained from the installation of the System. Any moisture penetration will affect thermal conductivity. The System is designed to minimise moisture penetration to the MW insulation layer.

The requirement for limiting heat loss through the building fabric, including the effect of thermal bridging, can be satisfied if the U-value of a wall incorporating the System does not exceed the maximum U-value requirement given in the national Building Regulations.

The U-value of a completed wall construction will depend on the MW insulation thickness, fixing method, type of mechanical fixing and insulating value of the supporting wall and its internal finish.

For the purposes of U-value calculations and to determine if the requirements of national Building Regulations are met, the thermal resistance and U-value of the walls incorporating the System shall be calculated according to BS EN ISO 10211 (taking into consideration BS EN ISO 6946, BS EN ISO 10456 and BRE Report 443), using the thermal conductivity ( $\lambda_D$ ) of the MW insulation - see Section 2.5.4.

### Thermal bridging at junctions and around openings

Care shall be taken in the overall design and construction of junctions with other elements and openings to minimise cold bridging and air infiltration.

Guidance on linear thermal transmittance, heat flows and surface temperatures can be found in the documents supporting the national Building Regulations and in BS EN ISO 10211, BRE Information Paper 1/06, BRE Report 262, BRE Report 497, PAS 2030 and PAS 2035.

### 2.2.11 Durability

The service life durability of the System will be dependent upon the environment (operating conditions) in which the System will be used. The expected service life durability will be in excess of 30 years.

Once installed, the System is not susceptible to damage from environmental conditions normally encountered in the UK. The System has a maintenance regime in accordance with Section 2.2.6.

### 2.2.12 UKCA, UKNI and CE marking

There is no relevant Product standard for the System.

Diagram 1 - Typical fixing pattern



Diagram 2 - Typical vertical movement joint detail

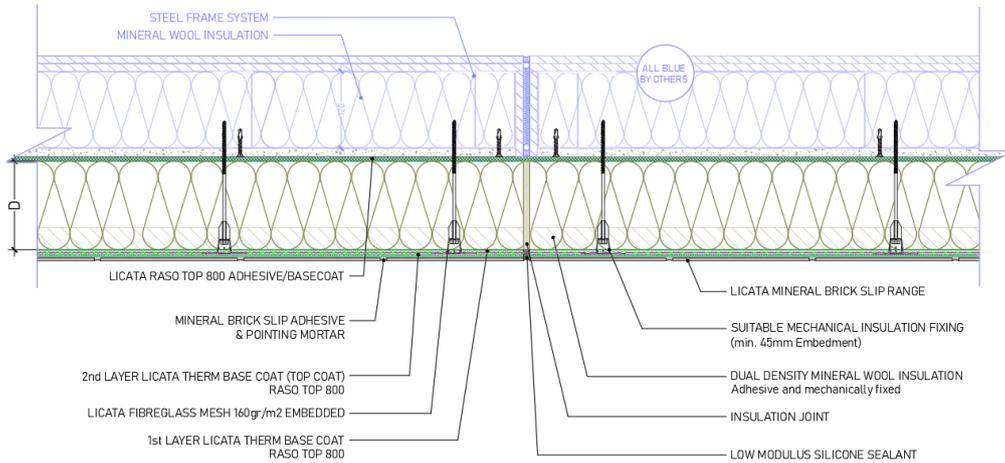


Diagram 3 - Typical internal corner detail

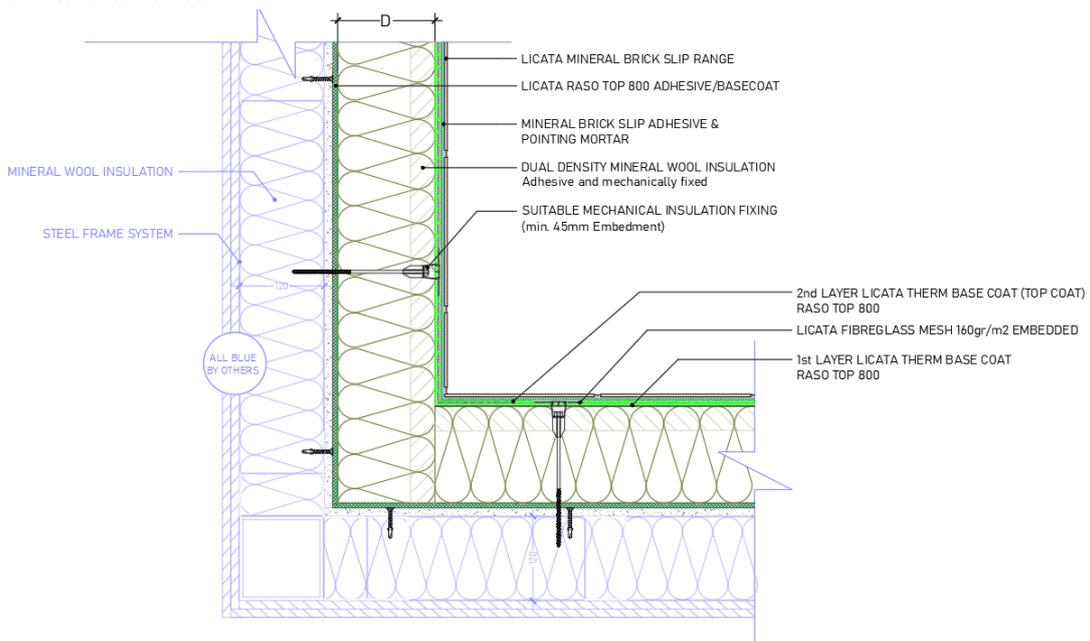


Diagram 4 - Typical standard base detail

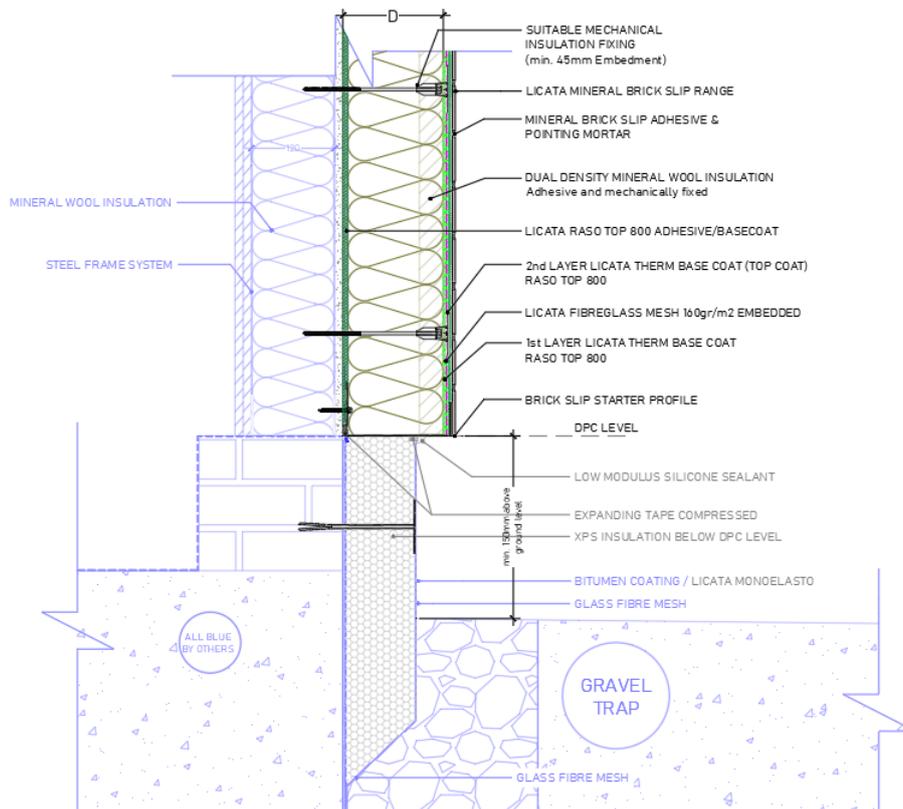
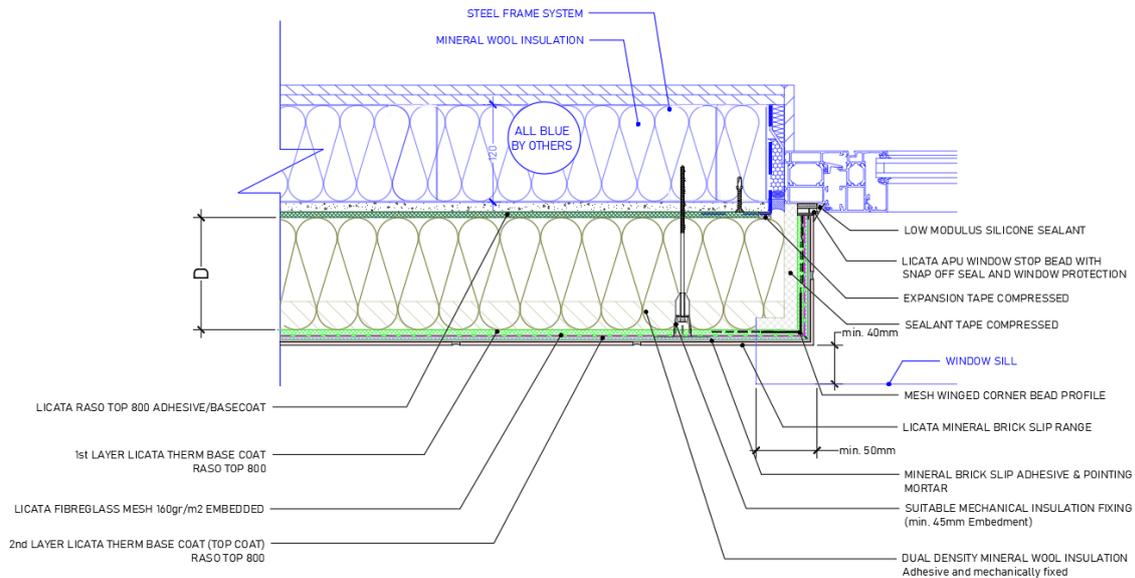
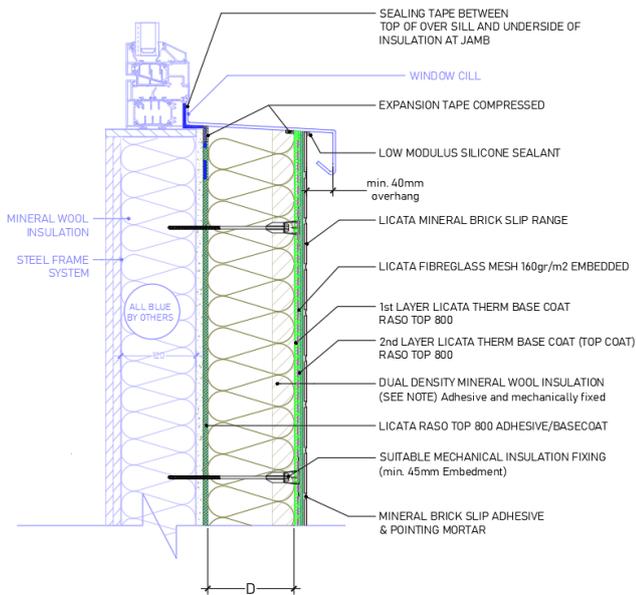


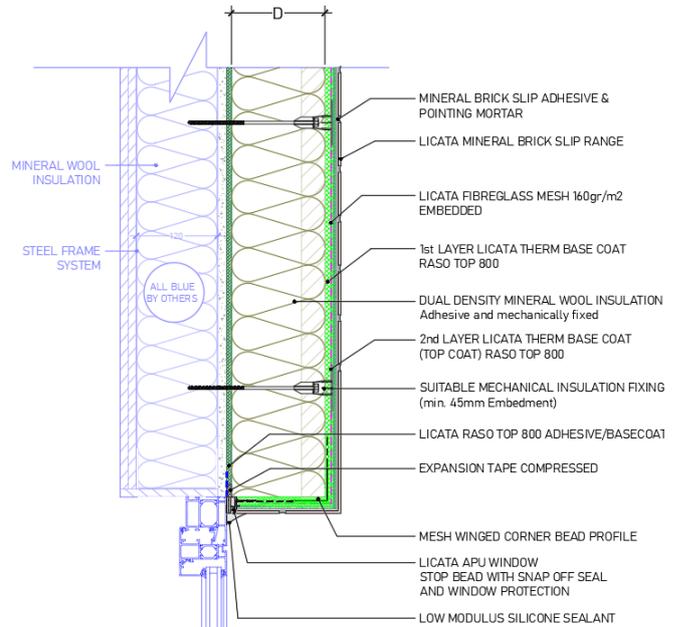
Diagram 5 - Typical window/door reveal detail



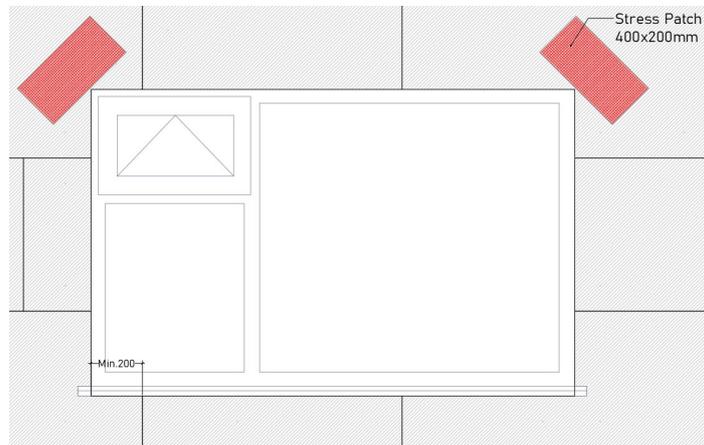
**Diagram 6 - Typical window cill detail**



**Diagram 7 - Typical window head detail**



**Diagram 9 - Typical opening stress patch detail**



The System shall be installed strictly in accordance with the instructions (hereinafter 'Installation Manual') of the Agrément holder, the requirements of this Agrément and the requirements of BS 8000-0.

#### **2.4.1 Project-specific installation considerations**

The project-specific design shall be determined from a pre-installation survey.

A specification shall be prepared for each elevation of the building indicating, where appropriate:

- DPC level, the position of the starter track, water deflection beads/channels, expansion joints and weather seals;
- detailing around windows, doors, etc.;
- identification of:
  - services and any fittings requiring removal or alteration to facilitate installation of the System;
  - areas where silicone/flexible sealants shall be used.

This process includes fixing pull-out tests of the supporting wall according to the Construction Fixings Association Guidance note 'Procedure for site testing construction fixings', to determine pull-out strength values - see Section 2.2.8. Pull-out test loads shall be 2.5 x design load. The pull-out resistance strengths of the supporting wall and MW insulation anchor fixings shall be checked by a competent person and shown to be adequate before installation of the System.

Subsequent project-specific design considerations include confirmation that:

- there is no existing rising damp and there are no signs of damp on the inner face of the supporting wall, other than those caused solely by condensation;
- existing walls are:
  - structurally sound, in a good state of repair and show no evidence of rain or frost damage;
  - watertight, clean and meet the requirements of the relevant Standards and national Building Regulations for airtightness.

#### **2.4.2 Preparation**

The following works shall be undertaken before installing the System:

- the supporting wall shall be finished and free from protrusions and uneven jointing;
- make any necessary repairs or modifications (e.g. removal of fittings which can be relocated after the System is installed);
- the roof shall be in place and window and door openings shall be sealed;
- surfaces shall be clean, dry and free from dirt, grease, oils, solvents and loose particles;
- flues, chimneys and combustion air ventilators shall be continuously sleeved through the wall. Reference shall be made to CIGA's 'Technician's guide to best practice: Flues, chimneys and combustion air ventilators';
- supports for services/fittings, e.g. soil pipes, shall be fixed back to the supporting wall; no load is to be transferred to the System;
- external power cables concealed in trunking shall be well labelled with warning signs;
- where required, extend beyond the surface and securely refix external soil stacks, wastewater pipes, overflows, ducts and vent pipes.

#### **2.4.3 Outline installation procedure**

Detailed installation procedures can be found in the Agrément holder's Installation Manual.

The outline procedure is as follows:

- fix the starter track horizontally to the supporting wall above DPC level at base of the wall, or 150 mm above ground level;
- apply adhesive to the boards with minimum 40 % coverage area using the strip and dot method or full surface application;
- position the MW insulation boards onto the starter track;
- temporarily mechanically fix the MW insulation boards into the supporting wall;
- fix stop beads vertically onto the sealing tape and fully seal with silicone;
- continue with additional MW insulation boards, ensuring tight butt-joints and adhering to a staggered bonding pattern;
- fit ancillary materials or accessories as per the project-specific design or specifications such as corner or drip beads, window profiles, movement beads, etc.;
- apply reinforcing mesh patches at the corners of wall/door openings;
- fit window cills, attachments for fitting gutters and other installations or attachments to the façade;
- apply a layer of basecoat to the entire surface of the MW insulation boards and bed reinforcing mesh into the wet basecoat, overlapping joints;
- apply mechanically fixings through the mesh and MW insulation boards to the supporting wall, in accordance with the fixing pattern, and apply 400 mm by 200 mm mesh patches on top of the fixing heads;
- apply a further layer of basecoat, ensuring no mesh is visible and is fully encapsulated in the basecoat;
- apply System finishes as follows:
  - for silicone finish, apply primer onto the basecoat prior to application of the silicone finish;
  - for mineral brick slip or clay brick slip finishes, apply brick slip adhesive onto the basecoat prior to application of the brick slip finish;
  - apply pointing mortar to clay brick slip finish.

#### **2.4.4 Finishing**

The following finishing is required on completion of the installation:

- check all trunked air vents and flues (by an appropriate test if necessary) to verify that they are clear and unobstructed;
- apply mastic sealant around windows, door frames, etc., and where the installation abuts any other building or surface, to ensure a weathertight joint.

Post-installation inspection checks shall be carried out to ensure that the installation has been successfully completed and that the building has not been damaged. These shall be conducted as soon as possible after completion of the work and before removing scaffolding; any defects shall be reported immediately.

## 2.5 INDEPENDENTLY ASSESSED SYSTEM CHARACTERISTICS

### 2.5.1 Moisture control

Test	Standard	System with finish	Result
Water vapour diffusion resistance	EAD 040083-00-0404	silicone finish	2.24 MNs/g
		mineral brick slip finish	4.69 MNs/g
		clay brick slip finish	6.86 MNs/g
Hygrothermal and freeze-thaw conditioning		silicone finish	No defects
		mineral brick slip finish	
		clay brick slip finish	

### 2.5.2 Strength

Test	Standard	System with finish	Result
Hard-body impact	EAD 040083-00-0404	silicone finish	Use Category I
		mineral brick slip finish	
		clay brick slip finish	
Test	Standard	System component	Result
Compressive stress at 10 % deformation	BS EN 826	Rocksilk EWI Slab	30 kPa
		Rockwool DD	10 kPa
Tensile strength	BS EN 1607	Rocksilk EWI Slab	10 kPa
		Rockwool DD	

### 2.5.3 Fire performance

Test	Standard	System with finish	Result
Reaction to fire	BS EN 13501-1	silicone finish	A2-s1, d0
		mineral brick slip finish	
		clay brick slip finish	

### 2.5.4 Thermal performance

Test	Standard	System component	Result
Thermal conductivity ( $\lambda_D$ )	BS EN 12667	Rocksilk EWI Slab	0.036 W/mK
		Rockwool DD	

3.1 THE CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS 2015 AND THE CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS (NORTHERN IRELAND) 2016

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

3.2 THE NATIONAL BUILDING REGULATIONS

In the opinion of Kiwa Ltd., the System, if installed and used in accordance with Section 2 of this Agrément, can satisfy or contribute to satisfying the relevant requirements of the following national Building Regulations.

This Agrément shall not be construed to confer the compliance of any project-specific design with the national Building Regulations.

3.2.1 England

**The Building Regulations 2010 and subsequent amendments**

- A1 Loading - the System can sustain and transmit combined dead and wind loads to the supporting wall
- B4(1) External fire spread - the System can adequately resist the spread of fire over walls and from one building to another
- C2(b) Resistance to moisture - the System can adequately protect the building from precipitation, including wind-driven spray
- C2(c) Resistance to moisture - the System can adequately protect the building from interstitial and surface condensation
- L1(a)(i) Conservation of fuel and power - the System can contribute to limiting heat gains and losses through walls
- Regulation 7(1) Materials and workmanship - the System is manufactured from suitably safe and durable materials for their application, and can be installed to give a satisfactory performance
- Regulation 7(2) Materials and workmanship - all System components which are part of the external wall or specified attachment, shall achieve European classification of A2-s1, d0 or A1
- Regulation 23 Requirements relating to thermal elements - the System can contribute to walls complying with the requirements of L1(a)(i)
- Regulation 26 CO<sub>2</sub> emission rates for new buildings - the System can contribute to satisfying this Requirement
- Regulation 26A Fabric energy efficiency rates for new dwellings - the System can contribute to satisfying this Requirement
- Regulation 26C Target primary energy rates for new buildings - the System can contribute to satisfying this Requirement

3.2.2 Wales

**The Building Regulations 2010 and subsequent amendments**

- A1 Loading - the System can sustain and transmit combined dead and wind loads to the supporting wall
- B4(1) External fire spread - the System can adequately resist the spread of fire over walls and from one building to another
- C2(b) Resistance to moisture - the System can adequately protect the building from precipitation, including wind-driven spray
- C2(c) Resistance to moisture - the System can adequately protect the building from interstitial and surface condensation
- L1(a)(i) Conservation of fuel and power - the System can contribute to limiting heat gains and losses through walls
- Regulation 7(1) Materials and workmanship - all System is manufactured from suitably safe and durable materials for their application, and can be installed to give a satisfactory performance
- Regulation 7(2) Materials and workmanship - the System components which are part of the external wall or specified attachment, shall achieve European classification of A2-s1, d0 or A1
- Regulation 23 Requirements relating to thermal elements - the System can contribute to walls complying with the requirements of L1(a)(i)
- Regulation 26 CO<sub>2</sub> emission rates for new buildings - the System can contribute to satisfying this Requirement
- Regulation 26A Primary energy rates for new buildings - the System can contribute to satisfying this Requirement
- Regulation 26B Fabric performance values for new dwellings - the System can contribute to satisfying this Requirement
- Regulation 26C Energy efficiency rating - the System can contribute to satisfying this Requirement

3.2.3 Scotland

**The Building (Scotland) Regulations 2004 and subsequent amendments**

3.2.3.1 Regulation 8(1)(2) Durability, workmanship and fitness of materials

- The System is manufactured from acceptable materials and is adequately resistant to deterioration and wear under normal service conditions

3.2.3.2 Regulation 8(3) Durability, workmanship and fitness of materials

- All System components which are part of the external wall or specified attachment, shall achieve European classification of A2-s1, d0 or A1

3.2.3.3 Regulation 9 Building standards - Construction

- 1.1 Structure - the System can sustain and transmit combined dead and wind loads to the supporting wall
- 2.6 Spread to neighbouring buildings - the System can inhibit the spread of fire to neighbouring buildings
- 2.7 Spread on external walls - the System can inhibit the spread of fire on external walls
- 2.8 Spread from neighbouring buildings - the System can inhibit the spread of fire to the building
- 3.10 Precipitation - the System can resist precipitation penetrating to the inner face of the building
- 3.15 Condensation - the System can be designed and constructed to inhibit surface or interstitial condensation
- 6.2 Buildings insulation envelope - the System can contribute to satisfying this Requirement
- 7.1(a)(b) Statement of sustainability - the System can contribute to meeting the relevant Requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard. In addition, the System can contribute to a construction meeting a higher level of sustainability, as defined in this Standard

3.2.3.4 Regulation 12 Building standards - Conversions

- All comments given under Regulation 9 also apply to this Regulation, with reference to Schedule 6 of The Building (Scotland) Regulations 2004 and subsequent amendments, clause 0.12 of the Technical Handbook (Domestic) and clause 0.12 of the Technical Handbook (Non-Domestic)

### 3.2.4 Northern Ireland

#### The Building Regulations (Northern Ireland) 2012 and subsequent amendments

- 23(1)(a)(i)(ii)(iii)(b) Fitness of materials and workmanship - the System is manufactured from materials which are suitably safe and acceptable as described in this Agrément
- 23(2) Fitness of materials and workmanship - all System components which are part of the external wall or specified attachment, shall achieve European classification of A2-s1, d0 or A1
- 28(b) Resistance to moisture and weather - the System can be constructed to prevent the passage of moisture from the weather
- 29 Condensation - the System can be designed and constructed to prevent interstitial condensation
- 30 Stability - the System can sustain and transmit combined dead and wind loads to the supporting wall
- 36(a) External fire spread - the System can adequately resist the spread of fire over walls and from one building to another
- 39(a)(i) Conservation measures - the System can contribute to limiting heat gains and losses through walls
- 40(2) Target CO<sub>2</sub> emission rate - a wall incorporating the System shall be designed and constructed as not to exceed its target CO<sub>2</sub> emission rate
- 43 Renovation of thermal elements - the renovation work carried out to ensure a wall complies with requirement 39(a)(i)

### 3.3 THIRD-PARTY ACCEPTANCE

None requested by the Agrément holder.

### 4 SOURCES

- BS EN ISO 6946:2017 Building components and building elements. Thermal resistance and thermal transmittance. Calculation methods
- BS EN ISO 9001:2015+A1:2024 Quality management systems. Requirements
- BS EN ISO 10211:2017 Thermal bridges in building construction. Heat flows and surface temperatures. Detailed calculations
- BS EN ISO 10456:2007 Building materials and products. Hygrothermal properties. Tabulated design values and procedures for determining declared and design thermal values
- BS EN 771-1 :2011+A1:2015 Specification for masonry units. Clay masonry units
- BS EN 826:2013 Thermal insulating products for building applications. Determination of compression behaviour
- BS EN 998-2:2016 Specification for mortar for masonry - Masonry mortar
- BS EN 1607:2013 Thermal insulating products for building applications. Determination of tensile strength perpendicular to faces
- BS EN 1991-1-4:2005+A1:2010 Eurocode 1. Actions on structures. General actions. Wind actions
- NA to BS EN 1991-1-4:2005+A1:2010 UK National Annex to Eurocode 1. Actions on structures. General actions. Wind actions
- BS EN 1993-1-1:2005+A1:2014 Eurocode 3. Design of steel structures. General rules and rules for buildings
- NA+A1:2014 to BS EN 1993-1-1:2005+A1:2014 UK National Annex to Eurocode 3. Design of steel structures - General rules and rules for buildings
- BS EN 1993-1-3:2006 Eurocode 3. Design of steel structures. General rules. Supplementary rules for cold-formed members and sheeting
- NA to BS EN 1993-1-3:2006 UK National Annex to Eurocode 3. Design of steel structures. General rules. Supplementary rules for cold-formed members and sheeting
- BS EN 12004-1:2017 Adhesives for ceramic tiles. Requirements, assessment and verification of constancy of performance, classification and marking
- BS EN 12004-2:2017 Adhesives for ceramic tiles. Test methods
- BS EN 12467:2012+A2:2018 Fibre-cement flat sheets. Product specification and test methods
- BS EN 12667:2001 Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Products of high and medium thermal resistance
- BS EN 13162:2012+A1:2015 Thermal insulation products for buildings. Factory made mineral wool (MW) products. Specification
- BS EN 13501-1:2018 Fire classification of construction products and building elements. Classification using test data from reaction to fire tests
- BS EN 13859-2:2014 Flexible sheets for waterproofing. Definitions and characteristics of underlays. Underlays for walls
- BS EN 13914-1:2016 Design, preparation and application of external rendering and internal plastering. External rendering
- BS EN 14411:2016 Ceramic tiles. Definition, classification, characteristics, assessment and verification of constancy of performance and marking
- BS 5250:2021 Management of moisture in buildings. Code of practice
- BS 6093:2006+A1:2013 Design of joints and jointing in building construction. Guide
- BS 8000-0:2014+A1:2024 Workmanship on construction sites. Introduction and general principles
- BS 8104:1992 Code of practice for assessing exposure of walls to wind-driven rain
- BRE Information Paper 1/06:2006 Assessing the effects of thermal bridging at junctions and around openings
- BRE Report 135:2013 Fire performance of external thermal insulation for walls of multi-storey buildings
- BRE Report 262:2002 Thermal insulation: avoiding risks
- BRE Report 443:2019 Conventions for U-value calculations
- BRE Report 497:2016 Conventions for calculating linear thermal transmittance and temperature factors
- CIGA Technician's guide to best practice: Flues, chimneys and combustion air ventilators:2016
- Construction Fixings Association Guidance note:2012 Procedure for site testing construction fixings
- EAD 040083-00-0404:2019 External thermal insulation composite systems (ETICS) with renderings
- EAD 330196-01-0604:2017 Plastic anchors made of virgin or non-virgin material for fixing of external thermal insulation composite systems with rendering
- EOTA TR 051:2018 Recommendations for job site tests of plastic anchors and screws
- PAS 2030:2023 Installation of energy efficiency measures in existing dwellings. Specification
- PAS 2035:2023 Retrofitting dwellings for improved energy efficiency. Specification and guidance
- SCI Publication P343:2006 Insulated render systems used with light steel framing

**Remark** - Apart from these sources, technical information and confidential reports have been assessed; any relevant documents are in the possession of Kiwa Ltd. and are kept in the Technical Assessment File of this Agrément. The Installation Manual for the System may be subject to change; contact the Agrément holder for the clarification of revisions.

## 5 AMENDMENT HISTORY

Revision	Amendment description	Author	Approver	Date
-	First issue	A Chapman	C Devine	March 2025
A	Addition of clay brick slip finish	X Karakasi	C Devine	May 2025

## 6 CONDITIONS OF USE

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