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SCOPE OF AGRÉMENT

This BDA Agrément® (hereinafter 'Agrément') relates to Struc-M-Brick and Struc-M-Sil (hereinafter the 'System'). The System is mechanically fixed (and if required, with supplementary adhesive) mineral wool (hereinafter 'MW') insulated, external thermal insulation composite system (ETICS). The System is for use in installation above damp-proof course (hereinafter 'DPC') level on masonry (where masonry includes clay and calcium silicate bricks, concrete blocks, and natural and reconstituted stone blocks) or concrete supporting walls. The System is for existing and new dwellings, and buildings other than dwellings.

DESCRIPTION

The System consists of MW insulation boards, basecoat, reinforcement mesh and brick-effect render (hereinafter 'BER') or silicone render finish, which are fixed to the supporting wall in one of the following configurations:

- MW insulation is mechanically (and if required, with supplementary adhesive) fixed to the supporting wall. A layer of basecoat with reinforcement mesh is then applied, finished with two layers of BER. If required, an optional ArtBrick™ resin and acrylic paint can be applied to the BER;
- MW insulation incorporating a layer of basecoat and reinforcement mesh is mechanically (and if required, with supplementary adhesive) fixed through the • basecoat with reinforcement mesh to the supporting wall. A secondary layer of basecoat with reinforcement mesh is then applied, finished with two layers of BER or silicone render finish. If required, an optional ArtBrick[™] resin and acrylic paint can be applied to the BER.

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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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

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.

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 (optional)	HP12	cement-based, high polymer-modified render basecoat, conforming to BS EN 998-1		
	Rockwool DD	dual density MW insulation slabs, with a minimum compressive strength of 10 kPa and a tensile strength of 10 kPa, in accordance with BS EN 13162, λ_D 0.036 W/mK	1,200 mm by 600 mm, available in thicknesses from 50 to 250 mm [^]	
MW insulation	Knauf - Rocksilk EWI Slab	rock mineral wool slabs, with a minimum compressive strength of 30 kPa and a tensile strength of 10 kPa, in accordance with BS EN 13162, λ_D 0.036 W/mK	1,200 mm by 600 mm available in thicknesses from 50 mm to 260 mm^	
	mechanical fixings for MW insulation	Ejotherm H1 - a steel hammer-in plastic anchor with washer	95 to 355 mm long by 8 mm diameter with 60 mm diameter washer ^{^^}	
basecoat	HP12	cement-based, high polymer-modified render basecoat, conforming t	o BS EN 998-1	
reinforcement mesh	R131 A101 Saint- Gobain Adfors Mesh	a glass fibre mesh with a nominal weight of 131g/m ²	50 m by 1 m, 3.5 mm by 3.8 mm grid size	
silicone render	Struc-Primer	a water-based product containing silicone resin emulsion, acrylic resin emulsion with a range of mineral fillers and other additives, to be used with silicone render finish		
finish	Silicone finish TC15	a water-based product containing silicone resin emulsion, acrylic resin emulsion with a range of mineral fillers and other additives, conforming to BS EN 15824		
	Struc-M-Brick	cement-based, self coloured and ready-mixed render, conforming to BS EN 998-1		
BER finish	ArtBrick™ resin (optional)	hard wearing, high solids blend of UV stable MMA polymers suspended in aromatic hydrocarbons		
	acrylic paint (optional)	acrylic paint copolymer-based, external wall surfaces in aqueous emulsion, quartz, inorganic pigments and micronized loads		

thinner MW insulation (minimum 30 mm thick) to be used for localised cold bridge applications such as reveals

^{^^} length dependent on thickness of MW insulation; 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

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:
- substrate masonry;
- profiles a range of standard profiles for end stop, corner mesh and expansion joints, starter track, available in stainless steel, PVC-U or organic polyester powder-coated galvanized steel, provided to the Specifier's requirements;
- under-and-over cills, cill extenders;
- roof verge extenders;
- expanding tape;
- silicone sealant;
- sealing tape;
- fire barrier mechanical fixings stainless steel.

2.2 POINTS OF ATTENTION TO THE SPECIFIER

2.2.1 Design

2.2.1.1 Design responsibility

A Specifier may not undertake a project-specific design; they shall co-operate closely with the Agrément holder to agree a project-specific design. The Agrément holder retains full design responsibility unless the design is subsequently modified by others.

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 exposure zones 1, 2 and 3, in accordance with BS8104 and PD6697. This Agrément also covers the use of the System onto cavity walls in exposure zone 4; however, for solid walls in exposure zone 4 areas, the Agrément holder shall determine the suitability of the System, taking in consideration the appropriate local wind-driven rain index and permeability of the existing materials using BS 8104 and/or a BS EN 15026 compliant software analysis tool such as WUFI, with an appropriate weather data set.

New masonry supporting walls shall be designed in accordance with:

- BS EN 1992-1-1;
- BS EN 1996-1-1;
- BS EN 1996-2:
- PD 6697.

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

Internal wet work (e.g. screed or plastering) shall be completed and allowed to dry prior to the application of the System.

Assessment of the structural performance of the System shall be carried out by the Agrément holder 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.

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, penetrations and movement joints, which shall be in accordance with BS 6093.

The System shall be secured to the supporting wall with mechanical fixings passing through the MW insulation for BER finish, or through the reinforcement mesh and MW insulation for BER or silicone render finishes.

Where required, properly constructed structural 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, powder-coated galvanised steel or stainless steel, subject to the project-specific design. Structural expansion joints shall be provided at 7.5 m intervals when the length of a wall exceeds 12 m in accordance with PD 6697 and BS EN 1996-2 (subject to the project-specific design). Movement joints for the continuous render finish shall be provided at 10 m intervals.

2.2.1.4 Project-specific design considerations

- The project-specific design shall:
- be determined by the Agrément holder;
- 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 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.

Masonry supporting walls shall be vapour permeable to ensure that moisture can escape from inside the building.

The number of fixings required for Systems fixed through the MW insulation or through 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.

Account shall be taken of Government Accredited Construction Details for Part L - Masonry External Wall Insulation Illustrations, Timber Frame Illustrations and Steel Frame Illustrations for England and Wales and Accredited Construction Details for Scotland (hereinafter 'Government Accredited Construction Details').

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^2 . When using pull-out data for fixings, the material safety factor γ_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 in a well-ventilated covered area to protect System components from rain, frost and humidity;
- store 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;
- 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.

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

Maintenance shall include the 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.

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.

Lime bloom is likely to occur in renders containing Portland cement and this can be avoided by applying the render during weather conditions recommended by the Agrément holder.

Performance factors in relation to the Major Points of Assessment

2.2.7 Moisture control

Condensation risk

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, paying due regard to the design detailing, workmanship and materials to be used.

At the tops 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.

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 load action 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 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 Tables 2 and 3 shall be used.

Table 2 - De	sign wind load value	s - mechanical fixings through	the reinforcement mesh and	MW insulation to the	ne supporting wall
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Design wind load (kN/m ²)	MW insulation thickness (mm)	Number of fixings per m ²	Design fixing pull-through resistance (kN) [^]
1.55		6	
1.80	110	7	0.26
2.10		8	

b derived from static foam block test on MW insulation with EJOT H1 Eco Fixing and reinforcement mesh. Partial factor of 2.5 has been applied

Table 3 - Design wind load values - mechanical fixings through the MW insulation to the supporting wall

Design wind load (kN/m ²)	MW insulation thickness (mm)	Number of fixings per board	Design fixing pull-through resistance (kN) [^]
0.40		4	
0.50	60	5	0.07
0.60		6	
0.55		4	
0.70	110	5	0.10
0.80		6	
0.45		4	
0.60	140	5	0.08
0.70		6	
0.60		4	
0.75	200	5	0.11
0.90		6	

⁴ derived from static foam block test on MW insulation with EJOT H1 Eco Fixing 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 Tables 2 and 3, shall be equal or less than the design pull-out resistance strength of the mechanical fixings from the supporting wall obtained from site tests.

For multistorey buildings, the System shall always be fixed through the reinforcement mesh and MW insulation to the supporting wall due to high wind-load pressure coefficients.

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

- masonry supporting walls;
- MW insulation.

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

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 60-minute intervals thereafter.

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

The System shall include a minimum of one stainless steel fixing per m² of MW insulation or one stainless steel fixing per insulation board, whichever is lesser, fixed through the reinforcing mesh and the MW insulation, in addition to the other MW insulation fasteners normally specified.

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.

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 thermal value will recover when the MW insulation dries out. 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 (λ_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. Due consideration should be given to the Government Accredited Construction Details.

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 and PAS 2030.

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.

2.3 EXAMPLES OF TYPICAL DETAILS

Diagram 1 - Typical construction detail (through MW insulation only)



- 1. MW insulation
- 2. mechanical fixings
- 3. two 3 mm thick coats of basecoat
- 4. mesh
- 5. BER mortar coat
- 6. BER face coat
- 7. ArtBrick[™] resin (optional)
- 8. acrylic paint (optional)

Diagram 2 - Typical construction detail (through mesh and MW insulation)



- 1. MW insulation
- 2. mechanical fixings through insulation
- 3. two 3 mm thick coats of basecoat
- 4. mesh
- 5. mechanical fixings through mesh with additional mesh over
- 6. Struc-Primer
- 7. silicone finish topcoat 1.5 mm

Diagram 3 - Typical vertical movement joint detail



- 1. MW insulation
- 2. mechanical fixings
- 3. basecoat with a layer of mesh
- 4. BER mortar coat
- 5. BER face coat
- 6. full system movement bead
- 7. existing structural movement joint
- 8. ArtBrick[™] resin (optional)
- 9. acrylic paint (optional)

Diagram 5 - Typical standard base detail



- 1. MW insulation
- 2. mechanical fixings
- 3. basecoat with a layer of mesh
- 4. BER mortar coat
- 5. BER face coat
- 6. base bead
- 7. ArtBrick[™] resin (optional)
- 8. acrylic paint (optional)

Diagram 4 - Typical horizontal movement joint detail





- 1. MW insulation
- 2. mechanical fixings
- 3. basecoat with a layer of mesh
- 4. BER mortar coat
- 5. BER face coat
- 6. PVC Bellcast bead with low modulus silicone sealant
- 7. ArtBrick[™] resin (optional)
- 8. acrylic paint (optional)

Diagram 6 - Typical window/door reveal detail



- 1. MW insulation
- 2. basecoat with a layer of mesh
- 3. mechanical fixings
- 4. BER mortar coat
- 5. BER face coat
- 6. wing mesh corner bead
- 7. MW insulation for reveals
- 8. mechanical fixings
- 9. sealing tape and silicone sealant
- 10. window/door frame
- 11. ArtBrick[™] resin (optional)
- 12. acrylic paint (optional)



- MW insulation 1.
- basecoat with a layer of mesh 2.
- BER mortar coat 3.
- 4. BER face coat
- 5. mechanical fixings
- wing mesh corner bead 6.
- ArtBrick[™] resin (optional) 7.
- 8. acrylic paint (optional)

Diagram 9 - Typical over cill detail



- MW insulation 1.
- mechanical fixings 2.
- basecoat with a layer of mesh 3.
- 4. BER mortar coat
- 5. BER face coat
- sealing tape and silicone sealant 6.
- over cill profile 7.
- ArtBrick[™] resin (optional) 8.
- acrylic paint (optional) 9.

Diagram 8 - Typical window reveal/head detail



- MW insulation 1.
- basecoat with a layer of mesh 2.
- mechanical fixings 3.
- 4. BER mortar coat
- BER face coat 5.
- wing mesh corner bead 6.
- MW insulation for reveals 7.
- 8. mechanical fixings
- sealing tape and silicone sealant 9.
- 10. window/door frame
- ArtBrick[™] resin (optional)
 acrylic paint (optional)

Diagram 10 - Typical opening stress patch detail



- mechanical fixings 1.
- 2. extra reinforcement at corners of openings
- 3. mesh
- 4. overlap to mesh sheets

 $\mbox{Diagram 11}$ - Typical fixing pattern - six fixings per m^2 (through mesh and MW insulation)



Diagram 13 - Parapet detail



- 1. MW insulation
- 2. mechanical fixings
- 3. basecoat with a layer of mesh
- 4. BER mortar coat
- 5. BER face coat
- 6. sealing tape and silicone sealant
- 7. exterior grade CP board dressed with damp-proof membrane over
- 8. adjustable bracket
- 9. aluminium capping
- 10. ArtBrick[™] resin (optional)
- 11. acrylic paint (optional)

2.4 INSTALLATION

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.

The primary requirement of the pre-installation survey is to determine the following:

- DPC level, the position of starter track, expansion joints and weather seals;
- detailing around windows, doors, etc.;
- location of fire barriers installed in line with compartment walls and floors;
- identification of:
 - o services and fittings requiring removal or alteration to facilitate installation of the System;
 - o areas where silicone/flexible sealants shall be used.

The installation process includes fixing pull-out tests of the supporting wall according to TR051 to determine pull-out strength values - see Section 2.2.8. The characteristic resistance of fixings shall be subject to the partial factor, as advised by the System designer and the Agrément holder. The design 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:
 - o structurally sound, in a good state of repair and show no evidence of rain or frost damage;
 - o watertight, clean and meet the requirements of the relevant Standards and national Building Regulations for airtightness.

Diagram 12 - Typical fixing pattern (through MW insulation only)



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;
- extend beyond the surface and securely refix external soil stacks, wastewater pipes, overflows, ducts, vent pipes where required.

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 wall above DPC level at base of the wall, or 150 mm above ground level;
- if required, apply adhesive to the MW insulation using the 'notch trowel' method, ensuring 100% coverage; or 'ribbon and dab' method, ensuring minimum 40% coverage;
- position the MW insulation on the starter track and apply mechanical fixings through the MW insulation:
 - for the System with mechanical fixings through the reinforcement mesh and MW insulation, temporarily mechanically fix the MW insulation to the supporting wall;
 - for the System with mechanical fixings through the MW insulation only, apply mechanical fixings through the MW insulation to the supporting wall in accordance with the fixing pattern;
- continue with additional MW insulation, ensuring it is tightly butt-jointed and that a staggered bonding pattern is adhered to; no edge or piece of insulation shall be smaller than 150 mm;
- fit ancillary materials or accessories as per the project-specific design, such as corner or drip beads, window profiles, movement beads, etc.;
- apply reinforcing mesh patches at the corners of wall/door openings;
- apply basecoat to the entire surface of the MW insulation and bed reinforcing mesh into the wet basecoat, ensuring joints are overlapped by a minimum of 100 mm;
- for the System with mechanical fixings through the reinforcement mesh and MW insulation:
 - o apply mechanical fixings through the reinforcement mesh and MW insulation to the supporting wall in accordance with the fixing pattern;
 - apply a further layer of basecoat 1 to 2 mm thick;
 - o lay a secondary layer of reinforcement mesh, or apply patches of reinforcement mesh over the fixings, ensuring it is fully encapsulated in the basecoat;
- apply a final layer of basecoat 3 mm thick
- apply the appropriate finish as follows:
 - o for BER finish, apply BER mortar coat 6 to 8 mm thick and allow to cure; then apply BER face coat 3 to 5 mm thick; finish the BER face coat to create the brick/stone or timber effect. Apply ArtBrick™ resin to the entire surface and ArtBrick™ pigment if specified to create the desired effect, the back point the joints if required;
 - o for silicone finish, apply primer and then apply the silicone coat.

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 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 finish or component	Result
	BC EN 100 12572	BER finish	0.58 m
Water vapour diffusion resistance, Sd	B3 EN 130 12372	BER + ArtBrick™ finish	0.65 m
	EAD 040083-00-0404	Silicone finish	0.26 m
	EAD 040083-00-0404	BER finish	
Hygrothermal conditioning		BER + ArtBrick™ finish	No defects
		Silicone finish	

2.5.2 Strength

Test	Standard	System finish or component	Result
		BER finish	
Hard-body impact	EAD 040083-00-0404	BER + ArtBrick™ finish	Use Category I
		Silicone finish	
Compressive stress at 10% deformation	DO EN 926	Knauf - Rocksilk EWI Slab	30 kPa
Compressive stress at 10% deformation	63 EN 020	Rockwool DD	10 kPa
Topoilo atronath loval	BS EN 1607	Knauf - Rocksilk EWI Slab	10 kBo
rensile strength level		Rockwool DD	10 KFa

2.5.3 Fire performance

Test	Standard	System finish or component	Result
		BER finish	
Reaction to fire	BS EN 13501-1	BER + ArtBrick™ finish	A2-s1, d0
		Silicone finish	

2.5.4 Thermal performance

Test	Standard	System finish or component	Result	
Thermal conductivity ()-)	BS EN 12667	Knauf - Rocksilk EWI Slab	0.026 W/mK	
		Rockwool DD	0.050 W/IIK	

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(1)(a)(2) 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 the System components which are part of the external wall or specified attachment, achieve European classification of A2-s1, d0 or better
- Regulation 23(1) Requirements relating to thermal elements the System can contribute to walls complying with the requirements of L1(a)(i)
- Regulation 26 CO₂ 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(1)(a)(2) 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 the System components which are part of the external wall or specified attachment, achieve European classification of A2-s1, d0 or better
- Regulation 23(1) Requirements relating to thermal elements the System can contribute to walls complying with the requirements of L1(a)(i)
- Regulation 26 CO₂ 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, provided it is
 installed in accordance with the requirements of this Agrément
- 3.2.3.2 Regulation 8(3) Durability, workmanship and fitness of materials
- The System components which are part of the external wall or specified attachment, achieve European classification of A2-s1, d0 or better

3.2.3.3 Regulation 9 Building standards - Construction

- 1.1(a) 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
- 6.1(b) Carbon dioxide emissions the System can contribute to satisfying this Requirement
- 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 the System components which are part of the external wall or specified attachment, achieve European classification of A2-s1, d0 or better
- 28(b) Resistance to moisture and weather the System can be constructed to prevent the passage of moisture
- · 29 Condensation the System can be designed and constructed to prevent interstitial condensation
- 30(a) 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 Target CO₂ emission rate a wall incorporating the System shall be designed and constructed as not to exceed its target CO₂ 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 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 ISO 12572:2016 Hygrothermal performance of building materials and products. Determination of water vapour transmission properties. Cup method
- BS EN 826:2013 Thermal insulating products for building applications. Determination of compression behaviour
- BS EN 998-1:2016 Specification for mortar for masonry. Rendering and plastering 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 1992-1-1:2004+A1:2014 Eurocode 2: Design of concrete structures. General rules and rules for buildings
- NA+A2:2014 to BS EN 1992-1-1:2004+A1:2014 UK National Annex to Eurocode 2. Design of concrete structures. General rules and rules for buildings
- BS EN 1996-1-1:2005+A1:2012 Eurocode 6. Design of masonry structures. General rules for reinforced and unreinforced masonry structures
- NA to BS EN 1996-1-1:2005+A1:2012 UK National Annex to Eurocode 6. Design of masonry structures. General rules for reinforced and unreinforced masonry structures
- BS EN 1996-2:2006 Eurocode 6. Design of masonry structures. Design considerations, selection of materials and execution of masonry
- NA to BS EN 1996-2:2006 UK National Annex to Eurocode 6. Design of masonry structures. Design considerations, selection of materials and execution of masonry
- BS EN 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 data from reaction to fire tests
- BS EN 13914-1:2016 Design, preparation and application of external rendering and internal plastering. External rendering
- BS EN 15026:2023 Hygrothermal performance of building components and building elements. Assessment of moisture transfer by numerical simulation
- BS EN 15824: 2017 Specifications for external renders and internal plasters based on organic binders
- 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 Workmanship on construction sites. Introduction and general principles
- BS 8104:1992 Code of practice for assessing exposure of walls to wind-driven rain
- Accredited Construction Details, Scotland: 2019
- BRE Information Paper 1/06:2006 Assessing the effects of thermal bridging at junctions and around openings
- 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 rendering
- 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
- Government Accredited Construction Detail for Part L:2019
- PAS 2030:2019+A1:2022 Specification for the installation of energy efficiency measures in existing buildings
- PAS 2035:2019+A1:2022 Retrofitting dwellings for improved energy efficiency. Specification and guidance
- PD 6697:2019 Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2

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	November 2023
А	Amendment to MW insulation options	C Hewer	C Devine	February 2025

6 CONDITIONS OF USE

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