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BAW-24-351-S-A-UK
BDA Agrément®
Baumit StarSystem Nature - Direct Fix
External Thermal Insulation Composite System (ETICS)

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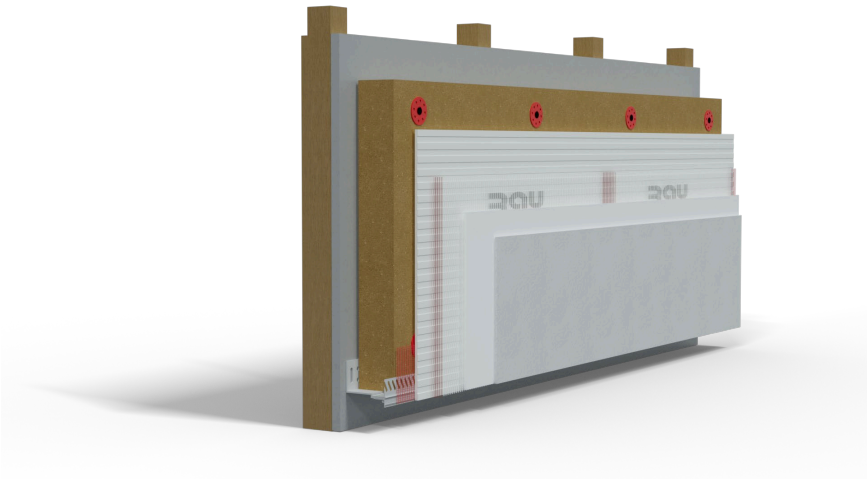
SCOPE OF AGRÉMENT

This BDA Agrément® (hereinafter 'Agrément') relates to Baumit StarSystem Nature - Direct Fix (hereinafter the 'System'). The System is a mechanically fixed, wood fibre (hereinafter 'WF') insulated, external thermal insulation composite system (ETICS) with render finishes. The System is for installation above damp-proof course (hereinafter 'DPC') level on external sheathed structural timber frame (hereinafter 'STF') supporting walls. The System is for existing and new residential and non-residential buildings.

DESCRIPTION

The System consists of render finishes and WF insulation boards which are mechanically fixed to the supporting wall. A layer of basecoat with reinforcement mesh is applied to the WF insulation boards; for multistorey buildings (i.e. more than two storeys), a layer of basecoat and reinforcement mesh is applied to the WF insulation boards which are mechanically fixed through the reinforced basecoat to the supporting wall, with mesh patches embedded over fixing heads. Primer is applied before the application of render finishes. The System incorporates either synthetic, silicone or silicate render finish.

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 protection against rainwater ingress.

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

Fire performance - see Section 2.2.9 - the System is classified as European Classification B-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.

CONTENTS

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, Northern Ireland and 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
WF insulation	Steico	WF insulation board with a minimum compressive strength of 100 kPa and tensile strength of 20 kPa, in accordance with BS EN 13171, λ_D 0.040 W/mK	1,325 mm by 600 mm, 1,880 mm by 600 mm and 2,800 mm by 1250 mm, available in thicknesses from 40 to 200 mm
	Naturheld Wand 140	WF insulation board with a minimum compressive strength of 100 kPa and tensile strength of 20 kPa, in accordance with BS EN 13171, λ_D 0.043 W/mK	1,500 mm by 580 mm, available in thicknesses from 80 to 140 mm
	Naturheld Wand 180	WF insulation board with a minimum compressive strength of 150 kPa and tensile strength of 30 kPa, in accordance with BS EN 13171, λ_D 0.045 W/mK	1,500 mm to 3,000 mm by 580 mm to 1,250 mm, available in thicknesses from 40 to 60 mm
	mechanical fixings	Ejot STR H screw-in anchor with polyethylene plate and stainless steel or galvanised steel screw^	6 mm diameter screw, 80 to 260 mm long with 60 mm diameter plate^^
basecoat	Baumit StarContact	mineral-based, dry adhesive contact mortar and basecoat render with cement, mineral powder and additives	
	Baumit StarContact White	natural white, mineral-based, dry adhesive and basecoat render with cement, mineral powder and additives	
reinforcement mesh	Baumit StarTex	alkali resistant glass-fibre mesh with a nominal weight of 160 g/m^2	50 m long by 1 m and 1.1 m wide rolls, 4 mm by 4.5 mm grid size
primer	Baumit UniPrimer	an acrylic primer comprising organic binder, quartz sand, silicone-containing additives, filler and pigment	
	Baumit Premium Primer	acrylic-based liquid primer comprising organic binder, additives and filler	
decorative topcoats finish	SilikonTop	silicone resin render with additives, comprising organic binders, colour pigments and mineral fillers with a 1.5 mm, 2 mm and 3 mm grain size, in accordance with BS EN 15824	
	SilikatTop	silicate based render with additives, comprising organic binders, colour pigments, silicate, fibres and mineral fillers with a 1.5 mm, 2 mm and 3 mm grain size, in accordance with BS EN 15824	
	StarTop	silicone resin render with additives, comprising organic binders, colour and white pigments, fibres and special mineral fillers with a 1.5 mm, 2 mm and 3 mm grain size, in accordance with BS EN 15824	

^ 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

^^ length is dependent on the thickness of the WF insulation

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 - structural timber frame;
- profiles - a range of standard profiles for end stop, corner mesh and expansion joints, 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 barriers;
- 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 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 using BS 8104. However, for severe and very severe exposure zone areas, the Specifier, in close cooperation with the Agrement

holder, shall determine the suitability of the System, taking into 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.

The System shall be installed on STF supporting walls, where sheathing consists of exterior-grade cement-bonded particle boards (hereinafter 'CBPB'), marine-grade plywood, oriented strand boards (hereinafter 'OSB') or fibre cement boards. Manufacturing requirements and recommended thicknesses, are as follows:
- CBPB shall be manufactured in accordance with BS EN 12467 or BS EN 634-2, with a minimum thickness of 10 mm;
- marine-grade plywood shall be manufactured in accordance with BS EN 313-1, with a minimum thickness of 12 mm;
- OSB shall be OSB/3, manufactured in accordance with BS EN 300, with a minimum thickness of 11 mm;
- fibre cement boards shall be weather resistance Category A or B and bending strength Class 2 or 3, manufactured in accordance with BS EN 12467, with a minimum thickness of 9 mm.

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.

Supporting walls shall be designed in accordance with BS EN 1995-1-1 / I.S. EN 1995-1-1, BS EN 14081-1 and PD 6693-1; timbers shall be not less than 37 mm thick with a minimum width of 72 mm.

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.

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, 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 WF insulation, or through the reinforcement mesh and WF 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, powder-coated galvanised steel or stainless steel. Movement joints within the System shall be installed as follows:
- to be 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 and for existing buildings, expansion joints shall be provided to align with existing expansion joints within the building structure;
- to allow for vertical movement, horizontal expansion joints shall be provided at each floor level;
- movement joints for the continuous render finish shall be provided at 10 m intervals;
- in accordance with the project-specific design.

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 for the existing building, and to confirm that the design works can be carried out for new buildings - 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.

Supporting walls shall be vapour permeable, to ensure that moisture can escape from inside the building. In cases where the external envelopes are not vapour permeable, mechanical moisture management system shall be considered.

The local spell index method for assessing the exposure zones to wind-driven rain 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 WF insulation only and through the reinforcement mesh and WF 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^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 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;
- 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 inspection and, if appropriate, replacement and resealing of joints at window and door frames and other penetrations through the System 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.

The system shall be cleaned using soft washing techniques instead of high-pressure washing, which can damage the render. This involves applying the cleaning solution at low pressure and letting it sit for a few minutes to break down dirt, algae and graffiti.

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.

Ensure adequate ventilation in the building to reduce the risk of interstitial and surface condensation. Mechanical ventilation with heat recovery (MVHR) should be considered.

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 protection against rainwater ingress. However, care shall be taken to ensure that the 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, paying due consideration 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 to shed water away from the walls.

The System has adequate resistance to artificial weathering and resistance to thermal shock, in accordance with EAD 040089-00-0404.

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 STF supporting wall and the System 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 / I.S. 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 walls 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 can be designed to adequately resist wind-loads with suitable mechanical strength, in accordance with BS EN 16382. For the calculation of the wind-load resistance of the System, the design pull-through values given in Table 2 shall be used.

Table 2 - Design wind load values - mechanical fixings with 60 mm diameter plate

Design wind load (kN/m^2)	No. of fixings per WF board	No. of fixings per m^2	Design fixing pull-through resistance (kN)^
1.07	5	7	0.15
1.38	6	9	
1.53	7	10	
1.84	8	12	

^ derived from pull-through test through 60 mm thick WF insulation. A partial factor of 3 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.

For multistorey buildings (i.e. more than two storeys), the System shall always be fixed through the reinforcement mesh and WF 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 of the WF insulation, and System finishes. Negative wind load is resisted by the bond between the WF insulation and the System finish reinforced with reinforcement mesh. The WF insulation is retained by reinforcement mesh and mechanical fixings, which are fixed through reinforcement mesh and insulation or though the insulation only to the supporting wall.

Impact resistance
When tested for hard-body impact resistance, in accordance with EAD 040089-00-0404, all the System finishes are categorised as Use Category II.

The Use Categories in accordance with EAD 040089-00-0404 are as detailed below:
- 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 B-s1, d0, in accordance with BS EN 13501-1.

For all buildings in Wales and Northern Ireland, and non-residential buildings in England, the System shall not be used on buildings with a storey of 18 m or more above ground level; the System can be used without any boundary restrictions. Refer to the relevant national Building Regulations for types of buildings and any exclusions that may apply.

For residential buildings in England, the System shall not be used on buildings with a storey of 11 m or more above ground level; the System can be used without any boundary restrictions. Refer to the relevant national Building Regulations for types of buildings and any exclusions that may apply.

For all buildings in Scotland, the System is restricted to buildings with no floor more than 11 m above ground level and not less than 1 m from the boundary. In such cases, the System may be excluded from the unprotected area calculation regardless of openings. Refer to the national Building Regulations for types of buildings and any exclusions that may apply.

For dwellings in Ireland, the System shall not be used on buildings with a storey of 15 m or more above ground level; the System can be used without any boundary restrictions. Refer to the relevant national Building regulations for types of buildings and any exclusions that apply.

For buildings other than dwellings in Ireland, the System shall not be used on buildings with a storey of 18 m or more above ground level; the System can be used without any boundary restrictions. Refer to the national Building Regulations for types of buildings and any exclusions that may apply.

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, in accordance with the national Building Regulations.

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

In addition to the other WF insulation mechanical fixings normally specified, when applied to buildings of more than 2 storeys, the System shall include a minimum of one stainless steel fixing per m^2 of WF insulation or one stainless steel fixing per insulation board, whichever is the lesser, fixed through the reinforcement mesh and the WF insulation, as per the guidance in BRE Report 135 and BRE Defect Action Sheets 131 and 132.

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.

Proximity of flues and appliances
The installed System shall be adequately separated from any chimney, heat producing appliance or incinerator flue pipe passing through a wall. Recommended means of separation are detailed in the Approved Documents supporting the national Building Regulations. Reference shall also be made to the NIA's 'Specification for the installation of external wall insulation ensuring the safety and operation of fuel burning appliances'.

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 WF 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 WF 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 WF insulation thickness, fixing method, type of supplementary mechanical fixing and insulating value of the supporting wall and its internal finish. For further improvement of the thermal performance of the building, the designer should consider additional insulation thickness or service measures.

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 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 shall be given to INCA's 'External wall insulation specification for weathering and thermal bridge control - Guide'.

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 and Ireland. 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 fixing pattern

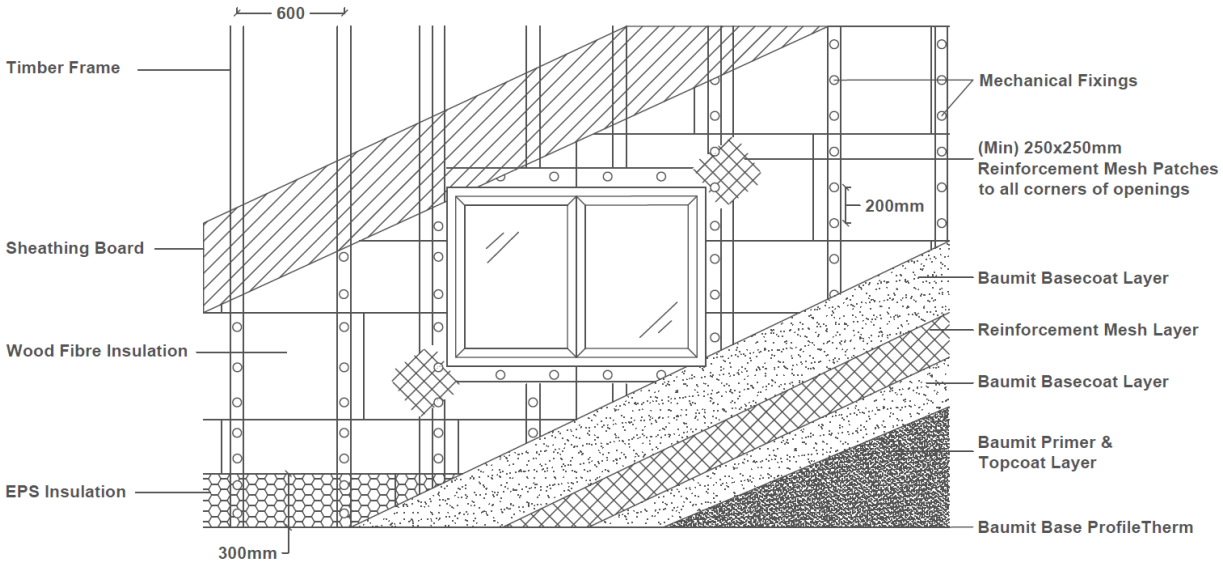


Diagram 2 - Typical build up detail

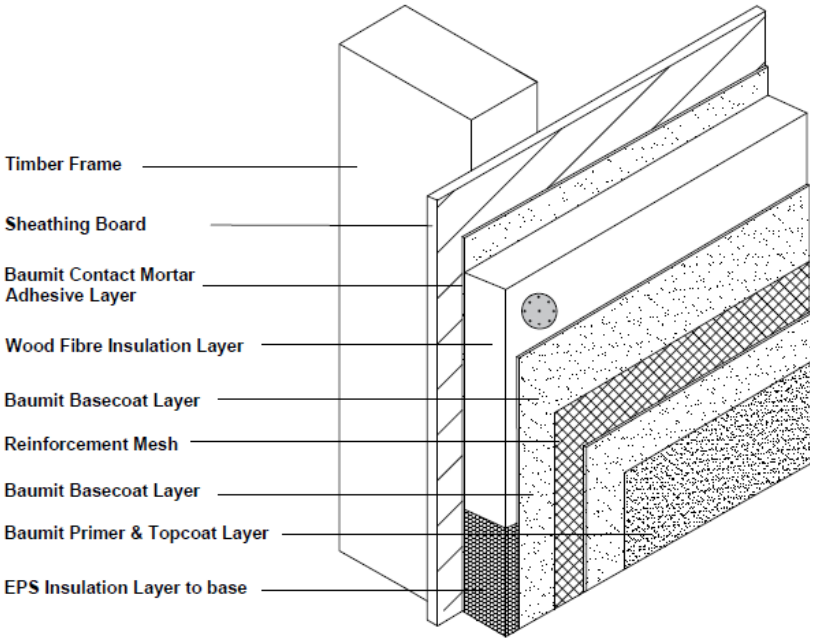
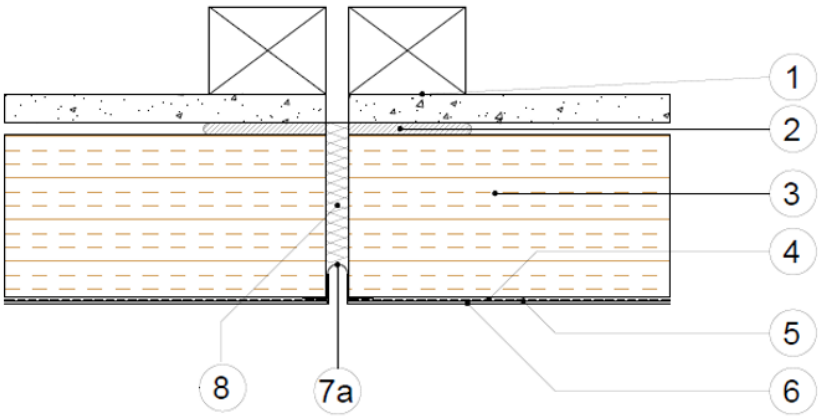


Diagram 3 - Typical vertical movement joint detail



1. substrate
2. adhesive layer
3. WF insulation
4. basecoat with mesh
5. primer
6. topcoat

7a. expansion joint 'E' profile

8. structural expansion joint

Diagram 4 - Typical standard base detail

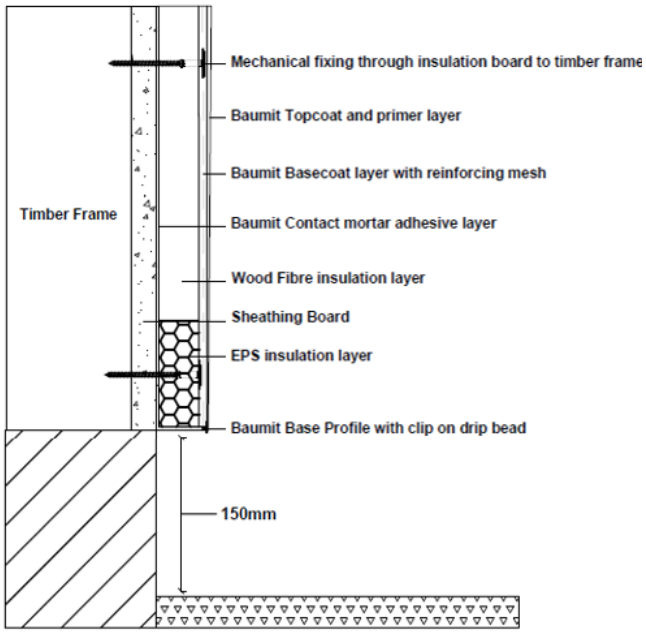


Diagram 5 - Typical window head detail

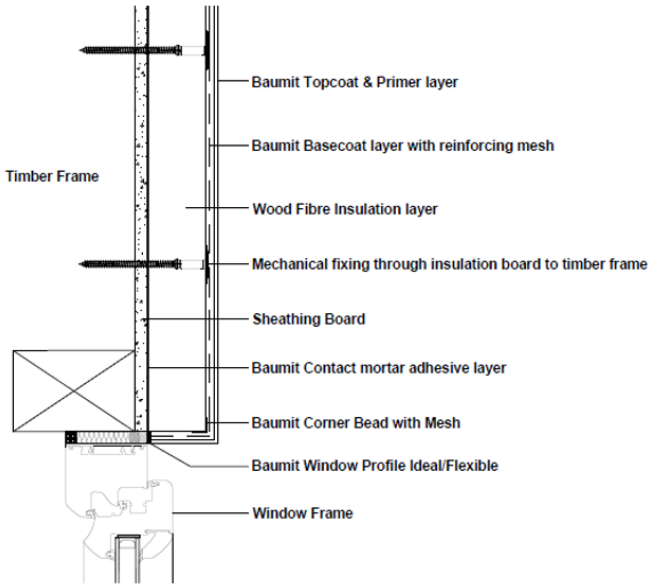


Diagram 6 - Typical window reveal detail

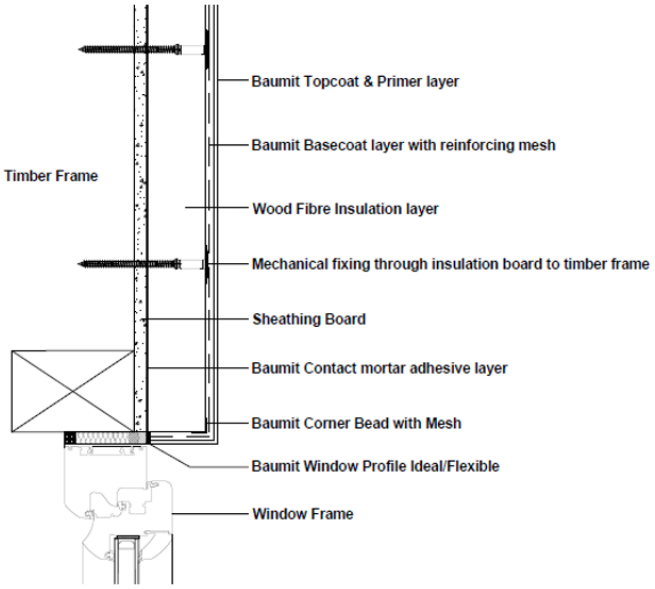


Diagram 7 - Typical window cill detail

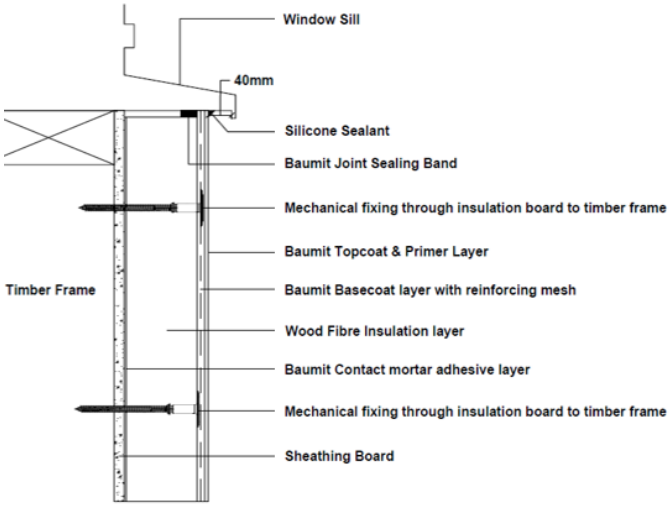


Diagram 8 - Typical overhanging eaves detail

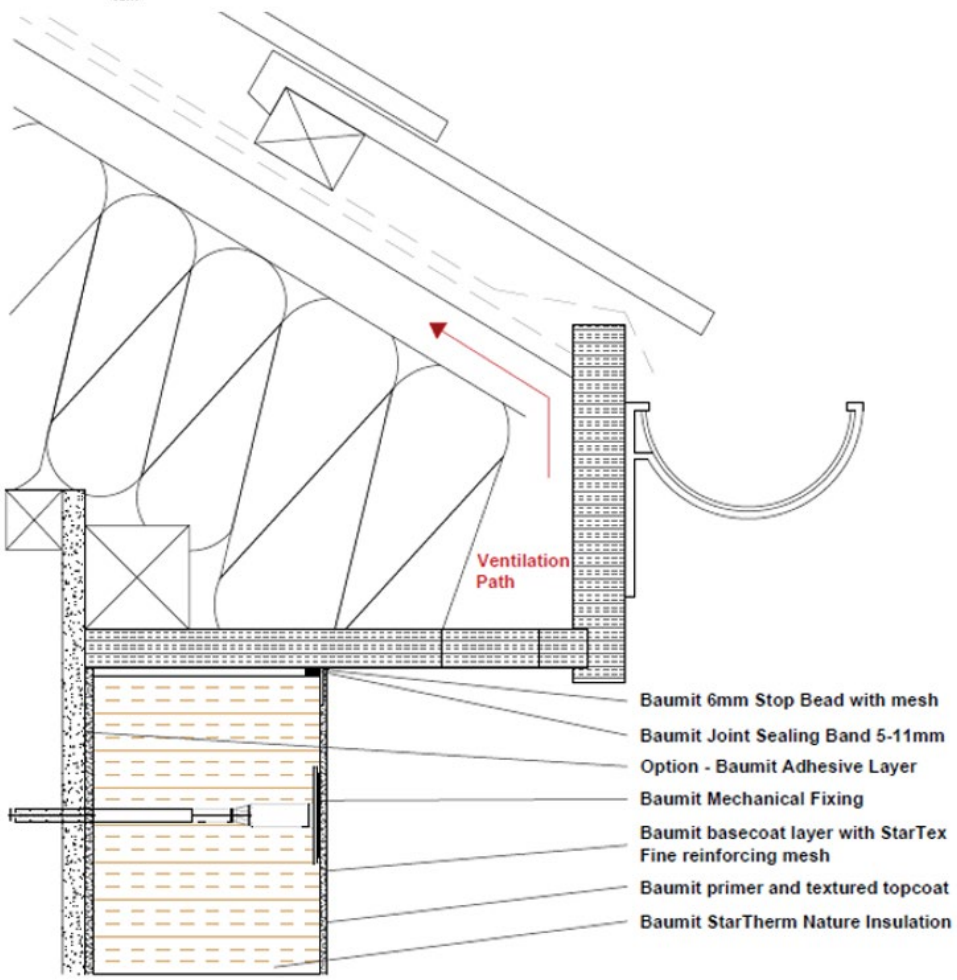
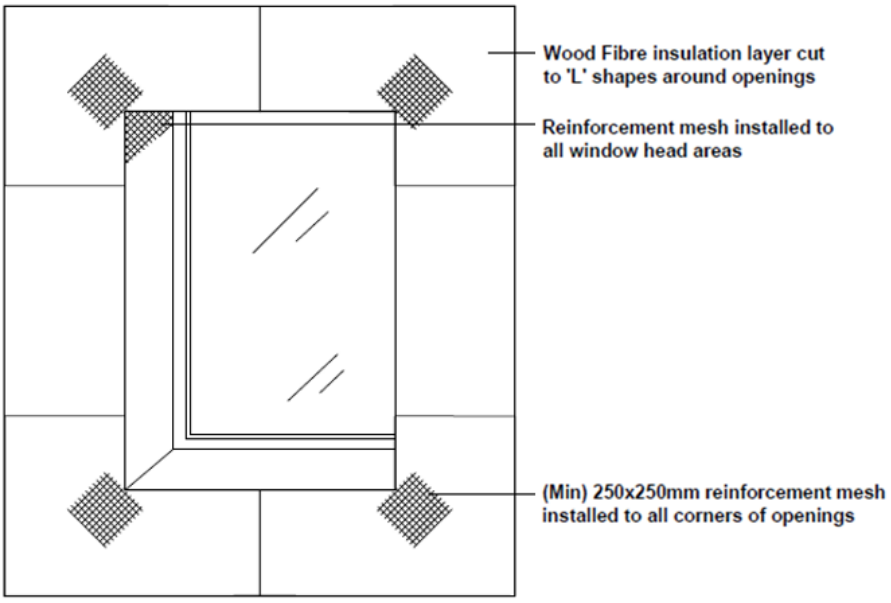


Diagram 9 - Typical opening stress patch detail



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

A pre-installation survey is required to allow determination of the project-specific design for the existing building, and to confirm that the design works can be carried out for new buildings.

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

- DPC level, the position of 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 BS 8539 and the Construction Fixings Association Guidance note 'Procedure for site testing construction fixings', to determine pull-out strength values. Pull-out test loads shall be 2.5 x design load. The design pull-out resistance strengths of the supporting wall and WF insulation mechanical fixings shall be checked by a competent person and evidenced 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. Cables shall be adequately rated in accordance with BS 7671;
- where required, extend beyond the surface and securely refix external soil stacks, wastewater pipes, overflows, ducts and vent pipes;
- roofs/copings shall have sufficient overhang at eaves, verges and parapets.

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:

- mechanically fix the starter track horizontally to the supporting wall at maximum spacing of 300 mm, above DPC level at base of the wall, or 150 mm above ground level;
- position the WF insulation boards onto the starter track and temporarily mechanically fix to the supporting wall;
- continue with additional WF insulation boards; L-shaped WF insulation boards shall be placed on corners of windows and doors;
- from ground floor up to second storey, mechanically fix into the substrate wall according to the fixing pattern;
- fit ancillary materials or accessories in accordance with the project-specific design or specifications;
- apply a layer of basecoat to the entire surface of the WF insulation boards and bed reinforcement mesh into the wet basecoat, ensuring joints are overlapped by a minimum of 100 mm;
- apply a minimum of 250 mm by 250 mm reinforcement mesh patches at the corners of wall/door openings;
- for the second storey and above, apply mechanical fixings through the mesh and WF insulation boards to the substrate wall in accordance with the fixing pattern and apply a 250 mm by 300 mm or 340 mm by 400 mm mesh patches over fixing heads and fully encapsulate the mesh patches into the basecoat;
- primer is applied onto the basecoat prior to application of the finish;
- apply the appropriate topcoat render finish and then rub down the material to the particle grain size.

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;
- where a proprietary window sealing strip has not been employed, 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
Hygrothermal conditioning	EAD 040089-00-0404	all render finishes	No defects
Water vapour permeability (S_d)		SilikonTop	0.5 m
		SilikatTop	0.3 m
		StarTop	0.4 m

2.5.2 Strength

Test	Standard	System with finish	Result
Hard-body impact resistance	EAD 040089-00-0404	all render finishes	Use Category II

2.5.3 Fire performance

Test	Standard	System with finish	Result
Reaction to fire	BS EN 13501-1	all render finishes	B-s1, d0

2.5.4 Thermal performance

Test	Standard	System component	Result
Thermal conductivity (λ_D)	BS EN 13171	Steico	0.040 W/mK
		Naturheld 140	0.043 W/mK
		Naturheld 180	0.045 W/mK

3 CDM, NATIONAL BUILDING REGULATIONS AND THIRD-PARTY ACCEPTANCE

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 23 Requirements relating to thermal elements - the System can contribute to walls complying with the requirements of L1(a)(i)
- Regulation 26 CO_2 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 - the System is manufactured from suitably safe and durable materials for their application, and can be installed to give a satisfactory performance
- Regulation 23 Requirements relating to thermal elements - the System can contribute to walls complying with the requirements of L1(a)(i)
- Regulation 26 CO_2 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 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

3.2.3.3 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
- 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_2 emission rate - a wall incorporating the System shall be designed and constructed as not to exceed its target CO_2 emission rate
- 43 Renovation of thermal elements - the renovation work carried out to ensure a wall complies with requirement 39(a)(i)

3.2.5 Ireland

Building Regulations 1997 and subsequent amendments

In order to demonstrate compliance with Irish Building Regulations, this BDA Agrément® certifies that the System complies with the requirements of a recognised document and indicates it is suitable for its intended purpose and use.

- A1(1)(2) Structure - the System can sustain and transmit combined dead and wind loads to the supporting wall
- B4 External fire spread - the System can adequately resist the spread of fire over walls and from one building to another (for buildings other than dwellings)
- B9 External fire spread - the System can adequately resist the spread of fire over walls and from one building to another (for dwellings)
- C4 Resistance to weather and ground moisture - a wall incorporating the System can contribute to adequately protecting a building from the passage of moisture from precipitation
- D1 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
- L1 Conservation of fuel and energy - the System can contribute to limiting heat gains and losses through walls
- L2(a) Conservation of fuel and energy (in existing dwellings) - the System can contribute to limiting heat gains and losses through walls
- L4(a) Conservation of fuel and energy (in existing buildings other than dwellings) - the System can contribute to limiting heat gains and losses through walls
- L5(c) Conservation of fuel and energy (in new buildings other than dwellings) - the System can contribute to limiting heat gains and losses through walls
- Regulation 7 Conservation of fuel and energy in existing dwellings - the System can contribute to satisfying this Requirement
- Regulation 8(c) Conservation of fuel and energy in new dwellings - the System can contribute to satisfying this Requirement

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 300:2006 Oriented strand boards (OSB). Definitions, classification and specifications
- BS EN 313-1:1996 Plywood. Classification and terminology. Plywood. Classification and terminology. Classification
- BS EN 634-2:2007 Cement-bonded particleboards. Specifications. Requirements for OPC bonded particleboards for use in dry, humid and external conditions
- 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 1995-1-1:2004+A2:2014 Eurocode 5: Design of timber structures. General. Common rules and rules for buildings
- NA to BS EN 1995-1-1:2004+A2:2014 UK National Annex to Eurocode 5: Design of timber structures. General. Common rules and rules for buildings
- BS EN 12467:2012+A2:2018 Fibre-cement flat sheets. Product specification and test methods
- BS EN 13171:2012+A1:2015 Thermal insulation products for buildings. Factory made wood fibre (WF) 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 14081-1-1:2016+A1:2019 Timber structures. Strength graded structural timber with rectangular cross section. General requirements
- BS EN 15824:2017 Specifications for external renders and internal plasters based on organic binders
- BS EN 16382:2016 Thermal insulation products for building applications. Determination of the pull-through resistance of plate anchors through thermal insulation products
- 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 7671:2018/A3:2024 Requirements for Electrical Installations. IET Wiring Regulations
- 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
- BS 8539:2012+A1:2021 Code of practice for the selection and installation of post-installed anchors in concrete and masonry
- BRE Defect Action Sheet 131:1989 External walls: combustible external plastics insulation: horizontal fire barriers
- BRE Defect Action Sheet 132:1989 External walls: combustible external plastics insulation: fixings
- 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:2020
- Construction Fixings Association Guidance note:2012 Procedure for site testing construction fixings
- EAD 040089-00-0404:2016 ETICS with renderings for the use of timber frame buildings
- 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
- INCA:2019 External wall insulation specification for weathering and thermal bridge control - Guide
- I.S. EN 1991-1-4:2005 Eurocode 1: Actions on structures. Part 1-4: General actions. Wind actions
- I.S. EN 1991-1-4/NA:2005 Irish National Annex to Eurocode 1: Actions on structures. Part 1-4: General actions. Wind actions
- I.S. EN 1995-1-1:2005 Eurocode 5: Design of timber structures. Part 1-1: General. Common rules and rules for buildings
- I.S. EN 1995-1-1/NA:2005+A1:2013 Irish National Annex to Eurocode 5: Design of timber structures. Part 1-1: General. Common rules and rules for buildings
- NIA Specification for the installation of external wall insulation ensuring the safety and operation of fuel burning appliances:2017
- PAS 2030:2023 Installation of energy efficiency measures in existing dwellings. Specification
- PAS 2035:2023 Retrofitting dwellings for improved energy efficiency. Specification and guidance
- PD 6693-1:2019 Recommendations for the design of timber structures to Eurocode 5: Design of timber structures. General. Common rules and rules for building

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	X Karakasi	C Devine	June 2025

6 CONDITIONS OF USE

This Agrément may only be reproduced and distributed in its entirety.

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Whilst all due diligence has been used, no liability or warranty is extended by Kiwa Ltd.

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