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BAW-25-392-S-A-UK
BDA Agrément®
Baumit StarSystem EPS External Thermal Insulation Composite System (ETICS)

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SCOPE OF AGRÉMENT

This BDA Agrément® (hereinafter 'Agrément') relates to Baumit StarSystem EPS (hereinafter the 'System'). The System is an adhesively fixed (with supplementary mechanical fixings), expanded polystyrene (hereinafter 'EPS') insulated, external thermal insulation composite system (ETICS) with render finishes. The System is for 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 residential and non-residential buildings.

DESCRIPTION

The System consists of EPS insulation boards which are adhesively fixed, and with supplementary mechanical fixings, to the supporting wall. A layer of basecoat with reinforcement mesh is applied to the EPS insulation boards. Primer is applied before the application of render finishes. The System incorporates either synthetic, silicone, silicate, acrylic or mineral render finish.

ILLUSTRATION

THIRD-PARTY ACCEPTANCE

See Section 3.3 (Third-Party Acceptance).

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 can be designed to resist wind loads normally encountered in the UK.

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.

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1 GENERAL CONSIDERATIONS

1.1 CONDITIONS OF USE

1.1.1 Limitations

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

1.1.2 Application

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

1.1.3 Assessment

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

1.1.4 Installation supervision

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

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

1.1.5 Geographical scope

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

1.1.6 Validity

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

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	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	
EPS insulation	Baumit Grey EPS 70	70E HP - grey EPS insulation, with compressive strength of 70 kPa and a tensile strength of 100 kPa, in accordance with BS EN 13163, λ_D 0.032 W/mK	1,200 mm by 600 mm, available in thicknesses from 20 to 200 mm
		EPS 70E Grey - grey EPS insulation, with compressive strength of 70 kPa and a tensile strength of 140 kPa, in accordance with BS EN 13163, λ_D 0.031 W/mK	1,200 mm by 600 mm, available in thicknesses from 20 to 200 mm
		Plustherm 70 - grey EPS insulation, with compressive strength of 70 kPa and a tensile strength of 110 kPa, in accordance with BS EN 13163, λ_D 0.030 W/mK	1,200 mm by 600 mm, available in thicknesses from 20 to 250 mm
	mechanical fixings	Ejot STR U screw-in anchor with polyethylene plate and stainless steel or galvanised steel screw^	8 mm diameter screw, 78 to 418 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	
	CrystalActivator	primer with mineral binder, polymer dispersion, white pigment, water, thickener, defoamer, dispersing agent, mineral fillers in accordance with BS EN 15824 (to be used only with CrystalTop top coat)	
decorative top coat finish	GranoporTop	synthetic 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	
	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	
	PuraTop	acrylic resin render with additives, comprising 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	
	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	
	CrystalTop	mineral render with mineral binder, polymer dispersion, white pigment, water, thickener, defoamer, dispersing agent, mineral fillers with 1.5 mm, 2 mm and 3 mm grain size in accordance with BS EN 15824 (to be used only with CrystalActivator primer)	

^ 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 EPS 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:

- external supporting wall - masonry or concrete;
- profiles - a range of standard profiles for end stop, corner reinforcement 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;
- sealing tape;
- silicone sealant;
- Baumit DS26 Flex sealant;
- breather membrane;
- roofline closure systems;
- dubbing-out compound;
- moss and mould remover/biocide;
- 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 exposure zones 1, 2 and 3, in accordance with BS 8104 and PD 6697. This Agrément also covers the use of the System when installed onto cavity walls in exposure zone 4, in accordance with 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.

New masonry supporting walls shall be designed in accordance with:
- BS EN 1992-1-1;
- BS EN 1996-1-1;
- BS EN 1996-2;
- BS 8000-3;
- PD 6697.

The ingress of water into the wall construction shall be avoided by carrying out detailing techniques specified in the Agrément to a high standard. The risk of water penetration will cause substantial damage to the wall construction incorporating the System and the thermal benefit of the insulation will be minimised.

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.

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.

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 and, where relevant, shall be in accordance with BS 6093.

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. Movement joints within the System shall be installed as follows:
- 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;
- movement joints for the continuous render finish shall be provided at 10 m intervals;
- in accordance with PD 6697 and BS EN 1996-2, for the System on masonry supporting walls;
- 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 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. 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, on Systems installed on masonry supporting walls, shall be considered at the project-specific design phase, taking into consideration:
- geographical location and orientation of the proposed wall;
- terrain upwind;
- obstructions;
- characteristics of the proposed wall.

During the assessment and survey, pull-off (bond strength) tests shall be conducted on the supporting wall. The results of the assessment and survey shall assist the Agrément holder in determining the wind resistance of the supporting wall and 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 a degree of 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 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 qualified structural engineer. The project-specific design shall ensure that the System attachment to the supporting wall has adequate pull-off (bond strength) 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 action load data for the site location shall be collated and used to calculate the required design wind resistance (positive and negative). Special consideration shall be given to locations with high wind-load pressure coefficients, as extra fixings may be required.

The System can be designed to adequately resist wind-loads with suitable bond strength, in accordance with EAD 040083-00-0404. For the calculation of the wind-load resistance of the System, the design bond strength resistance values given in Table 2 shall be used.

Table 2 - Design bond strength resistance

Design bond strength resistance		
Between the adhesive and the substrate^	**Between the adhesive and EPS insulation^^**	**Between the basecoat and EPS insulation§**
163 kPa	11.3 kPa	35.2 kPa

^ tested on a concrete slab, with a partial factor of 9 applied
^^ a partial factor of 9 applied
§ a partial factor of 2.5 applied

The design bond strength resistance derived from test results between the:

- substrate wall and the adhesive, shall incorporate a partial factor of 9;
- adhesive and the EPS insulation, shall incorporate a partial factor of 9;
- EPS insulation and the basecoat shall incorporate a partial factor of 9. For tensile failure in the body of insulation a partial factor shall be 2.5.

The Agrément holder shall determine the number and spacing of the supplementary fixings. These fixings will initially support the weight of the insulation system, transferring it to the substrate wall while the adhesive cures. However, the pull-out resistance values vary depending on the substrate type.

The qualified structural engineer shall ensure that the data obtained from Table 2 shall be assessed against the maximum design wind load and shall be equal or less than the design bond strength resistances, including the design bond strength resistance of the supporting wall obtained from site tests. Contribution of the mechanical fixings is not considered when calculating the wind-load resistance of the System.

Design bond strength resistances shall withstand the design wind loads, in cases where the design wind loads exceed the design bond strength resistances, the System shall be mechanically fixed, however, a mechanically fixed System is outside of the scope of this Agrément.

Positive wind load is transferred to the supporting wall directly via bearing and compression of the EPS insulation and System finishes. Negative wind load is resisted by the bond between the System finish reinforced with reinforcement mesh and the EPS insulation. The EPS insulation is retained by the bond between the EPS insulation and adhesive which is bonded to the supporting wall in addition to any supplementary mechanical fixings.

Impact resistance

When tested for hard-body impact resistance, in accordance with EAD 040083-00-0404, all the System finishes are categorised as Use Category II.

The Use Categories in accordance with EAD 040083-00-0404 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.

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

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

In addition to the other EPS insulation fasteners 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 EPS insulation or one stainless steel fixing per insulation board, whichever is the lesser, fixed through the reinforcement mesh and the EPS 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 EPS 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 EPS 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 EPS 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. 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 build up details

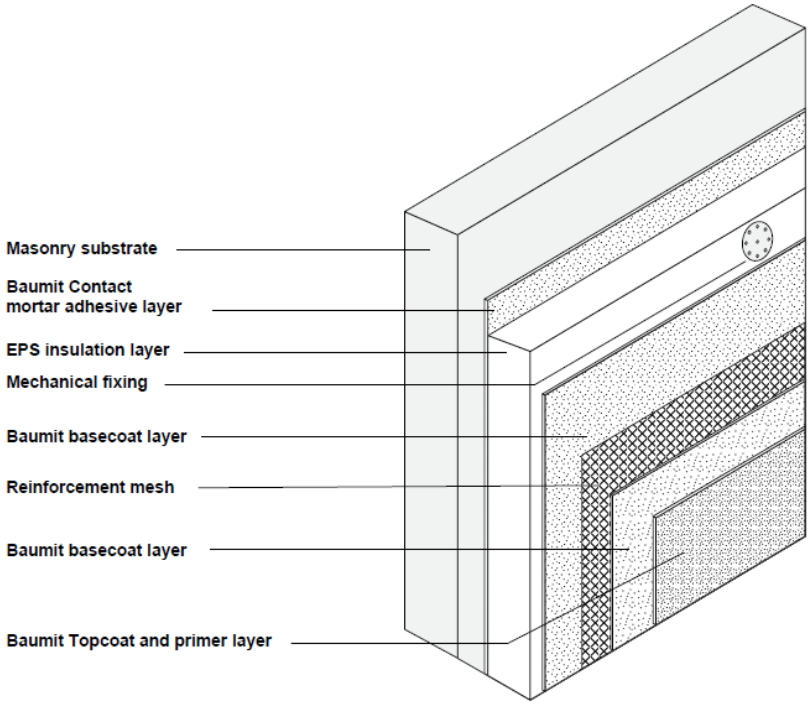
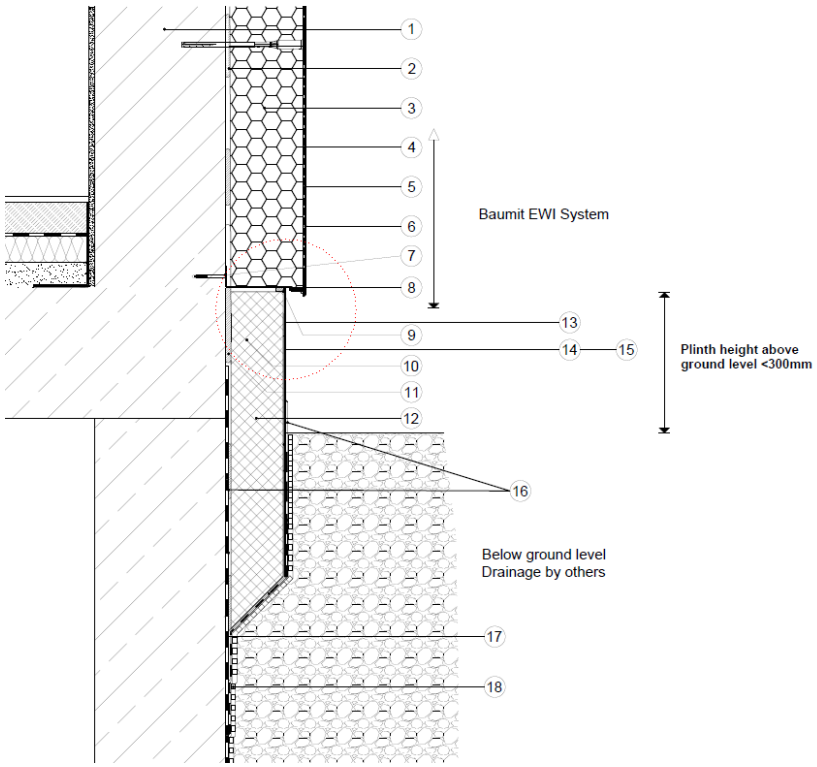
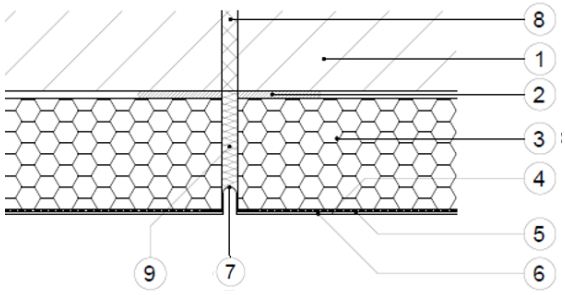


Diagram 2 - Typical standard base detail



1. substrate
2. adhesive
3. EPS insulation
4. basecoat with reinforcement mesh
5. primer
6. top coat layer
7. nail anchor/montage set
8. Base ProfileTherm
9. joint sealing band
10. mechanical fixing
11. adhesive
12. PlinthTherm XPS (outside scope of this Agrément)
13. basecoat with reinforcement mesh
14. primer
15. top coat
16. Baumit DS26 Flex
17. existing building waterproofing (by others)
18. plastic waterproofing layer (by others)

Diagram 3 - Typical vertical movement joint detail



1. substrate
2. adhesive
3. EPS insulation
4. basecoat with reinforcing mesh
5. primer
6. top coat layer
7. expansion joint 'e' profile
8. structural expansion joint
9. mineral wool insulation (outside scope of this Agrément)

Diagram 4 - Typical cill detail with upstands

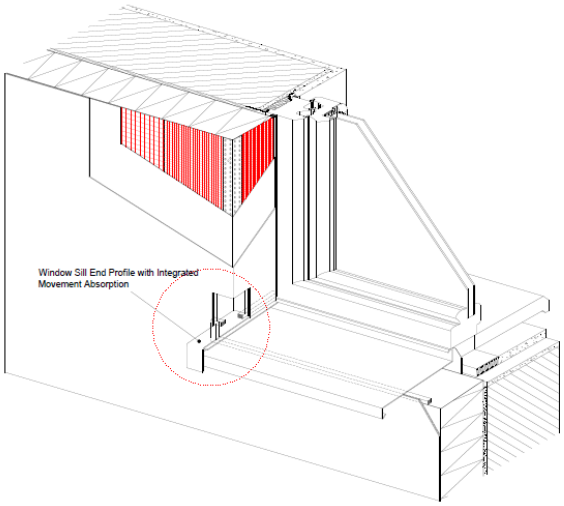
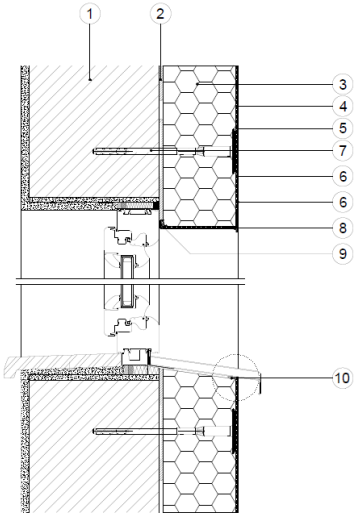
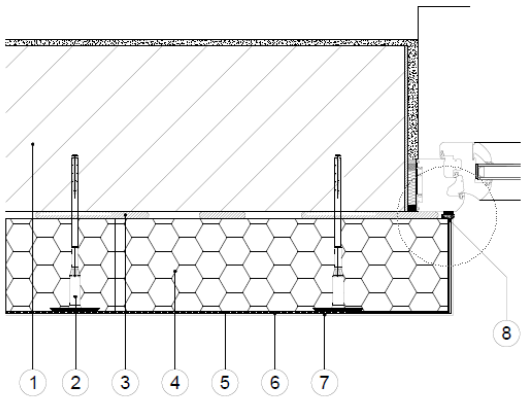


Diagram 5 - Typical window head detail



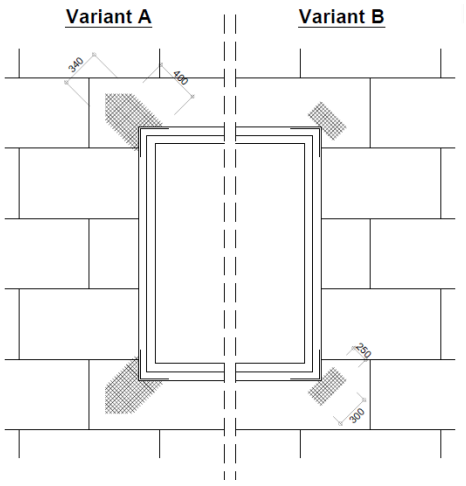
1. substrate
2. adhesive
3. EPS insulation
4. basecoat with reinforcing mesh
5. primer
6. top coat layer
7. mechanical fixing
8. return drip bead
9. window profile ideal/flexible
10. joint sealing band

Diagram 6 - Typical window jamb detail



1. substrate
2. fixing anchor
3. adhesive
4. EPS insulation
5. basecoat with reinforcing mesh
6. primer
7. top coat
8. window profile ideal bead

Diagram 7 - 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 base rail, water deflection beads/channels, expansion joints and weather seals;
- detailing around windows, doors, etc.;
- location of fire barriers installed in line with compartment walls and floors;
- 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 pull-off tests (bond strength) of the adhesive of the supporting wall by the Agrément holder to determine the bond strength between the adhesive and the substrate, to satisfy the bond strength requirements from the substrate is adequate - see Section 2.2.8. The bond strength of the adhesive of the supporting wall shall be checked by a qualified structural engineer and shown to be adequate before installation of the System.

Subsequent project-specific design considerations include confirmation that:

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

2.4.2 Preparation

The following works shall be undertaken before installing the System:

- the supporting wall shall be finished and free from protrusions and uneven jointing;
- make any necessary repairs or modifications (e.g. removal of fittings which can be relocated after the System is installed);
- the roof shall be in place and window and door openings shall be sealed;
- surfaces shall be clean, dry and free from dirt, grease, oils, solvents and loose particles;
- flues, chimneys and combustion air ventilators shall be continuously sleeved through the wall. Reference shall be made to CIGA's 'Technician's guide to best practice: Flues, chimneys and combustion air ventilators';
- supports for services/fittings, e.g. soil pipes, shall be fixed back to the supporting wall; no load is to be transferred to the System;
- external power cables concealed in trunking shall be well labelled with warning signs. 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;
- mix the adhesive (for bonding the EPS insulation to the supporting wall) in accordance with the Agrément holder's recommendations;
- 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 base of the supporting wall above DPC level, or 150 mm above ground level with fixings at maximum 300 mm centres;
- apply adhesive to the EPS insulation boards with notched combed pattern or ribbon pattern on masonry supporting wall to satisfy the minimum bonded area requirements;
- position the EPS insulation board onto the starter track and bond to the supporting wall; ensuring it is tightly butt-jointed and that a staggered bonding pattern is adhered to;
- continue with additional EPS insulation boards; L-shaped EPS insulation boards shall be placed on corners of windows and doors;
- mechanically fix the EPS insulation boards into the supporting wall;
- 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 EPS insulation boards and bed reinforcing mesh into the wet basecoat, ensuring joints are overlapped by a minimum of 100 mm;
- apply minimum 250 mm by 300 mm or 340 mm by 400 mm reinforcing mesh patches at the corners of wall/door openings;
- primer is applied onto the basecoat prior to application of the finish;
- apply the appropriate top coat 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 040083-00-0404	all render finishes	No defects
Water vapour permeability (S_d)		GranoporTop	0.47 m
		SilikonTop	0.58 m
		SilikatTop	0.54 m
		PuraTop	0.66 m
		StarTop	0.29 m
		CrystalTop	0.15 m

2.5.2 Strength

Test	Standard	System with finish	Result
Hard-body impact resistance	EAD 040083-00-0404	all render finishes	Use Category II

Test	Standard	System component	Result
Compressive stress at 10% deformation	BS EN 13163	EPS insulation	70 kPa
Tensile strength		EPS insulation - 70E HP	TR100
		EPS insulation - EPS 70E Grey	TR140
		EPS insulation - Plustherm 70	TR110

2.5.3 Fire performance

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

2.5.4 Thermal performance

Test	Standard	System component	Result
Thermal conductivity (λ_D)	BS EN 12667	EPS insulation - 70E HP	0.032 W/mK
		EPS insulation - EPS 70E Grey	0.031 W/mK
		EPS insulation - Plustherm 70	0.030 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)

3.3 THIRD-PARTY ACCEPTANCE

In the opinion of Kiwa Ltd. if installed, used, and maintained in accordance with this Agrément, this System can satisfy the appropriate structural, fire, moisture, thermal, acoustic and durability requirements of a Structural Warranty provider. Please contact the relevant Structural Warranty provider to ascertain their project specific design requirements and to confirm their acceptance on a case-by-case basis.

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 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 13163:2012+A2:2016 Thermal insulation products for buildings. Factory made expanded polystyrene (EPS) 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 13914-1:2016 Design, preparation and application of external rendering and internal plastering. External rendering
- 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 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 8000-3:2020 Workmanship on building sites - Code of practice for masonry
- BS 8104:1992 Code of practice for assessing exposure of walls to wind-driven rain
- BRE Defect Action Sheet 131:1989 External walls: combustible external plastics insulation: horizontal fire barriers
- BRE Defect Action Sheet 132:1989 External walls: external combustible 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 multistorey buildings
- BRE Report 262:2002 Thermal insulation: avoiding risks
- BRE Report 443:2019 Conventions for U-value calculations
- BRE Report 497:2016 Conventions for calculating linear thermal transmittance and temperature factors
- CIGA Technician's guide to best practice: Flues, chimneys and combustion air ventilators:2016
- EAD 040083-00-0404:2019 External thermal insulation composite systems (ETICS) with rendering
- INCA:2019 External wall insulation specification for weathering and thermal bridge control - Guide
- NIA Specification for the installation of external wall insulation ensuring the safety and operation of fuel burning appliances:2017
- PAS 2030:2023 Specification for the installation of energy efficiency measures in existing dwellings
- PAS 2035:2023 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	X Karakasi	C Devine	September 2025
A	Correction of typographical error in component name	F Young	C Devine	September 2025

6 CONDITIONS OF USE

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