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BDA Agrément®
Jablite Inverted Roof Insulation
Flat Roof Insulation

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SCOPE OF AGRÉMENT

This BDA Agrément® (hereinafter 'Agrément') relates to Jablite Inverted Roof Insulation (hereinafter the 'System'). The System is formed from expanded polystyrene (hereinafter 'EPS') insulation boards in conjunction with a water flow reducing layer (hereinafter the 'WFRL'). The System is for use in flat roofs (with a pitch not greater than 10 ° to the horizontal) and zero fall roofs (with a slope which lies between 0 and a minimum fall of 1:80) including brown roofs, extensive green roofs and balconies. Such areas must be subject to pedestrian access only. A protective finish must be applied to the System. The System is only to be used on roof decks when these areas have been pre-waterproofed with a membrane based watertight roof covering. Use of the System in designs for blue roofs, intensive green roofs, parking decks, walkways and installation areas is not permitted.

DESCRIPTION

The System comprises flat or tapered EPS insulation boards, available in three product grades (EPS 200, EPS 200 Premium and EPS 300). A WFRL with lapped joints is laid over the EPS insulation boards to prevent the potential for water ingress into the System from direct precipitation. A protective finish of gravel or concrete paving slabs will serve as ballast to resist wind-uplift and as protection against pedestrian traffic.

ILLUSTRATION



THIRD-PARTY ACCEPTANCE

NHBC - for detailed information, 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
 Head of Operations, 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

The System described in this Agrément meets the requirements defined on Kiwa Technical Requirement KTR-49.

Moisture control - see Section 2.2.7 - the WFRL will prevent the potential for water ingress into the System from direct precipitation.

Fire performance - see Section 2.2.8 - the System provides adequate resistance to the spread of fire over a roof, and from one building to another, when covered with loose laid gravel or concrete paving slabs.

Thermal performance - see Section 2.2.9 - the System can meet all required levels and provisions regarding U-values or thermal resistance.

Durability - see Section 2.2.10 - the System shall have a service life durability equivalent to that of the building into which it is incorporated.

UKCA and CE marking - see Section 2.2.11 - 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 Kiwa Technical Requirement KTR-49. 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. The NHBC Standards have also been taken into consideration.

1.1.4 Installation supervision

The quality of installation and workmanship shall be controlled by a competent person who shall be an employee of the installation company (hereinafter '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 System consists of square, homogeneous EPS insulation boards and a WFRL. The flat or tapered EPS insulation boards are available in three product grades (EPS 200, EPS 200 Premium and EPS 300), have maximum dimensions of 1,200 mm by 1,200 mm (see Diagram 3), are 50 mm to 240 mm thick (in increments of 5 mm) and are supplied with a 15 mm shiplap rebated edge profile.

2.1.2 Ancillary items falling outside the scope of this Agrément

Ancillary items (e.g. tape, foam, outlets, etc.) are not a part of the System and fall outside the scope of this Agrément.

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 System.

2.2.1.3 General design considerations

Roofs incorporating the System should be designed in accordance with BS 6229, which gives recommendations in respect of the design and application for flat roofs (with a pitch not greater than 10 ° to the horizontal) with continuously supported roof coverings, to ensure a minimum finished fall of 1:80 is achieved. Falls for roof design should be steeper than the minimum finished fall required to allow for deflections of the structural members and decking under dead and imposed loads and construction tolerances.

To ensure a finished surface with a zero fall, a design fall of 1:80 should be used and a detailed structural analysis should account for construction tolerances, settlement and for deflection under load.

The use of tapered EPS insulation boards in the System can assist designers to comply with BS 6229.

Roof drainage must be specified by others accordingly.

Prior to installation of the System, the roof deck must be covered with a membrane based watertight roof covering, with a resistivity to water vapour transmission greater than that of the EPS insulation boards.

The GRO Green Roof code contains aspects to consider when designing and specifying the waterproofing system of a brown roof or an extensive green roof.

Loads imposed during construction should be considered, along with the end use application and dead weight of the finish layer. Mechanical plant and machinery must not be used for the distribution and laying of concrete paving slabs, gravel, soil or other elements.

Wind actions should be calculated in accordance with BS EN 1991-1-4; due consideration should be given to higher pressure coefficients applicable to corners of the building; do not specify EPS insulation boards less than 300 mm by 300 mm in corner zones (F) or in edge zones (G) of a roof.

The System shall be finished by gravel or concrete paving slabs to resist wind-uplift, flotation of the EPS insulation boards, the spread of fire and to protect the WFRL and EPS insulation boards against pedestrian traffic.

A project-specific design shall address the wind-uplift resistance of gravel and/or concrete paving slabs.

Gravel must be at least 50 mm thick or have a mass ≥ 80 kg/m² (minimum aggregate size 4 mm, maximum 32 mm).

Concrete paving slabs shall be at least 40 mm thick.

Concrete paving slabs must be installed supported by proprietary bearing spacers as per the manufacturer's instructions, to maintain a nominal air gap to assist the removal of water and help to reduce rocking.

When using concrete paving slabs as a finish, a 150 mm wide edge strip filled with gravel (clean, rounded, nominal diameter 20 mm to 40 mm) should be provided against parapets and upstands and around rooflights.

Examples of typical details of e.g. outlets, penetrations and upstands can be obtained from the Agrément holder. The project-specific roof design must take into consideration all elements required in the finished roof.

2.2.1.4 Project-specific design considerations

The project-specific design shall:

- be determined by the Specifier;
- 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 2.2.10).

No pre-installation survey is required.

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.

Application of the System is only allowed on continuous self-supporting decks, the material and shape of a deck shall support all relevant loads and transmit these to the deck supports.

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 can be undertaken by competent persons experienced in this type of work. The Agrément holder requires these to be employed by an organisation that holds ISO 9001 certification.

2.2.5 Delivery, storage and site handling

The System is 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.

Care must be taken to:

- avoid exposure to direct sunlight and high or low temperatures for long periods of time;
- store away from possible ignition sources.

Packs of EPS insulation boards should not be unwrapped until needed for use.

2.2.6 Maintenance and repair

Once installed, the System does not require regular maintenance. For advice in respect of repair, consult the Agrément holder.

However, in accordance with BS 6229 flat roofs incorporating the System must be inspected at least twice yearly:

- in autumn to ensure that rainwater outlets are not blocked, and the roof is free draining;
- in spring to discover and rectify any damage due to weather actions.

It is good practice to adopt this programme for zero fall roofs, brown roofs or extensive green roofs and balconies in respect of the installation of the System.

Performance factors in relation to the Major Points of Assessment

2.2.7 Moisture control

The WFRL will prevent the potential for water ingress into the System from direct precipitation. A limited amount of condensation may accumulate due to ambient temperature fluctuations; this will naturally drain away. Any water ingress will not materially affect the performance of the System.

2.2.8 Fire performance

The EPS insulation boards are classified as European Classification E, in accordance with BS EN 13501-1.

To comply with the national Building Regulations:

- a flat roof or zero fall roof is not required to have any specific fire performance, except when it forms part of a means of escape or when it performs the function of a floor or where part of it is near a boundary;
- provisions for fire resistance apply where a roof is intended for use as a means of escape or as a floor;
- provisions for the fire resistance of a flat roof or zero fall roof apply where a roof is intended for use as a means of escape or as a floor; in that case exposure to a fire at the underside of a roof is relevant;
- adequate protection to the spread of fire is required near a boundary, as defined in the national Building Regulations; in that case the WFRL must be covered by concrete paving slabs, or loose laid gravel with a thickness of at least 50 mm or a mass $\geq 80 \text{ kg/m}^2$ (minimum aggregate size 4 mm, maximum 32 mm).

2.2.9 Thermal performance

The System can meet all required levels and provisions regarding U-values or thermal resistance.

The drainage factor (f) of the System is 0.

Therefore, the correction ΔU_r for the calculated thermal transmittance of an inverted roof element (according to annex F.4 in BS EN ISO 6946) and the factor F_m (to calculate the design thermal conductivity because of moisture are):

- $\Delta U_r = 0$ (no water flowing between the insulation and the waterproofing membrane in an inverted roof);
- $F_m = 1$ for inverted roofs and balconies;
- $F_m = 1.04$ for the parts of a green inverted roof with a substrate or with vegetation. This is based on the moisture conversion coefficient according to standard BS EN ISO 10456 and the long-term water absorption by diffusion only according to standard BS EN 12088.

2.2.10 Durability

The System shall have a service life durability equivalent to that of the building into which it is incorporated.

2.2.11 UKCA and CE marking

The European standard for the EPS insulation boards is BS EN 13163.

2.3 EXAMPLES OF TYPICAL DETAILS

Diagram 1 - Typical detail with gravel/paving ballast

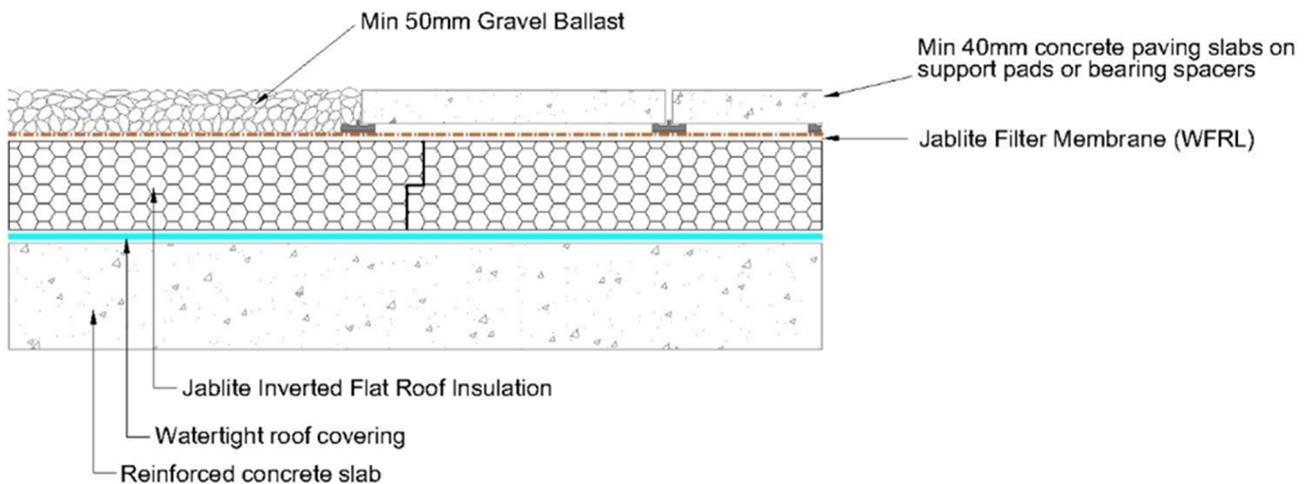
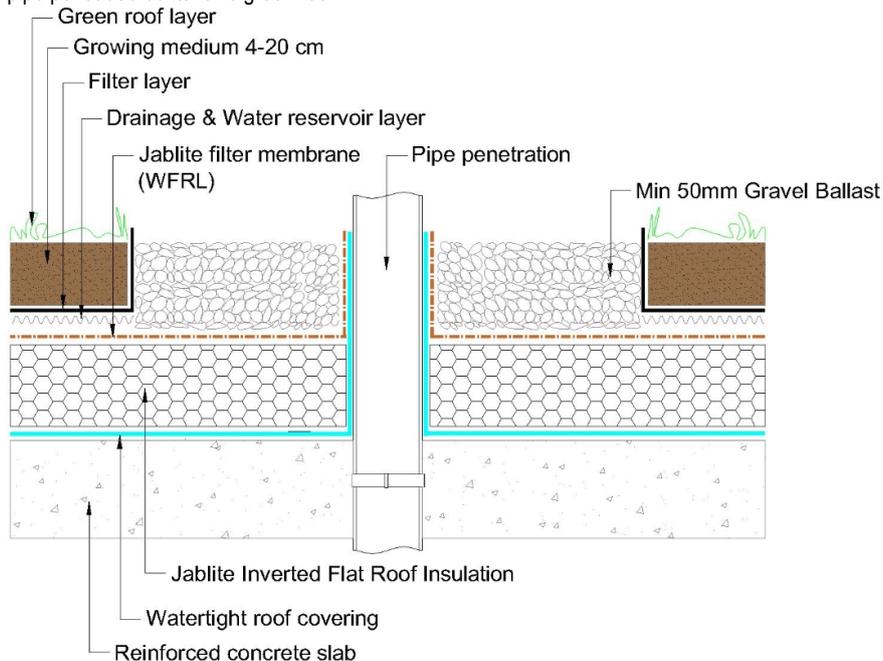


Diagram 2 - Typical detail of pipe penetration/extensive green roof



Note: Diagrams are not exhaustive, and every project requires bespoke details and solutions in the form of a project-specific design.

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

No pre-installation survey is required.

2.4.2 Preparation

The following considerations apply before starting the work:

- read the Roof Technical Data Sheet carefully prior to installing the System;
- check that materials delivered correspond to the project-specific design details;
- check that openings/skylights in roofs are suitably protected;
- the existing roof covering shall be dry, free from dirt and debris and not damaged before installation of the System; all side and end laps and penetrations (e.g. for outlets, pipes and supports) shall be sealed properly before installation of the System;
- at all abutments, door openings and parapets the waterproof layer should be turned up to a level not less than 150 mm above the upper surface of the gravel, concrete paving slabs or any roof growing medium;
- check the project-specific design drawings to ensure the detailing of outlets, movement joints, penetrations and supports etc. is clearly indicated; drawings shall clearly show how the roof covering connects to the details (to avoid rain penetration) and how thermal bridging is minimised;
- when a PVC single ply membrane is used as the watertight roof covering, check that a suitable isolation layer (e.g. a fibreglass sheet with a mass $\geq 120 \text{ g/m}^2$) is specified below the EPS insulation boards; the isolation layer stops plasticiser migration from the PVC.

The following works shall be undertaken before the installation of the System:

- the existing watertight roof covering shall be clean and free from dirt and debris;
- ensure there is no damage to the existing watertight roof covering prior to application of the System;
- ensure that at all abutments, door openings and parapets the waterproof layer is turned up to a level not less than 150 mm above the upper surface of the gravel, concrete paving slabs or any roof growing medium.

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:

- lay the EPS insulation boards in a staggered, brick bond pattern ensuring they are tightly interlocked via the shi-lap edges to prevent air gaps;
- cut the EPS insulation boards around service penetrations and seal with expanding foam;
- the WFRL must be immediately loose laid over the top of the EPS insulation boards;
- lay the first row of WFRL horizontally across the fall of the roof with unsealed lap joints;
- where more than one roll of WFRL material is required in a single row the rolls must be overlapped by a minimum of 300 mm to complete the run;
- subsequent rows of the WFRL must be laid ascending the flat roof slope and overlapping the row laid prior by 300 mm.

2.4.4 Finishing

The following finishing is required on completion of the installation:

- cover the WFRL as soon as possible with a finish of gravel or concrete paving slabs according to the project-specific design.

2.5 INDEPENDENTLY ASSESSED SYSTEM CHARACTERISTICS

Table 1 - EPS insulation boards EPS 200, EPS 200 Premium and EPS 300

Parameter		Value
System weight	EPS	8.7 kg/m ²
Thickness (minimum: increment: maximum)		50(5)240 mm
Thermal conductivity, λ_D	EPS 200 and EPS 300	0.033 W/(mK)
	EPS 200 Premium	0.031 W/(mK)
Reaction to fire, class		E
Compressive strength, class	EPS 200	CS(10)200
	EPS 300	CS(10)300
Bending strength, class	EPS 200	BS325
	EPS 200 Premium	BS280
	EPS 300	BS305
Water absorption	Long-term W_{dv} (diffusion for 28 days), class	WD(V)3 % (V/V)
	Long-term W_{dt} (total immersion for 28 days), class	WL(T)2 % (V/V)
Water vapour transmission	Vapour resistance factor, μ (tabulated)	40 - 100
	Resistivity (calculated)	200 - 500 MN·s/g·m

Diagram 3 - Maximum dimensions of flat roof EPS insulation boards with shiplap edges

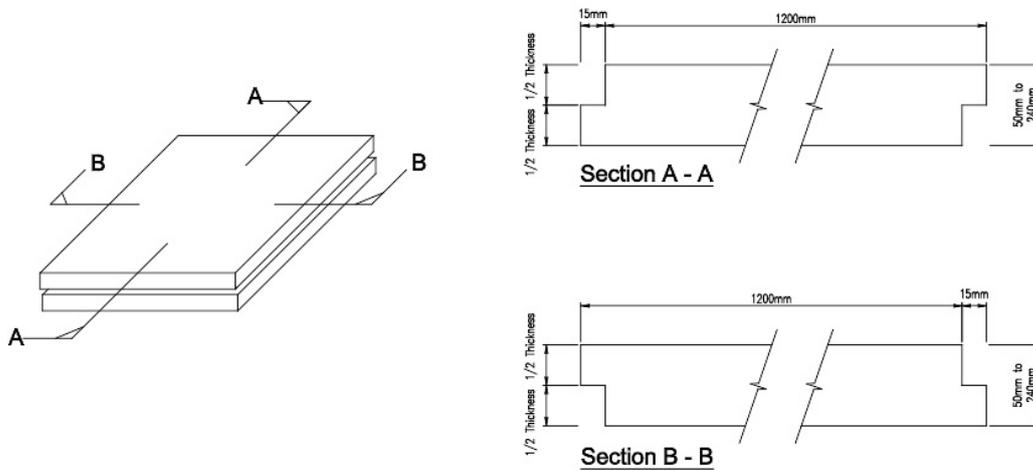


Table 2 - Water Flow Reduction Layer (WFRL)

Parameter		Value
Density		100 g/m ²
Thickness		0.45 mm
Reaction to fire		NPD
Tensile strength, initial/aged values (CMD) [^]		200/180 N/50 mm
Elongation, initial/aged values (CMD) [^]		80/40 %
Tear resistance (MD ^{^^} /CMD)		130/130 N
Water penetration (resistance), initial/aged, class (water column = 200 mm)		W2/W2
Water vapour transmission	Diffusion-equivalent air layer thickness, S_d	≤ 0.003 (m)
	Resistance	≤ 0.02 MN·s/g

[^] CMD = Cross Machine Direction (transverse direction)

^{^^}MD = Machine Direction

Note: The WFRL is a non-woven spunbonded polypropylene sheet supplied in rolls of 100 m in length and widths of 0.54 m, 1.35 m, 2.7 m, and 3.0 m.

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(2) Loading - the System shall be installed on top of a continuous, self-supporting roof deck which shall sustain all dead weights and imposed loads during construction and when in use; resistance to wind loads must be achieved by the finish
- B4(2) external fire spread roof - the System meets all provisions when ballasted with suitable loose laid gravel, concrete paving slabs, a brown roof or an extensive green roof with a suitable substrate and designed to incorporate gravel fire breaks at perimeters and penetrations in accordance with the GRO Green Roof Code 2014
- C2(b) Resistance to precipitation - the System limits the passage of moisture to the inside but is not watertight; a watertight roof covering and WFRL must be used
- C2(c) Resistance to condensation - the System can contribute to limiting the risk of interstitial and surface condensation; a roof covering with adequate water vapour resistance must be used
- L1(a)(i) Conservation of fuel and power - the System will contribute to satisfying this Requirement
- Regulation 7 Materials and workmanship - the System is manufactured from suitably safe and durable materials for its application and can be installed to give a satisfactory performance
- Regulation 26 CO₂ emission rates for new buildings - the System can contribute to satisfying this Requirement
- Regulation 26A Fabric energy efficiency rates - the System can contribute to satisfying this Requirement

3.2.2 Wales

The Building Regulations 2010 and subsequent amendments

- A1(2) Loading - the System shall be installed on top of a continuous, self-supporting roof deck which shall sustain all dead weights and imposed loads during construction and when in use; resistance to wind loads must be achieved by the finish
- B4(2) external fire spread roof - the System meets all provisions when ballasted with suitable loose laid gravel, concrete paving slabs, a brown roof or an extensive green roof with a suitable substrate and designed to incorporate gravel fire breaks at perimeters and penetrations in accordance with the GRO Green Roof Code 2014
- C2(b) Resistance to precipitation - the System limits the passage of moisture to the inside but is not watertight; a watertight roof covering and WFRL must be used
- C2(c) Resistance to condensation - the System can contribute to limiting the risk of interstitial and surface condensation; a roof covering with adequate water vapour resistance must be used
- L1(a)(i) Conservation of fuel and power - the System will contribute to satisfying this Requirement
- Regulation 7 Materials and workmanship - the System is manufactured from suitably safe and durable materials for its application and can be installed to give a satisfactory performance
- Regulation 26 CO₂ emission rates for new buildings - the System can contribute to satisfying this Requirement
- Regulation 26A Primary energy consumption 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

3.2.3 Scotland

The Building (Scotland) Regulations 2004 and subsequent amendments

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

- The System is manufactured from acceptable materials and is adequately resistant to deterioration and wear under normal service conditions, provided it is installed in accordance with the requirements of this Agrément
- Maintenance or repair work will not be necessary unless (a part of) the roof is damaged or is affected by structural modifications

Regulation 9: Building Standards - construction

- 1.1 (a) Structure - the System shall be installed on top of a continuous, self-supporting roof deck which shall sustain all dead weights and imposed loads during construction and when in use; resistance to wind loads must be achieved by the finish
- 2.8 Spread from neighbouring buildings - the System meets all provisions when ballasted with suitable loose laid gravel, concrete paving slabs, a brown roof or an extensive green roof with a suitable substrate and designed to incorporate gravel fire breaks at perimeters and penetrations in accordance with the GRO Green Roof Code 2014
- 3.10 Precipitation - the System limits the passage of moisture to the inside but is not watertight; a watertight roof covering and WFRL must be used
- 3.15 Condensation - the System can contribute to limiting the risk of interstitial and surface condensation; a roof covering with adequate water vapour resistance must be used
- 6.2 Building insulation envelope - the System will contribute to this Requirement
- 7.1(a)(b) Statement of sustainability - the System can contribute to achieve an adequate level of sustainability

Regulation 12: Building Standards - conversions

All comments given for the System under Regulation 9 also apply to this Regulation, with reference to clause 0.12 and Schedule 6 of this Standard.

3.2.4 Northern Ireland

The Building Regulations (Northern Ireland) 2012 and subsequent amendments

- 23(a)(i)(iii)(b) Fitness of materials and workmanship - the System is manufactured from materials which are suitably safe and acceptable for use as thermal insulation as described in this Agrément
- 28(b) Resistance to moisture and weather - the System contributes to prevent any harmful effect on the building or the health of the occupants caused by the passage of moisture to any part of the building from (b) the weather. A watertight roof covering and WFRL must be used
- 29 Condensation - the System will contribute to limiting the risk of interstitial condensation; a roof covering with adequate water vapour resistance must be used
- 30(a)(b) Stability - the System shall be installed on top of a continuous, self-supporting roof deck which shall sustain all dead weights and imposed loads during construction and when in use; resistance to wind loads must be achieved by the roof finish
- 36(b) External fire spread - the System meets all provisions when ballasted with suitable loose laid gravel, concrete paving slabs, a brown roof or an extensive green roof with a suitable substrate and designed to incorporate gravel fire breaks at perimeters and penetrations in accordance with the GRO Green Roof Code 2014
- 39(a)(i) Conservation of fuel and power - the System will contribute to this requirement
- 40(2) Target carbon dioxide emission rate - to be calculated for the erection of residential and non-residential buildings; to be calculated also for the extension of buildings when the extension has a total useful floor area that is both (i) greater than 100 m² and (ii) greater than 25% of the total useful floor area of the existing building; no calculation is required when extending a dwelling or a building with a low energy demand

3.3 THIRD-PARTY ACCEPTANCE

NHBC - In the opinion of Kiwa Ltd., the System, if installed, used and maintained in accordance with this Agrément, can satisfy or contribute to satisfying the relevant requirements in relation to NHBC Standards, Technical Requirement R3 and Chapter 7.1 Flat roofs and balconies.

4 SOURCES

- Kiwa Technical Requirement KTR-49 (provisional)
- BS EN ISO 6946:2017 Building components and building elements. Thermal resistance and thermal transmittance. Calculation methods
- BS EN ISO 9001:2015 Quality management systems. Requirements
- BS EN 1603:2013 Thermal insulating products for building applications. Determination of dimensional stability under constant normal laboratory conditions (23°C/50% relative humidity)
- 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 12430:2013 Thermal insulating products for building applications. Determination of behaviour under point load
- 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 data from reaction to fire tests
- BS 8000-0:2014 Workmanship on construction sites. Introduction and general principles
- BS 6229:2018 Flat roofs with continuously supported coverings. Code of practice
- EOTA, ETAG 031-1, Inverted Roof Insulation Kits, Part 1: General, issued November 2010
- GRO, Best Practice for the UK 2014, issued 25.09.2014
- NHBC Standards 2019

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	C Vurley	C Forshaw	February 2020
A	Updated Agrément holder contact address	C Devine	C Vurley	June 2021
B	Minor editorial updates	C Devine	C Vurley	July 2021
C	Migrated to current template; updated client logo	A Chapman	C Devine	October 2022

6 CONDITIONS OF USE

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

Where a National Annex exists in respect of a BS EN (or other) standard, its use is deemed mandatory wherever the original standard is referenced.

Kiwa Ltd. has used due skill, care and attention in the preparation of this BDA Agrément®.

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

The Agrément holder is responsible for advising Kiwa Ltd. immediately if there is a variation to the System specification or constituent elements/components after initial publication of this BDA Agrément®.

For full terms and conditions, refer to Kiwa Ltd.