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**BAF-19-121-P-A-UK**  
**BDA Agrément®**  
**IcyFoam Elite**  
**Spray Foam Insulation for**  
**Suspended Floors**

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### SCOPE OF AGRÉMENT

This Agrément relates to IcyFoam Elite (hereinafter the 'Product'), an in-situ formed, HFO blown, spray-applied (hereinafter 'applied') thermal insulation layer which contributes to the thermal performance, airtightness, vapour-tightness and watertightness of suspended ground and upper floors (hereinafter 'suspended floors'). The Product is for internal application to the underside of suspended timber, steel, concrete slab or concrete beam and block floors of existing or new domestic buildings in the UK and Ireland.

### PRODUCT DESCRIPTION

The Product consists of two liquid chemical components (hereinafter 'Product components') that are mixed under pressure and applied to form a closed cell structure, rigid polyurethane (PUR) seamless foam insulation layer, in accordance with BS EN 14315-2, that adheres to the treated surface. It is produced by an exothermic reaction between the isocyanate component and the resin component. Once applied, the Product expands, solidifies and cures. The Product is applied in layers until the final required design thickness (not exceeding 400 mm) is achieved.

### PRODUCT 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 Product is fit for its intended use, provided it is specified, installed and used in accordance with this Agrément.

Chris Vurley, CEng  
 Technical Manager, Building Products

Mark Crowther, M.A. (Oxon)  
 Kiwa Ltd. Technical Director

## SUMMARY OF AGRÉMENT

This document provides independent information to specifiers, building control personnel, contractors, installers and other construction industry professionals considering the fitness for the intended use of the Product. This Agrément covers the following:

- Conditions of use;
- Production Control, Quality Management System and the Annual Verification Procedure;
- Product components and ancillary items, points of attention for the Specifier and examples of details;
- Installation;
- Independently assessed Product 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** - the Product (see section 2.2.9):

- has a high-volume closed cell percentage;
- has high water vapour transmission resistance;
- can contribute to limiting the risk of interstitial and surface condensation;
- is resistant to water penetration.

**Fire performance** - the Product is classified as European Classification E (combustible), in accordance with BS EN 13501-1 (see section 2.2.10).

**Thermal performance** - the Product improves the thermal insulation of a suspended floor and has a declared aged thermal conductivity ( $\lambda_D$ ) of 0.025 W/mK depending on application thickness (see section 2.2.11).

**Durability** - the Product will have a service life equivalent to that of a suspended floor structure in which it is incorporated (see section 2.2.12).

**CE marking** - the product manufacturers have responsibility for CE marking in accordance with all relevant harmonised European Product Standards (see section 2.2.13).

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## CHAPTER 1 - GENERAL CONSIDERATIONS

### 1.1 - CONDITIONS OF USE

#### 1.1.1 Design considerations

See section 2.2.

#### 1.1.2 Application

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

#### 1.1.3 Assessment

Kiwa Ltd. has assessed the Product 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 must be controlled by a competent person who must be an employee of the installation company.

The Product must 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 Chapter 3 of this Agrément (CDM, national Building Regulations and Third-Party Acceptance).

#### 1.1.6 Validity

The purpose of this BDA Agrément® is to provide for well-founded confidence to apply the Product within the Scope described. The validity of this Agrément is three years after the issue date, and as published on [www.kiwa.co.uk/bda](http://www.kiwa.co.uk/bda).

### 1.2 - PRODUCTION CONTROL AND QUALITY MANAGEMENT SYSTEM

Kiwa Ltd. has determined that the Agrément holder fulfils all obligations in relation to this Agrément, in respect of the Product.

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 Product 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.

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

### 2.1 - ANCILLARY ITEMS

Ancillary items detailed in this section may be used in conjunction with the Product but fall outside the scope of this Agrément:

- spray machinery includes plural component proportioner (double acting positive displacement piston metering pumps), transfer pumps, primary heaters and heated hose fitted with spray gun application equipment;
- Type LR breather membrane;
- floorboards;
- plasterboard lining.

### 2.2 - POINTS OF ATTENTION TO THE SPECIFIER

#### 2.2.1 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 installing contractor is responsible for the final as-built design.

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

A competent specialist shall check the physical behaviour of a project-specific design incorporating the Product and if necessary can offer advice in respect of 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 consultant Specialist co-operates closely with the Agrément holder).

#### 2.2.3 General design considerations

The Product can:

- insulate surfaces in restricted areas which are typically hard to treat;
- upgrade suspended floors with existing insulation under the floor to meet current thermal transmittance (hereinafter 'U-value') requirements;
- be used to treat a plasterboard lining below a suspended floor prior to installation of a floor finish;
- be covered with floorboards in habitable rooms where there is adequate ventilation.

Suspended floors incorporating the Product can adequately limit the risk of interstitial and surface condensation when designed in accordance with BS 5250 Annex F and BRE Report 262. Room spaces should be ventilated in accordance with BS 5250 Annex K. Care should be taken to provide adequate trickle ventilation, particularly in rooms expected to experience high humidity, and to ensure the integrity of any vapour control layer (hereinafter 'VCL') (where installed) and plasterboard linings against vapour ingress.

Cavity barriers shall be provided at edges, around openings, at junctions and in extensive cavities with fire-resisting elements in accordance with the relevant provisions of the national Building Regulations.

Underfloor ventilation should be provided by ventilators on at least two opposite external walls, with air bricks properly ducted. Where this is not possible, suitable cross ventilation should be provided by a combination of openings and air ducts.

For suspended timber floors, the void space beneath the lowest point of the floor construction shall be at least 150 mm high, with provision for adequate through-ventilation in the form of ventilation openings provided in two opposing external walls. The ventilation opening shall not be less than 1500 mm<sup>2</sup> per metre run of external wall or 500 mm<sup>2</sup> per square metre of floor area, whichever is greater. Where pipes are used to carry ventilating air, these shall be at least 100 mm in diameter.

Ventilation openings should be arranged to prevent the ingress of rain, snow, birds and small animals, and the risk of blockage by other building operations.

Care is needed for design detailing of joints at flue pipe openings and should be in accordance with BS 6093.

The Product shall not be applied over junctions with external walls required to provide a minimum period of fire resistance. Care shall be taken to ensure continuity of fire resistance at junctions with fire-resisting elements, in accordance with the national Building Regulations.

In habitable room spaces, the Product must be contained by floorboards and a suitable ceiling lining board fixed to joists or battens and with all joints taped, sealed and supported by joists, noggins or battens to give a 30-minute fire rating.

The Product shall be separated by 50 mm from any heat-emitting devices and any potential source of ignition, where the temperature is in excess of 93 °C.

Do not apply the Product over electrical cables, recessed lighting, existing vents or ventilation gaps. Consider re-routing, re-laying in conduit or trunking, or de-rating electrical cables. Replace existing recessed lighting with ventilated fittings which incorporate a protective fire hood (see section 2.4.4).

The Product is a closed cell foam which is inert once cured and is therefore chemically inactive. The Product will not react with metals typically used in construction elements.

The Product can be applied on concrete, steel, plasterboard, timber-based flooring and insulation board surfaces.

#### Retrofit design considerations

Existing suspended floors must be in a good state of repair with no evidence of damp. Any necessary repairs shall be carried out prior to installation.

## **New build design considerations**

New suspended floors should be designed and constructed in accordance with the national Building Regulations to prevent moisture ingress and air infiltration.

### **2.2.4 Project-specific design considerations**

A pre-installation survey is required to allow determination of the project-specific design - see section 2.4.3.

### **2.2.5 Permitted applications**

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

### **2.2.6 Installer competence level**

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

Installation shall be by employees trained and approved by the Agrément holder and subject to 1 % inspections by Kiwa Ltd. under a Kiwa Installation Assessment & Surveillance Scheme.

### **2.2.7 Delivery, storage and site handling**

The Product components are delivered to site in suitable packaging, bearing the Product component name, the Agrément holder's name and the BDA Agrément® logo incorporating the number of this Agrément.

Store the Product in accordance with the Agrément holder's requirements. Particular care must be taken to:

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

The Product components:

- are sensitive to humidity and should be stored in sealed drums or hermetically sealed tanks to protect from moisture;
- shall be stored between 15 °C and 30 °C.

The isocyanate component has a shelf life of 12 months; the resin component has a shelf life of 6 months if stored as stated.

The isocyanate component is classified as 'harmful' under The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP 4); drums containing the isocyanate component bear the appropriate hazard warning signs. Ventilate and vacate the installed space for 24 hours subsequent to installation to prevent the inhalation of isocyanate vapour. When cured, the Product is non-hazardous.

### **2.2.8 Maintenance and repair**

Once installed, the Product does not require regular maintenance provided the floor covering is maintained. Damaged or poorly applied Product shall be removed from the affected area using a handsaw. New Product should then be applied. For advice in respect of repair, consult the Agrément holder.

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

### **2.2.9 Moisture control**

#### **Cell structure**

The Product has a high-volume closed cell percentage (96.6 %), in accordance with BS EN ISO 4590.

#### **Water vapour transmission**

The Product has a low level of water vapour permeability (high water vapour resistance), in accordance with BS EN 12086 Method A.

#### **Condensation risk**

Suspended floors incorporating the Product can adequately limit the risk of interstitial and surface condensation when designed in accordance with BS 5250 Annex F and BRE Report 262. Room spaces should be ventilated in accordance with BS 5250 Annex K. Care should be taken to provide adequate trickle ventilation, particularly in rooms expected to experience high humidity, and to ensure the integrity of any VCL (where installed) and plasterboard linings against vapour ingress.

A Condensation Risk Analysis can be carried out by the Agrément holder on a project-specific basis, in accordance with BS 5250 Annex D, BS EN ISO 13788, BS EN 13370 or BS EN 15026.

#### **Water permeability**

The closed cell structure means the Product is water resistant and has adequate watertightness, in accordance with BS EN 1928 and EOTA TR 003, to prevent water infiltration into a building.

### **2.2.10 Fire performance**

The Product is classified as European Classification E (combustible), in accordance with BS EN 13501-1.

The Product must be:

- protected from naked flames and other ignition sources during and after application;
- suitably separated from any potential source of ignition.

The exposed Product has the potential to contribute to the development stages of a fire.

Suspended floors must incorporate cavity barriers at edges, around openings, at junctions and in extensive cavities with fire-resisting elements, in accordance with the relevant provisions of the national Building Regulations.

The Product shall be separated by 50 mm from any heat-emitting devices and any potential source of ignition, where the temperature is in excess of 93 °C.

In habitable room spaces, the Product must be contained by floorboards and a suitable ceiling lining board fixed to joists or battens and with all joints taped, sealed and supported by joists, noggins or battens to give a 30-minute fire rating.

### Proximity of flues and appliances

The installed Product shall be separated or shielded from any heat-emitting devices, recessed lighting, flue pipes or chimneys passing through a suspended floor and any potential source of ignition where the temperature is in excess of 93 °C, by non-combustible insulation, in accordance with the provisions of the national Building Regulations.

## 2.2.11 Thermal performance

### Thermal conductivity

The Product offers high thermal resistance relative to its installed thickness, in accordance with BS EN 12667.

For the purpose of U-value calculations and to determine if the requirements of national Building Regulations are met, the thermal resistance and U-value of suspended floors incorporating the Product should 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 Product's declared thermal conductivity ( $\lambda_D$ ). Design and declared thermal values can be found in BS EN ISO 10456.

The Product can be used to upgrade suspended floors that already have insulation in place to meet current U-value requirements.

The maximum thickness of the Product should not exceed 400 mm. For improved thermal/carbon emissions performance, increased insulation thickness may be required.

Account should be taken of standardised junction details in the Government Accredited Construction Details for Part L, England and Wales, Accredited Construction Details for Scotland, and energy efficiency measures in PAS 2030 and PAS 2035.

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 suspended floor incorporating an appropriate thickness of the Product does not exceed the maximum U-value requirement in the national Building Regulations.

### Thermal bridging at junctions and around openings

Care shall be taken in the overall design and construction at junctions with external walls and openings to minimise air infiltration and thermal bridging.

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

The applied Product forms a solid, seamless, airtight insulating foam layer without joints or gaps, reducing thermal bridges.

## 2.2.12 Durability

The Product will have a service life durability equivalent to that of the structure into which it is incorporated.

The Product is inert once cured and is therefore chemically inactive. The Product does not encourage corrosion on metals. No corrosive substances are released from the cured Product.

## 2.2.13 CE marking

The harmonised European standard for the Product is BS EN 14315-1.

## 2.3 - EXAMPLES OF TYPICAL DETAILS

Diagram 1 - Insulating intermediate suspended floors

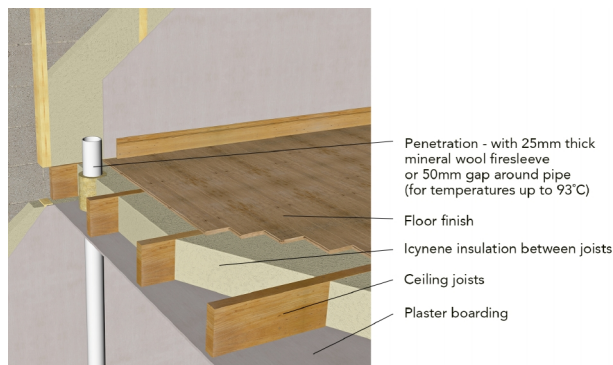
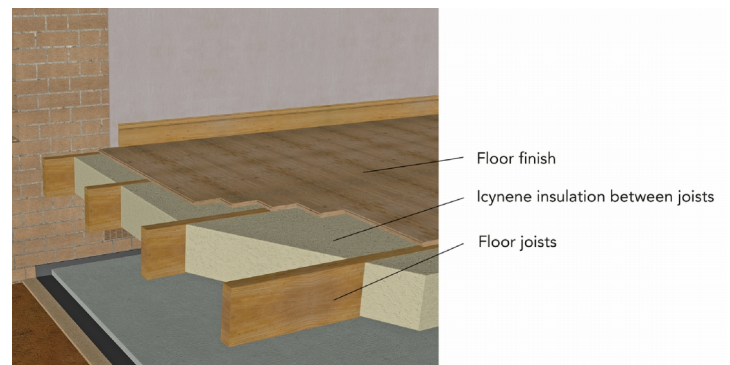


Diagram 2 - Insulating ground suspended floors



The Product must be installed strictly in accordance with the instructions (hereinafter 'Installation Manual') of the Agrément holder and the requirements of this Agrément.

### 2.4.1 Installer competence level

See section 2.2.6.

### 2.4.2 Delivery, storage and site handling

See section 2.2.7.

### 2.4.3 Project-specific installation considerations

The project-specific design has been determined from a pre-installation survey.

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

- the condition of the floor structure;
- that there is no existing damp, staining or condensation on the faces of the suspended floor;
- the type, suitability and condition of floor timbers, concrete substrates and any openings;
- the type and condition of floorboards or breather membrane present;
- floor void, room space and underfloor ventilation requirements;
- areas not to be treated.

### 2.4.4 Preparation

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

- the substrates must be clean, dry and free from dirt, dust, grease, oils and loose particles/torching;
- a small adhesion test should be made to the substrate to guarantee good bonding, especially on metal surfaces. This will determine if a primer is required for maximum adhesion;
- any necessary repairs to suspended floors, such as replacing damp or broken/rotten timbers, or floorboards must be made prior to application;
- any timber treatment carried out;
- cover front faces of surfaces not to be treated e.g. exposed joists;
- cover services e.g. electrical cables, and pipes.

### 2.4.5 Outline installation procedure

The detailed installation sequence can be found in full in the Agrément holder's Installation Manual.

Installation of the Product shall be carried out in accordance with BS 8000-0 and BS EN 14315-2.

During application, prohibit contact with naked flames and sources of ignition.

Do not weld or cut metal which is in contact with the Product. If it is necessary to weld metal elements, this shall be done before applying the Product.

Application of the Product may produce a build-up of harmful vapours. Installers must wear personal protection equipment (PPE) when working with the Product including nitrile gloves, disposable overalls and full-face mask (with A2P3 filters) air-fed from NIOSH approved pumping equipment.

Some vapours given off by the Product components are heavier than air and will naturally move to lower parts of the building compartment. These areas should be suitably ventilated. In certain conditions (e.g. application in a confined space) the use of extractor fans is recommended. Ensure proper ventilation in the work area.

The moisture content of the surfaces of porous materials should not exceed 20 % before application commences. Non-porous surfaces must be dry and free from condensation.

The ambient air/substrate temperature shall be between 5 °C and 50 °C. An infrared or contact thermometer can be used for checking surface temperature.

The relative humidity of the air in the workplace must be less than 85 % to minimise the risk of surface condensation. Care should be taken to ensure that ingress of moisture vapour from the rest of the dwelling space is restricted.

The spraying machine must be specially designed to mix and apply the Product via a spray gun. The Product is applied with volumetric displacement pumps with fixed mixing ratio 100:100 by volume. The ratio will be controlled prior to each application by measuring the flow rates of the two Product components before they pass through the mixer in the spraying machine. The value must not differ from 5 % by mass to the indicated value.

Drum temperatures for processing the Product components shall be between 15 °C and 30 °C.

The spraying machine shall have a temperature controller in the pre-heaters and in the hoses. The working temperature shall be set between 47 °C and 52 °C depending on the ambient temperature conditions.

Application shall be carried out using the spray gun at a 90 ° angle to the substrate in 25 mm to 50 mm layers. Maximum thickness per pass is 50 mm for first pass and for each additional pass. Cooling shall take place before each additional layer. Check the surface temperature, which shall be below 30 °C.

In cold weather, use a flash coat or wait for warmer conditions.

Due to the short reaction time, application can be performed without resulting in sagging. The Product hardens quickly, although it will not be completely cured until approximately 24 hours have passed.

Care should be taken to minimise the degree of overspray generated whilst applying.

The total applied Product thickness will depend on the required U-value. The installer shall check the total thickness by means of a depth gauge with measuring pin to ensure the required minimum thickness is met. The installer shall be aware of the maximum insulation layer thickness in ventilated floor designs.

The Product must not make contact with heat-emitting flue pipes, appliances and chimneys, etc. If hot work is to take place near the Product, it must be cut back by 2 m and protected by heat blankets.

Self-verification quality control checks provided for in BS EN 14315-2 shall be carried out by the installer in respect of core density, appearance and thickness.

#### **Initial set-up**

1. set the appropriate temperature and pressure parameters to guarantee the mixing quality of the Product and select a suitable application nozzle;
2. carry out quality control tests to check for a round application pattern, sticky patches, light or dark patches/streaks, no voids, consistent colour, appearance and reaction profile - cream time, gel time, tack-free time and free rise density, using test methods in accordance with BS EN 14315-1 Annex E;
3. interlaminar adhesion shall be checked on a two-layer application sample.

The key sequence for installation is:

1. apply the Product in sections, starting at the eaves and working across towards the ridge, upwards or downwards onto a surface in a flash coat/primer using a quick pass;
2. once this layer is cured (dry to the touch), a second layer (45 mm thick) is applied to give a maximum total thickness of 50 mm;
3. when the previous layer has cooled to at least 30 °C (usually within 3 minutes), apply additional layers of maximum thickness of 50 mm;
4. additional layers should be applied within 10 minutes of the previous layer to achieve the design thickness (not exceeding 400 mm);
5. once cured and cold, the Product can be trimmed flat using a hand saw if required.

#### **Timber suspended floors**

The Product can be applied up onto the underside of existing floorboards between joists to the depth of the joists. Where suspended floors have polyisocyanurate (PIR) or expanded polystyrene (EPS) insulation board between joists, the Product can be applied onto the underside of the insulation board.

Alternatively, the Product can be applied from above a suspended floor onto a Type LR breather membrane, plywood or plasterboard ceiling lining where a floor covering has been removed. Type LR breather membrane can be draped over joists and mechanically fixed to create a channel on which to apply the Product.

Once cured, any excess Product shall be trimmed back.

Gaps in floorboards can be taped to reduce the risk of overspray damage to any furniture above the floor. Apply between the floor joists, wetting the sides of the joists with foam to achieve an airtight seal.

For increased depth of Product, apply the Product to the depth of the joists. Cross-battens are then mechanically fixed to the joists. The battens shall be of sufficient width and spacing (up to 600 mm) to provide adequate support to which the ceiling lining board can be mechanically fixed. Resume filling in layers with a maximum thickness of 50 mm.

The void between the timber joists and the ground surface below shall be at least 150 mm to ensure sufficient ventilation.

#### **Concrete suspended floors**

The Product can be applied directly onto a concrete suspended floor, either from below or above the existing floor. The Product can also be applied between timber battens fixed to the concrete suspended floor. Multiple passes may be required to achieve the desired depth of Product.

Once cured, any excess Product shall be trimmed back.

#### **Steel suspended floors**

The Product can be applied directly onto a steel suspended floor, either from below or above the existing floor. Multiple passes may be required to achieve the desired depth of Product.

Once cured, any excess Product shall be trimmed back.

#### **2.4.6 Finishing**

The following finishing is required on completion of the installation:

- in habitable rooms, the Product shall be covered by floorboards and a plasterboard lining, with all joints taped, sealed and supported by studs, noggins or battens;
- in non-habitable room spaces where the Product is left exposed, prominent 'fire warning' labels shall be placed in treated areas;
- floor decking suitable for the intended use shall be of adequate strength and moisture resistance, correctly installed and protected against damage, if required.



## 2.5 - INDEPENDENTLY ASSESSED PRODUCT CHARACTERISTICS

### 2.5.1 Moisture control

Test		Test standard	Result
Cell structure	Open and closed cell volume	BS EN ISO 4590, Method 2a	96.6 % closed cells
Water vapour transmission	Water vapour transmission rate	BS EN 12086, Method A	266 mg/(m <sup>2</sup> h) <sup>^</sup>
	Water vapour permeance		0.190 mg/(m <sup>2</sup> hPa) <sup>^</sup>
	Water vapour resistance		5.31 m <sup>2</sup> hPa/mg <sup>^</sup>
	Water vapour permeability		0.0101 mg/(mhPa) <sup>^</sup>
	Water vapour diffusion factor		72 <sup>^</sup>
	Water vapour diffusion equivalent air layer thickness		3.8 m <sup>^</sup>
Water permeability	Watertightness	BS EN 1928, Method A and Method B	W0,27
Water absorption	Short-term water absorption	BS EN 1609, Method B	0.27 kg/m <sup>2</sup> <sup>^^</sup>

<sup>^</sup> mean result for 53.1 mm mean thickness

<sup>^^</sup> mean result for 50 mm thickness

### 2.5.2 Fire performance

Test	Test standard	Result
Reaction to fire performance classification	BS EN 13501-1	E (combustible)
Durability of reaction to fire against ageing/degradation	BS EN 14315-1	reaction to fire does not decrease with time

### 2.5.3 Thermal performance

Test	Test standard	Result
Declared aged thermal conductivity ( $\lambda_D$ )	BS EN 12667	0.025 W/mK

### 2.5.4 Other properties

Test	Test standard	Result
Apparent density	BS EN 1602	37.22 kg/m <sup>3</sup>
Dimensional stability under specified conditions (70 °C, 90 % RH)	BS EN 1604	change in length mean 1.8 % change in width mean 1.9 % change in thickness mean -0.1 %
Tensile strength perpendicular to faces	BS EN 1607	mean 1.0 kPa on OSB mean 0.4 kPa on concrete mean 0.4 kPa on trapezoidal sheet
Compressive strength or stress @ 10 % linear compression or strain	BS EN 826	mean 267.25 kPa
REACH Statement for the Product in respect of emission of dangerous substances	BS EN ISO 16000-10	no hazardous materials are present; < 0.01 mg/m <sup>3</sup> total volatile organic compounds present

## CHAPTER 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 Product, if installed and used in accordance with Chapter 2 of this Agrément, can satisfy or contribute to satisfying the relevant requirements of the following national Building Regulations.

#### 3.2.1 - ENGLAND THE BUILDING REGULATIONS 2010 AND SUBSEQUENT AMENDMENTS

- C2(c) Resistance to moisture - a suspended floor incorporating the Product can adequately protect a building from interstitial and surface condensation
- J4 Protection of building - the Product can be separated from hot appliances and surfaces to prevent a building catching fire
- L1(a)(i) Conservation of fuel and power - the Product can limit heat gains and losses through a suspended floor
- Regulation 7(1) Materials and workmanship - the Product is manufactured from suitably safe and durable materials for its application and can be installed to give a satisfactory performance
- Regulation 23(1) Requirements relating to thermal elements - the Product can contribute to a suspended floor complying with the requirements of L1(a)(i)
- Regulation 26 CO<sub>2</sub> emission rates for new buildings - the Product can contribute to a building to not exceed its CO<sub>2</sub> emission rate
- Regulation 26A Fabric energy efficiency rates (new buildings) - the Product can contribute to satisfying this Requirement

#### 3.2.2 - WALES THE BUILDING REGULATIONS 2010 AND SUBSEQUENT AMENDMENTS

- C2(c) Resistance to moisture - a suspended floor incorporating the Product can adequately protect a building from interstitial and surface condensation
- J4 Protection of building - the Product can be separated from hot appliances and surfaces to prevent a building catching fire
- L1(a)(i) Conservation of fuel and power - the Product can limit heat gains and losses through a suspended floor
- Regulation 7(1) Materials and workmanship - the Product is manufactured from suitably safe and durable materials for its application and can be installed to give a satisfactory performance
- Regulation 23(1) Requirements relating to thermal elements - the Product can contribute to a suspended floor complying with the requirements of L1(a)(i)
- Regulation 26 CO<sub>2</sub> emission rates for new buildings - the Product can contribute to a building to not exceed its CO<sub>2</sub> emission rate
- Regulation 26A Primary energy consumption rates for new buildings - the Product can contribute to satisfying this Regulation
- Regulation 26B Fabric performance values for new dwellings - the Product 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) Durability, workmanship and fitness of materials

- The Product is manufactured from acceptable materials and is adequately resistant to deterioration and wear under normal service conditions, provided it is installed in accordance with the requirements of this Agrément

##### 3.2.3.2 Regulation 9 Building standards - construction

- 3.15 Condensation - a suspended floor incorporating the Product can protect a building from moisture caused by surface or interstitial condensation
- 3.19 Combustion appliances - relationship to combustible materials - the Product can be separated from fixed combustion appliances to prevent damage to a building
- 6.1(b) Carbon dioxide emissions - the Product will contribute to energy conservation of a building
- 6.2 Building insulation envelope - the Product will contribute to the insulation envelope to resist thermal transfer
- 7.1(a)(b) Statement of sustainability - the Product can contribute to satisfying the relevant Requirements of Regulation 9, Sections 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard; in addition, the Product 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)

#### 3.2.4 - NORTHERN IRELAND THE BUILDING REGULATIONS (NORTHERN IRELAND) 2012 AND SUBSEQUENT AMENDMENTS

- 23(a)(b) Fitness of materials and workmanship - the Product is suitable and can be adequately mixed, prepared and applied
- 29 Condensation - a suspended floor incorporating the Product can adequately protect a building from moisture in the form of interstitial condensation
- 39(a)(i) Conservation measures - the Product will limit heat gains and losses through a floor
- 40(2) Target carbon dioxide emission rate - the Product will contribute to a building to not exceed its target CO<sub>2</sub> emission rate
- 73(1)(b) Protection of people and buildings - the Product can be separated from combustion appliances, flue-pipes, flues or chimneys to prevent damage to a building by heat or fire

### 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 Product complies with the requirements of a recognised document and indicates it is suitable for its intended purpose and use.

- D1 Materials and workmanship - the Product is manufactured from suitably safe and durable materials for the application and can be installed to give a satisfactory performance
- J3 Protection of building - the Product can be separated from heat producing appliances, flue pipes, fireplace or chimneys to prevent a building catching fire
- L1 Conservation of Fuel and Energy - the Product can enable a building to conserve energy and limit CO<sub>2</sub> emissions

### 3.3 - THIRD-PARTY ACCEPTANCE

**NHBC** - In the opinion of Kiwa Ltd., the Product, if installed, used and maintained in accordance with this Agrément, can satisfy or contribute to satisfying the relevant requirements in relation to NHBC Standards, Chapters 5.2 Suspended ground floors and 6.4 Timber and concrete upper floors.

### CHAPTER 4 - SOURCES

- BS EN ISO 9001:2015 Quality management systems - Requirements
- BS EN ISO 10211:2017 Thermal bridges in building construction. Heat flows and surface temperatures. Detailed calculations
- BS EN ISO 13370:2017 Thermal performance of buildings. Heat transfer via the ground. Calculation methods
- BS EN ISO 13788:2012 Hygrothermal performance of building components and building elements. Internal surface temperature to avoid critical surface humidity and interstitial condensation. Calculation methods
- BS EN ISO 16000-10:2006 Indoor air. Determination of the emission of volatile organic compounds from building products and furnishing. Emission test cell method
- BS EN 1928:2000 Flexible sheets for waterproofing. Bitumen, plastic and rubber sheets for roof waterproofing. Determination of watertightness
- BS EN 14315-1:2013 Thermal insulating products for buildings. In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products. Specification for the rigid foam spray system before installation
- BS EN 14315-2:2013 Thermal insulating products for buildings. In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products. Specification for the installed insulation products
- BS EN 15026:2007 Hygrothermal performance of building components and building elements. Assessment of moisture transfer by numerical simulation
- BS 5250:2011+A1:2016 Code of practice for control of condensation in buildings
- BS 6093:2006+A1:2013 Design of joints and jointing in building construction. Guide
- BS 8000-0:2014 Workmanship on construction sites. Introduction and general principles
- Accredited Construction Details for Scotland
- BRE Information Paper 1/06:2006 Assessing the effects of thermal bridging at junctions and around openings
- BRE Report 262:2002 Thermal insulation: avoiding risks
- BRE Report 443:2006 Conventions for U-value calculations
- BRE Report 460 BRE Building Elements: Floors and flooring:2003
- BRE Report 497:2016 Conventions for calculating linear thermal transmittance and temperature factors
- Government Accredited Construction Details for Part L - England and Wales
- NHBC Standards 2020
- PAS 2030:2019 Specification for the installation of energy efficiency measures in existing buildings
- PAS 2035:2019 Retrofitting dwellings for improved energy efficiency - Specification and guidance

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

### CHAPTER 5 - AMENDMENT HISTORY

Revision	Amendment description	Amended by	Approved by	Date
-	First Issue	C Devine	C Vurley	March 2021

### CHAPTER 6 - CONDITIONS OF USE

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