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BAF-20-148-P-A-UK
BDA Agrément®
Supafloor
Thermal Insulation Layer
(Floor Applications)

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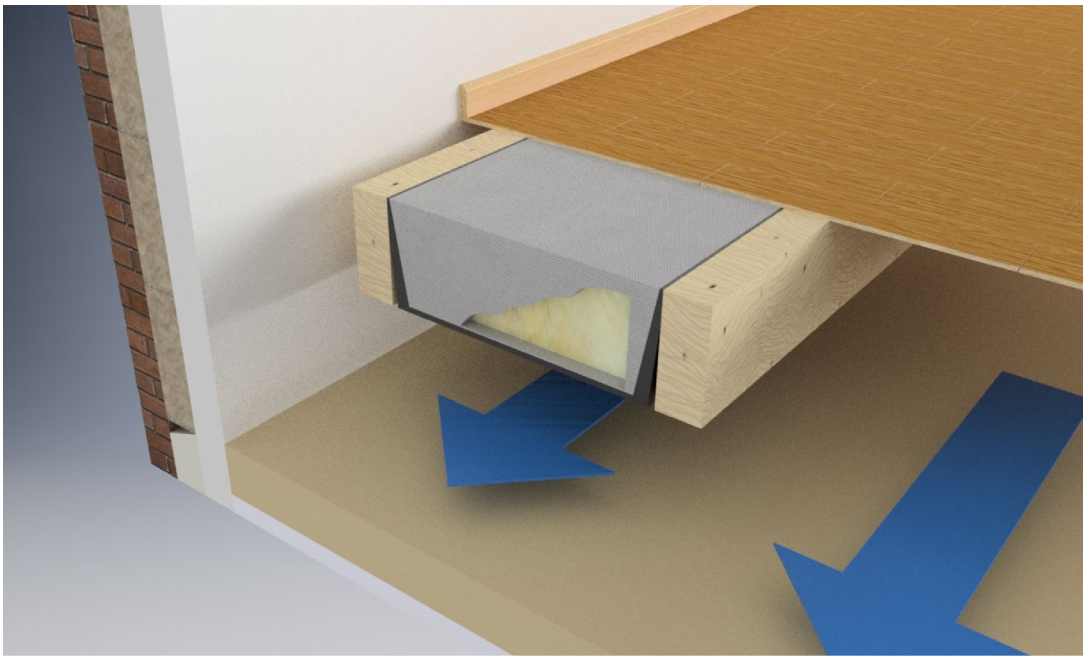
SCOPE OF AGRÉMENT

This Agrément relates to Supafloor (hereinafter the 'Product'), an underfloor thermal insulation layer. The Product is a retrofit insulation solution for use between the joists of suspended timber ground floors with underfloor voids of not more than 1.2 m. For use in existing domestic and non-domestic buildings in the UK. Use of the Product in basement and cellar applications is not permitted.

DESCRIPTION

The Product consists of glass mineral wool insulation (hereinafter 'MW insulation'), encapsulated within a pocket of breathable membrane (hereinafter 'membrane'). The upper surface is white; the underside is dark grey. The MW insulation is manufactured in accordance with BS EN 13162; the membrane is manufactured in accordance with BS EN 13859-1. The Product features extended 'wings' to either side with which to fix the Product to joists using galvanised staples.

ILLUSTRATION



THIRD-PARTY ACCEPTANCE

None requested by the Agrément holder.

STATEMENT

It is the opinion of Kiwa Ltd., that the Product is safe and 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 safety and 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 - suspended timber ground floors incorporating the Product can limit the risk of interstitial and surface condensation when designed in accordance with BS 5250, BRE Report 262 and BRE Digest 369 (see section 2.2.9).

Fire performance - the European Classification in accordance with BS EN 13501-1 is (see section 2.2.10):

- A1 - MW insulation;
- E - membrane.

Thermal performance - the Product can meet or contribute to meeting all required levels and provisions regarding thermal transmittance (hereinafter 'U-value') or thermal resistance (see section 2.2.11).

Durability - the service life durability of the Product will be dependent upon the environment (operating conditions) in which the Product will be used (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).

CONTENTS

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.

1.1.4 Installation supervision
The quality of installation and workmanship must be controlled by a competent person who must be an employee of an Approved Installer.

The Product 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 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.

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.

CHAPTER 2 - TECHNICAL ASSESSMENT

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

2.1 - PRODUCT COMPONENTS AND ANCILLARY ITEMS

2.1.1 Components included within the scope of this Agrément
The following components are integral to the use of the Product:

Component	Description	Dimensions
Supafloor	MW-13162-T1 MW insulation, manufactured in accordance with BS EN 13162, encapsulated within a pocket of Class W1 breathable membrane, manufactured in accordance with BS EN 13859-1	2000 by 400, 200 or 100 mm by 100, 150, 170 or 200 mm thick

2.1.2 Ancillary items falling outside the scope of this Agrément
Ancillary items detailed in this section may be used in conjunction with the Product but fall outside the scope of this Agrément:
- Rapid 140/10 High Performance staples, manufactured from flat, galvanized steel wire, to fix the Product to joists and to seal the Product after each section has been installed;
- staple gun.

2.2 - POINTS OF ATTENTION TO THE SPECIFIER

2.2.1 Design responsibility
Project-specific design is the responsibility of an Approved Installer trained and approved by the Agrément holder.

2.2.2 Applied building physics (heat, air, moisture)
A competent specialist shall check the hygrothermal 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
An assessment and design in accordance with PAS 2030 and PAS 2035 must be undertaken before the Product is installed. The assessment must be specific to the property and the type of product being considered for its suitability, in accordance with BEIS 'Guide to Best Practice - Retrofit Floor Insulation - Suspended Timber Floors' and the relevant national Building Regulations.

The Product is effective for use as an underfloor thermal insulation layer and reduces the thermal transmittance (hereinafter 'U-value') of suspended timber ground floors.

Suspended timber ground floors incorporating the Product must include suitable ventilation of the sub-floor void (minimum 150 mm void between the underside of the floor construction and the ground beneath).

If present, mould or fungal growth shall be treated prior to the installation of the Product.

Any necessary repairs, including those as a result of the pre-installation survey, must be carried out prior to installation.

2.2.4 Project-specific design considerations
The project-specific design shall take into account the service life durability required - see section 2.2.11.

The project-specific design shall take into account the requirements of the national Building Regulations - see section 3.2.

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

The Product is only to be used in areas that have been assessed as suitable by the Agrément holder.

2.2.5 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.

2.2.6 Installer competence level
The Product shall be installed strictly in accordance with the instructions of the Agrément holder and the requirements of this Agrément.

Installation must be by an Approved Installer trained and approved by the Agrément holder.

2.2.7 Delivery, storage and site handling
The Product is delivered to site in suitable packaging, bearing the Product name, the Agrément holder's name and the BDA Agrément® logo incorporating the number of this Agrément.

Prior to installation, store the Product in accordance with the Agrément holder's requirements. When required, particular care shall be taken to:
- avoid exposure to direct sunlight for extended periods of time;
- avoid exposure to high or low temperatures for extended periods of time;
- store in a well-ventilated covered area to protect from rain, frost and humidity;
- store away from possible ignition sources
- not stack pallets of the Product; excess compression may affect the thermal conductivity of the Product;

2.2.8 Maintenance and repair
Once installed, the Product does not require regular maintenance. 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
Condensation risk
Suspended timber ground floors incorporating the Product can limit the risk of interstitial and surface condensation when designed in accordance with BS 5250, BRE Report 262 and BRE Digest 369.

A condensation risk analysis (hereinafter 'CRA'), including technical specification, moisture transfer and build-up characteristics for the Product, must be carried out by a competent person on a project-specific basis, in accordance with BS 5250 and BS EN ISO 13788.

In order to minimise any risk of interstitial condensation, there must always be an underfloor void of at least 150 mm beneath the lowest point of the floor construction incorporating ventilation openings in opposing external walls to facilitate through-ventilation. Ventilation openings shall be a minimum of 1500 mm^2 per linear metre of external wall run or 500 mm^2 per square metre of the floor area, whichever provides the greatest area. Any pipes needed to carry ventilating air shall have a diameter of at least 100 mm.

In accordance with BEIS 'Guide to Best Practice - Retrofit Floor Insulation - Suspended Timber Floors':
- when the Product is applied between joists, it shall not be supported by a material which offers a vapour resistance higher than that of the Product;
- to meet the required thermal transmittance value, the underside of joists may need to be insulated using a small layer of the Product, to minimise thermal bridging.

Suspended timber ground floors will adequately limit the risk of surface condensation when the U-value does not exceed 0.7 $W/m^2{\cdot}K$ at any point, and the junctions with other elements and openings maintain, or contribute to maintaining, the continuity of thermal insulation at junctions between joists and the Product.

Hygrothermal performance
Hygrothermal risk analysis for the Product must be carried out by a competent person on a project-specific basis, in accordance with BS EN 15026.

2.2.10 Fire performance
The MW insulation is classified as European Classification A1, in accordance with BS EN 13501-1.

The membrane is classified as European Classification E, in accordance with BS EN 13501-1.

When properly installed, the Product will not add significantly to any existing fire hazard. The Product will be contained within the floor by the overlay until the overlay itself is destroyed. Therefore, the Product will not contribute to the development stages of a fire or present a smoke or toxic hazard.

2.2.11 Thermal performance
The Product can meet or contribute to meeting all required levels and provisions regarding U-values or thermal resistance.

U-value calculations shall be carried out by a competent person in accordance with BS EN ISO 13370 and BRE Report 443, using the thermal conductivities (λ_D) given in Section 2.5.4.

The recommendations given in the Thermal Bridging Guide should be observed. BRE Report 262 provides guidance on reducing risks when installing insulation in suspended timber ground floors and, where possible, should always be followed.

2.2.12 Durability
The service life durability of the Product will be dependent upon the environment (operating conditions) in which the Product will be used. The expected service life durability will be in excess of 20 years.

2.2.13 CE marking
There is no relevant harmonised European standard for the Product.

2.3 - EXAMPLES OF TYPICAL DETAILS

Diagram 1 - Isometric detail of Product

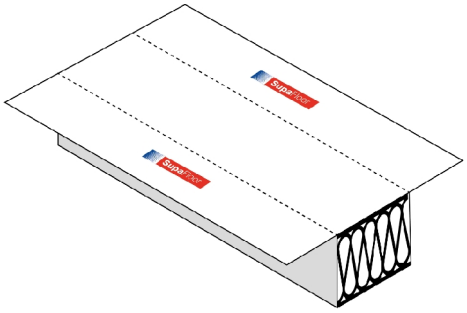


Diagram 2 - Section detail of Product

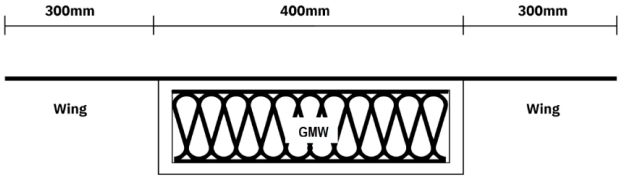


Diagram 3 - Typical fixing detail for 150 mm joists

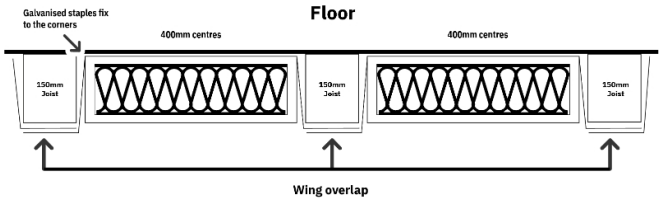


Diagram 4 - Typical fixing detail for 100 mm joists

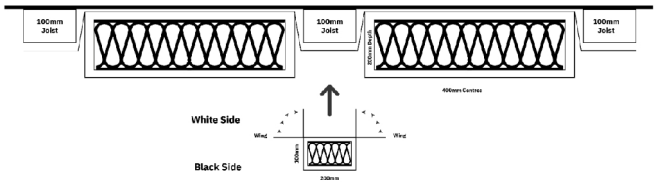


Diagram 5 - Detail of staple points

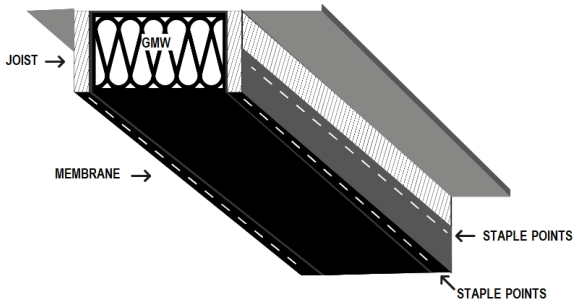


Diagram 6 - Detail of staples to joists side

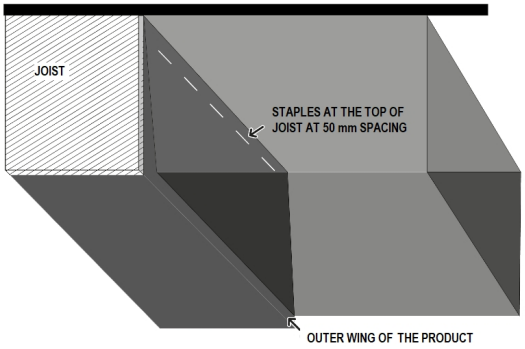


Diagram 7 - Detail of wings overlapping

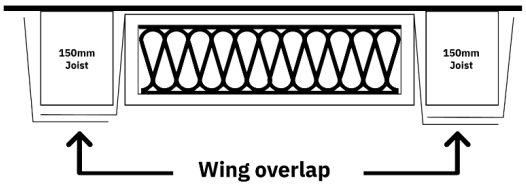
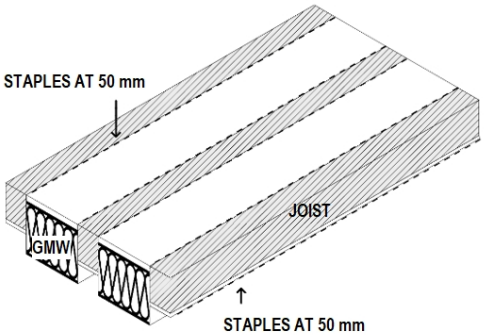


Diagram 8 - Detail of Product between joists



2.4 - INSTALLATION

The Product shall 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 pre-installation survey is based on the installation method statement and shall be conducted by a competent person as defined in BEIS 'Guide to Best Practice - Retrofit Floor Insulation - Suspended Timber Floors', PAS 2030 and PAS 2035.

The primary requirement of the pre-installation survey is to determine the following:
- dimensions and building materials, floor construction and areas to be insulated;
- underfloor void depth for ventilation;
- that adequate air bricks are in place to provide ventilation to the underfloor void;
- condition of timber, structural floor support members and openings;
- presence of rodents/pests under the floor;
- adequate protection of wiring or pipework;
- adequate protection of areas of the building and surrounding area that could be at risk during installation;
- evidence of damp, staining or condensation on the faces of the floor.

2.4.4 Preparation
The following considerations apply before starting the work:
- review the CRA checklist and method statement;
- read the Installation Manual carefully prior to installing the Product;
- ensure depth of insulation does not compromise ventilation by covering vents or reducing the depth of the air space.

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

- any necessary repairs must be made prior to installation;
- clear the area of any material waste/debris;
- use dust sheets where required;
- ensure and confirm the proper functioning of all ventilation openings and flues;
- ensure that a minimum 150 mm ventilated airspace is provided between the underside of the floor construction and the ground beneath.

2.4.5 Outline installation procedure

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

Installers must wear personal protective equipment (PPE) when working with the Product, including nitrile gloves, protective overalls, safety boots, protective headgear and respiratory equipment.

The key sequence for installation is:

- create an access aperture in the floor and enter the underfloor void;
- prepare the Product for installation by unrolling it with the white layer facing up;
- secure the Product to the upper side of the joists using staples at maximum 50 mm centres where the 'wing' element of the Product joins the body;
- wrap the 'wing' around the joist and secure it using staples;
- ensure there is adequate tension on the membrane between joists to obtain the same thickness across the whole floor;
- once each section has been installed, both ends of the Product shall be sealed using staples;
- verify the membrane is fixed to joists to provide a consistent protective membrane across the whole floor to minimise thermal bridges;
- verify installation has been completed and that no damage has occurred to the building;
- verify all areas have been insulated;
- exit from the underfloor void, install the last section of Product from above, ensuring the 'wings' are folded over the top, and replace section of flooring.

2.4.6 Finishing

The following finishing is required on completion of the installation:

- ensure repairs to the flooring in the area of the access aperture are structurally sound.

2.5 - INDEPENDENTLY ASSESSED PRODUCT CHARACTERISTICS

2.5.1 Moisture control

Test	Standard	Component	Result
Resistance to water penetration	BS EN 13859-1	Membrane	Class W1
Water vapour transmission Sd	BS EN ISO 12572	Membrane	0.02 m

2.5.2 Strength

Test	Standard	Component	Result	
Maximum tensile force	BS EN 12311-1	Membrane	Machine direction	176 N/50 mm
			Cross direction	109 N/50 mm
Elongation			Machine direction	63 %
			Cross direction	70 %

2.5.3 Fire performance

Test	Standard	Component	Result
Reaction to fire classification	BS EN 13501-1	MW insulation	Class A1
		Membrane	Class E

2.5.4 Thermal performance

Test	Standard	Component	Result
Declared thermal conductivity, λ_D	BS EN 12667	MW insulation	0.044 W/mK

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.

This Agrément shall not be construed to confer compliance of any project-specific design with the national Building Regulations.

3.2.1 - ENGLAND
THE BUILDING REGULATIONS 2010 AND SUBSEQUENT AMENDMENTS

- C2(c) Resistance to moisture - floors incorporating the Product can adequately protect a building from interstitial and surface condensation
- L1(a)(i) Conservation of fuel and power - the Product can limit heat gains and losses through a floor
- Regulation 7(1) Materials and workmanship - the Product is manufactured from suitably safe, durable materials for the application and can be installed to give a satisfactory performance
- Regulation 23(1) Requirements relating to thermal elements - the Product can contribute to a floor complying with the requirements of L1(a)(i)
- Regulation 26 CO_2 emission rates for new buildings - the Product can contribute to a building to not exceed its CO_2 emission rate
- Regulation 26A Fabric energy efficiency rates for new dwellings - the Product can contribute to satisfying this Requirement

3.2.2 - WALES
THE BUILDING REGULATIONS 2010 AND SUBSEQUENT AMENDMENTS

- C2(c) Resistance to moisture - floors incorporating the Product can adequately protect a building from interstitial and surface condensation
- L1(a)(i) Conservation of fuel and power - the Product can limit heat gains and losses through a floor
- Regulation 7(1) Materials and workmanship - the Product is manufactured from suitably safe, durable materials for the application and can be installed to give a satisfactory performance
- Regulation 23(1) Requirements relating to thermal elements - the Product can contribute to a floor complying with the requirements of L1(a)(i)
- Regulation 26 CO_2 emission rates for new buildings - the Product can contribute to a building to not exceed its CO_2 emission rate
- Regulation 26A Primary energy consumption rates for new buildings - the Product can contribute to satisfying this Requirement
- 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)(2) 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 - floors incorporating the Product can protect a building from moisture caused by surface or interstitial condensation
- 6.1(b) Carbon dioxide emissions - the Product will contribute to reducing carbon dioxide emissions 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, Standards 1 to 6, and will therefore 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 of Building (Scotland) Regulations 2004 and subsequent amendments and clause 0.12 of the Technical Handbook (Domestic).

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

- 23(a)(i)(iii)(iv)(b) Fitness of materials and workmanship - floors incorporating the Product are suitable and can be adequately prepared and applied
- 28(a) Resistance to moisture - floors incorporating the Product can adequately protect a building from moisture from the ground
- 29 Condensation - floors 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 not exceeding its target carbon dioxide emission rate

3.3 - THIRD-PARTY ACCEPTANCE

None requested by the Agrément holder.

CHAPTER 4 - SOURCES

- BS EN ISO 12572:2016 Hygrothermal performance of building materials and products. Determination of water vapour transmission properties. Cup method
- 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 9001:2015 Quality management systems - Requirements
- BS EN 12311-1:2000 Flexible sheets for waterproofing. Determination of tensile properties. Bitumen sheets for roof waterproofing
- BS EN 12667:2001 Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Products of high and medium thermal resistance
- BS EN 13162:2012+A1:2015 Thermal insulation products for buildings. Factory made mineral wool (MW) products. Specification
- BS EN 13501-1:2018 Fire classification of construction products and building elements. Classification using data from reaction to fire tests
- BS EN 13859-1:2014 Flexible sheets for waterproofing. Definitions and characteristics of underlays. Underlays for discontinuous roofing
- 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
- BEIS Guide to best practice - retrofit floor insulation - suspended timber floors, July 2020
- BRE Digest 369:1992 Interstitial condensation and fabric degradation
- BRE Report 262:2002 Thermal insulation: avoiding risks
- BRE Report 443:2006 Conventions for U-value calculations
- PAS 2030:2019 Specification for the installation of energy efficiency measures in existing dwellings and insulation in residential park homes
- PAS 2035:2019 Retrofitting dwellings for improved energy efficiency - Specification and guidance
- Thermal Bridging Guide:2016 An introductory guide to thermal bridging in homes, Zero Carbon Hub

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	Author	Approver	Date
-	First Issue	C Devine	C Vurley	January 2021

CHAPTER 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.

For full terms and conditions refer to Kiwa Ltd.