

SCOPE

This Agrément relates to SuperQuilt 19 (hereinafter the "Product"). The Product is for use as a flexible thermal insulation layer in conjunction with other insulation materials. Installation can be over and/or under the timber joists of flat timber roofs. When installed under joists and with overlaps sealed with YBS Foil Tape, the Product will perform as a vapour control layer (VCL). The Product can be used in new or existing domestic buildings, and non-domestic buildings with similar temperature and humidity conditions.

DESCRIPTION

The Product is a multi-foil layer, reflective, flexible composite polyester thermal insulation blanket material. It is made up of 19 separate layers including polyester fibre wadding, expanded polyethylene (PE) closed cell foam and aluminium foil coated polyethylene terephthalate (PET) film. The outer facing layers of the Product are aluminium foil laminate with polyethylene backing and reinforcing glass-fibre scrim (Foil-Tec Single). All layers are stitched together with nylon thread, approximately 8 mm from the edges of the blanket. The layers are spot wise connected with 40 mm long double T plastic clips in a regular pattern, to avoid thermal bridging and create flat and parallel surfaces. The Product has a nominal thickness of 40 mm and is manufactured in accordance with the requirements of Product Type 1 (to BS EN 16012) and Product Type A (to BS EN 13984). YBS Foil Tape is 75mm wide aluminium foil-backed self-adhesive tape.

PRODUCT ILLUSTRATION



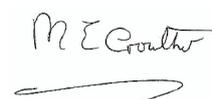
STATEMENT

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.

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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;
- Initial Factory Production Control, Quality Management System and the Annual Verification procedure;
- Points of attention for the Specifier and examples of details;
- Installation;
- Independently assessed Product characteristics and other information;
- Compliance with national Building Regulations and other regulatory requirements;
- Sources, including codes of practice, test and calculation reports.

MAJOR POINTS OF ASSESSMENT

Thermal insulation properties - the Product increases the thermal insulation of the roof structure. The Product has an emissivity coefficient of 0.014 for the outer foil, a declared thermal resistance of 1.52 m²K/W for the core and a declared thermal conductivity (λ_D) of 0.028 W/mK (see section 2.1.7).

Mechanical resistance and strength - the Product is sufficiently strong to resist tears (see section 2.1.9).

Condensation risk - the Product can contribute to limiting the risk of interstitial and surface condensation (see section 2.1.10).

Water vapour transmission resistance - the Product offers high resistance to water vapour transmission (see section 2.1.11).

Water absorption - the Product has adequate resistance to water absorption (see section 2.1.13).

Behaviour in relation to fire - the Product is classified as Euroclass E (combustible) according to BS EN 13501-1 (see section 2.1.14).

Durability - the Product is durable and sufficiently stable to remain effective as an insulant for the life of the roof structure (see section 2.1.15).

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CHAPTER 1 - GENERAL CONSIDERATIONS

1.1 - CONDITIONS OF USE

1.1.1 Design considerations

See section 2.1.

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 its' test reports, technical literature and factory and site visits. Factory Production Control has been assessed.

1.1.4 Installation supervision

It is recommended that the quality of installation and workmanship is controlled by a competent person. Such person shall be either a qualified employee of the Consulting Engineer or an employee of the installing contractor.

The Product shall be installed strictly in accordance with this Agrément and with the Agrément holder's requirements.

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 and national Building Regulations).

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. After this, the validity of the Agrément can be extended every three years after a positive review.

1.2 - INITIAL FACTORY PRODUCTION CONTROL (FPC)

- Kiwa Ltd. has determined that the Agrément holder has fulfilled all provisions of the specifications described in this Agrément in respect of the Product.
- The initial FPC audit demonstrated that the Agrément holder has a satisfactory Quality Management System (QMS) and is committed to continuously improving their FPC operations.
- A detailed Production Quality Specification (PQS) has been compiled to ensure traceability and compliance under the terms of this Agrément.

1.3 - QUALITY MANAGEMENT SYSTEM (QMS)

- The Agrément holder:
 - has an effective and well maintained QMS in operation which covers the necessary clauses required for BDA Agrément®.
 - is committed to continually improving their FPC, QMS and associated procedures.
- Document control and production line procedures were deemed satisfactory, with sufficient evidence provided in support of BDA Agrément® requirements.

1.4 - ANNUAL VERIFICATION PROCEDURE - CONTINUOUS SURVEILLANCE

To demonstrate that the FPC is in conformity with the requirements of the technical specification described in this Agrément, the continuous surveillance, assessment and approval of the FPC will be done in a frequency of not less than once per year by Kiwa Ltd.

2.1.1 Design responsibility

The Agrément holder is not responsible for any project specific design.

2.1.2 Design considerations

This Agrément covers the use of the Product, subject to the following conditions being met:

- Compliance with the provisions of BS 5250;
- Compliance with weather-tightness and thermal insulation in accordance with BRE Report 262;
- The uncompressed Product is most thermally effective with a minimum air cavity (formed using timber battens) of 25 mm on either side, to minimise the effect of thermal bridging cross-battening is advised;
- Finished roofs must be watertight and in a good state of repair;
- The roof void is not being used as a source of combustion air or as a flue for ventilation purposes;
- The correct level of workmanship and design detailing, particularly around chimneys, flue pipes and rooflights.

Keep penetration of the Product by services to a minimum.

Care is needed for design at openings, and the correct level of workmanship and design detailing of joints around openings should be in accordance with BS 6093.

At joints, the Product should be overlapped by a minimum of 50 mm and sealed with YBS Foil Tape.

The Product must be covered straight after installation to ensure that it is not exposed to rain.

The Product shall not be exposed to organic solvents or plasticisers.

The Product must not come into contact with heat sources greater than 80 °C.

New flat timber roofs subject to the national Building Regulations should be designed and constructed to prevent moisture penetration and air infiltration in accordance with the relevant BS Standards, Codes of Practice and BRE Report 262:

- When installed over joists, the Product should be immediately decked over to protect it from the weather;
- When installed under joists, the Product installation is to be left until the finished roof is in place and any flue pipe openings are sealed;
- If ventilation openings are required in accordance with BS 5250, they should be positioned on opposite sides of the finished roof;
- Any ventilation openings shall be small enough or suitably protected by mesh to prevent the ingress of rain, birds or animals.

Additional insulation will be required in order to meet the U-value requirements of the national Building Regulations. Account should be taken of Government Accredited Construction Details for Part L - Timber Frame Illustrations in England and Wales and Accredited Construction Details for Scotland.

A ceiling can be installed to encapsulate the Product if required.

2.1.3 Permitted applications

Only applications designed according to the specifications as given in this Agrément are allowed under this Agrément, in each case the specifier will have to co-operate closely with the Agrément holder.

2.1.4 Building physics

The physical behaviour of flat timber roofs incorporating the Product shall be verified as suitable by a competent specialist, who can be either a qualified employee of the Specifier or a qualified consultant. The Specialist will check the physical behaviour of the designed flat timber roof construction and if need be advise about improvement to achieve the final specification. It is recommended that the Specialist co-operates closely with the Agrément holder.

2.1.5 Installation

See section 2.3.

2.1.6 Delivery, storage and site handling

The Product is delivered to site in rolls and should not be opened until required for use. The Product must be protected from rain, snow and other sources of dampness and prolonged exposure to sunlight. The Product must not be exposed to naked flame or other ignition sources and must be stored away from flammable material such as paint and solvents. See Section 2.3.2.

Performance factors in relation to the Major Points of Assessment

2.1.7 Thermal insulation properties

The Product is effective in reducing the thermal transmittance (U-value) of flat timber roofs and helps to reduce energy transfer by conduction, convection and radiation, and it reflects infra-red radiation. The Product acts by creating a low emissivity air space in the roof, thus reflecting heat back into the building. The Product is effective in winter by reflecting heat back into the building and cold out, and in summer the Product is an effective barrier to solar over-heating. The Product is most effective with a minimum 25 mm air gap on either side, battens can be used to create this gap.

The requirement for limiting heat loss through the building fabric, including the effect of thermal bridging can be satisfied if the thermal transmittance (U-value) of the roof incorporating the Product does not exceed the maximum and target U-values in the Elemental Methods given in the national Building Regulations.

For the purpose of U-value calculations the thermal resistance and U-value of flat roofs incorporating the Product (in combination with a minimum 25mm air cavity on both sides of the Product layer) should be calculated according to BS EN ISO 10211.

Due consideration should be given to BS EN ISO 6946, BS EN ISO 10456 and BRE Report 443, using the declared thermal resistance or conductivity (λ_D) value of the Product.

Additional insulation in the roof void is required to meet the U-value requirements of the national Building Regulations.

Thermal bridging at junctions and around openings

The overall design and construction of junctions with other elements and openings should minimise thermal bridges and air infiltration.

Guidance on linear thermal transmittance, heat flows and surface temperatures can be found in the documents supporting the national Building Regulations and BS EN ISO 10211, BRE Information Paper IP1/06, BRE Report 262 and BRE Report 497. To minimise the effect of thermal bridging cross-battening is advised. Account should be taken of Government Accredited Construction Details for Part L - Timber Frame Illustrations in England and Wales and Accredited Construction Details for Scotland.

2.1.8 Adequacy of fixing

The Product can be installed sufficiently taugth in flat timber roofs, when using the correct fixings and correct distances between fixings to maintain its thermal insulation benefit.

2.1.9 Mechanical resistance and strength

The Product has adequate tensile strength parallel to faces in accordance with BS EN 1608 and BS EN 12311-2 and adequate resistance to tearing (nail shank) in accordance with BS EN 12310-1.

The Product has high burst strength and adequate resistance to impact in accordance with BS EN 12691.

The Product with sealed joints has adequate shear resistance of joints in accordance with BS EN 12317-2.

2.1.10 Condensation risk

A project specific condensation risk analysis shall be completed by the Specialist at design stage.

Interstitial condensation

Flat timber roofs incorporating the Product can adequately limit interstitial condensation when they are designed and constructed in accordance with BS 5250 and BRE Report 262.

Any openings or penetrations in the ceiling and the ceiling-wall joints must be well sealed. Special attention should be given to the air tightness of the ceiling to avoid excessive condensation in the space above the Product and additional insulation. If ventilation has been provided there is no requirement for a VCL above the ceiling, provided that the Product is thoroughly sealed at all joints with YBS Foil Tape (resulting in an airtight layer).

Ventilation to the air space should be in accordance with BS 5250. The water vapour resistance of any additional insulation material should also be taken into consideration.

Surface condensation

Flat timber roofs incorporating the Product can adequately limit surface condensation on internal ceilings when the thermal transmittance (U-value) does not exceed the maximum values given in the national Building Regulations at any point, including junctions with walls and openings when designed in accordance with BS 5250 and BRE Report 262.

2.1.11 Water vapour transmission resistance

When all joints are sealed using YBS Foil Tape, the Product has a high water vapour transmission resistance in accordance with BS EN 1931, BS EN 12086 and BS EN ISO 12572 and can act as a VCL. The Product can adequately resist the passage of water vapour to the underlying structure and when installed against the internal side of the roof joists or battens the Product will perform as a vapour barrier.

2.1.12 Resistance to precipitation including wind-driven rain

The Product is protected by the roof covering to prevent rain water ingress across the roof void to the face of the Product. Design of joints through a roof should be in accordance with BS 6093.

The Product has adequate water-tightness in accordance with BS EN 1928.

2.1.13 Water absorption

The foam layers within the Product are sealed, stopping water from penetrating the air pockets whilst in-situ in the application. The Product does not absorb water over the long-term in accordance with BS EN 12087 and BS EN 12088.

2.1.14 Behaviour in relation to fire

The Product is classified as Euroclass E in accordance with BS EN 13501-1.

The Product has a low rate of heat release and a low rate of fire growth when ignited.

When installed with additional insulation materials, the fire properties of the additional insulation materials must be taken into account.

Combustible materials are permitted in the roof void but require any opening or penetration to be sealed.

Care should be taken to avoid accidental ignition during maintenance works (e.g. by a roofer's or plumber's torch).

When suitably encapsulated in a roof void, the Product will not contribute to the development stages of a fire or present a smoke or toxic hazard.

Junctions between the roof and compartment walls must be fire stopped. The Product must not be carried over junctions between roofs and walls required to provide a minimum period of fire resistance. The continuity of fire resistance (by compartmentalisation) must be maintained in accordance with the provisions of the national Building Regulations.

Proximity of flues and appliances

The installed Product must be separated from any chimney or heat-producing appliance or an incinerator flue pipe passing through the roof, by a separation. The separations recommended are detailed in the Approved Documents to the national Building Regulations.

2.1.15 Durability

The Product comprises acceptable and durable materials. The Product is durable, rot-proof, non-hygroscopic, water-resistant, inert, odourless, non-toxic, and does not sustain vermin or insects and will not encourage the growth of fungi, mould or bacteria. The Product has adequate exposure resistance to alkali liquid chemicals in accordance with BS EN 1847 (liquid 2) and BS EN 12311-2.

The Product is adequately resistant to deterioration under normal service conditions in a flat timber roof, provided it is installed in accordance with the requirements of this Agrément. Once installed, the Product is protected in service from agents liable to cause deterioration and will have a service life equivalent to that of the flat roof structure in which it is incorporated.

2.1.16 Maintenance and repair

When encapsulated in a roof void, the Product does not require any regular maintenance and has a suitable durability provided the waterproof roof covering is maintained in a weathertight condition. When left exposed, damage to the Product can be repaired using YBS Foil Tape.

2.2 - EXAMPLES OF DETAILS

Figure 1 - Single layer - over joist

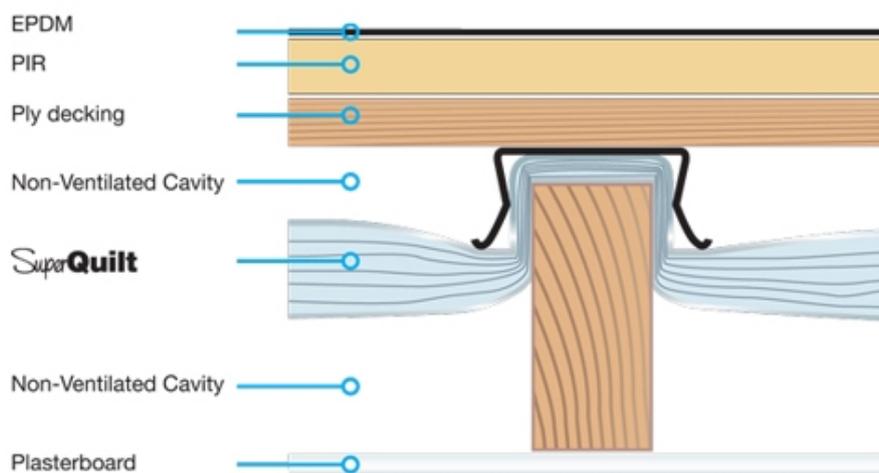


Figure 2 - Double layer - over and under joist

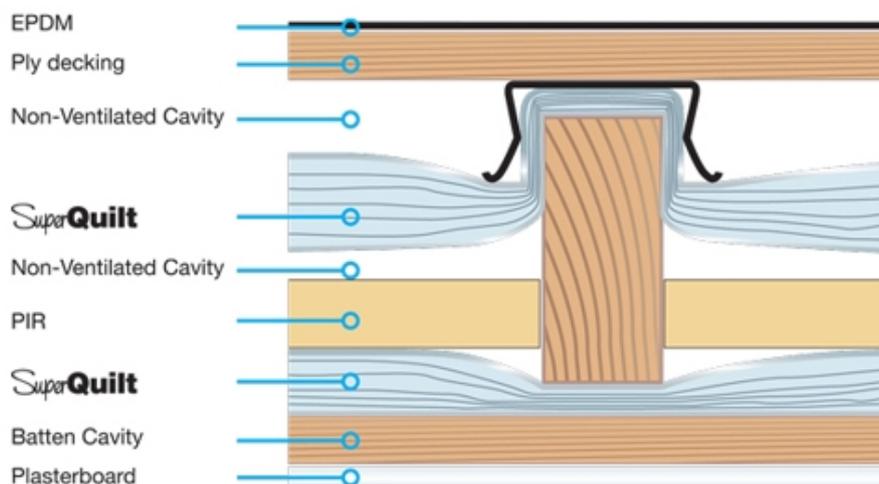


Figure 3 - Single layer - under joist, no battens

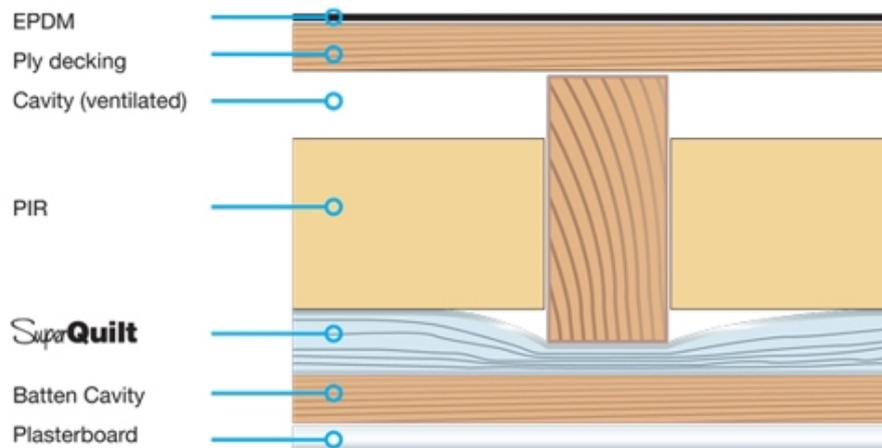
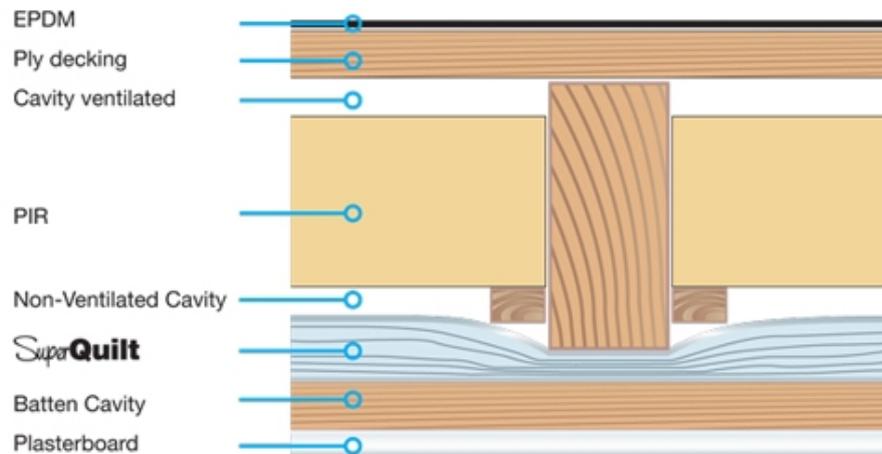


Figure 4 - Single layer - under joist, battens



2.3 - INSTALLATION

2.3.1 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 can be undertaken by unskilled labour.

2.3.2 Delivery, storage and site handling

The Product is delivered to site in polythene-wrapped rolls on pallets. The packaging is labelled with the Product name, weight, dimensions, the Agrément holder's name and the BDA Agrément® logo incorporating the number of this Agrément. Fitting instructions are placed in the pack.

Each roll should not be opened until required for use. The packs are designed for short term protection only and the Product should be stored off the ground in clean dry conditions, or under cover on a dry surface and should not be left exposed to the elements.

The Product must be protected from rain, snow and other sources of dampness and prolonged exposure to direct sunlight. Nothing should be stored on top of the rolls. For longer term protection on site, the Product should be stored indoors.

Care must be exercised when storing large quantities on site. The Product must not be exposed to naked flame or other ignition sources and must be stored away from flammable material such as paint and solvents.

Protect the Product from mud and dirt on site.

Damaged, contaminated or wet materials must not be used.

2.3.3 Preparation

All flues or chimney penetrations in the flat roof must be checked. If adequate sleeving or other cavity closures are not present, installation must not proceed until these openings have been sleeved or otherwise modified.

It is important to be sure that:

- All penetrations are sealed;
- Any necessary cross-roof ventilation should be installed in the flat roof verge.

2.3.4 Existing partially-filled roof voids

The Product can be used as additional insulation of residual roof voids in existing partial-fill installations (i.e. existing constructions where insulation, in the form of batts or boards, has previously been built into a flat roof and there is a residual roof void).

Existing insulation batts or boards must be properly installed and butt-jointed prior to installation of the Product.

2.3.5 Procedure

The Product shall be cut with a craft knife or a sharp pair of scissors, equal to the width of the roof (perpendicular to the joists) plus 100 mm.

Installation should start from the external wall with the Product being unrolled perpendicular to the joists, pulled tight and then fixed to the joists using staples (14 mm minimum stainless or galvanised steel), nails or joist saddle clips at 300 mm centres. Fixing proceeds from one side of the roof to the other.

At joints, the Product should be overlapped by a minimum of 50 mm and fixed to the joists. The lapped joints must be sealed with YBS Foil Tape over the full joint length.

Penetrations through the Product should be sealed with YBS Foil Tape.

Openings in the roof structure e.g. rooflights should be supported by additional timber battens around the opening. When the Product is cut to fit around openings or connections, gaps must be minimised and any exposed cut edges should be sealed with YBS Foil Tape to prevent condensation.

2.3.6 Fixing over joist

The Product is fixed to the top of the joists. At the eaves the Product is cut and taken down between the joists to the cavity wall insulation or the wall plate and sealed to the structure with YBS Foil Tape so that a reasonably airtight envelope is created. Additional insulation should be installed above the Product.

2.3.7 Fixing under joist

The Product is fixed to the underside of the joists. At the eaves the Product is cut and taken down to the cavity wall insulation or the wall plate and sealed to the structure with YBS Foil Tape so that a reasonably airtight envelope is created. Timber battens to support a ceiling can be secured horizontally at right angles to the joists at 600 mm centres.

2.3.8 Finishing

75mm wide YBS Foil Tape must be used to seal the cut edges.

2.3.9 Completion

For over joist applications, the waterproof roof covering must be installed immediately after installation.

The timber batten size should be sufficient to ensure a minimum 25 mm air gap between the Product and a ceiling (when incorporated).

2.4 - INDEPENDENTLY ASSESSED PRODUCT CHARACTERISTICS

2.4.1 Nominal dimensions

Roll length	5, 10 m
Roll width	1500 mm
Area	7.5, 15 m ²
Thickness	40 mm
Weight	800 g/m ²

2.4.2 Thermal insulation properties

Hemispherical emissivity coefficient of foil outer faces to BS EN 16012, Annex D	mean 0.014
Product core 40 mm thickness has a declared thermal resistance to BS EN 16012, method B (BS EN 12667)	1.52 m ² K/W
Product has a declared thermal conductivity (λ_D) to BS EN 16012	0.028 W/mK
Product compressed core, 7 mm thickness has a declared thermal resistance to BS EN 12667	0.23 m ² K/W
Product compressed core, 14 mm thickness has a declared thermal resistance to BS EN 12667	0.47 m ² K/W
Thermal resistance of an air cavity adjacent to the product \geq 13 mm thickness (upward heat flow)	0.49 m ² K/W
Product with 2 adjacent minimum 25 mm non-ventilated air cavities, heat flow vertical upwards has a declared thermal resistance to BS EN ISO 6946 and BS EN 12667	2.49 m ² K/W

2.4.3 Mechanical resistance and strength

Max tensile force to BS EN12311-2	75 N/50 mm
Tensile strength parallel to faces to BS EN 1608 and BS EN 12311-2	142 kPa
Resistance to tearing (nail shank) to BS EN 12310-1	408 N
Elongation to BS EN 12311-2	10 %

2.4.4 Water vapour transmission resistance

Water vapour transmission resistance to BS EN 1931, BS EN 12086 and BS EN ISO 12572	1569 MNs/g
Water vapour diffusion factor, μ	75000

2.4.5 Resistance to water penetration

Water-tightness to liquid water to BS EN 1928	2 KPa
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2.4.6 Behaviour in relation to fire

Reaction to fire - ignitability by direct impingement of flame to BS EN ISO 11925-2	For surface application, maximum flame height reached - 110 ± 1.7 mm For edge application, maximum flame height reached - 20 ± 0.8 mm
The Product has a fire classification to BS EN 13501-1	Euroclass E

2.5 - ANCILLARY ITEMS

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

- Pre-treated timber battens.
- Additional insulation.

CHAPTER 3 - CDM AND NATIONAL BUILDING REGULATIONS

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 - 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 REQUIREMENTS: THE BUILDING REGULATIONS 2010 AND SUBSEQUENT AMENDMENTS

- C2(b) Resistance to precipitation - the waterproof covering protects the flat roof and Product from precipitation to the inner face
- C2(c) Resistance to condensation - the Product can contribute to satisfying this Requirement
- L1A(a)(i) Conservation of fuel and power in new dwellings - the Product can contribute to limiting heat gains and losses through the flat roof
- L1B(a)(i) Conservation of fuel and power in existing dwellings - the Product can contribute to limiting heat gains and losses through the flat roof
- L2A(a)(i) Conservation of fuel and power in new buildings other than dwellings - the Product can contribute to limiting heat gains and losses through the flat roof
- L2B(a)(i) Conservation of fuel and power in existing buildings other than dwellings - the Product can contribute to limiting heat gains and losses through the flat roof
- Regulation 7 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 flat roof complying with the requirements of L1A(a)(i), L1B(a)(i), L2A(a)(i) and L2B(a)(i)
- Regulation 25 - Minimum energy performance requirements for new buildings - the Product can contribute to the target CO₂ emission rates
- Regulation 26 - CO₂ emission rates for new buildings - the Product can contribute to satisfying this Requirement
- Regulation 26A - Fabric energy efficiency rates - the Product can contribute to satisfying this Requirement

3.2.2 - WALES REQUIREMENTS: THE BUILDING REGULATIONS 2010 AND SUBSEQUENT AMENDMENTS

- C2(b) Resistance to precipitation - the waterproof covering protects the flat roof and Product from precipitation to the inner face
- C2(c) Resistance to condensation - the Product can contribute to satisfying this Requirement
- L1A(a)(i) Conservation of fuel and power in new dwellings - the Product can contribute to limiting heat gains and losses through the flat roof
- L1B(a)(i) Conservation of fuel and power in existing dwellings - the Product can contribute to limiting heat gains and losses through the flat roof
- L2A(a)(i) Conservation of fuel and power in new buildings other than dwellings - the Product can contribute to limiting heat gains and losses through the flat roof
- L2B(a)(i) Conservation of fuel and power in existing buildings other than dwellings - the Product can contribute to limiting heat gains and losses through the flat roof
- Regulation 7 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 flat roof complying with the requirements of L1A(a)(i), L1B(a)(i), L2A(a)(i) and L2B(a)(i)

- Regulation 25 - Minimum energy performance requirements for new buildings - the Product can contribute to the target CO₂ emission rates
- Regulation 26 - CO₂ emission rates for new buildings - the Product can contribute to satisfying this Requirement
- 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

REQUIREMENTS: THE BUILDING (SCOTLAND) REGULATIONS 2004 AND SUBSEQUENT AMENDMENTS

3.2.3.1 Regulations 8 (1)(2) Fitness and durability of materials and workmanship

- 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

- 3.10 Precipitation - the waterproof covering protects the flat roof and Product from precipitation penetrating to the inner face
- 3.15 Condensation - the flat roof incorporating the Product can be designed and constructed to inhibit condensation
- 6.1(b) Carbon dioxide emissions - the flat roof incorporating the Product can reduce carbon dioxide emissions
- 6.2 Building insulation envelope - the flat roof incorporating the Product can reduce heat loss
- 7.1(a) Statement of sustainability - the flat roof incorporating the Product can contribute to satisfying this Standard
- 7.1(b) Statement of sustainability - the flat roof incorporating the Product can contribute to satisfying this Standard

3.2.3.3 Regulation 12 Building Standards – Conversion

- All comments given under Regulation 9 also apply to this regulation, with reference to Schedule 6 of The Building (Scotland) Regulations 2004 and subsequent amendments, clause 0.12 of the Technical Handbook (Domestic) and clause 0.12 of the Technical handbook (Non-Domestic)

3.2.4 – NORTHERN IRELAND

REQUIREMENTS: THE BUILDING REGULATIONS (NORTHERN IRELAND) 2012 AND SUBSEQUENT AMENDMENTS

- 23(a)(i)(iii)b Fitness of materials and workmanship - the Product is manufactured from materials which are considered to be suitably safe and acceptable for use as described in this Agrément
- 28(b) Resistance to the weather - the waterproof covering protects the flat roof and Product from precipitation to the inner face
- 29 Condensation - the roof shall be designed and constructed to prevent interstitial condensation
- 39(a)(i) Conservation measures - the Product can contribute to limiting heat gains and losses through the flat roof
- 40(2) Target carbon dioxide emission rate - the flat roof incorporating the Product shall be designed and constructed as not to exceed its target CO₂ emission rate
- 43 Renovation of thermal elements - the renovation work carried out to ensure the flat roof complies with requirement 39(a)(i)

CHAPTER 4 - SOURCES

- BS EN ISO 6946:2017 Building components and building elements. Thermal resistance and thermal transmittance. Calculation methods
- BS EN ISO 10211:2017 Thermal bridges in building construction. Heat flows and surface temperatures. Detailed calculations
- BS EN ISO 10456:2007 Building materials and products. Hygrothermal properties. Tabulated design values and procedures for determining declared and design thermal values
- BS EN ISO 11925-2:2010 Reaction to fire tests. Ignitability of products subjected to direct impingement of flame. Single-flame source test
- BS EN ISO 12572:2016 Hygrothermal performance of building materials and products. Determination of water vapour transmission properties. Cup method
- BS EN 520:2004 Gypsum plasterboards - Definitions, requirements and test methods
- BS EN 1608:2013 Thermal insulating products for building applications. Determination of tensile strength parallel to faces
- BS EN 1847:2009 Flexible sheets for waterproofing. Plastics and rubber sheets for roof waterproofing. Methods for exposure to liquid chemicals, including water
- BS EN 1928:2000 Flexible sheets for waterproofing. Bitumen, plastic and rubber sheets for roof waterproofing. Determination of watertightness
- BS EN 1931:2000 Flexible sheets for waterproofing. Bitumen, plastic and rubber sheets for roof waterproofing. Determination of water vapour transmission properties
- BS EN 12086:2013 Thermal insulating products for building applications. Determination of water vapour transmission properties
- BS EN 12087:2013 Thermal insulating products for building applications. Determination of long term water absorption by immersion
- BS EN 12088:2013 Thermal insulating products for building applications. Determination of long term water absorption by diffusion
- BS EN 12310-1:2000 Flexible sheets for waterproofing. Determination of resistance to tearing (nail shank). Bitumen sheets for roof waterproofing
- BS EN 12311-2:2013 Flexible sheets for waterproofing. Determination of tensile properties. Plastic and rubber sheets for roof waterproofing
- BS EN 12317-2:2010 Flexible sheets for waterproofing. Determination of shear resistance of joints. Plastic and rubber 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 12691:2006 Flexible sheets for waterproofing. Bitumen, plastic and rubber sheets for roof waterproofing. Determination of resistance to impact
- BS EN 13162:2012+A1:2015 Thermal insulation products for buildings. Factory made mineral wool (MW) products. Specification
- BS EN 13163:2012+A2:2016 Thermal insulation products for buildings. Factory made expanded polystyrene (EPS) products. Specification
- BS EN 13164:2012+A1:2015 Thermal insulation products for buildings. Factory made extruded polystyrene foam (XPS) products. Specification
- BS EN 13501-1:2007+A1:2009 Fire classification of construction products and building elements. Classification using test data from reaction to fire tests
- BS EN 13984:2013 Flexible sheets for waterproofing - Plastic and rubber vapour control layers - Definitions and characteristics
- BS EN 16012:2012+A1:2015 Thermal insulation for buildings. Reflective insulation products. Determination of the declared thermal performance

- BS 4841-3:2006 Rigid polyisocyanurate (PIR) and polyurethane (PUR) products for building end-use applications. Specification for laminated boards (roof boards) with auto-adhesively or separately bonded facings for use as roofboard thermal insulation under built up bituminous roofing membranes
- 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 8212:1995 Code of practice for dry lining and partitioning using gypsum plasterboard
- BRE Information Paper IP 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 497:2007 Conventions for Calculating Linear thermal transmittance and Temperature Factors
- Government Accredited Construction Details for Part L - Timber Frame Illustrations

Remark: apart from these sources confidential reports may also have been assessed; any relevant reports are in the possession of Kiwa Ltd. and kept in the Technical Assessment File of this Agrément; the Installation Instructions is current at the time of publication and may be subject to change, the Agrément holder should be contacted for clarification of revision.

CHAPTER 5 - AMENDMENT HISTORY

Revision	Amendment Description	Amended By	Approved By	Date
-	Draft for internal review	S Lloyd	P Oakley	May 2018
A	Issue for Client review	S Lloyd	P Oakley	May 2018
B	Issue for internal review	P Oakley	C Forshaw	September 2018
C	First issue	P Oakley	C Forshaw	September 2018