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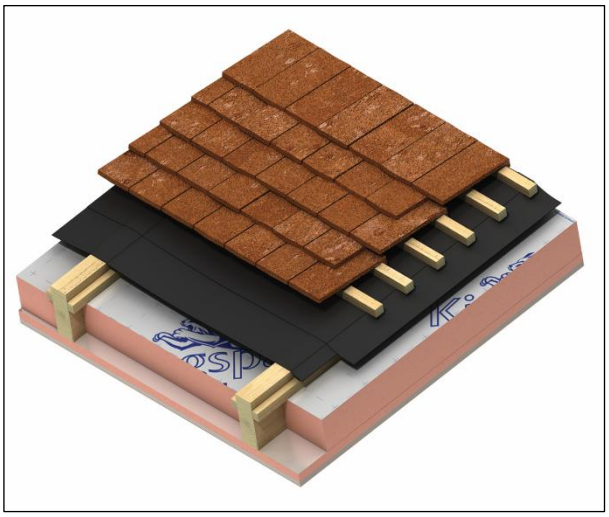
**Agrément Certificate**
**14/5134**
Product Sheet 2 Issue 2

# KINGSPAN KOOLTHERM RANGE FOR FLOORS, WALLS AND PITCHED ROOFS

## KOOLTHERM K7 PITCHED ROOF BOARD

This Agrément Certificate Product Sheet(1) relates to Kooltherm K7 Pitched Roof Board, a closed-cell phenolic foam board with a foil-composite facing on both sides, for use as insulation installed above, between and/or below rafters in tiled or slated pitched roofs in new and existing domestic buildings where the ceiling follows the pitch of the roof and encloses a habitable space, with height restrictions in some cases.

(1) Hereinafter referred to as 'Certificate'.



### The assessment includes

**Product factors:**

- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

**Process factors:**

- compliance with Scheme requirements
- installation, delivery, handling and storage
- production and quality controls
- maintenance and repair

**Ongoing contractual Scheme elements†:**

- regular assessment of production
- formal 3-yearly review

**KEY FACTORS ASSESSED**

Section 1. Mechanical resistance and stability
Section 2. Safety in case of fire
Section 3. Hygiene, health and the environment
Section 4. Safety and accessibility in use
Section 5. Protection against noise
Section 6. Energy economy and heat retention
Section 7. Sustainable use of natural resources
Section 8. Durability

The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Second issue: 22 April 2025
Originally certified on 19 November 2015

Hardy Giesler
Chief Executive Officer



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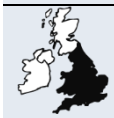
## SUMMARY OF ASSESSMENT AND COMPLIANCE

This section provides a summary of the assessment conclusions; readers should refer to the later sections of this Certificate for information about the assessments carried out.

## Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that Kooltherm K7 Pitched Roof Board, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations:



### The Building Regulations 2010 (England and Wales) (as amended)

| | | |
|---|---|---|
| **Requirement:** | **B3(4)** | **Internal fire spread (structure)** |
| Comment: | | The product can contribute to satisfying this Requirement in some cases. See section 2 of this Certificate. |
| **Requirement:** | **B4(1)** | **External fire spread** |
| Comment: | | The use of this product is restricted by this Requirement in some cases. See section 2 of this Certificate. |
| **Requirement:** | **C2(c)** | **Resistance to moisture** |
| Comment: | | The product can contribute to satisfying this Requirement. See section 3 of this Certificate. |
| **Requirement:** | **L1(a)(i)** | **Conservation of fuel and power** |
| Comment: | | The product can contribute to satisfying this Requirement. See section 6 of this Certificate. |
| **Requirement:** | **7(1)** | **Materials and Workmanship** |
| Comment: | | The product is acceptable. See sections 8 and 9 of this Certificate. |
| **Requirement:** | **7(2)** | **Materials and Workmanship** |
| Comment: | | The product is restricted by this Requirement in some cases. See section 2 of this Certificate. |
| **Regulation:** | **25B** | **Nearly zero-energy requirements for new buildings** |
| **Regulation:** | **26** | **$CO_2$ emission rates for new buildings** |
| **Regulation:** | **26A** | **Fabric energy efficiency rates for new dwellings (applicable to England only)** |
| **Regulation:** | **26A** | **Primary energy rates for new buildings (applicable to Wales only)** |
| **Regulation:** | **26B** | **Fabric performance values for new dwellings (applicable to Wales only)** |
| **Regulation:** | **26C** | **Target primary energy rates for new buildings (applicable to England only)** |
| **Regulation:** | **26C** | **Energy efficiency rating (applicable to Wales only)** |
| Comment: | | The product can contribute to satisfying these Regulations. See section 6 of this Certificate. |

### The Building (Scotland) Regulations 2004 (as amended)

| | | |
|---|---|---|
| **Regulation:** | **8(1)** | **Fitness and durability of materials and workmanship** |
| Comment: | | The product is acceptable. See sections 8 and 9 of this Certificate. |
| **Regulation:** | **8(3)** | **Fitness and durability of materials and workmanship** |
| Comment: | | The product is restricted by this Regulation in some cases. See section 2 of this Certificate. |

| | | |
|---|---|---|
| **Regulation:** | **9** | **Building standards - construction** |
| Standard: | 3.15 | Condensation |
| Comment: | | The product can contribute to satisfying this Standard, with reference to clauses 3.15.1(1), 3.15.3(1), 3.15.4(1), 3.15.5(1) and 3.15.7(1). See section 3 of this Certificate. |
| Standard: | 6.1(b)(c) | Energy demand |
| Comment: | | The product can contribute to satisfying this Standard, with reference to clause 6.1.1(1). See section 6 of this Certificate. |
| Standard: | 6.2 | Building insulation envelope |
| Comment: | | The product can contribute to satisfying this Standard, with reference to clauses 6.2.1(1), 6.2.3(1), 6.2.6(1), 6.2.7(1), 6.2.8(1), 6.2.9(1), 6.2.10(1) and 6.2.12(1). See section 6 of this Certificate. |
| Standard: | 7.1(a)(b) | Statement of sustainability |
| Comment: | | The product can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting at least 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, with reference to clauses 7.1.4(1), 7.1.6(1) and 7.1.7(1). See section 6 of this Certificate. |
| **Regulation:** | **12** | **Building standards – conversion** |
| Comment: | | All comments given for the product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1(1) and Schedule 6(1). |

(1) Technical Handbook (Domestic).

## The Building Regulations (Northern Ireland) 2012 (as amended)

| | | |
|---|---|---|
| **Regulation:** | **23(1)(a)(i)** | **Fitness of materials and workmanship** |
| Comment: | **(iii)(b)(i)(ii)** | The product is acceptable. See sections 8 and 9 of this Certificate. |
| **Regulation:** | **23(2)** | **Fitness of materials and workmanship** |
| Comment: | | The product is restricted by this Regulation in some cases. See section 2 of this Certificate. |
| **Regulation:** | **29** | **Condensation** |
| Comment: | | The product can contribute to satisfying this Regulation. See section 3 of this Certificate. |
| **Regulation:** | **35(4)** | **Internal fire spread – structure** |
| Comment: | | The product can contribute to satisfying this Regulation. See section 2 of this Certificate. |
| **Regulation:** | **36(a)** | **External fire spread** |
| Comment: | | The product is restricted by this Regulation in some cases. See section 2 of this Certificate. |
| **Regulation:** | **39(a)(i)** | **Conservation measures** |
| **Regulation:** | **40(2)** | **Target carbon dioxide emission rates** |
| **Regulation:** | **43(1)(2)** | **Renovation of thermal elements** |
| **Regulation:** | **43B** | **Nearly zero-energy requirements for new buildings** |
| Comment: | | The product can contribute to satisfying these Regulations. See section 6 of this Certificate. |

## Additional Information

### NHBC Standards 2025

In the opinion of the BBA, Kooltherm K7 Pitched Roof Board, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 7.2 *Pitched roofs*.

## Fulfilment of Requirements

The BBA has judged Kooltherm K7 Pitched Roof Board to be satisfactory for use as described in this Certificate.
The product has been assessed for use above, between and/or below roof rafters, in conjunction with internal lining boards, roof tile underlays, timber counter battens and tiling battens, in new and existing domestic buildings, with height restrictions in some cases.

## ASSESSMENT

## Product description and intended use

The Certificate holder provided the following description for the product under assessment. Kooltherm K7 Pitched Roof Board consists of a closed-cell phenolic foam board faced with perforated composite aluminium foil facings on both sides.

The product has the nominal characteristics given in Table 1.

*Table 1 Nominal characteristics*

| Characteristic (unit) | Value |
|---|---|
| Length (mm) | 2400 |
| Width (mm) | 1200 |
| Thickness (mm) | 25 to 150 |

Ancillary Items

The Certificate holder recommends the following ancillary items for use with the product, but these materials have not been assessed by the BBA and are outside the scope of this Certificate.

- tile or slate roof finish
- roof tile underlay
- treated timber battens/rafters
- air and vapour control layer (AVCL)
- fixings
- proprietary airtightness tape
- gypsum plasterboard lining.

Application

The product is for use as insulation in the following applications, on new and existing domestic buildings, with height restrictions in some cases (see section 2 of this Certificate):

- on tiled or slated pitched roofs, with a roof pitch of between 10 and 70°
- above sloping rafters
- above and between sloping rafters
- between sloping rafters
- between and below sloping rafters.

## Product assessment – key factors

The product was assessed for the following key factors, and the outcome of the assessments is shown below. Conclusions relating to the Building Regulations apply to the whole of the UK, unless otherwise stated.

## 1 Mechanical resistance and stability

Data were assessed for the following characteristic.

1.1 Behaviour under loading

The compressive strength of the product was assessed, and the result of a test is given in Table 2.

*Table 2 Compressive strength*

| Product assessed | Assessment method | Requirement | Result |
|---|---|---|---|
| Kooltherm K7 Pitched Roof Board | BS EN 826 : 2013 | Value achieved | ≥ 100 kPa |

## 2 Safety in case of fire

Data were assessed for the following characteristics.

2.1 Reaction to fire

2.1.1 The reaction to fire classification is given in Table 3.

*Table 3 Reaction to fire classification*

| Product assessed | Assessment method | Requirement | Result |
|---|---|---|---|
| Kooltherm K7 Pitched Roof Board | BS EN 13166 : 2012 | Value achieved | F |

2.1.2 On the basis of data assessed, the product will be restricted in use under the documents supporting the national Building Regulations in some cases.

2.1.3 In England, the product, when used in roof pitches greater than 70°, must not be used on residential buildings with a storey 11 m or more in height, or on any other building with a storey 18 m or more in height.

2.1.4 In Wales and Northern Ireland, the product, when used in roof pitches greater than 70°, must not be used on buildings with a storey 18 m or more in height.

2.1.5 In Scotland, the product, when used in roof pitches greater than 70° must not be used less than 1 m from a relevant boundary or on buildings that have a storey 11 m or more above ground level.

2.1.6 Designers must refer to the relevant national Building Regulations and guidance for detailed conditions of use, particularly in respect of requirements for substrate fire performance, cavity closers and barriers, fire stopping of service penetrations and combustibility limitations for other materials and components used in the overall wall construction.

## 3 Hygiene, health and the environment

Data were assessed for the following characteristics.

3.1 Water vapour permeability

For the purposes of assessing the risk of interstitial condensation, the water vapour resistivity/resistance values may be taken as given in Table 4.

*Table 4 Water vapour resistivity/resistance*

| Material | Assessment method | Requirement | Result |
|---|---|---|---|
| Insulation Core | BS EN 12086 : 2013 | Value achieved | 410 $MN \cdot s \cdot g^{-1} \cdot m^{-1}$ |
| Composite foil facer | | | 0.35 $MN \cdot s \cdot g^{-1}$ |

## 4 Safety and accessibility in use

Not applicable.

## 5 Protection against noise

Not applicable.

## 6 Energy economy and heat retention

Data were assessed for the following characteristics.

6.1 Thermal conductivity

The product was tested for thermal conductivity and the results are given in Table 5.

*Table 5 Thermal conductivity*

| Product assessed | Thickness | Assessment method | Requirement | Result |
|---|---|---|---|---|
| Kooltherm K7 | 25 – 44 mm | BS EN 13166 : 2012 | Declared value ($\lambda_D$) | 0.022 $W \cdot m^{-1} \cdot K^{-1}$ |
| Pitched Roof Board | 45 – 150 mm | | | 0.021 $W \cdot m^{-1} \cdot K^{-1}$ |

6.2 Thermal performance

6.2.1 The foil facing was tested for emissivity and the result is given in Table 6.

*Table 6 Emissivity of the foil-facing*

| Product assessed | Assessment method | Requirement | Result |
|---|---|---|---|
| Foil-facing | Aged emissivity to BS EN 15976 : 2011 | Declared value | 0.05 |

6.2.2 The U value of a completed roof will depend on the insulation thickness, the number and type of fixings, and the roof structure and its internal finish. Example calculated U-values are given in Table 7.

*Table 7 Example U values ($W \cdot m^{-2} \cdot K^{-1}$) for pitched roofs*

| Kooltherm K7 Pitched Roof Board — pitched roof insulation thickness (mm) | | | |
|---|---|---|---|
| Target U value ($W \cdot m^{-2} \cdot K^{-1}$) | Over Rafters[1] | Between and Over rafters[2] | Between and Under rafters[3] |
| 0.09 | —[5] | 120 + 120 | 150 + 140[4] |
| 0.11 | —[5] | 100 + 95 | 100 + 130 |
| 0.12 | —[5] | 100 + 80 | 100 + 115 |
| 0.13 | 150 | 90 + 70 | 100 + 100 |
| 0.15 | 130 | 80 + 60 | 100 + 75 |
| 0.16 | 120 | 70 + 60 | 100 + 65 |
| 0.18 | 110 | 60 + 55 | 100 + 45 |

(1) Pitched roof construction — concrete tiles on 25 mm timber tile battens (well ventilated) on low-resistance (LR) roof tile underlay, insulation secured with 11 fixings per $m^2$ – stainless steel ($\lambda$ = 17 $W \cdot m^{-1} \cdot K^{-1}$) with a cross-sectional area of 9 $mm^2$, on 47 by 150 mm timber rafters (11.75%; $\lambda$ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$), with a low-e ($\varepsilon_D$ = 0.05) air cavity between the timbers, AVCL and 12.5 mm plasterboard ($\lambda$ = 0.25 $W \cdot m^{-1} \cdot K^{-1}$).

(2) Pitched roof construction — concrete tiles on 25 mm timber tile battens (well ventilated) on low-resistance (LR) roof tile underlay, 50 mm clear well vented cavity above the insulation, insulation secured with 11 fixings per $m^2$ – stainless steel ($\lambda$ = 17 $W \cdot m^{-1} \cdot K^{-1}$) with a cross-sectional area of 9 $mm^2$, insulation cut tightly between the 47 by 150 mm timber rafters (11.75%; $\lambda$ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$), AVCL and 12.5 mm plasterboard ($\lambda$ = 0.25 $W \cdot m^{-1} \cdot K^{-1}$).

(3) Pitched roof construction — concrete tiles on 25 mm timber tile battens (well ventilated) on low-resistance (LR) roof tile underlay, 50 mm clear well vented cavity, insulation cut tightly between the 47 by 150 mm timber rafters (11.75%; $\lambda$ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$), insulation, AVCL and 12.5 mm plasterboard ($\lambda$ = 0.25 $W \cdot m^{-1} \cdot K^{-1}$) secured with 14.6 fixings per $m^2$ – mild steel ($\lambda$ = 50 $W \cdot m^{-1} \cdot K^{-1}$) with a cross-sectional area of 10.46 $mm^2$.

(4) With additional timber battens ($\lambda$ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$) added beneath the 150 mm rafters, to maintain a 50 mm ventilated cavity above the insulation.

(5) See section 6.2.5.

6.2.3 The product can contribute towards a construction satisfying the national Building Regulations in respect of energy economy and heat retention.

6.2.4 For improved energy or carbon savings, designers must consider appropriate fabric and/or service measures.

## 7 Sustainable use of natural resources

Not applicable.

## 8 Durability

8.1 The potential mechanisms for degradation and the known performance characteristics of the materials in the product were assessed.

8.2 Specific test data were assessed, as given in Table 8.

*Table 8 Durability*

| Product assessed | Assessment method | Requirement | Result |
|---|---|---|---|
| Kooltherm K7 Pitched Roof Board | BS EN 1604 : 2013 (70°C and 90% RH for 48 hours) | Value achieved | Length, width and reduction in thickness ≤ 1.5% change |
| | BS EN 1604 : 2013 (-20°C for 48 hours) | | Length, width and reduction in thickness ≤ 1.5% change |

8.3 Service life

Under normal service conditions, the product will have a life equivalent to the structure in which it is incorporated, provided it is designed, installed and maintained in accordance with this Certificate and the Certificate holder's instructions.

## PROCESS ASSESSMENT

Information provided by the Certificate holder was assessed for the following factors:

## 9 Design, installation, workmanship and maintenance

9.1 Design

9.1.1 The design process was assessed, and the following requirements apply in order to satisfy the performance assessed in this Certificate.

9.1.2 Roofs must be designed and constructed in accordance with the relevant clauses of BS 5250 : 2021, BS 5534 : 2014, BS 8212 : 1995 and BS EN 1995-1-1 : 2004 and its UK National Annex.

9.1.3 Design wind loading will depend largely on the building geometry and its geographical location and must be calculated by a suitable experienced and competent individual in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. Snow loadings must be calculated in accordance with BS EN 1991-1-3 : 2003 and its UK National Annex.

9.1.4 The Certificate holder and fixing manufacturer must advise on the use of the correct proprietary fixings and fixing capacity, but such advice is outside the scope of this Certificate. When considering this and calculating the fixing spacing required to resist the calculated loadings, the requirements of BS EN 1995-1-1 : 2004 and its National Annex must be followed.

9.1.5 Vapour permeable roof tile underlays used in conjunction with the product must have a current BBA Certificate and must be used in accordance with, and within the limitations of, that Certificate.

9.1.6 It is essential that detailing and jointing of the boards achieves a convection-free envelope of high vapour resistance. Any gaps must be filled and/or taped. Ridges, abutments and penetrations must also be sealed. Flue pipes passing through the insulation must be suitably sleeved.

9.1.7 Calculations of the thermal transmittance (U value) of a wall or roof must be carried out in accordance with BS EN ISO 6946 : 2017 and BRE Report BR 443 : 2019.

9.1.8 Care must be taken in the overall design and construction of junctions with other elements and openings to minimise thermal bridges and air infiltration and the detailed guidance can be found in the documents supporting the national Building Regulations must be followed.

*Interstitial condensation*

9.1.9 Roofs will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2021.

9.1.10 When installed with tightly butted joints and filled/sealed gaps and joints, the product will provide a continuous convection-free envelope of high vapour resistance. Therefore, a suitable vapour-permeable (low resistance - LR) roof tile underlay may be laid over the insulation boards without ventilated air space, unless the tiles/slates are tight fitting as defined in BS 5250 : 2021. When using a high resistance (HR) underlay, the ventilated void should take into account the underlay drape, which can reduce the effective ventilation airpath. For design purposes, the depth of the ventilated void should be 25 mm plus the maximum allowable drape of the underlay, which is 15 mm.

9.1.11 Where the product is installed in a roof with either a horizontal or sloping ceiling (i.e. room-in-the-roof), a 'warm roof' space is created, and ventilation should be designed in accordance with BS 5250 : 2021. However, any insulation in a horizontal ceiling should be removed.

9.1.12 Where high humidity may be expected, an AVCL with sealed and lapped joints, must also be installed unless a site-specific condensation risk analysis in accordance with BS 5250 : 2021 indicates otherwise.

*Surface condensation*

9.1.13 In England and Wales, roofs will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 0.35 $W \cdot m^{-2} \cdot K^{-1}$ at any point, and the junctions with walls are designed in accordance with section 9.1.8 of this Certificate.

9.1.14 In Scotland, roofs will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 1.2 $W \cdot m^{-2} \cdot K^{-1}$ at any point. Guidance may be obtained from BS 5250 : 2021. Further guidance may be obtained from BRE Report BR 262 : 2002 and section 9.1.8 of this Certificate.

9.2 Installation

9.2.1 Installation instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate.

9.2.2 Installation must be carried out in accordance with this Certificate and the Certificate holder's instructions. A summary of instructions and guidance is provided in Annex A of this Certificate.

9.2.3 During installation, care must be taken to ensure that the product is not subjected to any construction or foot traffic loads. Roof timbers of adequate strength must be used to support such loads.

9.3 Workmanship

Practicability of installation was assessed on the basis of the Certificate holder's information. To achieve the performance described in this Certificate, installation of the product must be carried out by a competent general builder, or a contractor, experienced with this type of product.

9.4 Maintenance and repair

Once installed, provided that the roof tiles/slates are maintained in a weathertight condition, maintenance is not required.

## 10 Manufacture

10.1 The production processes for the product have been assessed, and provide assurance that the quality controls are satisfactory according to the following factors:

10.1.1 The manufacturer has provided documented information on the materials, processes, testing and control factors.

10.1.2 The quality control operated over batches of incoming materials has been assessed and deemed appropriate and adequate.

10.1.3 The quality control procedures and product testing to be undertaken have been assessed and deemed appropriate and adequate.

10.1.4 The process for management of non-conformities has been assessed and deemed appropriate and adequate.

10.1.5 An audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

† 10.2 The BBA has undertaken to review the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

## 11 Delivery and site handling

11.1 The Certificate holder stated that the product is delivered to site in packaging bearing a label with the product name, Certificate holder's name and characteristics.

11.2 Delivery and site handing must be performed in accordance with the Certificate holder's instructions and this Certificate.

11.3 The product must be protected from prolonged exposure to sunlight and should be stored either under cover or protected with opaque polythene sheeting. Where possible, packs should be stored inside. If outside, the product must be stacked flat and raised above ground level and not in contact with ground moisture.

11.4 Some handling difficulties may be experienced in windy conditions. Care must be exercised to avoid crushing the edges or corners. If damaged, the product must not be used.

11.5 The product must not be exposed to an open flame or other ignition sources, or to solvents or other chemicals.

## †ANNEX A – SUPPLEMENTARY INFORMATION

Supporting information in this Annex is relevant to the product but has not formed part of the material assessed for the Certificate.

### Construction (Design and Management) Regulations 2015
### Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

### CE marking

The Certificate holder has taken the responsibility of CE marking the product, in accordance with harmonised European Standard EN 13166 : 2012.

### Management Systems Certification for production

The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by CIBSE Certification Limited (Certificate number 0001QMS-7).

### Additional information on installation

A.1 The boards can be cut to size using a sharp knife or a fine-toothed saw.

A.2 It is important to ensure a tight fit between boards, between boards and rafters, and between boards and other detailed elements. At ridges and verges, boards should be cut to achieve tightly butted joints.

A.3 It is important to fill/seal gaps and joints in the insulation envelope, including at all service penetrations. See section 9.1.5 of this Certificate.

A.4 For installation of roof tiles or slates and internal lining boards, see section A.12, A.13 and A.14.

**Insulation above rafters**

A.5 When installing over the rafters; a preservative-treated stop rail, the same thickness as the insulation board, is secured to the rafters at the eaves., it is not necessary to tape the product joints.

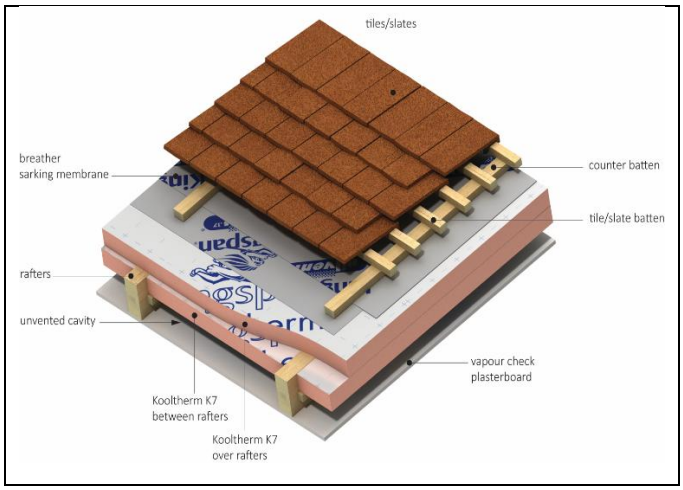
A.6 The product is laid over the rafters, starting at the stop rail and working towards the ridge so it covers the whole roof area. The product should be secured to the rafters with appropriate fixings. The product should be tightly butted and fixed in a staggered pattern, with joints butted over rafters, not mid-span. It is important to ensure a tight fit between the product, product and rafters and other detailed elements. At ridges and verges, the product should be cut to achieve a close-butt joint.

A.7 Treated counter battens (38 x 50 mm) are fixed above the insulation boards down the line of each rafter, run from eaves to ridge using appropriate fixings at a minimum spacing of 300 mm centres. A minimum 37 mm fixing penetration into the rafter should be maintained. Short lengths of counter batten should be tightly butted.

**Insulation between and over rafters**

A.8 The product is cut to fit tightly between rafters and is supported on stop battens or galvanized metal angles using nailable sarking clips. Over rafter boards are laid as described in sections A.5 to A.7.

*Figure 1 Between and over rafter insulation*




**Between rafters**

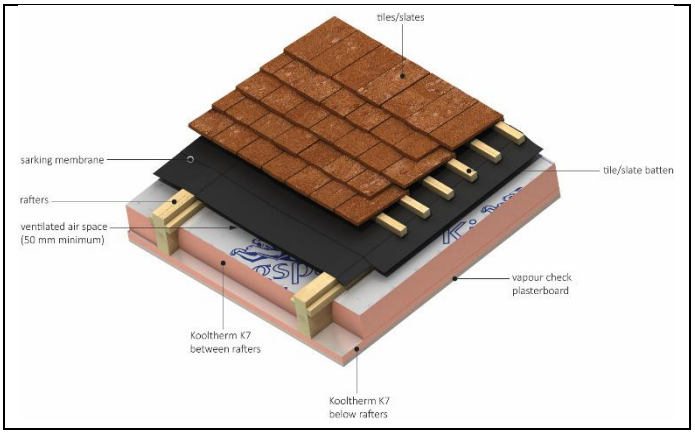
A.9 The product is cut to fit tightly between the rafters and butted against stop battens or galvanized metal angles which should maintain a ventilated air space suitable for the underlay ventilation requirements.

**Insulation between and under rafters (see Figure 2)**

A.10 The product may be attached to the underside of rafters, either as a single layer or in conjunction with an insulation product between the rafters, as described in section A.9.

A.11 The product is temporarily fixed with clout head nails and joints butted and taped.

*Figure 2 Insulation between and under rafters*




**Finishing**

A.12 The vapour permeable roof tile underlay (breathable membrane) should be installed in accordance with the manufacturer's instructions and the appropriate BBA Certificate.

A.13 Roof tiles or slates are installed in accordance with the relevant clauses of BS 5534 : 2014. When applying roof tiles or slates, the recommendations of the manufacturer should be followed.

A.14 Internal lining panels appropriate to the application (for example, standard gypsum plasterboard to BS EN 520 : 2004), should be fixed in accordance with BS 8212 : 1995, and the required decoration applied.

## Bibliography


BRE Report BR 262 : 2002 *Thermal insulation: avoiding risks*

BRE Report BR 443 : 2019 *Conventions for U-value calculations*

BS EN 826 : 2013 *Thermal insulating products for building applications — Determination of compression behaviour*

BS EN 1604 : 2013 *Thermal insulating products for building applications — Determination of dimensional stability under specified temperature and humidity conditions*

BS 5250 : 2021 *Management of moisture in buildings — Code of practice*

BS 5534 : 2014 + A2 : 2018 *Slating and tiling for pitched roofs and vertical cladding — Code of practice*

BS 8212 : 1995 *Code of Practice for Dry lining and partitioning using gypsum plasterboard*

BS EN 1991-1-3 : 2003 + A1 : 2015 *Eurocode 1 : Actions on structures — General actions — Snow loads*
NA + A2 : 2018 to BS EN 1991-1-3 : 2003 + A1 : 2015 *UK National Annex to Eurocode 1 : Actions on structures — General actions — Snow loads*
BS EN 1991-1-4 : 2005 + A1 : 2010 *Eurocode 1 : Actions on structures — General actions — Wind actions*
NA to BS EN 1991-1-4 : 2005 + A1 : 2010 *UK National Annex to Eurocode 1 : Actions on structures — General actions — Wind actions*

BS EN 1995-1-1 : 2004 + A2 : 2014 *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*
NA to BS EN 1995-1-1 : 2004 + A2 : 2014 *UK National Annex to Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*

BS EN 12086 : 2013 *Thermal insulating products for building applications — Determination of water vapour transmission properties*

BS EN 13166 : 2012 + A2 : 2016 *Thermal insulation products for buildings — Factory made phenolic foam (PF) products — Specification*

BS EN 13501-1 : 2018 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

BS EN 15976 : 2011 *Flexible sheets for waterproofing – Determination of emissivity*

BS EN ISO 6946 : 2017 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation methods*

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

## Conditions of Certificate

### Conditions

1 This Certificate:

- relates only to the product that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- and any matter arising out of or in connection with it or its subject matter (including non-contractual disputes or claims) is governed by and construed in accordance with the law of England and Wales
- the courts of England and Wales shall have exclusive jurisdiction to settle any matter arising out of or in connection with this Certificate or its subject matter (including non-contractual disputes or claims).

2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

3 This Certificate will be displayed on the BBA website, and the Certificate Holder is entitled to use the Certificate and Certificate logo, provided that the product and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product or any other product
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product
- actual installations of the product, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to UKCA marking and CE marking.

6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product which is contained or referred to in this Certificate is the minimum required to be met when the product is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

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