

Kontrol Building Products

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Agrément Certificate

09/4680

Product Sheet 1

KONTROL BUILDING PRODUCTS NATURAL INSULATION

KONTROL WOOL INSULATION FOR USE IN PITCHED ROOF APPLICATIONS

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Kontrol Wool Insulation for use in Pitched Roof Applications (tiled or slated, between rafters) of dwellings or buildings of similar occupancy or type.

AGRÉMENT CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Thermal performance — the product has a mean thermal conductivity of $0.039 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ and when used in conjunction with additional insulation (over or under the rafters) will contribute to a roof meeting typical design U values (see section 5).

Condensation risk — the product can contribute to limiting the risk of surface condensation and for the purposes of assessing the risk of interstitial condensation, the products vapour resistivity may be taken as $7.11 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}\cdot\text{m}^{-1}$ at a thickness of 100 mm (see section 6).

Behaviour in relation to fire — the product will not contribute to the development stages of a fire. (see section 7).

Durability — the product is stable, rot-proof and durable and will remain effective as an insulant for the life of the building in which it is installed (see section 10).

The BBA has awarded this Agrément 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

Chris Hunt
Head of Approvals — Physics

Greg Cooper
Chief Executive

Date of First issue: 26 January 2010

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, Kontrol Wool Insulation for use in Pitched Roof Applications, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



The Building Regulations 2000 (as amended) (England and Wales)

Requirement:	C2(c)	Resistance to moisture
Comment:		The product is acceptable. See section 6.1 and 6.5 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		The product is acceptable. See sections 5.2 to 5.6 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The product is acceptable. See section 10.1 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The product can contribute to a construction satisfying this Regulation. See section 10.1 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	3.15	Condensation
Comment:		The product can contribute to a roof satisfying the requirements of clauses 3.15.1 ⁽¹⁾ to 3.15.5 ⁽¹⁾ and 3.15.7 ⁽¹⁾ of this Standard. See sections 6.1 and 6.6 of this Certificate.
Standard:	6.1(a)(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		The product can contribute to a roof satisfying the requirements of these Standards, with reference to clauses 6.2.1 ⁽¹⁾ to 6.2.4 ⁽¹⁾ , 6.2.6 ⁽¹⁾ to 6.2.9 ⁽¹⁾ and 6.2.11 ⁽¹⁾ . See sections 5.2 to 5.6 of this Certificate.
Regulation:	12	Building standards – conversions
Comment:		All comments given for this product under Regulation 9, 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) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 10.1 and the <i>Installation</i> part of this Certificate.
Regulation:	C5	Condensation
Comment:		The product will contribute to enabling a roof to satisfy this Regulation. See section 6.1 of this Certificate.
Regulation:	F2(a)(i)	Conservation measures
Regulation:	F3	Target carbon dioxide Emissions Rate
Comment:		The product will enable, or contribute to enabling, constructions to satisfy the Elemental Approach for maximum U values given in Technical Booklet F, Tables 1.2 and 1.4. See sections 5.2 to 5.6 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 11 *Installation* (11.2).

Non-regulatory Information

NHBC Standards 2008

NHBC accepts the use of Kontrol Wool Insulation for use in Pitched Roof Applications when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.2 *Pitched roofs*.

Technical Specification

1 Description

1.1 Kontrol Wool Insulation for use in Pitched Roof Applications is a natural fibre/polyester insulation, predominantly wool, treated with inorganic fire retardants.

1.2 The product is available in batts and rolls in the sizes as given in Table 1.

Table 1 Product details⁽¹⁾

Length (mm)	Width (mm)	Thickness (mm)	Density (kg·m ⁻³)
1200	375	50, 75, 100, 140	19
1200	575	50, 75, 100, 140	19
6000	375, 575	100	19
4000	375, 575	150	19

(1) Other sizes are available to order.

2 Delivery and site handling

2.1 The product is delivered to site in packs wrapped in polythene, each pack includes a label bearing the product name, number of batts and the BBA identification mark incorporating the number of this Certificate.

2.2 The product should be stored under cover and out of contact with ground moisture.

2.3 The product must not be exposed to naked flame or other ignition sources.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Kontrol Wool Insulation for use in Pitched Roof Applications.

Design Considerations

3 General

3.1 The product is for use between rafters in ventilated and unventilated tiled or slated pitched roofs designed and constructed in accordance with the relevant Clauses of BS 5534 : 2003.

3.2 The product is for use in constructions where the ceiling follows the pitch of the roof and encloses a habitable space.

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

3.4 Detailing and jointing of the batts should avoid cold bridging, gaps should be filled and flue pipes passing through the insulation should be suitably sleeved.

3.5 The requirements/provisions of fire stops should be considered with regard to national Building Regulations.

3.6 Installation must not be carried out until the moisture content of the timber is less than 20%.

3.7 Installation of plasterboard must be in accordance with the relevant sections of BS 8212 : 1995.

4 Practicability of installation

The product is designed to be installed by a competent general builder, or a contractor, experienced with this type of product.

5 Thermal performance

5.1 Calculations of thermal transmittance (U value) should be carried out in accordance with BS EN ISO 6946 : 2007 and BRE report *Conventions for U value calculations* (BR 443 : 2006) using a thermal conductivity (λ_{mean}) of 0.039 W·m⁻¹·K⁻¹ for the product.



5.2 The U value of a roof will depend on the thickness of additional insulation used, the extent and arrangement of timber bridging and the insulating value of other roof components/layers. Example U values of roofs incorporating the product are shown in Table 2.

Table 2 Example⁽¹⁾ U values for pitched roof application

Thickness of insulation (mm)	U value (W·m ⁻² ·K ⁻¹)
100	0.38
140	0.29

(1) 150 mm rafter, 50 mm width at 600 mm centres. Tiled over a 0.15 mm breather membrane. 12.5 mm plasterboard fixed to the underside of rafters, 3 mm plaster finish.

5.3 When considering insulation requirements, designers should refer to the detailed guidance contained in the documents supporting the national Building Regulations. The U values shown in Tables 3 and 4 indicate that the product can contribute to enabling a roof to achieve typical design U values referred to in those supporting documents.

Table 3 Typical design U values for pitched roof — England and Wales, and Northern Ireland

Construction type	U value W·m ⁻² ·K ⁻¹
'Notional' mean in SAP and new dwellings	0.16
Limit mean for extensions, new and replacement elements	0.20
Limit mean for renovated, retained elements and material change of use ⁽¹⁾ or energy status ⁽²⁾	0.20
Limit mean for domestic extensions ⁽¹⁾ and new dwellings	0.25
Limit individual for domestic extensions ⁽¹⁾ and new domestic	0.35

(1) Alternative or flexible approaches are given in relevant documents supporting the national Building Regulations.

(2) England and Wales only.

Table 4 Typical design U values for pitched roof — Scotland

Construction type	U value W·m ⁻² ·K ⁻¹
Limit mean for new dwellings simplified approach (all fuel packages) and notional dwellings in SAP ⁽¹⁾	0.16
Limit mean for new domestic ⁽²⁾	0.20
Limit mean for conversions, extensions and alterations ⁽²⁾⁽³⁾	0.20
Limit individual element value	0.35

(1) For extensions the new building fabric comprising a pitched roof (insulation between ceiling ties or collars) a typical U value with a limit mean of 0.16 W·m⁻²·K is applicable.

(2) For extensions the new building fabric comprising a pitched roof (insulation between rafters or roof with integral insulation) a typical U value with a limit mean of 0.20 W·m⁻²·K is applicable.

(3) Alternative or flexible approaches are given in relevant documents supporting the national Building Regulations.

New buildings

5.4 Roofs with U values lower than (or the same as, for dwellings in Scotland) the relevant 'notional' value specified in section 5.3 will contribute to a building meeting its Target Emission Rate. Roofs with higher U values will require additional energy saving measures in the building envelope and/or services.

5.5 The product can maintain, or contribute to maintaining, continuity of thermal insulation at junctions between external walls and other building elements. Details shown in Figure 1 (see section 11.5) will allow use of the default psi values for Accredited Construction details in Target Emission Rate calculations to SAP 2005 *The Government's Standard Assessment Procedure for Energy Rating of Dwellings* or the Simplified Building Energy Model (SBEM). Detailed guidance on this and on limiting heat loss by air filtration can be found in:

England and Wales — *Limiting thermal bridging and air leakage : Robust construction details for dwellings and similar buildings* TSO 2002 or Accredited Construction Details (version 1.0)

Scotland — Accredited Construction Details (Scotland)

Northern Ireland — Accredited Construction Details (version 1.0).

Existing buildings

5.6 For existing buildings such as extensions and conversions, roofs will be acceptable where they do not exceed the relevant U values given in section 5.3 and junctions and openings comply with section 5.5 or BRE report (BR 262 : 2002) *Thermal insulation : avoiding risks*.

6 Condensation risk

Interstitial condensation




6.1 Roofs incorporating the product will adequately limit the risk of interstitial condensation when designed and constructed in accordance with BS 5250 : 2002, Section 8.4 and Appendix D. For the purposes of assessing the risk of interstitial condensation, the products vapour resistivity may be taken as 7.11 MN·s·g⁻¹·m⁻¹ at a thickness of 100 mm.


6.2 The risk of interstitial condensation is greatest when the building is drying out after construction. Guidance on preventing condensation from this and other sources is given in BRE Digest 369 *Interstitial condensation and fabric degradation* and BRE report (BR 262 : 2002).

6.3 A vapour control layer should be used in conjunction with a suitable vapour permeable roof tile underlay when used without a ventilated air space.

6.4 In all cases, where high vapour resistance roof tile underlays are used, ventilation to the air space should be in accordance with the recommendation of BS 5250 : 2002 or relevant BBA Certificate for the roof tile underlay. When installed in conjunction with other insulation materials, the water vapour resistance and installation instructions of the additional insulation should be taken into consideration.

Surface condensation

 6.5 Roofs will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $0.35 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ at any point and the junctions with walls are designed in accordance with the relevant requirements of *Limiting thermal bridging and air leakage : Robust construction details for dwellings and similar buildings*, TSO 2002, or BRE Paper IP 1/06 *Assessing the effects of thermal bridging at junctions and around openings*.

 6.6 Roofs will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $1.2 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ at any point. Guidance may be obtained from section 8 of BS 5250 : 2002 and BRE report (BR 262 : 2002).

7 Behaviour in relation to fire

7.1 When installed between rafters the product will be contained between the roof and internal lining board until one is destroyed. Therefore, the insulation will not contribute to the development stages of a fire.

7.2 The product must not be carried over junctions between roofs required to provide a minimum period of fire resistance. The continuity of fire resistance must be maintained, for example as described in the national Building Regulations:

England and Wales — Approved Document B, Volume 1, Sections 5.11 to 5.12

Scotland — Mandatory Standard 2.2, clause 2.2.10⁽¹⁾

(1) Technical Handbook (Domestic).

Northern Ireland — Technical Booklet E, paragraph 3.21.

8 Proximity of flues and appliances

When the product is installed in close proximity to certain flue pipes and/or heat producing appliances, for buildings subject to national Building Regulations the relevant provisions and guidance given below should be met:

England and Wales — Approved Document J, paragraph 2.15

Scotland — Mandatory Standard 3.19, clauses 3.19.1⁽¹⁾ to 3.19.9⁽¹⁾


(1) Technical Handbook (Domestic).

Northern Ireland — Technical Booklet L, paragraph 2.9.

9 Maintenance

As the product is placed within the roof and has suitable durability (see section 10), maintenance is not required.

10 Durability

 10.1 The product is stable, rot-proof and durable and will remain effective as an insulant for the life of the building in which it is installed.

10.2 The product is treated with a non-volatile larvacide and, therefore, the risk of moth or beetle infestation is negligible.

Installation

11 General

11.1 Installation of the product should be in accordance with the Certificate holder's instructions and current good building practice.

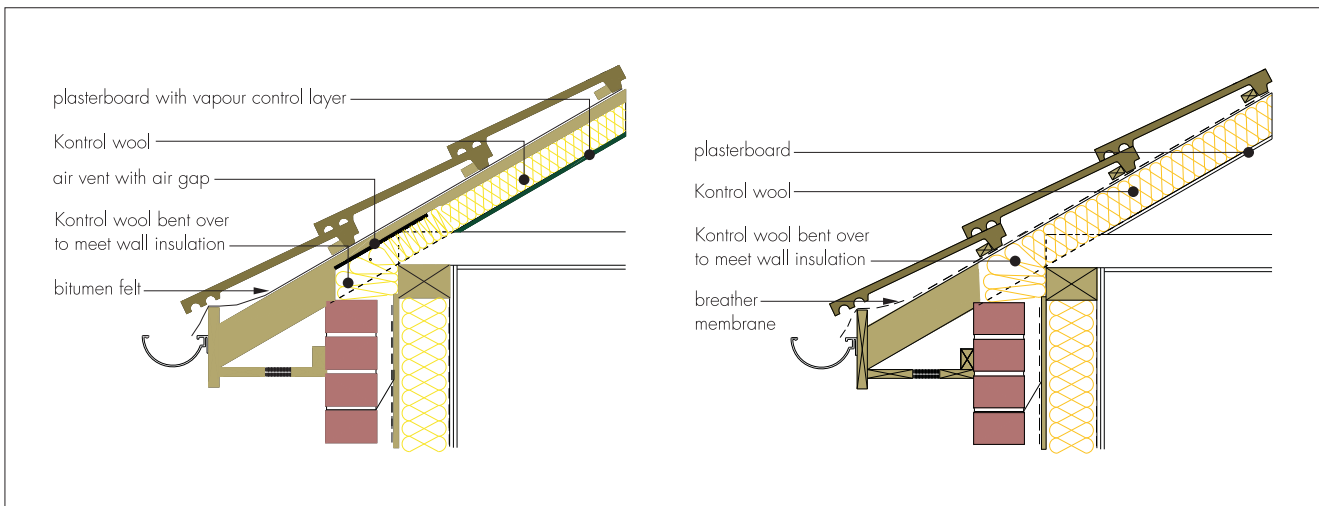
11.2 The installation of the product may be carried out by a competent installer or person. As a precaution, a disposable dust mask and gloves should be worn.

11.3 The product should be laid butted against each other between rafters. Where necessary, the product can be cut to size by tearing or by cutting with sharp scissors. Care should be taken to minimise gaps.

11.4 The batts should be installed, after tiling or slating is completed, from inside the roof space.

11.5 During installation it is essential that all ventilation points, for example eaves gaps and air bricks at gable ends, are kept clear of insulant so that the air flow is maintained (see Figure 1).

Figure 1 Typical installation showing airflow at eaves



11.6 As with other insulating materials, the product should not be installed around insulated metal chimney fabrications or flues passing through the loft space. Contact between these components and the insulant must be avoided.

Technical Investigations

12 Tests and investigations

12.1 Tests were undertaken on Kontrol Wool Insulation for use in Pitched Roof Applications to determine:

- corrosion developing capacity
- thickness
- retention of additives
- dimensional stability
- thermal conductivity.
- water vapour transmission.

12.2 Test data were also examined in relation to:

- common clothes moth and carpet beetle larvae resistance
- condensation risk assessment
- flammability and resistance to smoulder.

12.3 The manufacturing processes were examined, including quality control.

Bibliography

BS 476-20 : 1987 *Fire tests on building materials and structures — Method for determination of the fire resistance of elements of construction (general principles)*

BS 5250 : 2002 *Code of practice for control of condensation in buildings*

BS 5534 : 2003 *Code of practice for slating and tiling (including shingles)*

BS 8212 : 1995 *Code of practice for dry lining and partitioning using gypsum plasterboard*

13 Conditions

13.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- 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
- is subject to English law.

13.2 Publications and documents referred to in this Certificate are those that the BBA deems to be relevant at the date of issue or re-issue of this Certificate and include any: Act of Parliament; Statutory Instrument; Directive; Regulation; British, European or International Standard; Code of Practice; manufacturers' instructions; or any other publication or document similar or related to the aforementioned.

13.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant 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.

13.4 In granting this Certificate, the BBA is not responsible for:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

13.5 Any information relating to the manufacture, supply, installation, use and maintenance of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date 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. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.

