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Agrément Certificate  
**10/4730**  
Product Sheet 2

## NATUREPRO SHEEPSWOOL NATURAL INSULATION

### NATUREPRO SHEEPSWOOL FOR USE AS A LOFT INSULATION

#### PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to NaturePro Sheepswool for use as a Loft Insulation, with ventilated or unventilated spaces under pitched roofs in dwellings or buildings of similar occupancy.

#### 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 installed between and over ceiling joists, can enable roofs to achieve typical design U values less than  $0.20 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}$ . (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: 15 February 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](http://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, NaturePro Sheepswool for use as a Loft Insulation, 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 sections 6.1 and 6.6 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		The product can meet or contribute to meeting this Requirement. 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 <sup>(1)</sup> to 3.15.4 <sup>(1)</sup> and 3.15.6 <sup>(1)</sup> of this Standard. See sections 6.1 and 6.7 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 <sup>(1)</sup> and 6.2.2 <sup>(1)</sup> , 6.2.6 <sup>(1)</sup> to 6.2.9 <sup>(1)</sup> and 6.2.11 <sup>(1)</sup> . 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 <sup>(1)</sup> and Schedule 6 <sup>(1)</sup> . (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
Comment:		The products are acceptable. See sections 5.2 to 5.6 of this Certificate
Regulation:	F3	Target carbon dioxide Emissions Rate
Comment:		Roofs incorporating the products can satisfy or contribute to satisfying this Regulation. 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 NaturePro Sheepswool for use as a Loft Insulation, 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 NaturePro Sheepswool for use as a Loft Insulation 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 Nominal details<sup>(1)</sup>

Length (mm)	Width (mm)	Thickness (mm)	Density (kg·m <sup>-3</sup> )
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 NaturePro Sheepswool for use as a Loft Insulation.

## Design Considerations

### 3 General

3.1 NaturePro Sheepswool for use as a Loft Insulation is for use between and over ceiling joists in ventilated and unventilated pitched roofs designed and constructed in accordance with the relevant Clauses of BS 5534 : 2003.

3.2 The product is for use where the ceiling is horizontal and encloses a loft space.

### 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* (BRE 443 : 2006) using a thermal conductivity ( $\lambda_{mean}$ ) of 0.039 W·m<sup>-1</sup>·K<sup>-1</sup> for the product.


 5.2 The U value of a completed roof will depend on the thickness of 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 U values for loft insulation application

Thickness of insulation (mm)	U value (W·m <sup>-2</sup> ·K <sup>-1</sup> )
200 <sup>(1)</sup>	0.20
250 <sup>(1)</sup>	0.16
300 <sup>(1)</sup>	0.13

(1) 100 mm timber rafter spaced at 600 mm centres, 50 mm joist thickness. 12.5 mm plasterboard ceiling. Insulation material above 100 mm laid perpendicular to ceiling joists.

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 Table 2 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 roofs with insulation at ceiling level — England and Wales, and Northern Ireland*

Construction type	U value W·m <sup>-2</sup> ·K <sup>-1</sup>
'Notional' mean in SAP dwellings, domestic and small non-domestic extensions <sup>(1)</sup> (new, replacement, renovated and retained roofs) and consequential improvements <sup>(1)</sup>	0.16
Limit mean SBEM for notional buildings	0.25
Limit mean for new-build, flexible approaches and large non-domestic extensions	0.25
Limit individual for new-build and flexible approaches	0.35

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

*Table 4 Typical design U values for pitched roofs with insulation between ceiling ties or collars — Scotland*

Construction type	U value W·m <sup>-2</sup> ·K <sup>-1</sup>
Limit mean for new dwellings simplified approach (all fuel packages) and notional dwellings in SAP and SBEM. Limit mean for conversion of unheated buildings, extensions <sup>(1)</sup> , stand-alone buildings less than 50 m <sup>2</sup> and shell and fit out of non-domestic buildings.	0.16
Limit mean for new dwellings	0.20
Limit mean for non-domestic buildings	0.25
Limit individual for new-build, extensions, conversions and shell and fit out in domestic and non-domestic buildings and stand-alone buildings less than 50 m <sup>2</sup>	0.35

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

## New buildings

5.4 Lofts 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, lofts 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<sup>-1</sup>·m<sup>-1</sup> at a thickness of 100 mm.

6.2 Insulation material placed at ceiling level will considerably reduce the temperature of an unheated roof structure and, if moist air passes into the roof space, condensation on cold surfaces is likely to be enhanced. Roof structures incorporating the insulation at ceiling level must have provision for adequate permanent ventilation of the space above the insulation to minimise the formation of condensation in the roof space.

6.3 Permanent ventilation of the roof structure should be provided by continuous openings or regularly spaced vents of equivalent area situated along two opposite sides of the roof at eaves level. The size and position of ventilation openings for pitched roofs greater or less than 15°, roofs with spans exceeding 10 m, and mono-pitched roofs, should be in accordance with Clause 8.4 (in particular 8.4.2.2 ) of BS 5250 : 2002. Further information and guidance is given in BRE Report (BR 262 : 2002).

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

6.5 In roof structures incorporating the product at ceiling level, a breathable membrane can be used to limit excessive condensation.

### Surface condensation



6.6 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*.



6.7 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 BS 5250 : 2002, section 8 and BRE report (BR 262 : 2002).

## 7 Behaviour in relation to fire

7.1 When tested in accordance with BS 5803-4 : 1985, the material met the requirement for smouldering combustion not to extend more than 150 mm from the centre line of the ignition source.

7.2 Precautions must be taken to protect the products from heat generated from flues in accordance with the national Building Regulations:

**England and Wales** — Approved Document J, paragraph 2.15

**Scotland** — Mandatory Standard 3.19, clause 3.19.1<sup>(1)</sup> to 3.19.9<sup>(1)</sup>

(1) Technical Handbook (Domestic).

**Northern Ireland** — Technical Booklet L, paragraph 2.9.

7.3 The product should be spaced at least 75 mm from recessed luminaires.

## 8 De-rating of electrical cables

As with other insulation products, it may be necessary in some cases to de-rate electrical cables buried in insulation. BS 7671 : 2008 suggests that where wiring is completely surrounded by insulation, it may need to be de-rated to as low as half its free air current carrying capacity. Guidance should be sought from a qualified electrician.

## 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, therefore, the risk of moth or beetle infestation is negligible.

## Installation

### 11 General

11.1 Installation of NaturePro Sheepswool for use as a Loft Insulation should be in accordance with the Certificate holder's instructions and current good building practice.

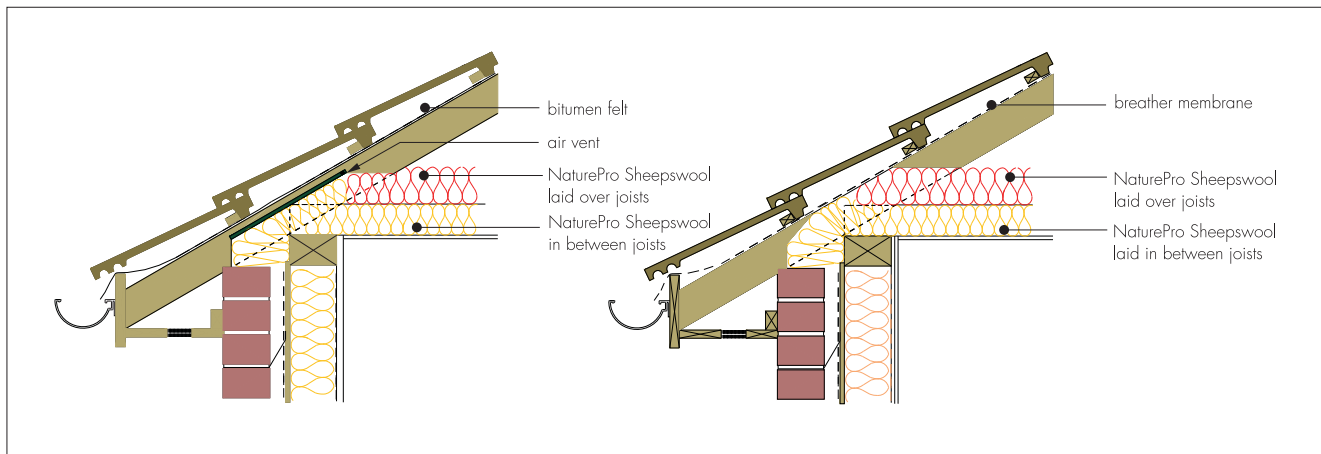
11.2 Installation of the product may be carried out as a DIY operation. As a precaution, a disposable dust mask and gloves should be worn.

11.3 All removable obstructions should first be cleared from the loft space and any holes in the ceiling, such as around pipes, should be sealed. Water tanks should be covered and any sources of moisture, e.g. vent pipes for central heating, should be arranged to avoid water vapour entering the loft space.

11.4 To reduce the risk of frost damage due to ceiling insulation, the pipes and tank in the loft space should be lagged before installing the product. The area directly below cold water tanks when resting at joist level must not be insulated to avoid the risk of the stored water freezing in cold weather.

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 section 6 and Figure 1).

Figure 1 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.

11.7 During installation, boards should be placed across the joists to reduce the risk of ceiling damage and care should be exercised when filling up to and above joist level.

11.8 The product is laid butted against each other between joists. The product can be laid on top of existing insulation. Where necessary, the rolls can be cut to size by tearing or by cutting with sharp scissors.

11.9 On completion, if required, a piece of insulation should be cut to size and fixed to the loft trap door.

11.10 In new and existing constructions the product should be installed, after tiling or slating is completed, from inside the roof space.

## Technical Investigations

### 12 Tests and investigations

12.1 Tests were undertaken on NaturePro Sheepswool Insulation for use as a Loft Insulation 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 5250 : 2002 *Code of practice for control of condensation in buildings*

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

BS 5803-4 : 1985 *Thermal insulation for use in pitched roof spaces in dwellings — Methods for determining flammability and resistance to smouldering*

BS 7671 : 2008 *Requirements for electrical installations. IEE Wiring Regulations. Seventeenth Edition*

BS EN ISO 6946 : 2007 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

## 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.

