

## Don & Low Ltd (Nonwovens)

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Agrément Certificate

96/3220

Product Sheet 1

## DALTEX ROOFSHIELD ROOF LINING SYSTEM

### FOR USE IN WARM NON-VENTILATED AND COLD VENTILATED ROOFS

#### PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to the Daltex Roofshield Roof Lining System, for use in warm non-ventilated and cold ventilated pitched roof systems (for use of the system in energy efficient non-ventilated cold pitched roof systems, see Agrément Certificate 99/3648).

#### 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

**Weathertightness** — as part of a complete roof, the product will resist the passage of water and wind-blown snow and dust into the interior of the building (see section 5).

**Risk of condensation** — the product is regarded as an air permeable and a low water vapour resistance (Type LR) underlay and can be used as part of a warm non-ventilated and cold ventilated pitched roof system (see section 6).

**Wind loading** — when installed on appropriately spaced battens the product's physical properties are deemed adequate to resist the wind loads imposed on the underlay. The product will reduce the wind uplift forces acting on the roof covering (see section 7).

**Strength** — the product has adequate strength to resist the loads associated with the installation of the roof (see section 8).

**Durability** — under the normal conditions found in a roof space the product will have a service life comparable to a traditional roof tile underlay (see section 11).

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

Date of Seventh issue: 1 October 2009

Originally certificated on 9 February 1996

Simon Wroe

Head of Approvals — Materials

Greg Cooper

Chief Executive

*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, the Daltex Roofshield Roof Lining System, 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(b)	Resistance to moisture
Comment:		The product will contribute to a roof meeting this Requirement. See section 5.1 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The product is an acceptable material. See section 11 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 satisfies this Requirement. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	3.10	Precipitation
Comment:		The product will contribute to a roof satisfying clauses 3.10.1 <sup>(1)(2)</sup> and 3.10.7 <sup>(1)(2)</sup> of this Standard. See section 5.1 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)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



## The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The product is an acceptable material. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	C4(b)	Resistance to ground moisture and weather
Comment:		The product will contribute to a roof satisfying this Regulation. See section 5.1 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 sections: 1 *Description* (1.2), 12 *General* (12.6).

# Non-regulatory Information

## NHBC Standards 2008

NHBC accepts the use of the Daltex Roofshield Roof Lining System, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.2 *Pitched roofs* (ie ridge or high ventilation is not required).

## Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA, the Daltex Roofshield Roof Lining System, when installed and used in accordance with this Certificate, satisfies the requirements of the *Zurich Building Guarantee Technical Manual*, Section 4 *Superstructure*, Sub-section *Pitched roofs*.

# General

Advice on the use of the product in this application can be sought by the product's UK distributor, A. Proctor Group, The Haugh, Blairgowrie, Perthshire. Tel 01250 872261 or Fax 01250 872727.

(1) Daltex Roofshield and Roofshield are registered trademarks of Don & Low Ltd (Nonwovens).

# Technical Specification

## 1 Description

1.1 The Daltex Roofshield Roof Lining System is manufactured by a lamination of a water vapour permeable film between two layers of non-woven polypropylene spunbond to form a flexible sheet.

1.2 The product has the nominal characteristics of:

Thickness (mm)	0.6
Mass per unit area ( $\text{gm}^{-2}$ )	175
Roll length (m)	50/100
Roll width (m)	1.0/1.50
Colour	
upper	green
lower	white

1.3 Quality control checks are carried out on the incoming materials, during production and on the finished product. Quality control checks on the finished product include:

- weight
- water penetration
- tear strength
- tensile strength and elongation.

## 2 Delivery and site handling

2.1 The product is supplied in rolls and delivered to site individually wrapped in polythene. A technical leaflet bearing the product name is included with each roll and the BBA identification mark incorporating the number of this Certificate is shown on the leaflet. Labels with lot identifiers are attached to each roll for traceability.

2.2 The rolls should be stored flat or on end, on a smooth, clean, dry surface, under cover and protected from sunlight.

# Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Daltex Roofshield Roof Lining System.

## Design Considerations

### 3 Use

3.1 The Daltex Roofshield Roof Lining System is satisfactory for use as fully supported or unsupported underlays in tiled and slated pitched roofs constructed in accordance with the relevant Clauses of BS 5534 : 2003.

3.2 The product can be used in energy efficient non-ventilated cold pitched roof systems. This application is covered by Agrément Certificate 99/3648.

### 4 Practicability of installation

Installation can be carried out readily by slaters/tilers experienced with this type of product.

### 5 Weathertightness



5.1 Tests indicate that the product will resist the passage of water, wind-blown snow and dust into the interior of a building, under all conditions to be found in a roof constructed in accordance with the relevant Clauses of BS 5534 : 2003.

5.2 The product resists penetration of liquid water and consequently may be used as temporary waterproofing prior to the installation of slates or tiles. The period of such use should, however, be kept to a minimum particularly during periods of high UV exposure. Advice should be sought from the Certificate holder (see section 16, Table for *Physical properties — general*).

### 6 Risk of condensation

6.1 For design purposes, the product's water vapour resistance may be taken as not more than  $0.1 \text{ MNsg}^{-1}$  and for roofs designed in accordance with BS 5534 : 2003 or BS 5250 : 2002, Section 8.4, it may be regarded as a Type LR membrane.

6.2 The product is also air permeable with a nominal value of  $1.50 \text{ m}^3\text{h}^{-1}\text{m}^{-2}$  at 1 Pa pressure difference, allowing a significant additional mechanism for water vapour egress by convection.

6.3 In common with all roofs, care must be taken in the overall design and installation to minimise the risk of water vapour coming into contact with cold parts of the construction. Factors to be considered and minimised include, moisture diffusion through the ceiling, infiltration through unsealed openings/penetrations in the ceiling and services evaporating or venting moisture into cold spaces.

6.4 The risk of condensation is highest in new-build construction during the first heating period, where there is high moisture loading due to wet trades, such as in-situ cast concrete slabs or plaster. The air permeability of the product will reduce this risk (see section 6.2). The risk of condensation diminishes as the building naturally dries out. See *BBA Information Bulletin No 1 – Roof Tile Underlays in Cold Roofs during the Drying-out Period*.

#### **Ceiling and insulation horizontal (cold roof)**

6.5 Roofs designed and constructed in accordance with BS 5250 : 2002 will adequately limit the risk of interstitial condensation. Alternatively, see section 3.2.

#### **Ceiling and insulation inclined (warm roof)**

6.6 For roofs with an insulated inclined ceiling, ventilation above or below the underlay will not be required provided that the passage of moisture by diffusion and by convection is controlled, eg, a continuous envelope of insulation with a high vapour resistance.

#### **Ceiling and insulation partially inclined (warm roof and cold roof)**

6.7 Where an insulated ceiling only spans part of the roofline, resulting cold roof spaces should be ventilated in accordance with BS 5250 : 2002, Section 8.4.2.5 and 8.4.2.6. Alternatively, see section 3.2.

## **7 Wind loading**

7.1 Project design wind speeds should be determined and wind uplift forces calculated, in accordance with BS 6399-2 : 1997.

7.2 The product, when fully supported, have adequate resistance to wind uplift forces.

7.3 For a cold ventilated system, wind loading on the underlay should be calculated in accordance with BS 5534 : 2003, Section 5.5.2.7. For acceptable wind loads with specific batten spacings for the draped product, using a 25 mm deep tiling batten, see section 16, Table for *Physical properties – general*.

## **8 Strength**

The product will resist the normal loads associated with installation of the roof (see section 16, Table for *Physical properties – directional*).

## **9 Properties in relation to fire**

9.1 The product will have similar properties in relation to fire to those of traditional polyethylene roof tile underlays.

9.2 When the product is used unsupported, there is a risk that fire can spread if the material is accidentally ignited during maintenance works, eg by a roofer's or plumber's torch. As with all types of underlay, care should be taken during building and maintenance to avoid the material becoming ignited.

9.3 When the product is used in a fully supported situation, the reaction to fire will be determined by the support.

9.4 The product achieves a Class D classification in accordance with BS EN 13501-1 : 2002.

## **10 Maintenance**

As the product is confined within a roof structure and has suitable durability (see section 11), maintenance is not required. However, it must be ensured that damage occurring before enclosure is repaired (see section 14).

## **11 Durability**



The product will be virtually unaffected by the normal conditions found in a roof space and will have a life comparable with that of traditional roof tile underlays, provided it is not exposed to sunlight for long periods (see section 12.4). Advice regarding exposure can be obtained from the Certificate holder.

## **Installation**

## **12 General**

12.1 The Daltex Roofshield Roof Lining System must be installed and fixed in accordance with the Certificate holder's instructions, provisions of this Certificate and the relevant recommendations of BS 5534 : 2003 and BS 8000-6 : 1990. Installation can be carried out under all conditions normal to roofing work.

12.2 The product is installed with the green side uppermost and lapped to shed water out and down the slope.

12.3 Overlaps must be provided with the minimum dimensions given in Table 1.

*Table 1 Minimum overlaps*

Roof pitch (°)	Horizontal lap (mm)		Vertical laps (mm)
	Not fully supported	Fully supported	
12.5 to 14	225	150	100
15 to 34	150	100	100
35+	100	75	100

12.4 Where possible, eaves guards should be used to protect the product from sunlight and direct water into the gutter.

12.5 Hips should be covered with a 600 mm wide strip of the product.

12.6 The product has a smooth surface with a low coefficient of friction and care should be taken when moving or standing on a wet surface covered with the product.

## **13 Procedure**

### **Fully supported**

13.1 The product may be used over sarking boards of softwood, C4 grade chipboard or water-resistant grade plywood or water-resistant grade OSB and either with continuous insulation or insulation placed between the rafters.

13.2 The product is secured to the support with counter battens at least 12 mm thick to create an air space between the product and the tiles for drainage and vapour dispersal. The counter battens are fixed with corrosion-resistant staples or galvanized clout nails as appropriate. Tiling battens are secured to the counter battens and rafters with appropriate fixings.

13.3 Care must be taken to minimise the risk of interstitial condensation as described in section 6.5 particularly for timber sarking which may be below the dew-point for extended periods during winter months.

### **Unsupported**

13.4 The product, when installed as an unsupported system, is fixed in the traditional method for roof tile underlays, ie draped between the rafters.

### **Factory-fabricated roof panel**

13.5 The product can be used in factory fabricated roof panels which have the benefit of factory controlled assembly. However, these panels have not been assessed by the BBA and, therefore, are outside the scope of this Certificate.

## **14 Repair**

Damage to the product can be repaired prior to the installation of slates or tiles by replacement of the damaged areas, by patching and sealing correctly. Care should be taken to ensure that the watertightness of the roof is maintained.

## **15 Finishing**

15.1 Detailing of abutments, verges and hips must be in accordance with the Certificate holder's instructions.

15.2 The tiling and slating must be carried out in accordance with the relevant Clauses of BS 5534 : 2003, BS 8000-6 : 1990 and the Certificate holder's instructions, especially when using tightly-jointed slates or tiles.

## 16 Tests

Samples of the Daltex Roofshield Roof Lining System were obtained from the Certificate holder for testing. The results of the tests carried out by, or on behalf of, the BBA are summarised in Tables 2 and 3.

*Table 2 Physical properties — directional*

Test (units)	Mean result		Method <sup>(1)</sup>
	Longitudinal	Transverse	
Tensile strength (N per 50 mm)			EN 12311-1
unaged	297	224	
aged <sup>(2)</sup>	251	196	
Elongation at break (%)			EN 12311-1
unaged	42	58	
aged <sup>(2)</sup>	28	41	
Tear resistance (nail) (N)			EN 12310-1
unaged	259	177	

(1) The test documents are detailed in the *Bibliography*. Numbers in the table refer to sections/parts of the various documents.

(2) UVA aged for 336 hrs at 50°C/heat aged for 90 days at 70±2°C.

*Table 3 Physical properties — general*

Test (units)	Mean result	Method <sup>(1)</sup>
Water vapour transmission at 25°C/75% RH (gm <sup>2</sup> day <sup>-1</sup> )	2409	BS 3177
Vapour resistance (MNsg <sup>-1</sup> )	0.09	BS 3177
Dimensional stability		EN 1107-2
longitudinal	-0.2	
transverse	0.0	
Low temperature flexibility (-40°C)	pass	BS EN 1109
Slip resistance (coefficient of friction)		BBA T1/10 <sup>(2)</sup>
dry	0.75	
wet	0.4	
Resistance to water penetration		EN 1928 <sup>(3)</sup>
unaged	W1	
aged <sup>(4)</sup>	W1	
Spray test	no leakage	BBA Test spec T1/15 <sup>(5)</sup>
Mullen burst strength (kNm <sup>-2</sup> )	488	BS 3137
Head of water (mm)	1135	BS EN 20811
Resistance to wind loads (kPa)		wind tunnel test <sup>(6)</sup>
up to 350 mm batten spacing		
25 mm batten depth used	>2.5	

(1) The test documents are detailed in the *Bibliography*. Numbers in the table refer to sections/parts of the various documents.

(2) Test method is based on the RAPRA in-house procedure No 73 : Issue 1 : 10th July 1991, using the British Portable Pendulum Tester fitted with a standard simulated shoe sole (four s).

(3) As modified in accordance with BS EN 13859-1 : 2005.

(4) UVA aged for 336 hours at 50°C/heat aged for 90 days at (70±2) °C.

(5) A 1000 mm by 700 mm mock-up roof section at a pitch of 45°, comprising a wooden board, covered with Daltex Roofshield with an underlining of absorbent paper, was exposed to a fine mist water spray. The sample was sprayed from a distance of one metre for two hours, left for 16 hours, then sprayed for a further three hours at one metre and three hours at 0.7 m.

(6) Based on wind tunnel tests on a range of underlays, including 1F felt.

## 17 Investigations

17.1 The condensation risk in warm roof constructions, and specifically those containing sarking boards, incorporating the products was examined.

17.2 The manufacturing process was assessed, including the method adopted for quality control, and details were obtained of the quality and composition of the materials used.

17.3 Data on wet strength was examined.

17.4 An examination was made of independent data on the investigation of wind loads on underlay/tile roof systems and data on behaviour of roof tile underlays under suction.

## Bibliography

BS 3137 : 1972 *Methods for determining the bursting strength of paper and board*

BS 3177 : 1959 *Method for determining the permeability to water vapour of flexible sheet materials used for packaging*

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 6399-2 : 1997 *Loading for buildings — Code of practice for wind loads*

BS 8000-6 : 1990 *Workmanship on building sites — Code of practice for slating and tiling of roofs and claddings*

BS EN 1109 : 2000 *Flexible sheets for waterproofing — Bitumen sheets for roof waterproofing — Determination of flexibility at low temperature*

BS EN 13501-1 : 2002 *Fire classification of construction products and building elements. Classification using test data from reaction to fire tests*

BS EN 13859-1 : 2005 *Flexible sheets for waterproofing — Definitions and characteristics of underlays — Part 1 Underlays for discontinuous roofing*

BS EN 20811 : 1992 *Textiles — Determination of resistance to water penetration — Hydrostatic pressure test*

EN 1107-2 : 2001 *Flexible sheets for waterproofing — Determination of dimensional stability — Plastic and rubber sheet for roof waterproofing*

EN 1928 : 2000 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of watertightness*

EN 12310-1 : 1999 *Flexible sheets for waterproofing — Bitumen sheets for roof waterproofing — Determination of resistance to tearing (nail shank)*

EN 12311-1 : 2000 *Flexible sheets for waterproofing — Determination of tensile properties — Part 1 — Bitumen sheets for roof waterproofing*

## 18 Conditions

18.1 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.

18.2 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.

18.3 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.

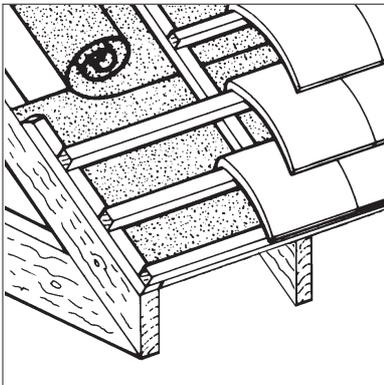
18.4 In granting this Certificate, the BBA is not responsible for:

- 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.

18.5 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.

**DALTEX ROOFSHIELD ROOF LINING SYSTEM  
(BBA CERTIFICATE No 96/3220)  
IRISH BUILDING REGULATIONS STATEMENT**

Second issue\*



- THIS STATEMENT RELATES TO THE DALTEX ROOFSHIELD ROOF LINING SYSTEM AND SETS OUT THE OPINION OF THE BBA ON THE POSITION OF THE PRODUCT UNDER THE BUILDING REGULATIONS IN THE REPUBLIC OF IRELAND.
- It must be read in conjunction with the Front Sheets of BBA Certificate No 96/3220.
- It will remain valid provided BBA Certificate No 96/3220 is valid.

**The Building Regulations 1997–2002 (Ireland)**

In the opinion of the BBA, the Daltext Roofshield Roof Lining System, if used in accordance with the provisions of Certificate No 96/3220, will satisfy or contribute to satisfying the relevant requirements.

Requirement:	C4	Resistance to weather and ground moisture
Comment:		Tests for weather resistance indicate that the product will contribute towards a tiled or slated roof meeting this Requirement. See sections 10.1 and 10.2 of BBA Certificate No 96/3220.
Requirement:	D1	Materials and workmanship
Comment:		The product is a proper material. See section 14 of BBA Certificate No 96/3220.

On behalf of the British Board of Agrément



Date of Second issue: 27th May 2005

Chief Executive

\*Original Statement issued 10th January 2002. This revised version includes reference to the revised Irish Building Regulations.