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Agrément Certificate
08/4548
Product Sheet 3

TYVEK ROOF LINING SYSTEMS

DUPONT AIRGUARD CONTROL AIR LEAKAGE BARRIER/VAPOUR CONTROL LAYER

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to DuPont⁽¹⁾ AirGuard Control Air Leakage Barrier/Vapour Control Layer for use in roofs.

(1) DuPont AirGuard Control and TYVEK are registered trademarks of E.I. du Pont de Nemours & Co or its affiliates.

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

Risk of condensation — the product has a low resistance to water vapour transmission and will reduce the risk of interstitial condensation (see section 6).

Air permeability — the product is an air barrier and can reduce heat loss by air infiltration (see section 7).

Strength — the product has adequate strength to resist damage during the construction of the roof (see section 8).

Durability — the product will have a service life comparable to other similar elements of construction, eg vapour control layers (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

Simon Wroe
Head of Approvals — Materials

Greg Cooper
Chief Executive

Date of Second issue: 31 May 2012

Originally certificated on 8 April 2008

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, DuPont AirGuard Control Air Leakage Barrier/Vapour Control Layer, 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 presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales)

Requirement:	C2(c)	Resistance to moisture
Comment:		The product can contribute to a roof meeting this Requirement, with respect to interstitial condensation. See section 6.2 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		See section 7 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The product is acceptable. 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 can contribute to a construction satisfying this Regulation. See section 11 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 clauses 3.15.1 ⁽¹⁾⁽²⁾ and 3.15.5 ⁽¹⁾⁽²⁾ of this Standard, with respect to interstitial condensation. See section 6.2 of this Certificate.
Standard:	6.1(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		See section 7 of this Certificate, with reference to clauses 6.1.1 ⁽¹⁾ , 6.1.2 ⁽²⁾ , 6.1.6 ⁽¹⁾ , 6.1.7 ⁽¹⁾ , 6.1.10 ⁽²⁾ , 6.2.4 ⁽¹⁾ , 6.2.6 ⁽²⁾ , 6.2.9 ⁽¹⁾ , 6.2.10 ⁽¹⁾ , 6.2.11 ⁽²⁾ , 6.2.12 ⁽²⁾ and 6.2.13 ⁽¹⁾⁽²⁾ .
Standard:	7.1(a)	Statement of sustainability
Comment:		The product can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	12	Building standards – conversions
Comment:		Comments made in relation to this product under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (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 acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	C5	Condensation
Comment:		The product can contribute to a roof to satisfying this Regulation. See section 6.2 of this Certificate.
Regulation:	F2(a)(i)	Conservation measures
Regulation:	F3(2)	Target carbon dioxide Emission Rate
Comment:		See section 7 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: 1 *Description* (1.2) of this Certificate.

Additional Information

NHBC Standards 2011

NHBC accepts the use of DuPont AirGuard Control Air Leakage Barrier/Vapour Control Layer, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.1 *Flat roofs and balconies*, 7.2 *Pitched roofs* and 8.2 *Wall and ceiling finishes*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with EN 13984 : 2004. An asterisk (*) appearing in this Certificate indicates that data shown has been taken from the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 DuPont AirGuard Control Air Leakage Barrier/Vapour Control Layer consists of a spunbond polypropylene substrate coated with a polyolefin-copolymer.

1.2 The finished rolls are available with nominal characteristics of:

Thickness* (mm)	0.25
Roll width (m)	1.5
Roll length (m)	50
Mass per unit area* ($\text{g}\cdot\text{m}^{-2}$)	108
Water vapour transmission – s_d^* (m)	
minimum	2
nominal	5
Water vapour resistance ($\text{MN}\cdot\text{s}\cdot\text{g}^{-1}$)	
minimum	10
nominal	25
Tensile strength* (N per 50 mm)	
longitudinal	200
transverse	170
Nail tear* (N)	
longitudinal	240
transverse	240

1.3 The product is secured in place by nails and all laps are sealed with TYVEK 2060B Tape. TYVEK Acrylic Tape (double-sided) may be used in repairing the membrane (see section 1.5).

2 Manufacture

2.1 The membrane is manufactured by spinning strands of polypropylene and bonding them together with heat and pressure to form a flexible sheet. The sheet is coated on one side with a polyolefin-copolymer.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out 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.

2.3 The management system of DuPont de Nemours (Luxembourg) S.à r.l. has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by DQS GmbH (Certificate 463950 QM08).

3 Delivery and site handling

3.1 Rolls are delivered to site packaged. Each package carries a label bearing the BBA identification mark incorporating the number of this Certificate.

3.2 Rolls should be stored on their sides, on a smooth, clean surface under cover and protected from direct sunlight.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on DuPont AirGuard Control Air Leakage Barrier/Vapour Control Layer.

4 General

4.1 DuPont AirGuard Control Air Leakage Barrier/Vapour Control Layer is satisfactory for use as an alternative to traditional vapour control layers/air barriers:

- at ceiling level in slated or tiled pitched cold roof constructions
- at the rafter line in slated or tiled pitched warm roof constructions
- at ceiling level in warm flat or pitched roofs, waterproofed using a membrane.

4.2 Further information is given in BRE Guidance Report No 262 *Thermal insulation : avoiding the risks*.

4.3 Where constructions need to comply with *NHBC Standards*, specifiers should observe the requirements of these documents.

4.4 It is essential that proper care and attention be given to maintaining the vapour control layer's integrity and continuity.

4.5 In ceilings the product is placed directly between the underside of the rafters and the ceiling lining to cover the insulation on the warm side as an integrated vapour control layer/air barrier.

4.6 Slated and tiled pitched roofs should be designed and constructed in accordance with BS 5534 : 2003.


4.7 Flat roofs should be designed and constructed in accordance with BS 6229 : 2003.

5 Practicability of installation

The product can be installed readily by operatives experienced with this type of product.

6 Risk of condensation

6.1 The risk of condensation occurring will depend upon the properties and vapour resistance of other materials used in the construction, the internal and external conditions, and the effectiveness of the product's installation.

 6.2 The product can contribute to meeting the relevant requirements of the national Building Regulations:

England and Wales – Requirement C2(c)


Scotland – Mandatory Standard 3.15, clauses 3.15.1 and 3.15.5

Northern Ireland – Regulation C5.

6.3 Consideration must be given in the overall installation to minimising penetrations by services. Joints at ceilings/walls must be sealed to offer significant resistance to water vapour transmission. Sealing should also be carried out in accordance with the Certificate holder's instructions.

6.4 Constructions should be in accordance with the nominal recommendations of BS 5250 : 2011, Annex H and favourably assessed in accordance with Annex D using a minimum air layer equivalent value (s_d) of not less than 2 m* (equivalent to a water vapour resistance of 10 MN·s·g⁻¹) for the product.

7 Air permeability

 The product is an air barrier and when lapped, fixed and taped correctly can contribute to elements and junctions minimising heat loss by unplanned air infiltration. Guidance in this respect can be found in:

England and Wales – Accredited Construction Details (version 1.0)

Scotland – Accredited Construction Details (Scotland)

Northern Ireland – Accredited Construction Details (version 1.0).

8 Strength

The product will resist the loads associated with installation of the roof.

9 Properties in relation to fire

9.1 The product will melt and shrink away from heat, but will burn in the presence of a naked flame. The product is classified in accordance with EN 13501-1 : 2007 as a Class E* material.

9.2 When the product is used unsupported, there is a risk that fire can spread if it 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.

10 Maintenance

As the product is confined within a roof structure and has suitable durability (see section 11), maintenance is not required.

11 Durability



The product is rot proof, does not tear easily and will have a life equal to that of the building in which it is installed.

12 Reuse and recyclability

The product is made from a mix of polyolefins that can be recycled.

Installation

13 General

13.1 Installation of DuPont AirGuard Control Air Leakage Barrier/Vapour Control Layer should be in accordance with the Certificate holder's instructions, BS 9520 : 2007 and good building practice (see Figures 1 to 3).

Figure 1 Ceiling — cold pitched roof

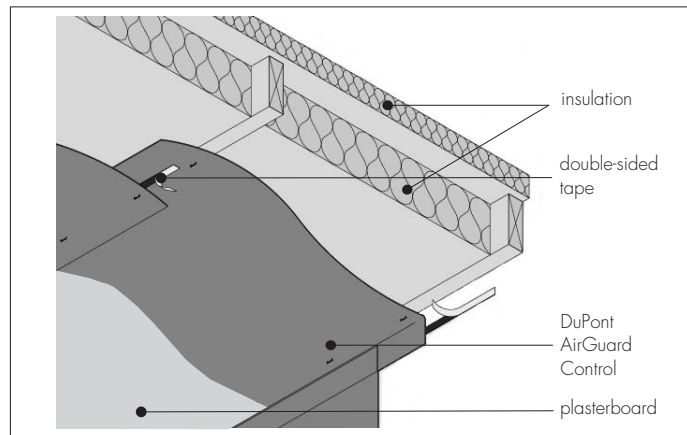


Figure 2 Warm pitched roof — rafter line

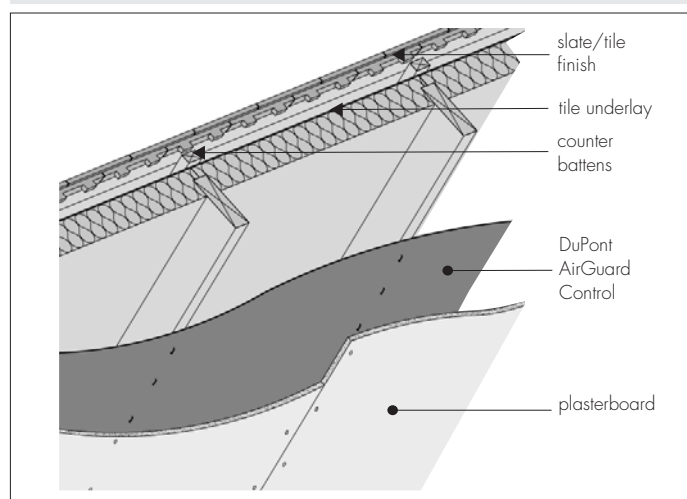
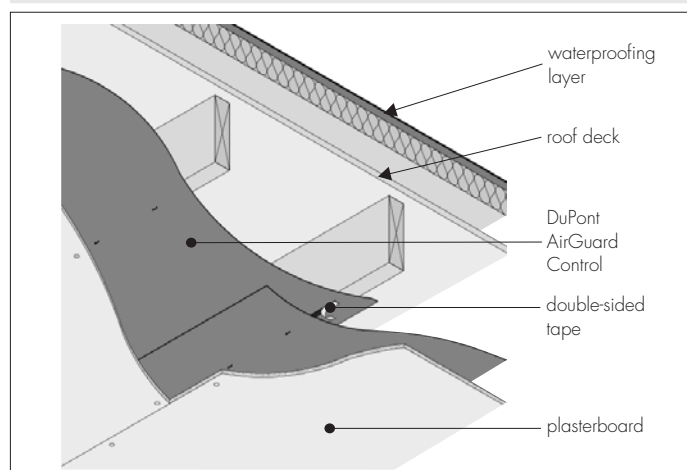


Figure 3 Flat roof



13.2 Where wood preservatives and damp-proofing treatments containing solvents have been applied, sufficient time must be allowed for solvents to disperse before the product is installed.

14 Procedure

14.1 The product should be positioned on the warm side of the thermal insulation and held in place if required by suitable fasteners to the background structure. Joints between adjacent sheets of the material should be lapped 150 mm over a support and be sealed with a strip of TYVEK 2060B Tape.

14.2 At all penetrations and abutments the product should be cut neatly to fit as closely as possible and the joint sealed with a strip of TYVEK 2060B Tape.

14.3 Internal linings can be applied directly onto the product and fixed through it in the normal manner. Alternatively the internal lining may be set on spacer battens, leaving a gap behind the lining which can accommodate wiring and other services and reduce the need for penetrations of the vapour control layer/air leakage barrier.

15 Repair

Damage to DuPont AirGuard Control can be repaired with TYVEK 2060B Tape. Extensively damaged areas are made good by overlaying a new sheet sealed in place with TYVEK 2060B Tape or TYVEK Acrylic Tape (double-sided).

Technical Investigations

16 Tests

16.1 An assessment was made on data to EN 13859-1 : 2010 in relation to:

- dimensions*
- mass per unit area*
- tensile strength and elongation*
- resistance to nail tear*
- watertightness*
- water vapour transmission properties*
- effect of heat ageing*
- reaction to fire* .

16.2 Tests were carried out:

- to determine:
 - air leakage at joints
 - air permeability
- to assess:
 - performance during service.

17 Investigations

Calculations on the risks of interstitial condensation occurring in various constructions were carried out.

Bibliography

BS 5250 : 2011 *Code of practice for control of condensation in buildings*

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

BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*

BS 9250 : 2007 *Code of practice for design of the airtightness of ceilings in pitched roofs*

EN 13501-1 : 2007 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

EN 13859-1 : 2010 *Flexible sheets for waterproofing — Definitions and characteristics of underlays — Underlays for discontinuous roofing*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

18 Conditions

18.1 This Certificate:

- relates only to the product/system 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
- is subject to English Law.

18.2 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.

18.3 This Certificate will remain valid for an unlimited period provided that the product/system 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.

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

18.5 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/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 their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

18.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal 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, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. 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.