

Shield Membranes Ltd

14 Princewood Road
Earlstrees Industrial Estate
Corby
Northamptonshire
NN17 4AP

Tel: 0207 740 9279

e-mail: info@shieldmembranes.com

website: www.shieldmembranes.com



Agrément Certificate

21/5949

Product Sheet 1

SHIELD ROOF WATERPROOFING MEMBRANES

ULTRASHIELD TORCH-ON FELT SBS MEMBRANES

This Agrément Certificate Product Sheet⁽¹⁾ relates to UltraShield Torch-On Felt SBS Membranes, for use in built-up bitumen waterproofing specifications, with an air and vapour control layer (AVCL) on warm roofs, including surface protection, on flat, zero fall or pitched roofs with limited access or in inverted roof specifications on flat or zero fall roofs with limited access.

(1) Hereinafter referred to as 'Certificate'.

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 — the products will resist the passage of moisture into the interior of a building (see section 6).

Condensation risk — roofs incorporating the AVCL will adequately limit the risk of interstitial and surface condensation (see section 7).

Properties in relation to fire — the products, when used in a suitable specification, may enable a roof to be unrestricted under the national Building Regulations (see section 8).

Resistance to wind uplift — the products will resist the effects of any likely wind suction acting on the roof (see section 9).

Resistance to mechanical damage — the products will accept, without damage, the limited foot traffic and loads associated with installation and maintenance (see section 10).

Durability — under normal service conditions, the products will provide a durable waterproof covering with a service life in excess of 25 years (see section 12).

The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 5 November 2021

Hardy Giesler
Chief Executive Officer

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 MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.*

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

British Board of Agrément

Bucknalls Lane
Watford
Herts WD25 9BA

©2021

tel: 01923 665300
clientservices@bbacerts.co.uk
www.bbacerts.co.uk

Regulations

In the opinion of the BBA, UltraShield Torch-On Felt SBS Membranes, 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 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) (as amended)

Requirement:	B4(1)	External fire spread
Comment:		The products are restricted by this Requirement in some circumstances. See section 8.4 of this Certificate.
Requirement:	B4(2)	External fire spread
Comment:		On a suitable substructure, the products may enable a roof to be unrestricted under this Requirement. See sections 8.1, 8.2 (Wales only) and 8.3 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The products, including joints, will enable a roof to satisfy this Requirement. See section 6 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		The AVCL can contribute to enabling a roof to satisfy this Requirement. See section 7 of this Certificate.
Regulation:	7(1)	Materials and workmanship
Comment:		The products are acceptable. See section 12.1 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Durability, workmanship and fitness of materials
Comment:		The products satisfy the requirements of this Regulation. See sections 11.1 and 12.1 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.6	Spread to neighbouring buildings
Comment:		The products are restricted under clause 2.6.4 ⁽¹⁾⁽²⁾ of this Standard in some circumstances. See section 8.5 of this Certificate.
Standard:	2.8	Spread from neighbouring buildings
Comment:		The products, when applied to a suitable substructure, may enable a roof to be unrestricted under clause 2.8.1 ⁽¹⁾⁽²⁾ of this Standard. See sections 8.1 and 8.3 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The products, including joints, will enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.7 ⁽¹⁾⁽²⁾ . See section 6 of this Certificate.
Standard:	3.15	Condensation
Comment:		The AVCL will enable a roof to satisfy this Standard, with reference to clauses 3.15.1 ⁽¹⁾⁽²⁾ , 3.15.3 ⁽¹⁾⁽²⁾ , 3.15.5 ⁽¹⁾⁽²⁾ and 3.15.6 ⁽¹⁾⁽²⁾ . See section 7 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The products can contribute to satisfying 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 applicable to conversions
Comment:	Comments in relation to the products 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) 2012 (as amended)

Regulation:	23(a)(i)	Fitness of materials and workmanship
Comment:	(iii)(b)(i)	The products are acceptable. See section 12.1 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The products, including joints, will enable a roof to satisfy the requirements of this Regulation. See section 6 of this Certificate.
Regulation:	29	Condensation
Comment:		The AVCL can contribute to a roof satisfying this Regulation. See section 7 of this Certificate.
Regulation:	36(b)	External fire spread
Comment:		On a suitable substructure, the products may enable a roof to be unrestricted under the requirements of this Regulation. See sections 8.1 to 8.3 of this 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.

See sections: 1 *Description* (1.2) and 3 *Delivery and site handling* (3.3) of this Certificate.

Additional Information

NHBC Standards 2021

In the opinion of the BBA, UltraShield Torch-On Felt SBS Membranes, 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 7.1, *Flat roofs, terraces and balconies*.

The NHBC Standards do not cover the use of the products in the refurbishment of existing roofs.

CE marking

The Certificate holder has taken the responsibility of CE marking the products in accordance with harmonised European Standards BS EN 13707 : 2013 and BS EN 13970 : 2004.

Technical Specification

1 Description

1.1 The UltraShield Torch-On Felt SBS Membranes range comprises:

- POL55 – a polyester-reinforced, SBS-modified bitumen, torch-on capsheet, with a mineral upper surface finish and a thermofusible film on the lower surface of the membrane
- POL45 – a polyester-reinforced, SBS-modified bitumen, torch-on intermediate layer, with a thermofusible film on both faces of the membrane

- POL25 – a polyester-reinforced, SBS-modified bitumen, torch-on air and vapour control layer (AVCL), with a thermofusible film on both faces of the membrane.

1.2 The products are manufactured to the nominal characteristics given in Table 1.

Characteristic (unit)	POL25	POL45	POL55
Roll width (m)	1	1	1
Roll length (m)	16	8	8
Mass per unit area ($\text{kg}\cdot\text{m}^{-2}$)	2.5	4.5	5.5
Watertightness - one metre head	pass	pass	pass
Tensile strength (N per 50 mm)			
longitudinal direction	800	900	950
transverse direction	500	700	800
Elongation (%)			
longitudinal direction	40	40	50
transverse direction	40	40	50
Low temperature flexibility ($^{\circ}\text{C}$)	≤ -14	≤ -14	≤ -14

1.3 Other items or components which may be used with the membranes, but which are outside the scope of this Certificate, are:

- self-adhesive membranes
- metal lined vapour control layers (AVCL)
- fire retardant membranes
- liquid applied membranes
- PIR insulation
- EPS insulation
- XPS insulation
- cellular glass insulation
- mineral wool insulation
- vacuum insulation panel (VIP)
- water flow reducing layers
- perforated membranes
- polyurethane adhesives
- mechanical fixings
- upstand insulation boards
- Guaraflex P
- Guarascreed
- decking
- concrete paving slabs
- concrete slab support pads
- stone ballast
- drainage outlets.

2 Manufacture

2.1 The products are manufactured by traditional methods for producing bitumen membranes.

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 Shield Membranes Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BM TRADA (Certificate 12233).

3 Delivery and site handling

3.1 The products are delivered to site in rolls secured with tape bands and packed on pallets shrink-wrapped in polythene and fastened with banding. Pallets bear a label with the product name, the Certificate holder's name, batch number, date of manufacture, dimensions, mass per unit area and the BBA logo incorporating the number of this Certificate.

3.2 Rolls should be stored upright on a clean, level surface, away from excessive heat and under cover.

3.3 The Certificate holder has taken the responsibility of classifying and labelling the products under the CLP Regulation (EC) No 1272/2008 on the *classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on UltraShield Torch-On Felt SBS Membranes.

Design Considerations

4 General

4.1 UltraShield Torch-On Felt SBS Membranes are satisfactory for use in built-up bitumen specifications in warm roofs, including a surface protection, on flat, zero fall or pitched roofs with limited access or in inverted roof specifications on flat or zero fall roofs with limited access.

4.2 Decks to which the product is to be applied must comply with the relevant requirements of BS 6229 : 2018, BS 8217 : 2005 and, where appropriate, *NHBC Standards 2021*, Chapter 7.1.

4.3 Limited access roofs are defined for the purpose of this Certificate as those subjected only to pedestrian traffic for maintenance of the roof covering, cleaning of gutters, etc. Where traffic in excess of this is envisaged, such as pedestrian access roofs, additional protection must be provided (see section 9.1 of this Certificate and the relevant clauses of the Certificate holder's installation instructions).

4.4 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80. For design purposes, twice the minimum finished fall should be assumed unless a detailed analysis of the roof is available, including overall and local deflection, direction of falls, etc.

4.5 Pitched roofs are defined for the purpose of this Certificate as those having a fall in excess of 1:6.

4.6 Zero fall roofs are defined for the purpose of this Certificate as those having a finished fall of between 0 and 1:80.

4.7 Structural decks to which the system is to be applied must be suitable to transmit the dead and imposed loads experienced in service. Allowance needs to be made for loading deflections to ensure that the free drainage of water is maintained.

4.8 Imposed loads, dead loading and wind load specifications should be calculated by a suitably experienced and competent individual in accordance with BS EN 1991-1-1 : 2002, BS EN 1991-1-3 : 2003 and BS EN 1991-1-4 : 2005, and their UK National Annexes.

4.9 The drainage system for inverted and zero fall roofs must be correctly designed, and the following points should be addressed:

- provision made for access for maintenance purposes
- for zero fall roofs, it is particularly important to identify the correct drainage points, to ensure that drainage is sufficient and effective
- additional guidance for inverted roof specifications is given in BBA Information Bulletin No 4 *Inverted roofs – Drainage and U value corrections*.

4.10 Insulation materials to be used in conjunction with the products must be in accordance with the Certificate holder's instructions and be either:

- as described in the relevant clauses of BS 6229 : 2018, or
- the subject of a current BBA Certificate and used in accordance with, and within the limitations of, that Certificate.

4.11 The NHBC requires that the roof membranes, once installed, are inspected in accordance with *NHBC Standards 2021*, Chapter 7.1, Clause 7.1.12, and undergo an appropriate integrity test, where required. Any damage to the membrane is repaired in accordance with section 15 of this Certificate and reinspected.

5 Practicability of installation

Installation of UltraShield Torch-On Felt SBS Membranes must only be carried out by roofing contractors approved by the Certificate holder.

6 Weathertightness



The products, including joints, when completely sealed and consolidated, will adequately resist the passage of moisture into the interior of a building and so satisfy the requirements of the national Building Regulations.

7 Condensation risk



The AVCL provides effective control to the passage of liquid water and water vapour.

8 Properties in relation to fire



8.1 When protected by an inorganic covering (eg gravel or paving slabs) listed in the Annex of Commission Decision 2000/553/EC, the membrane is deemed to achieve a B_{ROOF}(t4) classification and so is unrestricted by the national Building Regulations with respect to proximity to a boundary.



8.2 In Wales and Northern Ireland, when used on flat roofs with the surface finishes listed below, the roof is also deemed to be unrestricted with respect to proximity to a boundary:

- bitumen-bedded stone chippings covering the whole surface to a depth of not less than 12.5 mm
- bitumen-bedded tiles of a non-combustible material
- sand and cement screed
- macadam.



8.3 The designation of other specifications should be confirmed by reference to the requirements of the documents supporting the national Building Regulations.



8.4 The product, when used in pitches greater than 70°, excluding upstands, should not be used on buildings in England and Wales that have a storey at least 18 m above ground level and which contain one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools.



8.5 The products, when used in pitches greater than 70°, excluding upstands, should not be used on buildings in Scotland that have a storey more than 11 m above ground level.

9 Resistance to wind uplift

9.1 The adhesion of the fully bonded products is sufficient to resist the effects of wind suction, elevated temperature and thermal shock conditions likely to occur in practice.

9.2 When fully adhered to insulation boards, the resistance to wind uplift will be dependent on the cohesive strength of the insulation and the method by which it is secured to the roof deck. This should be taken into account when the insulation material is selected.

9.3 The ballast requirements for inverted roof systems must be calculated by a suitably experienced and competent individual in accordance with the relevant parts of BS EN 1991-1-4 : 2005 and its UK National Annex. When using gravel ballast, the systems must always be loaded with a minimum depth of 50 mm of aggregate. In areas of high-wind exposure, the Certificate holder's advice should be sought. Alternatively, concrete slabs on suitable supports can be used.

10 Resistance to mechanical damage

10.1 The products can accept, without damage, the foot traffic and light concentrated loads associated with installation and maintenance. Where traffic in excess of this is envisaged, such as for maintenance of lift equipment, a walkway must be provided (for example, using concrete slabs supported on bearing pads). Reasonable care should be taken to avoid puncture by sharp objects or concentrated loads.

10.2 The products are capable of accepting minor structural movement while remaining weathertight.

11 Maintenance



11.1 The products must be the subject of six-monthly inspections and maintenance in accordance with BS 6229 : 2018, Chapter 7, to ensure continued satisfactory performance.

11.2 Where damage has occurred, it should be repaired in accordance with section 15 of this Certificate and the Certificate holder's instructions.

12 Durability



12.1 Under normal service conditions, the products will provide a durable waterproof covering with a service life in excess of 25 years.

12.2 Localised loss of the mineral surfacing may occur after some years in areas where complex detailing of the roof design is incorporated.

13 General

13.1 Installation of UltraShield Torch-On Felt SBS Membranes must be carried out in accordance with the Certificate holder's instructions, the relevant clauses of BS 8000-0 : 2014, BS 8000-4 : 1989, BS 6229 : 2018 and BS 8217 : 2005 and this Certificate.

13.2 Deck surfaces must be dry, clean and free from sharp projections such as nail heads and concrete nibs. If required, the substrate is prepared using a suitable primer at the recommended coverage rate for that primer prior to installation of the AVCL or base sheet in the case of inverted roof specifications.

13.3 The products may be laid in conditions normal to roofing work and must not be laid in rain, snow or heavy fog, or if the temperature falls below 5°C, unless precautions against condensation have been taken.

13.4 The roofing layers must always be installed with staggered overlaps and in such a manner that no counter-seams in the direction of the outlets are made.

13.5 At falls in excess of 5° (1:11), precautions against slippage, and requirements for mechanical fixing as required by BS 8217 : 2005, should be observed.

14 Procedure

14.1 Bonding is achieved by melting the lower surface by torching and pressing the membrane down. Care must be taken not to overheat the membranes.

14.2 The products are installed with side laps of 100 mm and end laps of 100 mm, ensuring that a continuous bead of bitumen exudes from the lap, with laps between the membrane and any base sheets offset by a minimum of 300 mm.

Warm roof

14.3 The Ultrashield POL25 is installed over the deck prior the installation of the insulation boards.

14.4 The insulation boards are installed by bonding with a suitable adhesive in accordance with the installation instructions of the insulation supplier. The insulation boards must be suitable for receiving torch-bonded membranes.

14.5 The Ultrashield POL45 is installed over the insulation boards followed by the POL55 capsheet.

14.6 A surface protection, for example 50 mm of well-rounded gravel ballast of a suitable size or 40 mm thick natural stone or concrete pavers, is installed over the waterproofing layer.

Inverted roof

14.7 The Ultrashield POL45 is installed over the substrate followed by the POL55 capsheet.

14.8 The insulation boards and, if required, a water-flow-reducing layer are installed over the waterproofing layer in accordance with the insulation supplier's installation instructions, and ballast applied in line with the wind uplift requirements for the site concerned. The insulation used must be suitable for inverted roof specifications.

15 Repair

In the event of damage, the product can be effectively repaired with a patch of the UltraShield POL 55 torch-bonded over the damaged area, and the protection reinstated in accordance with the Certificate holder's instructions.

16 Tests

16.1 An assessment was made on test data for the membranes in relation to:

- thickness
- width
- mass per unit area
- length
- watertightness (six metre head of water)
- water vapour transmission properties
- tensile strength
- elongation at break
- nail tear
- low temperature flexibility
- heat resistance
- peel strength of joints
- shear strength of joints
- dimensional stability
- the effect of water exposure on membrane joints
- the effect of heat ageing on low temperature flexibility and heat resistance for a 25 year equivalent.

16.2 An assessment was made on test data for Ultrashield POL 45 and POL 55 used in combination, for:

- static indentation, hard and soft substrates
- dynamic impact, hard and soft substrates.

16.3 An assessment was made on test data on the coating mass used in all the products, for:

- fines content
- ring and ball.

17 Investigations

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

Bibliography

- BS 6229 : 2018 *Flat roofs with continuously supported flexible waterproof coverings — Code of practice*
- BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*
BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*
- BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*
- BS EN 1991-1-1 : 2002 *Eurocode 1 : Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*
NA to BS EN 1991-1-1 : 2002 UK National Annex to *Eurocode 1 : Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*
- 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 13707 : 2013 *Flexible sheets for waterproofing — Reinforced bitumen sheets for roof waterproofing — Definitions and characteristics*
- BS EN 13970 : 2004 *Flexible sheets for waterproofing — Bitumen water vapour control layers — Definitions and characteristics*
- BS EN ISO 9001 : 2015 *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
- actual 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.