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Agrément Certificate
10/4729
Product Sheet 1

POLYGLASS ROOF WATERPROOFING MEMBRANES

POLYSHIELD ROOF WATERPROOFING MEMBRANES

This Agrément Certificate Product Sheet⁽¹⁾ relates to Polyshield Roof Waterproofing Membranes, for use in fully or partially bonded waterproofing systems on flat or pitched roofs with limited access and as a single-layer waterproofing in loose-laid and ballasted systems on flat roofs.

(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 membranes resist the passage of moisture to the interior of the building (see section 6).

Properties in relation to fire — in the opinion of the BBA, the systems, when used in a suitable specification, will enable a roof to be unrestricted under Building Regulations (see section 7).

Resistance to wind uplift — when correctly specified, the systems resist the effect of any wind suction likely to occur in practice (see section 8).

Resistance to foot traffic — the systems will accept the limited foot traffic and loads associated with the installation and maintenance of the systems without damage (see section 9).

Durability — under normal service conditions the systems will provide a durable waterproof covering with a service life in excess of 20 years (see section 11).

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 Second issue: 19 December 2013

Originally certified on 18 February 2010

Simon Wroe

Head of Approvals — Materials

Claire Curtis-Thomas

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

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, Polyshield Roof Waterproofing Membranes, if installed, used and maintained in accordance with 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) (as amended)

Requirement: B4(2)	External fire spread
Comment:	On suitable substructures the use of the membranes will be unrestricted under this Requirement. See sections 7.1 to 7.4 of this Certificate.
Requirement: C2(b)	Resistance to moisture
Comment:	Tests for water resistance on the membranes, including joints, indicate that the membranes meet this Requirement. See section 6.1 of this Certificate.
Regulation: 7	Materials and workmanship
Comment:	The membranes are acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2)	Fitness and durability of materials and workmanship
Comment:	The membranes can contribute to a construction meeting this Regulation. See sections 10, 11.1 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards applicable to construction
Standard: 2.8	Spread from neighbouring buildings
Comment:	On suitable substructures the use of the membranes will be unrestricted by the requirements, under clause 2.8.1 ⁽¹⁾⁽²⁾ of this Standard. See sections 7.1, 7.2 and 7.4 of this Certificate.
Standard: 3.10	Precipitation
Comment:	Tests for water resistance on the membranes indicate that the membranes can 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 6.1 of this Certificate.
Standard: 7.1(a)	Statement of sustainability
Comment:	The membranes 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 applicable to conversions
Comment:	All comments given for the membranes under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012

Regulation: 23(a)(i)(iii)(b)(i)	Fitness of materials and workmanship
Comment:	The membranes are acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.
Regulation: 28(b)	Resistance to moisture and weather
Comment:	Tests for water resistance on the membranes, including joints, indicate that the membranes meet this requirement. See section 6.1 of this Certificate.
Regulation: 36(b)	External fire spread
Comment:	On suitable substructures the use of the membranes will be unrestricted under the requirements of this Regulation. See sections 7.1 to 7.4 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) and 3 *Delivery and site handling* (3.3) of this Certificate.

Additional Information

NHBC Standards 2013

NHBC accepts the use of Polyshield Roof Waterproofing Membranes, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.1 *Flat roofs and balconies*.

CE marking

The Certificate holder has taken the responsibility of CE marking the products in accordance with harmonised European standard EN 13707 : 2004 +A2 : 2009. An asterisk (*) appearing in this Certificate indicates that data shown is given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Polyshield Roof Waterproofing Membranes are torch-applied, polyester-reinforced, atactic polypropylene, modified-bitumen roof waterproofing membranes, with a powdered talc or mineral finished upper face and a thermofusible thermoplastic film on the lower surface.

1.2 The talc or mineral finished membranes are manufactured to the nominal characteristics given in Table 1. The mineral finish colours are: slate grey, white, green, red, and other colours on request.

Table 1 Nominal characteristics

Characteristics (units)	Talc	Mineral
Thickness* (mm)	4.0	5.0
Width* (m)	1.0	1.0
Length* (m)	8.0	8.0
Mass per unit area* (kg.m ⁻²)	4.2	5.2
Watertightness*	pass	pass
Water vapour resistance factor* (μ)	20000	20000
Tensile strength* (N per 50 mm)		
longitudinal direction	≥ 900	≥ 900
transverse direction	≥ 750	≥ 750
Resistance to tearing* (N)		
longitudinal direction	200	200
transverse direction	200	200
Dimensional stability* (%)	≤ 0.3	≤ 0.3
Low temperature flexibility* (°C)	≤ -20	≤ -20
Heat resistance* (°C)	≥ 140	≥ 140
Static loading* (kg)	25	25
Resistance to impact* (mm)	1500	1500

1.3 Polyprimer is a primer for use with Polyshield consisting of a solution of bitumen in a mixture of aliphatic and chlorinated hydrocarbons.

1.4 Other ancillary items for use with the membranes include the following materials:

- Polyver ALU — a solar protective paint manufactured from aluminium metallic pigment, oxidised bitumen and solvents
- Polyver ACRIL — a water-based acrylic emulsion solar protective paint.

2 Manufacture

2.1 The membranes are manufactured by saturating the bases with bitumen and coating with an APP modified bitumen containing mineral filler and surface finishes applied.

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 Polyglass SpA has been assessed and registered as meeting the requirements of EN ISO 9001 : 2008 by Bureau Veritas (Certificate 223925).

2.4 The products are marketed in the UK by Polyglass Great Britain Ltd, Unit 1, Electrium Point, Ashmore Lake Way, Willenhall, West Midlands WV12 4HD. Tel: 01902 637422, Fax: 01902 637459, e-mail: info@polyglass-gb.com, website: www.polyglass.com

3 Delivery and site handling

3.1 The membranes are delivered to site in rolls sealed with tape on pallets and shrink-wrapped in polyethylene. The tape bears product name, manufacturer's name, size and batch number with appropriate CE marking.

3.2 Rolls must be stored upright and positioned in a clean and dry level area.

3.3 Polyprimer is classified under *The Chemicals (Hazard Information and Packaging Supply) Regulations 2009* (CHIP4)/*Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) 2009*, has a flashpoint of <21°C and is classified as 'highly flammable'. The product bears the appropriate hazard warnings.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Polyshield Roof Waterproofing Membranes.

Design Considerations

4 General

4.1 Polyshield Roof Waterproofing Membranes are satisfactory for use as partially or fully bonded waterproofing on flat and pitched roofs with limited access, as part of a built-up specification and where necessary in conjunction with appropriate felts to BS 8747 : 2007.

4.2 The talc finished membrane is also suitable for use as a loose-laid single waterproof covering, ballasted with aggregate on flat roofs with limited access or under heavy protection, such as concrete slabs, on flat roofs with regular pedestrian traffic.

4.3 The mineral finished membrane is suitable for use where appropriate as an exposed cap sheet or in detail work.

4.4 Flat roofs are defined for the purpose of this Certificate as those roofs having a minimum finished fall of 1:80. Pitched roofs are defined for the purpose of this Certificate as those having a fall in excess of 1:6.

4.5 Limited access roofs are defined for the purpose of this Certificate as those roofs subjected only to pedestrian traffic for maintenance of the roof waterproofing and cleaning of gutters, etc. Where traffic in excess of this is envisaged, special precautions such as additional protection to the membrane must be taken.

4.6 When designing flat roofs, twice the minimum finished fall should be assumed, unless a detailed analysis of the roof is available, including overall and local deflection, and direction of falls.

4.7 Decks to which the products are to be applied must comply with the relevant requirements of BS 6229 : 2003, BS 8217 : 2005 and, where appropriate *NHBC Standards 2013*, Chapter 7.1.

4.8 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 8217 : 2005, or
- the subject of a current BBA Certificate and be used in accordance with, and with the limitations of that Certificate.

5 Practicability of installation

The products are designed to be installed by a competent roofing contractor, experienced with this type of product.

6 Weathertightness



6.1 Results of test data confirm that the membranes, including joints, when completely sealed and consolidated will adequately resist the passage of moisture to the inside of the building and so meet the requirements of the national building regulations:

England and Wales — Approved Document C, Requirement C2(b), Section 6

Scotland — Mandatory Standard 3.10, clauses 3.10.1 and 3.10.7

Northern Ireland — Regulation 28(b).

6.2 The membranes are impervious to water and when used as described will give a weathertight roof waterproofing capable of accepting minor structural movement without damage.

7 Properties in relation to fire



7.1 Tests indicate that a product comprising 19 mm thick plywood deck, one layer BS 747 : 1977 type 3B felt, 50 mm of glass tissue-backed polyurethane insulation board, one layer of 3 mm thick Polybond polyester-reinforced bitumen membrane, fully bonded, and one layer of torch-applied Polyshield mineral finished cap sheet will be unrestricted.

7.2 The membranes, when used in protected specifications, including on inorganic covering listed in the Annex of Commission Decision 2000/553/EC, can be considered to be unrestricted under the national requirements.



7.3 When used on flat roofs with the surface finishes (listed below) defined in part iii of Table 5 of Appendix A of Approved Document B of the Building Regulations, England and Wales, or Technical Booklet E, Table 4.6 of Part IV of the Building Regulations, Northern Ireland the roof is deemed to be of classification B_{ROOF} (t4).

Surface finishes

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



7.4 The designation of other specifications (eg on combustible substrates) should be confirmed by:

England and Wales — test or assessment to Approved Document B, Appendix A, Clause A1

Scotland — tests conform to Mandatory Standard 2.8, clause 2.8.1

Northern Ireland — test or assessment by a UKAS accredited laboratory, or an independent consultant with appropriate experience.

8 Resistance to wind uplift

8.1 Results of test data confirm that the adhesion of the bonded systems to decking or bituminous felt is sufficient to resist the effects of wind suction, elevated temperature and thermal shock conditions likely to occur in practice.

8.2 The precise ballast requirement should be calculated in accordance with BS EN 1991-1-4 : 2005 and UK National Annex but should not be below a minimum thickness of 50 mm. The use of concrete slabs on suitable protective supports should be considered in areas of high design wind loads.

9 Resistance to foot traffic

The membranes can accept without damage the limited foot traffic and light concentrated loads associated with installation and maintenance operations. Where traffic in excess of this is envisaged, additional protection to the membrane in accordance with the Certificate holder's instructions must be provided. Reasonable care is required, however, to avoid puncture by sharp objects or concentrated loads.

10 Maintenance



The installed membranes should be subjected to regular annual inspections and roof drains kept clear as is good practice with all roofing membranes.

11 Durability



11.1 Accelerated weathering tests confirm that satisfactory retention of physical properties is achieved. All available evidence indicates that the membranes should have a service life in excess of 20 years.

11.2 With the mineral finished membrane, it is possible that some localised loss of mineral surfacing may occur after some years in areas where complex detailing of the roof design is incorporated.

12 Reuse and recyclability

The product comprises modified bitumen and polyester, which can be recycled.

Installation

13 General

13.1 Installation of Polyshield Roof Waterproofing membranes must be in accordance with the Certificate holder's instructions, the relevant Clauses of BS 8000-4 : 1989 and BS 8217 : 2005.

13.2 Substrates to which the roof waterproofing membranes are applied must be firm, dry and clean, and free from sharp projections such as nail heads and concrete nibs.

13.3 The membranes should not be laid in rain, snow or heavy fog, nor if the temperature falls below 5°C, unless precautions against condensation can be taken.

13.4 If the roof is likely to be subject to uncontrolled pedestrian access, the substructure must meet the requirements of BS 8217 : 2005, and to prevent damage to the roof covering one of the appropriate surface finishes referred to in Clauses 8.19 and 9.2 of the Code must be used.

13.5 At falls in excess of 1:11, the nominal provision for mechanical fixings as required by BS 8217 : 2005 should be observed.

13.6 On completion of the roof, the talc finished membrane, when used as a top layer, may have a surface finish applied in accordance with BS 8217 : 2005, Clauses 8.19 and 9.2. Surface finishes in the Code of Practice include:

- stone aggregate in dressing compound
- precast concrete paving slabs
- proprietary tiles on bonding compound.

13.7 When using the mineral surface finished membrane, further surface protection is not required when it is used on roofs with limited access.

13.8 When used for remedial work, existing waterproofing layers must be made sound and existing surface finishes (eg surface dressing) must be removed and then primed.

13.9 Concrete substrates where partial or full applications are to be made should be primed with Polyprimer at an application rate between $150 \text{ g}\cdot\text{m}^{-2}$ and $400 \text{ g}\cdot\text{m}^{-2}$ depending upon the porosity of the concrete.

13.10 Where additional protection against wind uplift is not required, the surface of the membranes can be finished with a solar protective coating. Such paints should be the subject of regular inspection to ensure their effectiveness.

14 Procedure

Fully bonded applications

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 coating.

14.2 Side laps should be a minimum of 100 mm and end laps should be a minimum of 150 mm. Where used partially bonded, the membrane must be fully bonded to the substrate at least one metre immediately before and after the end lap. A bead of molten material must extrude from all laps to indicate a satisfactory seal and which should be levelled out using a heated, rounded tip trowel.

Partially bonded applications

14.3 A layer of type 3G felt to BS 8747 : 2007 should be loose-laid edge to edge over the substrate.

14.4 The membrane is then fully torch welded onto the perforated layer ensuring that the bitumen seeps regularly into the perforations.

Loose-laid applications

14.5 Side laps should be a minimum of 100 mm and end laps should be a minimum of 150 mm. The laps should be welded by torching the lower surface and pressing the membrane down.

14.6 With loose-laid systems the membranes should be ballasted to combat the effects of wind uplift. This can be achieved by:

- 0.2 mm thick polythene protective sheet by at least 50 mm of well-rounded gravel (gravel size 15/30 mm)
- 0.2 mm thick polyethylene or a non-woven (polyester) sheet (minimum mass $300 \text{ g}\cdot\text{m}^{-2}$) covered by a 20 mm thick layer of sand, overlaid with a layer of concrete paving slabs⁽¹⁾.

(1) If paving on plastic pads the sand is not required.

15 Repair

In the event of damage, the membranes can be effectively repaired after cleaning, with the membranes torch welded to the damaged area.

Technical Investigations

16 Tests

Tests were conducted on Polyshield Roof Waterproofing Membranes and the results assessed in relation to:

coating mass

- softening point (ring and ball)
- cold temperature flexibility
- fines content
- penetration
- heat ageing

reinforcement

- mass per unit area
- tensile strength
- elongation

membrane

- thickness
- width
- mass per unit area
- tensile strength
- elongation
- resistance to water penetration
- nail tear
- dimensional stability
- low-temperature flexibility
- heat resistance
- static indentation
- dynamic indentation
- fatigue cycling
- slip resistance
- unrolling at low temperature
- loss of mineral surface
- resistance to wind uplift
- thermal shock
- tensile strength of joint
- peel strength of joint
- air leakage at joints
- heat ageing
- UV ageing (Xenotest)
- effect of water soak.

17 Investigations

17.1 Data from the original Certificate (93/2874) were re-assessed as part of the assessment for this Certificate.

17.2 A factory visit was carried out to evaluate the manufacturing practice and quality control procedures employed in the manufacture of the membranes.

17.3 An evaluation was made of reports of fire tests.

17.4 An assessment of data from the Initial Type Testing for CE marking to EN 13707 : 2004 was made.

Bibliography

BS 747 : 1977 *Specification for roofing felts*

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

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 8747 : 2007 *Reinforced bitumen membranes (RBMs) for roofing — Guide to selection and specification*

BS EN 1991-1-4 : 2005 + *UK National Annex*

EN 13707 : 2004 + Amendment 2: 2009 *Flexible sheets for waterproofing — Reinforced bitumen sheets for roof waterproofing — Definitions and characteristics*

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
- 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.