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Agreement Certificate

05/4203

Product Sheet 1

IKO POLYMERIC SINGLE PLY ROOF WATERPROOFING MEMBRANES

SPECTRAPLAN SM

This Agreement Certificate Product Sheet⁽¹⁾ relates to Spectraplan⁽²⁾ SM, thermoplastic polyolefin elastomer waterproofing membranes, for use on flat and pitched roofs with limited access. Applications include mechanically fixed, loose-laid and ballasted, and inverted roofs.

(1) Hereinafter referred to as 'Certificate'.

(2) Spectraplan is a registered trademark of IKO PLC.

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 to the interior of the building (see section 6).

Properties in relation to fire — the products, when used in a suitable specification, can enable a roof to be unrestricted under the national Building Regulations (see section 7).

Resistance to wind uplift — the products will resist the effects of any wind suction likely to occur in practice (see section 8).

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

Durability — under normal conditions, the products will provide a durable waterproof covering with a service life in excess of 30 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

John Albon – Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

Originally certificated on 3 March 2005

This Certificate was amended on 22 May 2024 as part of a transition of The BBA Agrément Certificate scheme delivered under the BBA's ISO/IEC 17020 accreditation. This Certificate was issued originally under accreditation to ISO/IEC 17065. Sections marked with the symbol † are not issued under accreditation. Full conversion to the ISO/IEC 17020 format will take place at the next Certificate review. The BBA is a UKAS accredited Inspection Body (No.4345). Readers **MUST** check the validity 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 must not be relied upon.

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Regulations

In the opinion of the BBA, Spectraplan SM, 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(2)	External fire spread
Comment:		On suitable non-combustible substructures, the products can enable a roof to be unrestricted under this Requirement. See section 7 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The products, including joints, can contribute to satisfying this Requirement. See section 6.1 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The products 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)	Durability, workmanship and fitness of materials
Comment:		The use of the products satisfies the requirements of this Regulation. See sections 10 and 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 non-combustible substructures, the products can be regarded as having low vulnerability under clause 2.8.1 ⁽¹⁾⁽²⁾ of this Standard. See section 7 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The products, including joints, can contribute to satisfying 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 products 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:		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 11.1 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The products, including joints, can contribute to satisfying the requirements of this Regulation. See section 6.1 of this Certificate.

Regulation:	36(b)	External fire spread
Comment:	On suitable non-combustible substructures, the use of the products can be unrestricted by this Regulation. See section 7 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* (1.1) and 3 *Delivery and site handling* (3.3) of this Certificate

Additional Information

NHBC Standards 2018

In the opinion of the BBA, Spectraplan SM, 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 and balconies*.

CE marking

The Certificate holder has taken the responsibility of CE marking the products in accordance with harmonised European Standard BS EN 13956 : 2012. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Spectraplan SM are woven polyester scrim reinforced, flexible thermoplastic polyolefin (TPE), single-ply roof waterproofing membranes and are available in two specifications with the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Characteristic (unit)	Membrane	
	SM120	SM150
Thickness (mm) (+10%/-5%)	1.2	1.5
Length (m) (+1%/-0.5%)	20	20
Widths available (m) (+1%/-0.5%)	1.5, 2.05, 2.12	1.5, 2.05, 2.12
Mass per unit area* (kg·m ⁻²) (+10%/-5%)	1.3	1.6
Tensile strength* (N per 50 mm) MD/TD	≥1000	≥1000
Elongation at break* (%)	≥15	≥15
Tear resistance* (N)	≥150	≥150
Peel strength of joints* (N per 50 mm)	≥400	≥400
Shear strength of joints* (N)	≥1000	≥1000
Nail tear (N)	700	700
Impact resistance* (mm)		
Method A	1100	1100
Method B	450	450
Static load* (kg)	≥20	≥20
Dimensional Stability 6 hrs at 80 °C (%)	≤1.0	≤1.0
Flexibility at low temperatures* (°C)	≤-35	≤-35
Watertightness	Pass	Pass
Equivalent air thickness (S _d) (m)	120	150

1.2 The membranes are available in light grey, approximating to RAL colour reference 7035.

1.3 Other ancillary items⁽¹⁾ used with the membranes, but outside the scope of this Certificate, include:

- Bond and Seal Activating Cleaner — a solution for the preparation of non-porous substrates
- Bond and Seal Mastic — elastic polyurethane sealant
- IKOfix Telescopic Fixing Plates and Screw Fasteners — for membrane and insulation fixing
- IKO Enertherm Boards — polyisocyanurate (PIR) thermal insulation boards
- IKOfix Pressure Plates — metal plates for membrane and insulation fixing
- IKOfix Toothed Flatbars — steel fixing strip for membrane anchorage
- Preformed Spectraclad — drip and chase termination details
- Spectrabond TPE Contact Adhesive — for use at details and upstands
- Spectraclad Coated Metal — TPE-coated steel for fabrication of perimeter details
- IKO Strike — lightning conductor clips for heat welding to membranes
- Spectraplan D — homogenous roofing membrane for use in complex detailing
- Spectraplan Standing Seam Profile — TPE preformed simulated standing seam profile
- Spectraplan Walkway — heavy-duty grid-patterned TPE membrane for use on walkways
- Spectrastex Separation/Levelling Layers — a range of polyester geotextile isolation/protection fleeces
- Spectravap — loose-laid polyethylene air and vapour control layer
- TPE outlet pipes
- vapour control layers (AVCLs) — a range of torch-on, pour and roll, and self-adhesive bituminous AVCLs.

(1) Details of the full specifications of these items can be obtained from the Certificate holder.

2 Manufacture

2.1 The membranes are manufactured by laminating two extruded TPE sheets, sandwiching the polyester reinforcement.

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 IKO PLC has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BSI (Certificate Q 05233).

3 Delivery and site handling

3.1 The membranes are delivered to site in rolls wrapped in plastic with labels bearing the product name, Certificate holder's name, product dimensions, article and batch numbers.

3.2 The rolls should be stored horizontally under cover, on a clean, level surface.

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 Spectraplan SM.

Design Considerations

4 Use

4.1 Spectraplan SM are satisfactory for use on flat and pitched roofs with limited access in the following applications:

- mechanically fastened
- loose-laid and ballasted⁽¹⁾ (including inverted roofs).

(1) For ballasted installations where the roof slope is greater than 2°, the advice of the Certificate holder must be sought.

4.2 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, additional protection to the membranes must be provided (see section 9).

4.3 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80. Pitched roofs are defined for the purpose of this Certificate as those having a fall greater than 1:6. When designing flat roofs, twice the minimum finished fall should be assumed, unless a detailed analysis of the roof is available, including, for example, overall and local deflection and direction of falls.

4.4 Structural decks to which the products are to be applied must be able to transmit the dead and imposed loads experienced in service, including additional loads imposed by ballasted roofs.

4.5 The drainage system must be correctly designed, and provision made for access for maintenance purposes. Dead loads can increase if the drains become partially or fully blocked.

4.6 Imposed loads, dead loading and wind load specifications are calculated by a suitably competent and experienced 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.

4.7 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 2018*, Chapters 7.1. Additional guidance for inverted roof specifications is given in BBA Information Bulletin No 4 *Inverted roofs — Drainage and U value corrections*.

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 used in accordance with, and within the scope of, that Certificate.

5 Practicability of installation

The products must be installed by contractors who have been trained and approved by the Certificate holder.

6 Weathertightness



6.1 The membranes, including joints, when completely sealed and consolidated, will adequately resist the passage of moisture to the inside of the building and so satisfy the requirements of the national Building Regulations.

6.2 The products are impervious to water and will provide a weathertight roofing capable of accepting minor structural movement without damage.

7 Properties in relation to fire



7.1 In the opinion of the BBA, a system comprising a 1 mm thick profiled metal deck, covered on its upper surface with a 0.8 mm thick polypropylene VCL, and a 100 mm thick perforated mineral-coated glass-tissue faced polyisocyanurate (PIR) foam insulation board, covered by Spectraplan SM TPE, can be classified as B_{ROOF}(t4) in accordance with BS EN 13501-5 : 2016.

7.2 The products, when used in protected or loose-laid and ballasted roof specifications, including an inorganic covering listed in the Annex of Commission Decision 2000/553/EC, can also be considered to be unrestricted.

7.3 Designation of other specifications (eg on combustible substrates) should be confirmed by:

England and Wales — test or assessment in accordance with Approved Document B, Appendix A, clause 1

Scotland — tests to confirm compliance with Mandatory Standard 2.8, with reference to clause 2.8.1⁽¹⁾⁽²⁾

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

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

8 Resistance to wind uplift

8.1 The resistance to wind uplift of a mechanically fastened waterproofing layer is provided by the fasteners passing through the membrane into the substrate. The number and position of fixings will depend on a number of factors, including:

- wind uplift forces to be restrained
- pull-out strength of fasteners
- tensile properties of the membrane
- appropriate calculation of the safety factors.

8.2 The wind uplift forces must be calculated by a suitably experienced and competent individual in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. On this basis, the number of fixings required should be established using a maximum permissible load of 0.6 kN per fixing.

8.3 When the products are used in a loose-laid and ballasted system, the precise ballast requirements should be calculated in accordance with the relevant parts of BS EN 1991-1-4 : 2005. The use of concrete slabs on suitable supports should be considered in areas of high wind exposure, and the advice of the Certificate holder should be sought.

9 Resistance to mechanical damage

The products can accept the limited foot traffic associated with installation and maintenance. Reasonable care should be taken to avoid sharp objects or concentrated loads. Where regular traffic is envisaged; for example, for maintenance of lift equipment, a walkway should be provided using concrete slabs supported on bearing pads.

10 Maintenance



The products should be subjected to regular annual inspections and roof drains kept clear, as is good practice on all flat roofs.

11 Durability



11.1 The products, when subjected to normal conditions of use in a roof, will retain their integrity for a period in excess of 30 years.

11.2 In environments where the membranes are in contact with certain organic solvents and oil-based products, the life expectancy may be reduced. In cases of doubt, the advice of the Certificate holder should be sought.

12 Reuse and recyclability

The products are manufactured from TPE and polyester, which can be recycled.

Installation

13 General

13.1 Installation of Spectraplan SM must be carried out by installers trained and approved by the Certificate holder in accordance with the Certificate holder's instructions, BS 8000-0 : 2014, BS 8000-4 : 1989 and this Certificate.

13.2 Substrates to which the products are to be applied must be sound, dry, clean and free from sharp projections such as nail heads and concrete nibs. When used over a rough substrate, a suitable protection layer must be placed over the substrate.

13.3 Installation should not be carried out during inclement weather (eg rain, fog or snow). When the temperature is below 5°C suitable precautions against surface condensation must be taken, in accordance with the Certificate holder's instructions.

13.4 When using a loose-laid specification, account should be taken in the design of the deck of the extra dead loading owing to the weight of the aggregate.

13.5 Detailing must be formed in accordance with the Certificate holder's instructions.

14 Procedure

Mechanically fastened

14.1 Spectraplan SM are unrolled flat over the substrate without undulations. Prior to installation of the fasteners, the membranes must be temporarily secured against wind uplift. If installing on a profiled metal deck, the length must be perpendicular to the direction of the deck.

14.2 The membranes must be allowed to condition prior to installing for 5 to 10 minutes, depending on the ambient temperature.

14.3 The membranes are fixed to the deck (through insulation boards, where appropriate) in the joint overlaps prior to the welding of joint seams. IKOfix fasteners are positioned 30 to 35 mm from the edge of the membrane, at fixing centres specified by the Certificate holder for the specific project. Fasteners must be fixed using the appropriate installation tool for the fixing.

14.4 The next roll or length of membrane is unrolled, ensuring that the end laps are staggered by a minimum of 60 mm, and with side laps of 110 mm over the previously installed sheet.

14.5 The membrane is fixed at the edges using IKOfix Toothed Flatbars or by hot-air welding to mechanically fastened Spectraclad Coated metal flashings (see section 15).

14.6 The side laps are hot-air welded with an automatic welder or hot air-gun and allowed to cool completely (see section 15).

14.7 In corners and other areas where additional fastening is required, IKOfix fasteners are installed through the roof sheet, and covered with a 200 mm wide strip of Spectraplan SM. Both sides and ends are hot-air welded (see section 15).

14.8 At upstands and all roof penetrations, Spectraplan SM is secured with an IKOfix Toothed Flatbar. A 50 by 50 mm piece of Spectraplan SM is used to cover the 10 mm gap in the toothed bar and welded to the roof sheet. The toothed bar is waterproofed with the upstand flashing hot-air welded to the roof sheet (see section 15).

Loose-laid inverted and ballasted

14.9 The appropriate Spectratex Separation/Levelling Layer is unrolled over the prepared deck. All end and side laps must be a minimum of 100 mm. Spectraplan SM is unrolled over the Spectratex Separation/Levelling Layer.

14.10 The next roll or length of membrane is unrolled, ensuring that the end laps are staggered by a minimum of 60 mm, with side laps of 80 mm over the previously installed sheet. The side laps are hot-air welded and allowed to cool completely (see section 15).

14.11 Upstands and roof penetrations are secured as in sections 14.5 and 14.8.

14.12 The roof area must be thoroughly checked for damage and weak welds, paying close attention to all cross joints and T-seams.

14.13 In an inverted roof system, the approved thermal insulation is installed over the membrane, ensuring that all insulation boards are laid with staggered joints and the boards are free from debris.

14.14 If round washed pebbles are used as ballast, the Spectratex Separation/Levelling Layer must be installed to a minimum height of 50 mm above the height of the ballast. Only approved ballast may be used. Reference should be made to the Certificate holder for guidance.

14.15 The membrane must be ballasted using a minimum depth of 50 mm of aggregate. In areas of high wind loads, additional ballast such as concrete pavers, set on a suitable protective layer, may be necessary.

15 Jointing

15.1 The areas to be welded must be clean, dry and free from contamination. Where required, surfaces must be cleaned in accordance with the Certificate holder's instructions.

15.2 Joints are made using either automatic or hand-operated machines, with the temperature set in accordance with the Certificate holder's instructions.

15.3 The final welded width of the joint must be a minimum of 30 mm when welded with an automatic welding machine, and 40 mm when welded with a hand-operated machine.

15.4 The side laps are fully hot-air welded and allowed to cool completely.

15.5 The integrity of the seam must be tested with a suitable metal probe, and any weaknesses repaired immediately.

15.6 Flashings must be formed in accordance with the Certificate holder's instructions.

16 Repair

Any damage can be repaired by cleaning the affected area and applying a patch of the appropriate membrane in accordance with the Certificate holder's instructions.

17 Tests

Test data were assessed for Spectraplan SM for the following properties:

- thickness
- mass per unit area
- width
- length
- flatness
- tensile strength and elongation
- resistance to tearing
- nail tear
- dimensional stability
- low temperature foldability
- watertightness
- static indentation
- dynamic impact
- shear resistance of joints
- peel strength of joints
- effects of heat ageing
- effects of exposure to moisture
- effects of long term UV ageing
- bitumen resistance
- resistance to wind uplift.

18 Investigations

18.1 Data on fire performance of the membranes were assessed.

18.2 Visits to existing sites installed were carried out and samples were taken to assess the durability of the products under normal service conditions.

18.3 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 : 2003 *Flat roofs with continuously supported 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 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 13501-5 : 2016 *Fire classification of construction products and building elements — Classification using data from external fire exposure to roof tests*

BS EN 13956 : 2012 *Flexible sheets for waterproofing — Plastic and rubber sheets for roof waterproofing — Definitions and characteristics*

BS EN ISO 9001 : 2015 *Quality Management System — Requirements*

Conditions of Certificate

Conditions

1. This Certificate:

- relates only to the product 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.

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.

3 This Certificate will be displayed on the BBA website, and the Certificate Holder is entitled to use the Certificate and Certificate logo, provided that the product 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.

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

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 or any other product
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product
- actual installations of the product, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to UKCA, UKNI or CE marking.

6. Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product which is contained or referred to in this Certificate is the minimum required to be met when the product 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.

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