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**Agrément
Certificate
No 05/4203**

Designated by Government
to issue
European Technical
Approvals

SPECTRAPLAN S ROOF WATERPROOFING SYSTEMS

Revêtement d'étanchéité
Dachabdichtungen

Product




• THIS CERTIFICATE RELATES TO SPECTRAPLAN S ROOF WATERPROOFING SYSTEMS, CONSISTING OF SINGLE-PLY POLYMERIC SHEETS.

• The products are for use as waterproofing systems on suitably designed flat and pitched roofs with limited access.

• The products are marketed in the United Kingdom by Ruberoid Building Products Ltd, (member of IKO Group) Appley Lane North, Appley Bridge, Wigan, Lancashire WN6 9AB.
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Ruberoid Technical Services
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Regulations — Detail Sheet 1

1 The Building Regulations 2000 (as amended) (England and Wales)

 The Secretary of State has agreed with the British Board of Agrément the aspects of performance to be used by the BBA in assessing the compliance of roof waterproofing systems with the Building Regulations. In the opinion of the BBA, Spectraplan S Roof Waterproofing Systems, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement: B4(2)	External fire spread
Comment:	Data obtained from tests to BS 476-3 : 1958 indicate that on suitable non-combustible substructures the use of the systems will enable a roof to be unrestricted under the requirements of this Regulation. See the tinted areas of the <i>Properties in relation to fire</i> section of the accompanying Detail Sheet.
Requirement: C2(b)	Resistance to moisture
Comment:	Data for water resistance on the membranes, including joints, indicate that the systems meet this Requirement. See the tinted area of the <i>Weather-tightness</i> section of these Front Sheets.
Requirement: Regulation 7	Materials and workmanship
Comment:	The systems are acceptable materials. See the tinted areas of the <i>Durability</i> section of the accompanying Detail Sheet.

continued

continued

- Installation must be carried out by trained and approved operatives.

- Spectraplan is a registered Trademark of the IKO Group.

These Front Sheets must be read in conjunction with the accompanying Detail Sheet, which provides information specific for the membranes.

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2 The Building Standards (Scotland) Regulations 1990 (as amended)



In the opinion of the BBA, Spectraplan S Roof Waterproofing Systems, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Technical Standards as listed below.

Regulation:	10	Fitness of materials and workmanship
Standard:	B2.1	Selection and use of materials, fittings, and components, and workmanship
Comment:		The product can contribute to a construction meeting this Standard. See the <i>Installation</i> part of the accompanying Detail Sheet.
Standard:	B2.2	Selection and use of materials, fittings, and components, and workmanship
Comment:		The product is an acceptable material. See the tinted area of the <i>Durability</i> section of the accompanying Detail Sheet.
Regulation:	12	Structural fire precautions
Standard:	D9.1	Fire spread from an adjoining building
Comment:		Test data to BS 476-3 : 1958 indicate that on suitable non-combustible substructures the use of the systems will be unrestricted by the requirements of this Standard. See the tinted areas of the <i>Properties in relation to fire</i> section of the accompanying Detail Sheet.
Regulation:	17	Resistance to moisture
Standard:	G3.1	Resistance to precipitation — Resistance to precipitation
Comment:		Data examined for water resistance on the membranes, including joints, indicate that the use of the systems can enable a roof to satisfy the requirements of this Standard. See the tinted area of the <i>Weathertightness</i> section of these Front Sheets.

3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, Spectraplan S Roof Waterproofing Systems, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The systems are acceptable materials. See the tinted areas of the <i>Durability</i> section of the accompanying Detail Sheet.
Regulation:	C4	Resistance to ground moisture and weather
Comment:		Data for water resistance on the membranes, including joints, indicate that the use of the systems can enable a roof to satisfy the requirements of this Regulation. See the tinted area of the <i>Weathertightness</i> section of these Front Sheets.
Regulation:	E5	External fire spread
Comment:		Test data to BS 476-3 : 1958 indicate that on suitable non-combustible substructures the use of the systems will be unrestricted by the requirements of this Regulation. See the tinted areas of the <i>Properties in relation to fire</i> section of the accompanying Detail Sheet.

4 Construction (Design and Management) Regulations 1994 (as amended) Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See sections: 1 *Description* (1.2) and 2 *Delivery and site handling* (2.3) of the accompanying Detail Sheet.

5 General

5.1 Limited access roofs are defined for the purpose of this Certificate as those roofs subjected only to pedestrian traffic for maintenance of the roof covering 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.

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

5.3 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, Chapter 7.1 or the Zurich Building Guarantees Technical Standards, Page 234.

5.4 Insulation systems or materials used in conjunction with the products must be either:

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

5.5 Spectraplan S membranes are compatible with bitumen. Contact with certain organic (hydrocarbon-based) solvents and oil-based products should be avoided as the membranes have limited compatibility with these products. If contact with such products is likely, a separating layer should be interposed before installing the waterproofing sheet. Where doubt arises, the advice of the Certificate holder or Ruberoid Technical Services should be sought.

6 Weathertightness



6.1 Data confirm that the membranes, and joints in the membranes, when completely sealed, will adequately resist the passage of moisture to the inside of the building, and so meet the requirements of:

England and Wales

Approved Document C, Requirement C2, Section 6.0

Scotland

Standard G3.1, Regulation 17

Northern Ireland

Regulation C4.

6.2 The membranes are impervious to water and, when used in one of the systems described in this Certificate, will achieve a weathertight roof capable of accepting minor structural movement without damage.

7 Resistance to foot traffic

7.1 Data indicate that the membranes can withstand, without damage, the limited foot traffic and light concentrated loads associated with the installation and maintenance operations. Reasonable care should be taken, however, to avoid sharp objects or concentrated loads.

7.2 In a situation where, regular traffic is envisaged, eg maintenance of lift equipment, a walkway should be provided by using either concrete slabs supported on bearing pads or an anti-slip walkway with or without a protection sheet. The advice of the Ruberoid Technical Services should be sought on the most appropriate method to be used with the amount of traffic involved.

8 Maintenance

8.1 Roofs covered with Spectraplan S membranes should be the subject of annual inspections, as is good practice with waterproofing systems, to ensure continued security and performance, especially those roofs without ballast.

8.2 In the event of accidental damage, repairs can be carried out by cleaning the area around the damage and applying a patch of the appropriate membrane in accordance with the Certificate holder's instructions.

Bibliography

BS 476-3 : 1958 *Fire tests on building materials and structures — External fire exposure roof test*

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

BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*

Conditions of Certification

9 Conditions

9.1 This Certificate:

- (a) relates only to the product that is named, described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) is valid only within the UK;
- (d) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (e) is copyright of the BBA;
- (f) is subject to English law.

9.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

9.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabrication including all related and relevant processes thereof:

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;

(b) continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine; and

(c) are reviewed by the BBA as and when it considers appropriate.

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

- (a) the presence or absence of any patent, intellectual property or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the actual works in which the product is installed, used and maintained, including the nature, design, methods and workmanship of such works.

9.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the installation and use of this product.



In the opinion of the British Board of Agrément, Spectraplan S Roof Waterproofing Systems are fit for their intended use provided they are installed, used and maintained as set out in this Certificate. Certificate No 05/4203 is accordingly awarded to IKO EUROPE n.v.

On behalf of the British Board of Agrément

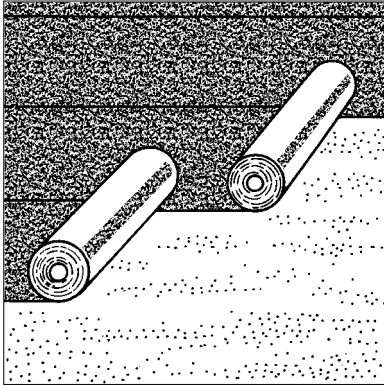
A handwritten signature in black ink, appearing to read 'P. C. Newson', is written over a light grey background.

Chief Executive

Date of issue: 3rd March 2005

SPECTRAPLAN SM120 AND SM150

Product



• THIS DETAIL SHEET RELATES TO SPECTRAPLAN SM120 AND SM150, A POLYESTER REINFORCED FLEXIBLE THERMOPLASTIC POLYOLEFIN ELASTOMER (TPE) MEMBRANE.

• The membrane is for use in mechanically fixed or loose-laid and ballasted waterproofing systems on flat and pitched roofs with limited access.

This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding the Building Regulations, general information relating to the product, and the Conditions of Certification, respectively.

Technical Specification

1 Description

1.1 Spectraplan SM120 and SM150 is a polyester (85 gm^{-2}) reinforced TPE membrane, manufactured by laminating two calendered TPE sheets sandwiching the polyester reinforcement.

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

Table 1 Nominal characteristics

Characteristic (units)	Membrane	
	SM120	SM150
Thickness (mm)	1.25	1.55
Roll width (mm)	1025 and 2050	
Roll length (m)	20.0	15.0
Roll weight (kg)	27 and 53.5	24 and 48
Colours	light grey (LG) and dark grey (DG)	

1.3 Ancillary items for use with the systems include:

- Spectrafix Mechanical Fastening System — for mechanically fastened systems
- prefabricated parts — for use in detailing and at perimeters
- Spectrabond TPE contact adhesive — a contact adhesive for use at details and upstands
- Spectraseal Mastic Sealant — for sealing exposed Spectraplan S membranes at detailing and wall finishing
- Spectraplan SA120 — self-adhesive membrane for use on vertical substrates

- Superbar Double Stick — for use as a vapour barrier
- Spectrabar and Spectra Coated Metal — a range of metal edging and terminators.

1.4 Quality control checks are carried out during production and on the finished product. Checks on the final product include:

- dimensions
- tensile strength and elongation
- tear resistance
- dimensional stability
- joint peel
- interlaminar strength
- low temperature foldability.

2 Delivery and site handling

2.1 Rolls are wrapped in plastic with labels bearing the product name, manufacturer's name, product dimensions, article number and batch number.

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

2.3 Spectrabond TPE contact adhesive has a flashpoint of $<0^{\circ}\text{C}$ and is classified Extremely Flammable under the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP3), carries the appropriate hazard warning and is stored in accordance with the Highly Flammable Liquids and Liquefied Petroleum Gases Regulations 1997.

3 General

Spectraplan SM120 and SM150 are satisfactory for use as mechanically-fixed, waterproofing layer on flat or pitched roofs or loose-laid and ballasted systems on flat roofs with limited access.

4 Resistance to wind uplift

4.1 The resistance to wind uplift of the membrane is provided by mechanical fasteners secured to the deck and passing through the membrane. The number of fixings will depend on a number of factors, including:

- wind uplift forces to be resisted
- the pull-out strength of fasteners
- elastic limit of the membrane
- appropriate safety factors.

4.2 The number of fixings used should be established by reference to the wind uplift forces calculated in accordance with BS 6399-2 : 1997 on the basis of the maximum permissible loads.

4.3 When used in a loose-laid and ballasted system, the precise ballast requirements should be calculated in accordance with the relevant parts of BS 6399-2 : 1997. The use of concrete slabs, on suitable supports should be considered in areas of high wind exposure and the advice of Ruberoid Technical Services should be sought.

5 Properties in relation to fire



5.1 When tested in accordance with BS 476-3 : 1958, a system comprising an 18 mm thick plywood deck, covered on its upper surface with a polyethylene vapour control layer, a 50 mm thick glass-tissue faced polyurethane foam (pentane blown) insulation board, covered by 1.5 mm thick Spectraplan SM150 achieved an EXT.F.AC rating.

5.2 When used in a loose-laid and ballasted specification including a minimum surface finish of 50 mm aggregate, the membranes shall be deemed to satisfy BS 476-3 : 1958 designation EXT.F.AA.

5.3 The designation of other specifications, for example, when used on combustible substrates, should be confirmed by:

England and Wales

Test or assessment in accordance with Approved Document B, Appendix A, Clause A1

Scotland

Test to conform to Standard D9.1

Northern Ireland

Test or assessment by a UKAS accredited laboratory, or an independent consultant with appropriate experience.

5.4 Systems comprising Spectraplan SM120 applied on mineral wool insulation, or EPS board or PIR insulation have been tested to DD ENV 1187 : 2002.

6 Durability



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

Installation

7 General

7.1 Installation of Spectraplan SM120 and SM150 must be carried out by trained and approved installers working in accordance with the relevant clauses of the *Ruberoid Technical Services Installation Manual* instructions, BS 8000-4 : 1989 and this Certificate.

7.2 Conditions on site should be those for normal roof waterproofing work. Deck surfaces must be dry, clean, and free from sharp projections such as nail heads, and concrete nibs.

7.3 Installation should not be carried out during wet weather (eg rain, fog, snow) nor when the temperature is below 0°C unless suitable precautions are taken in accordance with the *Ruberoid Technical Services Installation Manual* instructions.

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

8 Procedure

Mechanically fastened

8.1 The membrane should be unrolled onto the substrate, without undulations, with 110 mm minimum side laps and 60 mm minimum end laps.

8.2 The membrane is fixed to the deck (through insulation boards, where appropriate) in the joint overlaps, prior to welding of the seams, in accordance with the *Ruberoid Technical Services Installation Manual* instructions.

8.3 The membrane should then be fixed at the edges by either mechanically fastening using Spectrabar, Spectra Coated Metal or welding.

Loose-laid and ballasted systems

8.4 The membrane should be unrolled over the substrate, on top of any protective or isolating

layer, taking care not to stretch the material. Edge and end laps should be 60 mm minimum.

8.5 The membrane should be then fixed at the edges either by mechanical fixing Spectrabar, Spectra Coated Metal or welding.

8.6 The membrane should 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.

Hot-air welding

8.7 Joints are made using either automatic or hand-operated machines, with the temperature set in accordance with the *Ruberoid Technical Services Installation Manual* instructions.

8.8 The lap area must be clean and dry. The weld width must be a minimum of 25 mm for the field sheet and 15 mm for the detailing.

8.9 The seam is tested with a metal probe to highlight poorly-welded areas. Any such areas should be made good using hot-air welding.

8.10 Flashings should be formed in accordance with the *Ruberoid Technical Services Installation Manual* instructions.

Technical Investigations

The following is a summary of the technical investigations carried out on Spectraplan SM120 and SM150.

9 Tests

9.1 Data from tests carried out by and on behalf of the UBAtc were evaluated in the context of UK Roofing Practice. The results of the test data, which show typical results for the membrane are summarised in Tables 2 and 3.

Table 2 Physical properties — directional

Test (units)	Method ⁽¹⁾	Mean results			
		SM120		SM150	
		long ⁽²⁾	trans ⁽³⁾	long ⁽²⁾	trans ⁽³⁾
Tensile strength (N 50 mm ⁻¹)	EN 12311-2 (Method A)	1439	1286	1322	1113
Elongation at break (%)	EN 12311-2 (Method A)	592	565 ⁽⁴⁾	—	—
Elongation at max load (%)	EN 12311-2 (Method A)	19	20	18	19
Tear strength (N)	EN 12310-2	194	174	324	361
Nail shank (N)	EN 12310-1				
tested at -10°C		686	663	—	—
tested at +18°C		522	497	—	—
tested at +40°C		482	487	—	—
Dimensional stability (%)	EN 1107-2	-0.81	0.03	-0.55	0.09

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

(2) Longitudinal direction.

(3) Transverse direction.

(4) Value at total fracture of test specimen.

Table 3 Service performance

Test (units)	Method ⁽¹⁾	Mean results	
		SM120	SM150
Static indentation	EN 12730	≥L ₂₅	≥L ₂₅
Dynamic indentation	EN 12691	≤I ₁₀	≤I ₁₀
Foldability at low temperature (°C)	EN 495-5		
unaged		≤-40	≤-40
UV aged ⁽²⁾		≤-40	—
heat aged ⁽³⁾		≤-40	≤-40
Bitumen resistance	prEN 1548	≤-40	≤-40
Shear resistance of joints (N per 50 mm)	EN 12317-2		
unaged		1036	—
water soak ⁽⁴⁾		814	—
heat aged ⁽⁵⁾		1041	—
Peel resistance of joints (N) 50 mm)	EN 12316-2		
unaged		506	—
water soak ⁽⁴⁾		449	—
heat aged ⁽⁵⁾		639	—
Wind uplift ⁽⁶⁾	ETAG 006		
corrected load per fixing (N)		800	—

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

(2) 5000 hr 45°C in accordance with EN 1297 : 2004.

(3) 6 months at 70°C in accordance with EN 1296 : 2001.

(4) 7 days in water at 60°C.

(5) 28 days at 80°C.

(6) Spectraplan SM120 mechanical fastened with screws on steel profiled sheet E106, 0.75 mm plus mineral wool — thickness 60 mm.

9.2 Test data on the following properties were also examined:

- dimensions
- weight per unit area
- flatness/straightness
- behaviour under water pressure
- water vapour diffusion
- long-term heat ageing.

10 Investigations

10.1 Existing data on fire performance to BS 476-3 : 1958 were examined.

10.2 The manufacturing processes were examined, including quality control.

Bibliography

BS 476-3 : 1958 *Fire tests on building materials and structures — External fire exposure roof test*

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

BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*

DD ENV 1187 : 2002 *Test methods for external fire exposure to roofs*

EN 495-5 : 2000 *Flexible sheets for waterproofing — Determination of foldability at low temperature — Plastic and rubber sheet for roof waterproofing*

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

EN 1296 : 2001 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roofing — Method of artificial ageing by long term exposure to elevated temperature*

EN 1297 : 2004 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Method of artificial ageing by long term exposure to the combination of UV radiation, elevated temperature and water*

EN 12310-2 : 2000 *Flexible sheets for waterproofing — Determination of resistance to tearing — Plastic and rubber sheets for roof waterproofing*

EN 12311-2 : 2000 *Flexible sheets for waterproofing — Determination of tensile properties — Plastic and rubber sheets for roof waterproofing*

EN 12316-2 : 2000 *Flexible sheets for waterproofing — Determination of peel resistance of joints — Plastic and rubber sheets for roof waterproofing*

EN 12317-2 : 2000 *Flexible sheets for waterproofing — Determination of shear resistance of joints — Plastic and rubber sheets for roof waterproofing*

EN 12691 : 2001 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to impact*

EN 12730 : 2001 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to static loading*

ETAG 006 : 2000 *Systems of Mechanically Fastened Flexible Roof Waterproofing Membranes*

prEN 1548 *Thermal plastic and elastomeric sheets for waterproofing. Determination of compatibility with bitumen*



On behalf of the British Board of Agrément

Date of issue: 3rd March 2005

Chief Executive

