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APPROVAL NSPECTION TESTING OR CONSTR

Agrément Certificate 15/5284 Product Sheet 1

TECHNOELAST ROOF WATERPROOFING MEMBRANES

TECHNOELAST SBS EPP AND TECHNOELAST SBS EKP ROOF WATERPROOFING MEMBRANES

This Agrément Certificate Product Sheet⁽¹⁾ relates to Technoelast SBS EPP and Technoelast SBS EKP Roof Waterproofing Membranes, reinforced SBS polymer modified membranes for use as fully- or partially-adhered waterproofing on flat or pitched roofs, or as loose-laid or ballasted waterproofing on flat roofs with limited access or, under heavy protection, for pedestrian 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 membranes will resist the passage of moisture into the building (see section 6).

Behaviour in relation to fire — the membranes can enable a roof to be unrestricted under the Building Regulations (see section 7).

Resistance to wind uplift — the membranes will resist the effects of any likely wind suction acting on the roof (see section 8).

Resistance to foot traffic - the membranes will accept the limited foot traffic and loads associated with installation and maintenance (see section 9).

Durability — under normal service conditions the membranes will provide a durable roof waterproofing 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

(eccord)

Date of First issue: 24 December 2015

John Albon – Head of Approvals **Construction Products**

lain

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 **British Board of Agrément Bucknalls Lane** Watford Herts WD25 9BA

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©2015 Page 1 of 10

Regulations

In the opinion of the BBA, Technoelast SBS EPP and Technoelast SBS EKP Roof Waterproofing 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):

<u>, </u>		
E State	The Bui	lding Regulations 2010 (England and Wales) (as amended)
Requirement: Comment:	B4(2)	External fire spread On a suitable substructure, the use of the membranes can enable a roof to be unrestricted under this Requirement. See section 7 of this Certificate.
Requirement: Comment:	C2(b)	Resistance to moisture The membranes, including joints, will enable a roof to meet this Requirement. See section 6.1 of this Certificate.
Regulation: Comment:	7	Materials and workmanship The membranes are acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.
ST L	The Bui	Iding (Scotland) Regulations 2004 (as amended)
Regulation: Comment:	8(1)(2)	Durability, workmanship and fitness of materials The use of the membranes satisfies the requirements of this Regulation. See sections 10 and 11.1 and the <i>Installation</i> part of this Certificate.
Regulation: Standard: Comment:	9 2.8	Building standards applicable to construction Spread from neighbouring buildings The membranes, when applied to a suitable substructure, are regarded as having low vulnerability under clause 2.8.1 ⁽¹⁾⁽²⁾ of this Standard. See sections 7.1, 7.2 and 7.4 of this Certificate.
Standard: Comment:	3.10	Precipitation The use of the membranes, including joints, will enable a roof to meet 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: Comment:	7.1(a)	Statement of sustainability 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: Comment:	12	Building standards applicable to conversions All comments given for 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)
182		(2) Technical Handbook (Non-Domestic).
E Star	The Bui	Iding Regulations (Northern Ireland) 2012 (as amended)
Regulation: Comment:	23(a)(i) (iii)(b)(i)	Fitness of materials and workmanship The membranes are acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.

Regulation: Comment:	28(b)	Resistance to moisture and weather The membranes, including joints, can enable a roof to meet the requirements of this Regulation. See section 6.1 of this Certificate.
Regulation: Comment:	36(b)	External fire spread On a suitable substructure, the use of the membranes will enable a roof to be unrestricted under the requirements of this Regulation. See section 7 of this Certificate.

Construction (Design and Management) Regulations 2015 Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, Principal Designer/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 and 3.4) of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of Technoelast SBS EPP and Technoelast SBS EKP Roof Waterproofing Membranes, provided they are installed, used and maintained 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 BS EN 13707 : 2013. 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 Technoelast SBS EPP and Technoelast SBS EKP Roof Waterproofing Membranes comprise:

• Technoelast SBS EPP — a polyester/glass composite reinforced (180 g·m⁻² nominal) SBS polymer-modified bitumen membrane, with either a sand finish or a thermofusible plastic film on both surfaces to prevent the roll from adhering to itself

• Technoelast SBS EKP — a polyester/glass composite reinforced (180 g·m⁻² nominal) SBS polymer-modified bitumen membrane, with a slate granular finished upper surface and either a sand finish or a thermofusible plastic film on the under surface to prevent the roll from adhering to itself.

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

Table 1 Nominal characteristics

Characteristic (unit)	SBS EPP	SBS EKP
Thickness (mm)	4.0	4.0(1)
Roll length (m)	10.0	7.5
Roll width (m)	1.0	1.0
Mass per unit area (kg·m ⁻²)	4.4	5.8
Roll weight (kg)	44.0	43.5

(1) Excluding slate granules

1.3 The nominal physical characteristics of the membranes are given in Table 2.

Table 2 Nominal physical characteristics

Characteristic (unit)	SBS EPP	SBS EKP
Tensile strength* (N·50 mm ⁻¹)		
longitudinal	1000 ⁽¹⁾	1000 ⁽¹⁾
transverse	700 ⁽¹⁾	700 ⁽¹⁾
Elongation* (%)		
longitudinal	50	50
transverse	50	50
Dimensional stability* (%)	≤0.3	≤0.3
Low temperature flexibility* (°C)	-25	-25
Flow resistance* (°C)	100	100
Watertightness*	Pass	Pass

(1) ±20%

1.4 Verprim Primer, a solution of bitumen in a mixture of aliphatic, aromatic and chlorinated hydrocarbons, is an ancillary item for use with the membranes on substrates which require priming.

2 Manufacture

2.1 The products are manufactured by reinforcing a polymer-modified bitumen membrane with a spunbond polyester/glass fibre composite. The membranes have a sand finish, a slate granular finish or a thermofusible plastic film applied, as appropriate.

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 being operated by the manufacturer are being maintained.

2.3 The management systems of TechnoNicol-Vyborg Ltd have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and BS EN ISO 14001 : 2004 by DAkkS (Certificate Q-08.00.05e) and IQNet (Certificate 15.1217.026) respectively.

3 Delivery and site handling

3.1 The products are delivered to site in rolls sealed with tape on pallets shrink-wrapped in plastic. The roll sealing tape bears the product name, identification code, and the BBA logo incorporating the number of this Certificate.

3.2 Individual rolls must be stored in an upright position on a clean, level, surface and kept dry.

3.3 Verprim Primer is supplied in 5, 10 and 20 litre containers. It is an inflammable material and should be kept stored in a suitably dry and sealed area.

3.4 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 Technoelast SBS EPP and Technoelast SBS EKP Roof Waterproofing Membranes.

4 Use

4.1 Technoelast SBS EPP and Technoelast SBS EKP Roof Waterproofing Membranes are satisfactory for use as fully or partially adhered waterproofing for flat and pitched roofs with limited access, as part of a built-up specification.

4.2 Technoelast SBS EPP is satisfactory for use as a single-ply, loose-laid waterproofing layer, ballasted with aggregate on flat roofs with limited access, or under heavy protection (eg concrete slabs) on flat roofs with regular pedestrian traffic.

4.3 Technoelast SBS EKP is satisfactory for use, where appropriate, as an exposed cap sheet or in detail work.

4.4 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 membrane must be provided (see section 9).

4.5 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.

4.6 Decks to which the products are to be applied must comply with the relevant requirements of either BS 6229 : 2003 or BS 8217 : 2005 and, where appropriate, *NHBC Standards*, Chapter 7.1 *Flat roofs and balconies*.

4.7 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 membranes are designed to be installed by competent roofing contractors experienced with these types of products.

6 Weathertightness



6.1 The membranes, including joints when completely sealed and consolidated, will adequately resist the passage of moisture into a building and enable a roof to comply with the requirements of the national Building Regulations.

6.2 The membranes are impervious to water and will achieve a weathertight roof capable of accepting minor structural movement.

7 Behaviour in relation to fire



7.1 The membranes, 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, are unrestricted under the requirements of the national Building Regulations.

7.2 When tested, a system comprising an 18 mm thick plywood substrate, one layer of 1.7 mm thick polyester-based immediate layer membrane, one layer of 3 mm thick APP modified bitumen vapour control layer, one layer of a mineral wool insulation board laminated with an SBS modified bitumen membrane, and one layer of Technoelast SBS EKP will be similarly unrestricted.



7.3 When used in flat roofs with one of 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 B_{ROOF}(t4) :

- 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.



7.4 The designation of other specifications should be confirmed by:

England and Wales — test or assessment in accordance with Approved Document B, Appendix A, clause 1 **Scotland** — test to 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 The adhesion of the bonded systems to the decking or bituminous felt is sufficient to resist the effects of wind suction, elevated temperatures and thermal shock conditions likely to occur in practice.

8.2 The ballast requirements for loose-laid systems must be calculated in accordance with the relevant parts of BS EN 1991-1-4 : 2005 and its UK National Annex. The membrane should always be ballasted with a minimum depth of 50 mm of aggregate (20 to 40 grade gravel). In areas of high-wind exposure, the Certificate holder's advice should be sought. Alternatively, concrete slabs on suitable supports can be used.

9 Resistance to foot traffic

The membranes can accept, without damage, the limited foot traffic and light concentrated loads associated with installation and maintenance. Reasonable care should be taken to avoid puncture by sharp objects or concentrated loads. Where traffic in excess of this is envisaged, such as for maintenance of lift equipment, additional protection to the membrane, such as concrete slabs, etc, in accordance with the Certificate holder's instructions must be provided.

10 Maintenance

10.1 Roofs must be the subject of annual inspections and maintenance to ensure continued performance.

- 2 10.2 Maintenance should include checks and operations to ensure that, where applicable:
- exposed membrane is free from the build-up of silt and other debris, and unwanted vegetation is cleared
- adequate ballast is in place and evenly distributed over the membrane
- protection layers are in good condition.

10.3 Where damage has occurred it must be repaired in accordance with section 14 and the Certificate holder's instructions.

11 Durability



11.1 The membranes, when subjected to normal conditions of exposure and use, will have a service life In excess of 20 years.

11.2 When using the mineral-finished membrane, some localised loss of mineral surfacing may occur after some years in areas where complex detailing of the roof design is incorporated.

12 General

12.1 Installation of Technoelast SBS EPP and Technoelast SBS EKP Roof Waterproofing Membranes must be carried out by installers trained and approved by the Certificate holder in accordance with the relevant clauses of BS 8000-4 : 1989 and BS 8217 : 2005, the Certificate holder's instructions and this Certificate.

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

12.3 Installation should not be carried out during inclement weather (eg rain, fog or snow) nor when the temperature is below 5°C.

12.4 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 clause 6.12 of the Code must be used.

12.5 At falls in excess of 5°, the normal precautions against slippage and provisions for mechanical fixings as required by BS 8217 : 2005 should be observed.

12.6 On completion of the roof, the sand-finish membrane, when used as a top layer, may have a surface finish applied in accordance with BS 8217 : 2005, clause 8.19. Surface finishes in the Code of Practice include:

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

13 Procedure

Fully-bonded applications

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

13.2 Side laps should be a minimum of 100 mm and end laps a minimum of 150 mm. Where used partially bonded, the membrane must be fully bonded to the substrate for at least 1 m immediately before and after the end lap. A bead of molten material must exude from all laps to indicate a satisfactory seal, which should be levelled out using a heated, rounded-tip trowel.

Partially-bonded applications

13.3 A layer of type 3G reinforced bitumen membrane to BS 8747 : 2007, Annex C should be loose-laid edge to edge over the substrate and fully bonded with hot bitumen for a minimum of 500 mm around the perimeter and all upstands.

13.4 The membrane is fully torch-welded onto the perforated layer, ensuring that the bitumen seeps regularly into the perforations.

Loose-laid applications

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

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

- a 0.2 mm thick polyethylene protective sheet covered by at least 50 mm of well-rounded gravel (gravel size 15/30 mm)
- a 0.2 mm thick polyethylene protective sheet covered by a 20 mm thick layer of sand and a 0.05 mm thick polyethylene sheet overlaid with a layer of concrete paving slabs.

If paving on plastic pads is used, a separation layer of either 0.2 mm thick polyethylene or a non-woven (polyester) sheet (of minimum mass $300 \text{ g} \cdot \text{m}^{-2}$) should be used.

14 Repair

In the event of damage, repairs can be carried out by cleaning the area around the damage and applying a patch as described in the Certificate holder's instructions.

Technical Investigations

15 Tests

15.1 Tests were carried out on the membranes and the results assessed to determine:

- tensile strength and elongation at break
- tear strength
- dimensional stability
- water pressure
- low temperature flexibility
- heat resistance
- static indentation (concrete, EPS)
- dynamic indentation (perlite, EPS)
- fatigue cycling
- slip resistance
- peel strength from concrete, membrane-faced rockwool and membrane-faced polyurethane
- heat ageing (180 days at 70°C) followed by low temperature flexibility and heat resistance
- heat ageing (28 days at 70°C) followed by fatigue cycling and peel resistance
- water exposure (28 days at 23°C) followed by peel resistance.

15.2 Tests were carried out on joints in the membranes and the results assessed to determine:

- air pressure
- tensile strength of end laps and side laps
- t-peel
- heat ageing (28 days at 80°C) followed by air pressure, tensile strength and t-peel
- water exposure (7 days at 60°C) followed air pressure, tensile strength and t-peel.

15.3 Tests were carried out on the costing mass and the results assessed to determine:

- softening point (ring and ball)
- elastic elongation
- fines content
- low temperature flexibility
- heat ageing (180 days at 70°C) followed by softening point, elastic elongation and low temperature flexibility.

15.4 Tests were carried out on the reinforcement and the results assessed to determine:

- mass per unit area
- tensile strength and elongation at break.

16 Investigations

16.1 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.

16.2 Existing data for fire performance were assessed.

Bibliography

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 + 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 sheet for waterproofing — Reinforced bitumen sheets for roof waterproofing — Definitions and characteristics

BS EN ISO 9001 : 2008 Quality management systems — Requirements

BS EN ISO 14001 : 2004 Environmental management systems — Requirements with guidance for use

17 Conditions

17.1 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 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.

17.2 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.

17.3 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.

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

17.5 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.

17.6 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.

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