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Agrément Certificate
92/2799
Product Sheet 5

SEALECO EPDM ROOFING SYSTEMS

RUBBERTOP FR/FRT EPDM ROOFING MEMBRANES

This Agrément Certificate Product Sheet(1) relates to RubberTop FR/FRT EPDM Roofing Membranes, for use in roof waterproofing specifications that are fully-adhered, partially-adhered, mechanically-fastened, or loose-laid with suitable ballast covering, on limited access flat and pitched 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 products will resist the passage of moisture into the building (see section 6).

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

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

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

Durability — under normal service conditions the products will provide a durable roof waterproofing with a service life in excess of 35 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 Agrement

Date of Second issue: 20 June 2016

John Albon – Head of Approvals Construction Products

Claire Curtis-Thomas
Chief Executive

Originally certificated on 20 August 2015

Regulations

In the opinion of the BBA, RubberTop FR/FRT EPDM Roofing Membranes, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted:

The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	**B4(2)**	**External fire spread**
Comment:		On a suitable substructure, the use of 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, will enable a roof to meet this Requirement. See section 6.1 of this Certificate.
Regulation:	**7**	**Materials and workmanship**
Comment:		The products are acceptable. See section 11 and the *Installation* 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 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	2.8	Spread from neighbouring buildings
Comment:		The products, when applied to a suitable substructure, are 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 use of the products, 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:	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)(iii)(b)(i)**	**Fitness of materials and workmanship**
Comment:		The products are acceptable. See section 11 and the *Installation* part of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The products, including joints, will enable a roof to meet the requirements of this Regulation. See section 6.1 of this Certificate.

Regulation:	**36(b)**	**External fire spread**
Comment:		On a suitable substructure, the use of the products can 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* (1.1) and 3 *Delivery and site handling* (3.3 and 3.4) of this Certificate.

Additional Information

NHBC Standards 2016

NHBC accepts the use of RubberTop FR/FRT EPDM Roofing 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 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 RubberTop FR/FRT EPDM Roofing Membranes are single-ply, unreinforced elastomeric waterproofing membranes, based on the rubber polymer ethylene-propylene-diene monomer (EPDM). The FRT membrane has a 40 mm Thermobond edge. The products are black and have the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Characteristic (unit)	**RubberTop FR/FRT EPDM**
Thickness (mm)	1.2, 1.5
Mass per unit area* ($kg \cdot m^{-2}$)	1.49, 1.86
Roll length* (m)(1)	25 to 100
Roll width* (m)	1.7 and multiples thereof
Tensile strength* ($N \cdot mm^{-2}$)	8
Elongation* (%)	300
Tear resistance* (N)	30
Dimensional stability* (%)	0.5
Foldability at low temperatures* (°C)	–40
Watertightness*	Pass

(1) The membranes can also be delivered prefabricated made-to-measure, to fit individual roof sizes.

1.2 Ancillary items/specialist equipment necessary for installation of the products and included in this assessment are:

- Thermobond R Splice Strip — used for making connections between membranes and for detail work such as flashings and upstands
- Thermobond Hot Melt Sealant — for levelling differences in height at splice areas such as T-joints and cross-joints
- Contact Adhesive 5000 — a ready-to-use contact adhesive for adhering EPDM and butyl membranes to dry substrates such as wood, concrete and metals

- Cleaning wash 9700 — for use in cleaning jointing areas
- Sealant 5590 —elastic silicone-based sealant
- hot-bonding tape — rubber tape for vulcanising joints between membranes
- P100 contact adhesive — for use in conjunction with Primer T89 and Mastic T89 (See below) to ensure full and correct splicing of RubberTop membranes and details
- P125 — a spray-on contact adhesive based on synthetic rubber used to bond RubberTop membranes and Thermobond details to the substrate
- P150 — a PU-based curing adhesive for bonding membranes to a roofing deck
- Primer T89 — a primer used in conjunction with Mastic T89 for the SealEco cold splicing system, to ensure correct sealing of the system
- Mastic T89 — used for cold joint filling in conjunction with adhesive P100 after application of Primer T89
- termination Bar — used to secure RubberTop membrane at edges
- Centrix Washer — bespoke washer used when mechanically fixing RubberTop roofing membranes
- Seam Tape, Flashing Tape and Cover Tapes — rubber adhesive tapes for joints between the membranes
- RubberTop Primer — used to prime EPDM membrane when using EPDM tapes and sealants
- RubberTop Perimeter Strip — used to secure the membrane in non-penetrating base tie-ins
- Ecobond – an environmentally-friendly adhesive for bonding the membrane to a roofing deck.

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

- Thermobond Splice Strip — unreinforced flashing for detail work
- TPE 100 Flashing — for complex details
- Thermobond corners — for use at inside and outside corners in combination with Thermobond R Splice Strip
- Thermobond Pipe Boot — prefabricated detail for pipe penetrations
- Thermobond Clad Metal — for use at perimeter profiles. The product can be cut and folded in the same way as ordinary galvanized steel sheet
- 200 $g \cdot m^{-2}$ spunbond polyester sheet — for use as a protection layer on loose-laid and ballasted applications
- Drain PE — a roof drain equipped with a collar of Thermobond which can be heat-spliced into the membrane
- Drain PC — a roof drain equipped with a 500 x 500 mm collar of Thermobond which can be heat-spliced into the membrane
- Edge Detailing System — a system of drip edge and kerb trims for use at the perimeter of the roof.

2 Manufacture

2.1 RubberTop FR/FRT EPDM Roofing Membranes are manufactured by blending ethylene propylene diene monomer (EPDM), processing oils, fillers and other additives. The sheets are produced by feeding the mix through a calender before vulcanisation.

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 system of SealEco AB has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and BS EN ISO 14001 : 2004 by Bureau Veritas Certification (Certificates 10000266 and 100000267 respectively).

2.4 The products are manufactured in Sweden by SealEco AB and marketed and distributed in the UK by the Certificate holder.

3 Delivery and site handling

3.1 The products are delivered to site in rolls wrapped in polythene film. The rolls carry a label bearing the manufacturer's name, production number, identification, dimensions and the BBA logo incorporating the number of this Certificate. If fabricated off-site, the supplier is responsible for ensuring that the fabricated panel is delivered to site with a label bearing the manufacturer's name, production number, identification, dimensions and the BBA logo incorporating the number of this Certificate.

3.2 EPDM membranes do not require particular storage conditions. However, jointing strips and details should be stored in a clean, dry area at temperatures between 5°C and 20°C.

3.3 Sealants, adhesives and cleaning wash should be stored in a dry ventilated area at temperatures between 5°C and 20°C and isolated from potential ignition sources. Site storage of the products should not exceed six months.

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 RubberTop FR/FRT EPDM Roofing Membranes.

Design Considerations

4 Use

4.1 RubberTop FR/FRT EPDM Roofing Membranes are satisfactory for use as:

- a fully- or partially-adhered waterproofing layer, mechanically fixed or fully adhered at perimeters and upstands, on flat roofs with limited access
- a mechanically-fastened waterproofing layer on flat roofs with limited access
- a loose-laid waterproofing layer with suitable ballast covering or fully-adhered waterproofing layer with suitable ballast covering, on flat roofs with limited access. The membrane should be mechanically fixed or fully adhered at perimeters and upstands, and covered with suitable ballast on horizontal perimeter areas.

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. 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 greater than 1:6.

4.4 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* 2016, Chapter 7.1 *Flat roofs and balconies*.

4.5 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.

4.6 Contact with certain bituminous, coal tar and oil-based products must be avoided as the membranes are not compatible with lower grades of bitumen. 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 should be sought.

5 Practicability of installation

The products should only be installed by installers 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 into a building and enable a roof to comply with the requirements of the national Building Regulations.

6.2 The products 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 following systems will be unrestricted by the national Building Regulations:

- a 0.7 mm profiled metal deck, a 0.2 mm polyethylene vapour control layer, 70 mm foil-faced polyisocyanurate insulation board mechanically fixed, and a layer of 1.2 mm RubberTop FR mechanically fixed using the Centrix system
- an 18 mm OSB deck and a layer of 1.2 mm RubberTop FR fully adhered with P150 adhesive
- a 0.7 mm profiled metal deck, a 0.2 mm polyethylene vapour control layer, 70 mm glass-tissue faced polyisocyanurate insulation board mechanically fixed, and a layer of 1.2 mm RubberTop FR/FRT fully adhered with P150 adhesive
- an 18 mm WBP plywood deck, bitumen vapour barrier, 120 mm glass-tissue faced polyisocyanurate insulation board bonded with Insta-Stik adhesive, and a layer of 1.2 mm Rubbertop FR fully adhered with Ecobond adhesive.

7.2 The membranes, when used with an inorganic covering listed in the Annex of Commission Decision 2000/553/EC, can be considered to be unrestricted under the national Building Regulations.

7.3 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 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 membranes should always be ballasted with a minimum depth of 50 mm of aggregate (20 mm to 40 mm 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.

8.2 When fully bonded to a decking, the products should have sufficient adhesion to resist the effects of wind suction, elevated temperatures and thermal shock conditions likely to occur in practice.

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

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

- wind uplift force to be restricted
- pull-out strength of the fasteners
- tensile properties of the membranes
- appropriate calculation of safety factors.

8.5 The wind uplift forces are calculated 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 0.4 kN per fixing.

8.6 Wind uplift load results from tests on the membranes in an installed system are:

load per fixing (N)	700
corrected load per fixing	453.

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, a walkway should be provided, using, for example, concrete slabs supported on bearing pads.

10 Maintenance

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

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.

10.3 Where damage has occurred it must be repaired in accordance with section 16 and the Certificate holder's instructions.

10.4 A planned maintenance cycle, and inspections by the Certificate holder at minimum intervals of every five years, should be introduced if an extended service life is required. The Certificate holder can advise on methods of extending the service life. This could include the use of thicker membrane, specific maintenance requirements (such as maintenance coating), or localised replacement or repair (see section 16).

11 Durability

11.1 The durability of all roofing materials is dependent on the roof design, installation, immediate environment, maintenance and use.

11.2 The products will have a service life in excess of 35 years.

11.3 RubberTop EPDM membrane has been in use in Germany and the UK since 1976 and 1992 respectively. The BBA has examined the oldest available sites where the material has been installed. Tests conducted on the naturally-aged material taken from existing sites confirm satisfactory retention of properties, indicating that a service life in excess of 40 years can be achieved with periodic maintenance as stated in section 10.

12 Reuse and recyclability

The products comprise ethylene propylene diene monomer, which can be recycled.

Installation

13 General

13.1 Installation of the RubberTop FR/FRT EPDM Roofing Membranes must be carried out by trained installers working in accordance with the relevant clauses of the manufacturer's instructions, BS 8000-4 : 1989 and this Certificate.

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

13.3 Installation should not be carried out during wet weather (eg rain, fog or snow) nor when the temperature is below 0°C.

13.4 Contact with oil-based products must be avoided. If the membranes do come into contact with such materials, the surfaces should be carefully cleaned.

13.5 At details and perimeters, attachment using mechanical fixings or Contact Adhesive 5000/P125 is required with all fixing installation methods. The membranes should be covered with suitable ballast on horizontal perimeter areas.

14 Procedure

Loose-laid applications with suitable ballast covering or fully-adhered applications with suitable ballast covering

14.1 The membranes are unrolled onto the substrate without folds or ripples, and mechanically fastened with the termination bar or fully adhered with Contact Adhesive 5000/P125 at perimeters. The recommended bonding width of the adhesive on horizontal areas is 200–500 mm, depending on local conditions. Flashing and lap jointing must be carried out as described in section 15. The membrane can be loose laid or fully adhered in the field area with P150 adhesive.

14.2 The loose-laid or fully-adhered applications should be covered by at least 50 mm of well-rounded gravel (20/40 grade gravel) or minimum 40 mm concrete slabs. In areas of high-wind exposure, heavier gravel may be required, or thicker concrete slabs on bearing pads can be used as ballast. The required weight of the ballast will vary depending on the area of the roof, and specific zones on the roof must be calculated in accordance with local Building Regulations. A protective mat of non-woven polyester fleece (minimum 400 $g \cdot m^{-2}$) should be laid between the membrane and the ballast.

14.3 When using a ballasted application, account must be taken in the design of the deck of the extra dead loading owing to the weight of the aggregate and/or paving.

Fully-bonded applications

14.4 Only insulations suitable for fully-adhered systems can be used in fully-bonded applications. Where doubt arises as to compatibility, the advice of the Certificate holder should be sought.

14.5 A layer of P150 bonding adhesive should be applied by roller evenly to the substrate at a rate of between 250 $g \cdot m^{-2}$ and 400 $g \cdot m^{-2}$, the exact rate depending on the porosity of the substrate.

14.6 Immediately after application, the membranes must be unrolled across the substrate. Full bonding is achieved by ensuring that wrinkling does not occur in the laid membrane and that air has not been trapped beneath it. For a satisfactory application, at least 90-95% of the total area of membrane must be bonded to the substrate.

14.7 The laps must then be sealed and the flashing installed in the manner described in section 15.

Partially-bonded applications

14.8 Only insulations suitable for partially-adhered systems can be used in partially-bonded applications. Where doubt arises as to compatibility, the advice of the Certificate holder should be sought.

14.9 Strips of P150 bonding or Ecobond adhesive should be applied to the substrate by puncturing the tin. The distance

between strips of adhesive should be agreed with the Certificate holder.

14.10 The membranes must be unrolled across the substrate, immediately after application of the adhesive, to ensure that air does not get trapped beneath the membrane.

14.11 The laps must then be sealed and the flashing installed in the manner described in section 15.

Mechanically-fastened applications

14.12 The Centrix washers and fasteners are fixed directly to the deck or on top of the insulation, as determined by the Certificate holder, prior to the installation of the membrane.

14.13 The position and the number of fixings must be in accordance with the fixing specifications provided by the Certificate holder.

14.14 The membrane must be welded to the Centrix washers using the appropriate machine.

14.15 In addition to the Centrix fixings, the membrane should be secured around the perimeters and around roof details of 500 mm or larger, and mechanically fixed using either the termination bar or Thermobond Clad Metal. The distance between fixing points should be calculated in accordance with Local Building Regulations; however, the maximum distance between centres should be 200 mm. Alternatively, Contact Adhesive 5000 can also be used. The recommended bonding width of the adhesive on horizontal areas is 200–500 mm depending on local conditions.

14.16 The laps must then be sealed and the flashing installed in the manner described in section 15.

15 Details

Jointing procedure — hot-bonding method

15.1 At laps, the top sheet is folded back by 30 mm. Both surfaces are cleaned using Cleaning Wash 9700. Hot-bonding tape is placed between sheets and vulcanised using a hot-bonding machine.

Alternative jointing procedure — P100 Contact Adhesive

15.2 The lap joint area is cleaned using Cleaning Wash 9700 if required. The adjoining sheets are laid with a 130 mm overlap, the upper sheet is rolled back and P100 Contact Adhesive is applied in a 100 mm wide strip to both surfaces. Primer T89 is applied by brush onto the remaining 30 mm on both surfaces.

15.3 When the adhesive becomes tacky (after 10 to 15 minutes), the sheet is rolled back and the joint area is rolled, using a steel roller.

15.4 When the primer is completely dry (after 10 to 20 minutes), the elastomeric mastic T89 is inserted into the joint with a caulking gun, along the lap edge between the two lips.

15.5 The mastic is lightly tapped until a 1 mm thick joint is formed with a bead sealant at its edge. The mastic joint is then smoothed.

Alternative jointing procedure — Thermobond method

15.6 The lap joint area is cleaned with Cleaning Wash if required, and allowed to dry before welding.

15.7 All splicing is done using an automatic welder, the temperature of which must be set in accordance with the Certificate holder's instructions.

15.8 The membrane must be installed butt-jointed without overlap when jointing with Thermobond R Splice Strip and with a minimum 30 mm seam joint when jointing with Thermobond edge.

15.9 At T-joints and cross joints the difference in height is adjusted by filling the gap with Thermobond hot melt sealant.

Alternative jointing procedure — tape method

15.10 The sheets are positioned with a 100 mm overlap. The bottom sheet is marked 15 mm from the edge of the seam. The top sheet is folded back and tacked with RubberTop Primer for the splicing operation.

15.11 The lap joint area is cleaned using Cleaning Wash 9700 if required. A thin layer of RubberTop Primer is applied to the seam area with a brush using smooth strokes.

15.12 Seam tape 75 mm wide is positioned on the bottom sheet with the release paper facing up. The edge of the release paper is aligned with the marks on the bottom sheet.

15.13 Using a silicon roller, the tape is rolled across the paper to give uniform compression and remove any trapped air.

15.14 The top sheet is allowed to fall onto the tape, whilst checking for alignment of release paper beyond the top sheet, trimming back with scissors if required.

15.15 The release paper is steadily peeled at a 90° angle to the tape, keeping it low to the surface to avoid pockets and mate the top sheet along the seam length.

15.16 The top of the seam is rolled with a silicon roller, first across the seam to remove any air pockets and then along the full length of the seam.

Flashing procedure

15.17 Flashings must be completed in accordance with manufacturer's instructions, using cold bonding or the Thermobond jointing method, and moulded or prefabricated finishing pieces.

16 Repair

16.1 Any damage must be repaired in accordance with the Certificate holder's instructions. Repairs are made by applying a patch of the membrane which must extend at least 50 mm beyond the defect.

16.2 When using seam tapes, in the event of damage repairs should be carried out by cleaning beyond the affected area a minimum of 150 mm, and applying a patch of Rubbertop membrane or semi-cured flashing strip in accordance with the method for seam tape installation.

Technical Investigations

17 Tests

An assessment was made of data to EN 13956 : 2005 in relation to:

- tensile strength and elongation*
- dimensions*
- low temperature foldability*
- dimensional stability*
- static indentation*
- dynamic indentation*
- water vapour properties*
- watertightness*
- tear resistance*
- joint peel and shear resistance*.

18 Investigations

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

18.2 Existing data on the fire performance of the membranes were assessed.

18.3 Existing data on wind uplift of a mechanically-fastened and partially-bonded system were evaluated.

18.4 Data resulting in the issue of the Certificate holder's Belgian Certificate ATG 09/1740 were evaluated.

18.5 An assessment of the durability of the membranes was based on the findings of visits to existing sites in Germany, and the results of tests conducted on unaged and naturally-aged material.

18.6 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 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*
BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*
BS EN 1991-1-2 : 2002 *Eurocode 1 : Actions on structures — General actions — Actions on structures exposed to fire*
NA to BS EN 1991-1-2 : 2002 UK National Annex to Eurocode 1 : *Actions on structures — General actions — Actions on structures exposed to fire*
BS EN 1991-1-3 : 2003 *Eurocode 1 : Actions on structures — General actions*
NA to BS EN 1991-1-3 : 2003 UK National Annex to Eurocode 1 : *Actions on structures — General actions*
BS EN 1991-1-4 : 2005 *Eurocode 1 : Actions on structures — General actions — Wind actions*
NA to BS EN 1991-1-4 : 2005 UK National Annex to Eurocode 1 : *Actions on structures — General actions — Wind actions*
BS EN 13956 : 2005 *Flexible sheet for waterproofing — Plastic and rubber sheets for roof waterproofing — Definitions and characteristics*
BS EN 13956 : 2012 *Flexible sheet for waterproofing — Plastic and rubber 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*

19 Conditions

19.1 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.

19.2 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.

19.3 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.

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

19.5 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.

19.6 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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