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Agrément Certificate
22/6147
Product Sheet 1

PROTEUS TORCH-ON ROOF WATERPROOFING MEMBRANES

PROTEUS PRO-FELT 'ULTIMA-PLUS' SYSTEM

This Agrément Certificate Product Sheet(1) relates to the Proteus Pro-Felt(2) 'Ultima-Plus' System, for use partially or fully bonded on flat or pitched roofs with limited access, in roof garden or green roof specifications, and on podium decks.

(1) Hereinafter referred to as 'Certificate'.
(2) Proteus Pro-Felt is a registered trademark.

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 system, including joints, will resist the passage of moisture into the interior of a building (see section 6).

Properties in relation to fire — the system, when used as part of a suitable specification, may enable a roof to be unrestricted under the national Building Regulations (see section 7).

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

Resistance to mechanical damage — the system will accept, without damage, the limited foot traffic and loads associated with installation and maintenance, and minor structural movements occurring in service (see section 9).

Resistance to penetration by roots — the system will effectively resist the penetration of roots (see section 10).

Durability — under normal service conditions, the system will provide a durable waterproof covering with a service life in excess of 30 years (see section 12).

The BBA has awarded this Certificate to the company named above for the system described herein. This system has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

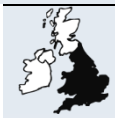
Date of First issue: 13 October 2022

Hardy Giesler
Chief Executive Officer

The BBA is a UKAS accredited certification body – Number 113.
The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk
Readers MUST check the validity and latest issue number 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 should not be relied upon.

Regulations

In the opinion of the BBA, the Proteus Pro-Felt 'Ultima-Plus' System, 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(1)**	**External fire spread**
Comment:		The system is restricted by this Requirement in some circumstances. See section 7.5 of this Certificate.
Requirement:	**B4(2)**	**External fire spread**
Comment:		On a suitable substructure, the use of the system may enable a roof to be unrestricted under this Requirement. See sections 7.1, 7.2, 7.3 (for Wales only) and 7.4 and of this Certificate.
Requirement:	**C2(b)**	**Resistance to moisture**
Comment:		The system will enable a roof to satisfy this Requirement. See section 6 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The system is acceptable. See section 12.1 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 system satisfies the requirements of this Regulation. See sections 11.1 and 12.1 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	2.6	Spread to neighbouring buildings
Comment:		The system is restricted under clause 2.6.4(1)(2) of this Standard in some circumstances. See section 7.6 of this Certificate.
Standard:	2.8	Spread from neighbouring buildings
Comment:		When applied to a suitable substructure, the system may enable a roof to be unrestricted under clause 2.8.1(1)(2) of this Standard. See sections 7.1, 7.2 and 7.4 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The system will enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1(1)(2) and 3.10.7(1)(2). See section 6 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The system 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 system 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 system is acceptable. See section 12.1 and the *Installation* part of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The system will enable a roof to satisfy the requirements of this Regulation. See section 6 of this Certificate.
Regulation:	**36(a)**	**External fire spread**
Comment:		The product is restricted by this Requirement in some circumstances. See sections 7.5 of this Certificate.
Regulation:	**36(b)**	**External fire spread**
Comment:		On suitable substructures, the use of the system may enable a roof to be unrestricted under the requirements of this Regulation. See sections 7.1 to 7.4 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* (1.3 and 1.4) and 3 *Delivery and site handling* (3.3 and 3.4) of this Certificate.

Additional Information

NHBC Standards 2022

In the opinion of the BBA, the Proteus Pro-Felt 'Ultima-Plus' system, 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, terraces and balconies.*

The NHBC Standards do not cover the use of the system in the refurbishment of existing roofs.

CE marking

The Certificate holder has taken the responsibility of CE marking the system components in accordance with harmonised European Standard BS EN 13707 : 2013.

Technical Specification

1 Description

1.1 The Proteus Pro-Felt 'Ultima-Plus' system is a multi-layer system for use partially or fully bonded on flat or pitched roofs with limited access, in roof garden or green roof specifications, and on podium decks.

1.2 The system comprises:

- Proteus Pro-Felt 'Ultima-Plus' Anti Root Sanded — a torch-applied, atactic polypropylene, modified bitumen sheet reinforced with a 170 $g \cdot m^{-2}$ polyester base with added UV protection and root-resistant additives, for use as a cap sheet in roof garden and green roof specifications
- Proteus Pro-Felt 'Ultima-Plus' Anti Root Mineral — as for Proteus Pro-Felt 'Ultima-Plus' Anti Root Sanded but with a slate mineral finish for use as a cap sheet in roof garden and green roof specifications (including exposed areas of roof gardens)

- Proteus Pro-Felt 'Ultima-Plus' Sanded Capsheet — a torch-applied, atactic polypropylene, modified bitumen sheet reinforced with a 170 g·m^{-2} polyester base with a sand finish, for use as a cap sheet with the appropriate surface protection applied
- Proteus Pro-Felt 'Ultima-Plus' Mineral — as Proteus Pro-Felt 'Ultima-Plus' Sanded Capsheet , but with a green or grey slate-chipping finish, for use as an exposed cap sheet or in detail work. Other colours are available on request
- Proteus Pro-Felt 'Ultima-Plus' Underlay Sanded — a torch-applied, atactic polypropylene, modified bitumen sheet reinforced with a 150 g·m^{-2} non-woven polyester base, for use as a base sheet
- Proteus Pro-Felt 'Ultima-Plus' Fireguard Mineral — as Proteus Pro-Felt 'Ultima-Plus' Sanded Capsheet , but with slate mineral-chipping finish and fire resistant, classified as Euroclass B_{ROOF}(t4) for use as an exposed cap sheet or in detail work. Also available in black
- Proteus Pro-Felt 'Ultima-Plus' SL Mineral — as Proteus Pro-Felt 'Ultima-Plus' Sanded Capsheet, but with a mineral finish with a 180 g·m^{-2} polyester reinforcement.

1.3 The membranes are manufactured with the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Characteristic (unit)	Proteus Pro-Felt 'Ultima-Plus' Anti Root Sanded	Proteus Pro-Felt 'Ultima-Plus' Anti Root Mineral	Proteus Pro-Felt 'Ultima-Plus' Sanded Capsheet	Proteus Pro-Felt 'Ultima-Plus' Mineral	Proteus Pro-Felt 'Ultima-Plus' Underlay Sanded	Proteus Pro-Felt 'Ultima-Plus' Fireguard Mineral	Proteus Pro-Felt 'Ultima-Plus' SL Mineral
Thickness (mm)	4	4(2)	4	4(1)	3	4(2)	4(2)
Length (m)	10	8	10	10	10	8	8
Width (m)	1	1(3)	1	1(3)	1	1(1)	1
Mass per unit area (kg·m^{-2})	4.5	4.6	4.5	4.5	3.3	5.6	5.6
Roll weight (kg)	45	56	45	45	33	45	45
Watertightness at 60 kPa	pass	pass	pass	pass	pass	Pass	Pass
Tensile strength (N per 50 mm)							
longitudinal	600	850	850	850	750	1200	850
transverse	500	650	650	650	500	900	650
Elongation (%)							
longitudinal	35	40	40	40	40	45	40
transverse	35	40	40	40	40	45	40
Nail tear (N)							
longitudinal	150	200	200	200	150	300	200
transverse	150	200	200	200	150	300	200
Impact (mm)	900	1250	1250	1250	900	1500	1250
Static loading (kg)	15	20	20	20	15	25	20
Low temperature flexibility (°C)	-10	-10	-15	-15	-15	-15	-15

(1) Includes slate finish.
(2) Measured on selvedge.
(3) Includes 70 mm selvedge.

1.4 The Certificate holder recommends Pro-Prime Bitumen as an ancillary item for use with the system, but this material has not been assessed by the BBA and is outside the scope of this Certificate. Pro-Prime Bitumen is a solution of oxidised bitumen dispersed in solvents, supplied in 10 and 20 litre metal tins, for use on concrete substrates.

1.5 For finishes suitable for green roofs, the advice of the Certificate holder should be sought.

2 Manufacture

2.1 The membranes are manufactured by saturation/coating of a polyester reinforcement using conventional coating techniques.

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.

3 Delivery and site handling

3.1 Rolls are delivered to site with two printed bands bearing the component name and thickness.

3.2 The rolls should be stored on end on a smooth clean surface, out of direct sunlight and away from sources of excessive heat.

3.3 The Certificate holder has taken the responsibility of classifying and labelling the system components 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).

3.4 Pro-Prime Bitumen containers must be kept tightly sealed and stored under cool and dry conditions, away from sources of ignition.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Proteus Pro-Felt 'Ultima-Plus' System.

Design Considerations

4 General

4.1 The Proteus Pro-Felt 'Ultima-Plus' System is satisfactory for use on flat or pitched roofs with limited access in the following applications:

- pedestrian access (with additional protection)
- loose-laid and ballasted
- partially or fully adhered
- protected, eg covered by pavers or other suitable protection
- single or built-up specifications
- green roofs
- roof gardens on flat roofs
- as an exposed cap sheet or in detail work
- podium decks.

4.2 Decks to which the system is to be applied must comply with the relevant requirements of BS 6229 : 2018, BS 8217 : 2005 and where appropriate *NHBC Standards* 2022, Chapter 7.1.

4.3 The following terms are defined for the purpose of this Certificate as:

- roof garden (intensive) — a roof with a substantial layer of growing medium with planting that can include shrubs and trees, and generally accessible to pedestrians
- green roof (extensive) — a roof with a shallow layer of growing medium planted with low-maintenance plants such as mosses, sedums, grasses and some wildflower species.

4.4 Limited access roofs are defined for the purpose of this Certificate as those subjected only to pedestrian traffic for maintenance operations, cleaning of gutters etc. Where traffic in excess of this is envisaged, special precautions such as 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(1). When designing flat roofs, twice the minimum fall must be assumed, unless a detailed analysis of the roof is available including, for example, overall and local deflection and direction of falls.

(1) *NHBC Standards* 2022 require a minimum fall of 1:60 for green roofs and roof gardens.

4.6 Pitched roofs are defined for the purpose of this Certificate as those having falls greater than 1:6.

4.7 The structural decks to which the membranes are to be applied must be suitable to transmit the dead and imposed loads experienced in service. Allowance needs to be made for loading deflections to ensure that the free drainage of water is maintained.

4.8 Imposed loads, dead loading and wind load specifications must be calculated by a suitably experienced and competent 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.

4.9 Recommendations for the design of green roofs and roof garden specifications are available within the latest edition of *The GRO Green Roof Code — Green Roof Code of Best Practice for the UK.*

4.10 The drainage system for green roofs or roof gardens must be correctly designed, and the following points should be addressed:

- provision made for access for maintenance purposes
- dead loads for green roof and roof gardens can increase if the drains become partially or completely blocked causing waterlogging of the drainage layer.

4.11 Insulation materials to be used in conjunction with the system 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 limitations of, that Certificate.

4.12 The NHBC requires that the roof membranes, once installed, be inspected in accordance with of *NHBC Standards* 2022, Chapter 7.1, Clause 7.1.12, including the use of an appropriate integrity test, where required. Any damage to the membrane is repaired in accordance with section 16 of this Certificate and reinspected.

5 Practicability of installation

The system is designed to be installed by a competent roofing contractor experienced with this type of system.

6 Weathertightness

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

7 Properties in relation to fire

7.1 When tested and classified in accordance with BS EN 13501-5 : 2005, a system comprising a 13 mm thick chipboard, a 2 mm thick vapour control layer, an 80 mm thick insulation board faced with bituminous glass fleece on both sides, a 3 mm thick plastomeric bitumen layer topped with Proteus Pro-Felt 'Ultima-Plus' Fireguard Mineral, achieved a classification of $B_{ROOF}(t4)$ and so is unrestricted with respect to proximity to a boundary by the documents supporting the national Building Regulations.

7.2 A roof incorporating the system will also be unrestricted under the national Building Regulations with respect to proximity to a boundary in the following circumstances:

- protected with an inorganic covering listed in the Annex of Commission Decision 2000/553/EC
- a roof garden covered with a drainage layer of gravel 100 mm thick and a soil layer 300 mm thick
- irrigated green roofs and roof gardens.

7.3 In Wales and Northern Ireland, when used on flat roofs with the surface finishes listed below, the system is also deemed to be unrestricted with respect to proximity to a boundary:

- 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 classification and permissible areas of use of other specifications should be confirmed by reference to the requirements of the documents supporting the national Building Regulations.

7.5 In England and Wales and Northern Ireland, the system, when used in pitches of greater than 70°, excluding upstands, should not be used on buildings that have a storey at least 18 m above ground level and which contain one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools and additionally, in Northern Ireland, nursing homes and places of lawful detention.

7.6 In Scotland, the system, when used in pitches of greater than 70°, excluding upstands, should not be used on buildings that have a storey at least 11 m above ground level.

7.7 If allowed to dry, the plants used may allow flame spread across the roof. This should be taken into consideration when selecting suitable plants for the roof. Appropriate planting, irrigation and/or protection should be applied to ensure the overall fire-rating of the roof is not compromised.

8 Resistance to wind uplift

8.1 The adhesion of the bonded membranes is sufficient to resist the effects of wind-suction, elevated temperature and thermal shock conditions likely to occur in practice.

8.2 The soil used in roof gardens must not be of a type that will be removed, or become delocalised, owing to wind scour experienced on the roof.

8.3 It should be recognised that the type of plants used in roof gardens could significantly affect the expected wind loads experienced in service.

9 Resistance to Mechanical Damage

9.1 The system can accept the limited foot traffic and light concentrated loads associated with installation and maintenance. Care must be taken to avoid puncture by sharp objects or concentrated loads. On limited access roofs where excess traffic is envisaged, such as for maintenance of lift equipment, a walkway must be provided using, for example, concrete slabs supported on bearing pads or in accordance with the Certificate holder's instructions.

9.2 Once the green roof or roof garden is installed, it can be regarded as a suitable protection for the membrane in use.

9.3 The system is capable of accepting minor structural movement while remaining weathertight.

10 Resistance to penetration by roots

A system using Proteus Pro-Felt 'Ultima-Plus' Anti Root Sanded or Proteus Pro-Felt 'Ultima-Plus' Anti Root Mineral membrane will resist penetration by plant roots and can be as a waterproofing in green roof and roof garden specifications.

11 Maintenance

11.1 The system must be the subject of six-monthly inspections and maintenance in accordance with the recommendations made in BS 6229 : 2018, Chapter 7, and Certificate holder's own maintenance requirements, where relevant, to ensure continued satisfactory performance.

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

11.3 Guidance for the maintenance of green roofs and roof gardens is available within the latest edition of *The GRO Green Roof Code — Green Roof Code of Best Practice for the UK*.

12 Durability

12.1 Under service normal conditions, the system will have a service life in excess of 30 years.

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

13 Reuse and recyclability

The membranes are made from bitumen, polyester and glass, which can be recycled.

Installation

14 General

14.1 Installation of the Proteus Pro-Felt 'Ultima-Plus' System must be carried out by installers trained and approved by the Certificate holder in accordance with the relevant clauses of BS 8000-0 : 2014, BS 8000-4 : 1989 and BS 8217 : 2005, the Certificate holder's instructions and this Certificate.

14.2 Substrates to which system is to be applied must be firm, dry, clean, and free from sharp projections such as nail heads, concrete nibs etc. Metal, concrete and wood wool substrates must first be primed with Pro-Prime Bitumen.

14.3 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.

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

14.5 Soil or other bulk material should not be stored on one area of the roof prior to installation, to ensure that localised overloading does not occur.

14.6 If the roof is likely to be subjected to uncontrolled pedestrian access, the substructure must satisfy 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 of Practice must be used.

14.7 At falls in excess of 1:11, provision should be made for mechanical fixings, as required by BS 8217 : 2005.

14.8 When used as an exposed top layer, Proteus Pro-Felt 'Ultima-Plus' Sanded Capsheet must be protected with a surface finish applied in accordance 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.

14.9 The mineral finished capsheets do not require further surface protection when used on roofs with limited access.

14.10 The membranes may be installed in the following system build-ups:

- a single layer of Proteus Pro-Felt 'Ultima-Plus' Sanded Capsheet and surface finished
- a single layer of Proteus Pro-Felt 'Ultima-Plus' Anti Root Sanded or Proteus Pro-Felt 'Ultima-Plus' Anti Root Mineral and green roof/roof garden specification
- a single layer of Proteus Pro-Felt 'Ultima-Plus' Fireguard Mineral
- a single layer of Proteus Pro-Felt 'Ultima-Plus' SL Mineral
- a double layer comprising Proteus Pro-Felt 'Ultima-Plus' Underlay Sanded and any one of the single-layer membranes previously mentioned
- a double layer comprising Proteus Pro-Felt 'Ultima-Plus' Sanded Capsheet and any one of the single-layer membranes previously mentioned.

15 Procedure

15.1 Irrespective of the chosen technique, the installation of double layer waterproofing specifications requires the second layer to always be fully bonded to the first layer, and all joints between the two layers to be offset by 500 mm.

Fully bonded

15.2 The membranes are applied by melting the lower surface by torching, and pressing the membrane down. Care must be taken not to overheat the coating. The capsheets, when used in multilayer systems, are fully bonded to Proteus Pro-Felt 'Ultima-Plus' Underlay Sanded or to base layers complying with BS 8747 : 2007.

Partially bonded

15.3 To achieve a partially bonded system, a base layer of BS 8747 : 2007 S1P1 membrane is bitumen bonded to a loose-laid layer of BS 8747 : 2007 Type 3G felt. The chosen capsheet is fully bonded to this base.

Loose-laid

15.4 The membranes should be laid out flat onto the substrate, without folds or ripples, with 100 mm side overlaps and 150 mm end overlaps.

15.5 The membrane is fully bonded at the perimeter and the overlaps are fully bonded together. Finally, the detailing work is carried out.

15.6 The membrane should be covered with a 5 mm protective sheet prior to the application of a 50 mm minimum thick layer of washed, well-rounded gravel. In areas of high-wind exposure, a heavier gravel may be used and/or the gravel may be bonded at the edges for a distance of one metre. Alternatively, concrete slabs on suitable supports can be used.

Jointing

15.7 End overlaps must be 150 mm wide and side overlaps 100 mm wide. A continuous bead of melted compound between 5 and 15 mm wide must be extruded on all overlaps to ensure a sealed and consolidated bond.

16 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

17 Tests

Tests were conducted on samples of the membrane, coating mass and reinforcement, and the results assessed to determine:

physical properties of the coating mass

- fines content
- softening point
- penetration
- low temperature flexibility

physical properties of the polyester reinforcement

- mass per unit area
- tensile strength
- elongation

physical properties — general

- roll width
- roll thickness
- mass per unit area
- water vapour permeability
- water vapour resistance

physical properties — directional

- tensile strength
- elongation
- tear strength
- dimensional stability

service performance

- resistance to water pressure
- resistance to static indentation
- resistance to dynamic indentation
- fatigue resistance
- wind uplift
- thermal cycling
- low temperature flexibility
- unrolling at low temperature
- thermal behaviour
- resistance to slipping
- peel strength
- heat ageing (test carried out at 70°C for 168 days)
- UV ageing (test carried out for 2000 hours QUV, 4 hours UV at 45°C with 4 hours condensation at 40°C).

18 Investigations

18.1 A user survey was carried out to assess the system's performance in use.

18.2 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.

18.3 An evaluation was made of fire tests reports.

18.4 Existing sites installed between 1982 and 1983 were visited in 2016 to assess the durability of the system.

Bibliography

BS 6229 : 2018 *Flat roofs with continuously supported flexible waterproof 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 8747 : 2007 *Reinforced bitumen membranes (RBMs) for roofing — Guide to selection and specification*

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 + A1 : 15 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 13707 : 2013 *Flexible sheets for waterproofing — Reinforced bitumen sheets for roof waterproofing — Definitions and characteristics*

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 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.

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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