

Radmat Building Products Ltd

Holland House
Valley Way
Rockingham Road
Market Harborough
Leicestershire LE16 7PS

Tel: 01858 410 372 Fax: 01858 410 572

e-mail: techenquiries@radmat.com

website: www.radmat.com



Agrément Certificate

09/4653

Product Sheet 1

PARAFLEX ROOF WATERPROOFING SYSTEMS

PARAFLEX FD ROOF WATERPROOFING SYSTEM

This Agrément Certificate Product Sheet⁽¹⁾ relates to the Paraflex FD Roof Waterproofing System, a flexible, unsaturated polyester reinforced roof waterproofing system, for use on flat (including protected zero fall) roofs and pitched roofs, including blue, green and brown roofs, in combination with a storm water attenuation system⁽²⁾, and on podium decks, balconies and walkways.

(1) Hereinafter referred to as 'Certificate'.

(2) The storm water attenuation system is outside the scope of this 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

Weather-tightness — the system will resist the passage of moisture to the interior of a building (see section 6).

Properties in relation to fire — the system may contribute to a roof being unrestricted under the national Building Regulations (see section 7).

Adhesion — the adhesion of the system is sufficient to resist the effects of any likely wind suction and the effects of thermal or other minor movement likely to occur in practice (see section 8).

Slip resistance — the system, when wet or dry, has a satisfactory coefficient of friction to enable its use in pedestrian areas (see section 9).

Resistance to mechanical damage — the system will accept, without damage, the limited foot traffic and loads associated with installation and maintenance (see section 10).

Resistance to penetration of roots — the system will resist the penetration by plant roots (see section 11).

Durability — under normal service conditions, the unprotected system will have a service life in excess of 35 years (see section 13).

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 Fourth issue: 29 September 2021

Originally certificated on 20 April 2009



Hardy Giesler
Chief Executive Officer

This Certificate was amended on 22 May 2024 as part of a transition of The BBA Agrément Certificate scheme delivered under the BBA's ISO/IEC 17020 accreditation. This Certificate was issued originally under accreditation to ISO/IEC 17065. Sections marked with the symbol † are not issued under accreditation. Full conversion to the ISO/IEC 17020 format will take place at the next Certificate review. The BBA is a UKAS accredited Inspection Body (No. 4345). Readers MUST check the validity of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly. Any photographs are for illustrative purposes only, do not constitute advice and must not be relied upon.

British Board of Agrément

Bucknalls Lane
Watford
Herts WD25 9BA

tel: 01923 665300
clientservices@bbacerts.co.uk
www.bbacerts.co.uk

©2021

Regulations

In the opinion of the BBA, the Paraflex FD Roof Waterproofing 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, in some circumstances, is restricted by this Requirement. See section 7.4 of this Certificate.	
Requirement:	B4(2)	External fire spread
Comment:	On a suitable substructure, the system can enable a roof to be unrestricted under this Requirement. See sections 7.1 to 7.3 of this Certificate.	
Requirement:	C2(b)	Resistance to moisture
Comment:	The system will enable a roof to satisfy this Requirement. See section 6.1 of this Certificate.	
Regulation:	7(1)	Materials and workmanship
Comment:	The system is acceptable. See sections 13.1 and 13.2 and the <i>Installation</i> part of this Certificate.	



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Durability, workmanship and fitness of materials
Comment:	The system is acceptable and satisfies the requirements of this Regulation. See sections 12.1, 13.1 and 13.2 and the <i>Installation</i> 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 7.5 of this Certificate.	
Standard:	2.8	Spread from neighbouring buildings
Comment:	The system, when applied to a suitable structure, can be regarded as having low vulnerability and can enable a roof to be unrestricted under this Standard, with reference to clause 2.8.1 ⁽¹⁾⁽²⁾ . See sections 7.1 to 7.3 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 6.1 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)	Fitness of materials and workmanship
Comment:	(b)(i)	The system is acceptable. See sections 13.1 and 13.2 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The system can enable a roof to satisfy the requirements of this Regulation. See section 6.1 of this Certificate.
Regulation:	36(b)	External fire spread
Comment:		On suitable substructures, the use of the system can enable a roof to be unrestricted under the requirements of this Regulation. See sections 7.1 to 7.3 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 section: 3 *Delivery and site handling* of this Certificate.

Additional Information

NHBC Standards 2021

In the opinion of the BBA, the Paraflex FD Roof Waterproofing 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.

Technical Specification

1 Description

1.1 The Paraflex FD Roof Waterproofing System is a three-part unsaturated polyester resin reinforced with polyester fleece.

1.2 Paraflex FD resin has the nominal characteristics of:

Specific gravity ($\text{g}\cdot\text{cm}^{-3}$)	1.013
Curing with accelerator (mins)	
time to rain-resistant	20
time to foot traffic accessibility	30
Flashpoint ($^{\circ}\text{C}$)	34
Colour	anthracite and light grey.

1.3 Other items used with the system, and included in the scope of this Certificate, are:

- reinforcement — a non-woven polyester fleece for use in reinforcing the membrane
- Paraflex Hardener — for use in curing
- Paraflex Accelerator — for use in curing
- Paraflex Primer — a polyurethane used for preparing substrates prior to the application of the main system
- kiln-dried sand (for primer) — grain size 0.3 – 0.8 mm, for broadcasting into the wet surface of the applied primer
- kiln-dried sand (for wearing coat) — grain size 0.8 – 1.1 mm, for addition to the wearing course as an anti-slip finish
- decorative coloured quartz sand can be used as an alternative.

2 Manufacture

2.1 The liquid components of the system are manufactured by a batch-blending process.

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 The Paraflex FD Roof Waterproofing System is delivered to site bearing the product's name, health and safety data, the Certificate holder's name and the BBA logo incorporating the number of this Certificate. The components are available in the pack sizes detailed in Table 1.

Component	Pack sizes
Paraflex FD resin	10 and 20 kg cans
reinforcement	1.05 m length roll, weighs 11 kg
Paraflex Hardener	0.6 kg Plastic Bags
Paraflex Accelerator	0.5 kg Dosing-Bottles
Paraflex Primer	10 and 20 kg Plastic Canisters
kiln-dried sand	25 kg Plastic Bags

3.2 The resin components, accelerator and primer must be kept tightly sealed and should be stored in a cool, ventilated place away from ignition sources and other chemicals. Storage temperatures of between 0 and 25°C will give the components a shelf-life of six months, at higher temperatures the shelf-life will reduce progressively.

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).

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Paraflex FD Roof Waterproofing System.

Design Considerations

4 General

4.1 The Paraflex FD Roof Waterproofing System is satisfactory for use as a waterproofing layer in:

- warm or cold exposed roofs on flat and pitched roofs with limited access
- inverted roof specifications using aggregate ballast on flat roofs, including zero fall roofs with limited access
- protected inverted roof specifications using pavers or other suitable protection on flat roofs, including zero fall roofs with limited or pedestrian access
- green roof (extensive) specifications on flat roofs, including zero fall roofs with limited or pedestrian access, or pitched roofs with limited access
- roof garden (intensive) specifications on flat roofs, including zero fall roofs with limited or pedestrian access
- brown roof specifications on flat roofs, including zero fall roofs with limited or pedestrian access
- blue roof specifications on flat roofs, including zero fall roofs

- long term storage roofs for rainwater harvesting
- podium decks
- balconies with pedestrian access
- walkways.

4.2 The system is suitable for use on the following substrates:

- concrete
- plastic
- wood
- metal
- asphalt
- reinforced bitumen membranes (including mineral-surfaced)
- PUR or PIR insulation boards
- mineral wool insulation batts.

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 wild flower species
- brown roof — a roof with a growing medium selected to allow indigenous plant species to inhabit the roof over time; no deliberate planting is undertaken
- blue roof — a flat roof designed to allow controlled attenuation of rain fall during storm events as part of a SUDS good practice policy.

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, special precautions, such as additional protection to the waterproofing membrane must be provided, as specified by the Certificate holder. Pedestrian access roofs are defined for the purpose of this Certificate as those not subject to vehicular traffic.

4.5 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80⁽¹⁾.

(1) *NHBC Standards 2021* 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 in excess of 1:6.

4.7 Zero fall roofs are defined for the purpose of this Certificate as those having a finished fall which can vary between 0 and 1:80⁽¹⁾ degrees. Recommendations for the design of roof falls are available in the Liquid Roofing and Waterproofing Association (LRWA) Note 7 — *Specifier Guidance for Flat Roof Falls*.

(1) *NHBC Standards 2021* require a minimum fall of 1:60 for green roofs and roof gardens.

4.8 When designing flat roofs, 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.

4.9 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 2020*, Chapter 7.1. Attention is drawn to the requirements of these Standards to ensure that reinforced concrete roof slabs are finished to an acceptable standard, allow free drainage of water and are allowed to dry prior to the installation of the waterproofing. When these conditions are not satisfied, appropriate remedial treatment is essential.

4.10 Structural decks for green roofs, roof gardens, brown roofs and blue roofs to which the system is 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.

4.11 Imposed loads, dead loading and wind load specifications are 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.

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

4.13 The drainage systems for inverted roofs, zero fall roofs, green roofs, roof gardens or brown roofs must be correctly designed, and the following points should be addressed:

- provision made for access for maintenance purposes
- for zero fall roofs, it is particularly important to identify the correct drainage points, to ensure that drainage is sufficient and effective
- dead loads for green roofs and roof gardens can increase if the drains become partially or completely blocked causing waterlogging of the drainage layer
- additional guidance for inverted roof specifications is given in BBA Information Bulletin No 4 *Inverted roofs — Drainage and U value corrections*.

4.14 Insulation systems or materials used in conjunction with the system must be suitable for the specification and either be:

- as described in the relevant clauses of BS 6229 : 2018 or
- the subject of a current BBA Certificate and used in accordance with, and within the limitations of, that Certificate.

4.15 The NHBC requires that the roof membrane, once installed, be visually inspected and electronically tested for its waterproofing integrity prior to the installation of the green roof/roof garden system in accordance with of *NHBC Standards 2021*, Chapter 7.1, Clause 7.1.9. Any damage to the membrane is repaired in accordance with section 17 of this Certificate.

5 Practicability of installation

The system must only be installed by installers who have been trained and approved by the Certificate holder.

6 Weathertightness



6.1 The system will adequately resist the passage of moisture to the interior of a building and enable a roof to comply with the requirements of the national Building Regulations.

6.2 To achieve a weathertight coating it is essential that the application rate is as quoted in the Certificate holder's literature for the relevant system.

7 Properties in relation to fire

Roof pitches ≤ 70 degrees



7.1 When tested to DD CEN/TS 1187 : 2012, Test 4⁽¹⁾⁽³⁾⁽⁵⁾, and classified in accordance with BS EN 13501-5 : 2016⁽⁴⁾⁽⁶⁾ and EN 13501-5 : 2005 +A1:2009⁽²⁾, the following specifications achieved a classification of B_{ROOF}(t4) and so are unrestricted with respect to proximity to a boundary under the national Building Regulations:

- a system comprising an 18 mm plywood, one layer of loose laid foil faced self-adhesive vapour control layer, a 120 mm thick foil faced PIR Insulation board, a loose laid layer of foil faced self-adhesive vapour control layer covered with 2.3 mm thick Paraflex FD resin with sanded surface applied in two coats, reinforced with a non-woven polyester.
(1) BRE Global P110631-1001 Issue 1, copies are available from the Certificate holder.
(2) BRE Global P110631-1002 Issue 1, copies are available from the Certificate holder.
- a system comprising a 19 mm plywood covered with 2.3 mm thick Paraflex FD resin applied in two coats, reinforced with a non-woven polyester, a loose laid 80 mm thick VIP insulation board and XPS insulation board, a loose laid water flow reducing layer covered by 100 mm of 20/40 rounded gravel ballast and finished with a 32 mm thick Dura Deck Resist Composite timber deck.

- (3) BRE Global Q100192-1002 Issue 2, copies are available from the Certificate holder.
- (4) BRE Global Q100192-1003 Issue 2, copies are available from the Certificate holder.

Note - Dura Deck Resist is outside the scope of the Certificate.

- a system comprising a 19 mm plywood covered with 2.3 mm thick Paraflex FD resin applied in two coats, reinforced with a non-woven polyester, a loose laid 80 mm thick VIP insulation board and XPS insulation board, a loose laid water flow reducing layer covered by 50 mm Concrete paving loose laid on paving supports 50 mm.

(5) BRE Global Q100192-1018 Issue 1, copies are available from the Certificate holder.

(6) BRE Global Q100192-1019 Issue 1, copies are available from the Certificate holder.

7.2 In the opinion of the BBA, a roof incorporating the system will be unrestricted under the national Building Regulations in the following circumstances:

- protected or inverted roof specifications, including 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 roof gardens, green roofs and brown roofs.

7.3 The designation of other specifications should be confirmed by reference to the requirements of the documents supporting the national Building Regulations.

Roof pitches >70 degrees



7.4 In England and Wales, 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 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.



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

7.6 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 Adhesion

8.1 The adhesion of the system to the substrates listed in section 4.2 is sufficient to resist the effects of any wind suction, elevated temperatures, thermal shock or minor movement likely to occur in practice.

8.2 Where the system is installed over insulation boards, the resistance to wind uplift will be dependent on the cohesive strength of the insulation and the method the boards are secured to the roof deck. This must be taken into account when selecting a suitable insulation material.

8.3 The growing medium used in intensive plantings must not be of the type that will be removed, or become delocalised, owing to wind scour experienced on site.

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

9 Slip resistance

The system, with a sand finish, has satisfactory slip resistance in both dry and wet conditions, and may be used in pedestrian access areas.

10 Resistance to mechanical damage

10.1 The system can accept, without damage, the limited foot traffic and light concentrated loads associated with installation and maintenance operations. However, reasonable care should be taken to avoid puncture by sharp objects or concentrated loads.

10.2 For areas of pedestrian access such as balconies and walkways, an anti-slip finish is applied.

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

11 Resistance to penetration of roots

When used in green roofs, brown roofs and roof gardens, the waterproofing will adequately resist penetration by plant roots.

12 Maintenance



12.1 The system must be the subject of six monthly inspections and maintenance in accordance with BS 6229 : 2018, Chapter 7, to ensure continued performance.

12.2 Green roofs, brown roofs and roof gardens must be the subject of regular inspections, particularly in autumn after leaf fall and in spring, to ensure unwanted vegetation and other debris are cleared from the roof and drainage outlets (see section 4.11). Guidance is available within the latest edition of *The GRO Green Roof Code, Green Roof Code of Best Practice for the UK*.

12.3 Where damage has occurred it should be repaired in accordance with section 17 and the Certificate holder's instructions.

13 Durability



13.1 Under normal service conditions, the unprotected system will have a service life in excess of 35 years.

13.2 When fully protected and subject to normal service conditions in an inverted roof specification with an open covering (eg aggregate pavers), the system can provide an effective barrier to the transmission of liquid water and water vapour for the design life of the roof in which it is incorporated.

13.3 However, in situations where maintenance or repair of any of the components in the roof structure are necessary (eg protection layer or insulation), the durability of the system may be reduced. In these circumstances the Certificate holder should be consulted.

13.4 An estimation cannot be given for the life of green roof, brown roof and roof garden specifications owing to the nature of use; however, under normal circumstances, it should be significantly greater than for open coverings.

Installation

14 General

14.1 Installation of the Paraflex FD Roof Waterproofing System must be in accordance with the relevant clauses of BS 6229 : 2018, BS 8000-0 : 2014, BS 8000-4 : 1989, Liquid Roofing and Waterproofing Association (LRWA) Note 7 – *Specifier Guidance for Flat Roof Falls*, the Certificate holder's instructions and the provisions of this Certificate.

14.2 The system must be applied when the air and substrate temperatures are greater than -5°C. Special precautions may be necessary when temperatures exceed 35°C, as shown in the Certificate holder's Technical Data sheets.

14.3 Detailing (eg upstands), must be carried out in accordance with the Certificate holder's instructions.

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

15 Site and surface preparation

15.1 Substrates to which the system is to be applied must be properly prepared in accordance with the Certificate holder's instructions.

15.2 Adhesion to substrates will depend on the condition and cleanliness of the substrate. Substrates must be visibly dry, sound and free from loose materials or contamination (eg moss or algae).

15.3 High pressure sand-blasting or water-jetting may be used to remove loose or flaking materials, but the substrate must be visibly dry before application of the system.

15.4 Damaged areas of the substrate (eg blistered bitumen roofing membrane) must be removed, replaced or repaired.

15.5 Deck surfaces should be free from sharp projections, such as protruding fixing bolts and concrete nibs.

15.6 Gutters and outlets should be checked to ensure that they are, and remain, clear of all debris.

15.7 The substrate should be primed with Paraflex Primer prior to application of the system at a coverage rate of 300 to 500 g·m⁻².

15.8 Kiln-dried quartz sand, with a grain size of 0.3 – 0.8 mm, is broadcast into the wet primer.

16 Application

16.1 The system is mixed on site by adding the hardener to the resin in the correct proportion, and the accelerator in the proportions given in Table 2 in respect of the surface/air temperature and stirred in accordance with the mixing instructions.

Table 2 Accelerator proportion

Surface and/or air temperature (°C)	Approximate amount of Paraflex Accelerator per kg of Paraflex FD resin (g)	Pot life (mins)
-5 – 0	30	30 – 40
1 – 5	25	25 – 35
6 – 10	20	20 – 30
11 – 15	15	20 – 25
16 – 20	10	15 – 20
21 – 35	5	10 – 20

16.2 The first coat of Paraflex FD is applied using a lambswool roller and spread evenly. The polyester reinforcement is rolled into the wet resin and pressed free of trapped air using the roller. The reinforcement should have an overlap of at least 50 mm and sufficient resin should be beneath the reinforcement to maintain the system's bond.

16.3 A second layer of Paraflex FD is applied and evenly spread.

16.4 The total coverage of the system is between 2.4 and 3 kg·m⁻² giving a finished cured thickness of 2.3 mm.

16.5 An anti-slip finish is applied, where necessary, for use on balconies, walkways or other areas of pedestrian access, in accordance with the Certificate holder's instructions.

17 Repair

The repair of minor damage to the system can be achieved effectively by cleaning back to the unweathered material and recoating the damaged area with the membrane at the total application rate stated in section 16.

18 Tests

Tests were conducted on samples of the Paraflex FD Roof Waterproofing System and the results were assessed to determine:

- water vapour diffusion resistance coefficient (μ)
- tensile strength and elongation at break
- watertightness at a six metre head
- tensile bond strength on concrete, steel, bitumen felt, softwood and plastic
- dynamic indentation at -20°C on mineral wool and concrete
- static indentation on mineral wool and concrete
- fatigue cycling
- root resistance
- coefficient of friction
- UV ageing ($1000 \text{ MJ}\cdot\text{m}^{-2}$ at 60°C) (severe conditions)
- heat ageing (for 200 days at 80°C)
- water exposure (for 180 days at 60°C)
- the effect of application temperatures
- the effect of day joints
- reaction to fire.

19 Investigations

19.1 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.

19.2 Data on fire performance were assessed.

19.3 Visits to existing sites of over 30 years old were carried out 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 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 13501-5 : 2005 + A1 : 2009 *Fire classification of construction products and building elements — Classification using data from external fire exposure to roof tests*

BS EN 13501-5 : 2016 *Fire classification of construction products and building elements — Classification using data from external fire exposure to roofs tests*

CEN/TS 1187 : 2012 *Test methods for external fire exposure to roofs*

Conditions of Certificate

Conditions

1. This Certificate:

- relates only to the product that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

2. Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

3 This Certificate will be displayed on the BBA website, and the Certificate Holder is entitled to use the Certificate and Certificate logo, provided that the product and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

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

5. In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

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

6. Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product which is contained or referred to in this Certificate is the minimum required to be met when the product is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

British Board of Agrément

1st Floor, Building 3, Hatters Lane
Croxley Park, Watford
Herts WD18 8YG

©2024

tel: 01923 665300
clientservices@bbacerts.co.uk
www.bbacerts.co.uk