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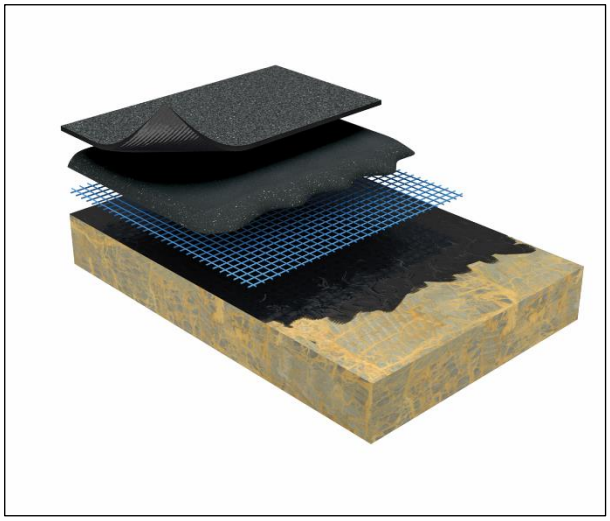
Agrément Certificate
15/5276
Product Sheet 2

LANGLEY'S ROOF WATERPROOFING SYSTEMS

PARATECH 40 HOT-MELT ROOFING SYSTEMS

This Agrément Certificate Product Sheet(1) relates to Paratech 40 Hot-Melt Roofing Systems, for use in waterproofing specifications for flat roofs, including zero fall, in inverted roof, green roof, roof garden and protected roof specifications.

(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 systems will resist the passage of moisture to the interior of a building (see section 6).

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

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

Resistance to mechanical damage — the systems will accept, without damage, the foot traffic and loads associated with installation and maintenance (see section 9).

Resistance to root penetration — the systems, when used in combination with Graviflex HM capsheet, will adequately resist plant root penetration (see section 10).

Durability — under normal service conditions and when fully protected, the system will provide a durable roof waterproofing for the service life of the roof in which it is incorporated (see section 12).

The BBA has awarded this Certificate to the company named above for the systems described herein. These systems have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

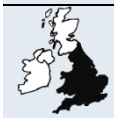
Date of Fourth issue: 21 January 2021

Originally certificated on 24 October 2017

Hardy Giesler
Chief Executive Officer

Regulations

In the opinion of the BBA, Paratech 40 Hot-Melt Roofing Systems, 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:		The systems, when used with suitable surface protection, can enable a roof to be unrestricted under this Requirement. See sections 7.1, 7.2 (Wales only) and 7.3 of this Certificate.
Requirement:	**C2(b)**	**Resistance to moisture**
Comment:		The systems will enable a roof to satisfy this Requirement. See section 6 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The systems are acceptable. See section 12 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 systems are acceptable and satisfy the requirements of this Regulation. See sections 11.1 and 12 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	2.8	Spread from neighbouring buildings
Comment:		The systems, when used with suitable surface protection, can be regarded as having a 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 and 7.3 of this Certificate.
Standard:	3.10	Precipitation
Comment		The systems 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)(b)	Statement of sustainability
Comment:		The systems can contribute to satisfying 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 systems 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)(b)(i)**	**Fitness of materials and workmanship**
Comment:		The systems are acceptable. See section 12 and the *Installation* part of this Certificate.

Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The systems will enable a roof to satisfy the requirements of this Regulation. See section 6 of this Certificate.
Regulation:	**36(b)**	**External fire spread**
Comment:		When used in suitably protected specifications, the systems can 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 sections: 1 *Description* (1.3, 1.4 and 1.5) and 3 *Delivery and site handling* (3.6) of this Certificate.

Additional Information

NHBC Standards 2021

In the opinion of the BBA, Paratech 40 Hot-Melt Roofing Systems, 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 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 membranes used in the systems in accordance with harmonised European Standard EN 13707 : 2013.

Technical Specification

1 Description

1.1 Paratech 40 Hot-Melt Roofing Systems consist of a hot-applied modified bitumen reinforced with interwoven glass fibre, and are used in conjunction with a range of modified bitumen roofing membranes.

1.2 The systems comprise:

- Langley Paratech HM — a polymer-modified bitumen hot-applied liquid membrane
- Langley Hi-Pen HM Primer — a cold-applied synthetic rubber-based primer for use on all concrete and masonry substrates
- Paratech R Reinforcing Fabric — a resin-coated interwoven glass fibre reinforcement
- Langley Bitumen Primer — a black quick-drying bitumen priming solution, consisting of bitumens and hydrocarbon solvents, for use on concrete surfaces
- Paradiene 35 SR4 HM — a polyester-fibre (180 $g \cdot m^{-2}$) reinforced, polymer-modified bitumen sheet with a thermofusible film or sand on both surfaces, for use as a base sheet or capsheet with additional protection
- Graviflex HM (the subject of BBA Certificate 10/4762) — a polyester-reinforced, styrene-butadiene-styrene (SBS) modified bitumen membrane with a mineral or sand finish on the upper surface, for use as an anti-root layer in green roof applications and used instead of Paradiene 35 SR4 HM on green roofs
- Néodyl Strip and Néodyl Cord — an SBS modified bitumen strip and a synthetic rubber cord, for use at changes of direction, structural joints and expansion joints, and covered with mineral layer
- Langley Protection Board — a bitumen-impregnated, water-resistant cellulose board for use on sites where covering of the waterproofing is delayed and excessive foot traffic is anticipated.

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

Table 1 Nominal characteristics

Characteristic (unit)	Graviflex HM	Paradiene 35 SR4 HM
Thickness (mm)	3.2(1)	3.7
Roll width (m)	1	1
Roll length (m)	8	8
Mass per unit area (kg·m^{-2})	5.0	3.3
Watertightness	pass	pass
Tensile strength (N per 50 mm)		
longitudinal	740	590
transverse	540	500
Elongation at break (%)		
longitudinal	40	40
transverse	49	45
Low temperature flexibility (°C)	≤ –15	≤ –15
Flow resistance (°C)	≥ 100	≥ 100
Dimensional stability (%)	≤ 0.5	≤ 0.5
Impact (mm) (soft substrate B)	1500	—
Static loading (kg) (soft substrate A)	20	20
Surface finish		
lower	thermofusible film/sand	thermofusible film/sand
upper	slate flakes/sand	thermofusible film/sand

(1) Including mineral finish.

1.4 Néodyl Strip and Néodyl Cord are manufactured to the following nominal characteristics:

Néodyl Strip

Roll length (m)	10
Roll width (m)	0.33, 0.5, 0.66 and 1.0
Roll weight (kg)	20 (0.33 m), 31 (0.5 m), 40 (0.66 m) and 62 (1.0 m)

Néodyl Cord

Diameter (mm)	30
Length (m)	10
Weight (kg)	11.

1.5 Langley Protection Board is manufactured to the following nominal characteristics:

Board length (m)	2
Board width (m)	1
Board thickness (mm)	2.5
Mass per unit area (kg·m^{-2})	3.3.

1.6 Ancillary items for use with the systems, but outside the scope of this Certificate, include:

- Langley Termination Bar — a GRP termination bar providing a compression seal to concrete or brickwork
- drainage board — a prefabricated drainage board for use in green roofs, plazas and podiums.

2 Manufacture

2.1 Langley Paratech HM is manufactured by heating and blending bitumen and polymer in a temperature-controlled cycle.

2.2 The membranes are manufactured by saturating and coating the reinforcement with SBS modified bitumen and calendering to the correct thickness.

2.3 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 operated by the manufacturer are being maintained.

3 Delivery and site handling

3.1 Langley Paratech HM is delivered to site in blocks packaged in silicon-lined cardboard cartons with labels bearing the product name, article number, weight, date of production, batch number, address of the Certificate holder and the BBA logo incorporating the number of this Certificate. The material must be stored under cover and away from heat sources.

3.2 Langley Paratech HM is unaffected by the temperatures likely to occur during storage and should have an indefinite shelf-life when stored under normal conditions.

3.3 The membranes are delivered to site in rolls in printed wrappers bearing the product name, the Certificate holder's name and the BBA logo incorporating the number of their corresponding Certificate.

3.4 Rolls should be stored upright on a clean, level surface and kept dry, away from excessive heat and under cover.

3.5 Paratech R Reinforcing Fabric, Néodyl Strip, Néodyl Cord and Langley Protection Board are packaged with labels bearing the product trade name, and should be stored under cover and kept dry.

3.6 The Certificate holder has taken the responsibility of classifying and labelling the systems 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 Paratech 40 Hot-Melt Roofing Systems.

Design Considerations

4 General

4.1 Paratech 40 Hot-Melt Roofing Systems are satisfactory for use as a waterproofing layer on flat, including zero fall, roofs with limited access in:

- inverted roof specifications
- protected roof specifications (including podium deck roofs), eg covered by pavers or other suitable protection
- roof gardens or green roof systems.

4.2 The systems have been assessed for use on the following substrates:

- in-situ structural concrete
- precast concrete
- concrete block in vertical applications
- lightweight structural concrete (subject to the manufacturer's recommendations)

- new exterior grade plywood (to BS EN 636 : 2012, Clause 8), fixed in accordance with the relevant requirements of BS 6229 : 2018 and BS 8217 : 2005.

4.3 Substrates to which the systems are to be applied must comply with the relevant requirements of BS 6229 : 2018 and, where appropriate, *NHBC Standards* 2019, Chapter 7.1.

4.4 In-situ structural concrete with a density of less than 1850 $kg \cdot m^{-3}$ (owing to substrate friability) and lightweight insulating concretes are not acceptable substrates for application of the systems.

4.5 The structural decks to which the systems are to be applied must be suitable to transmit the dead and imposed loads experienced in service.

4.6 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, 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.

4.7 Limited access roofs are defined for the purpose of this Certificate as those subjected only to pedestrian traffic for maintenance of the roof covering, cleaning of gutters, etc. Where traffic in excess of this is envisaged, additional protection to the membrane must be provided as specified by the Certificate holder.

4.8 Flat roofs are defined for the purpose of this Certificate as those with a minimum finished fall of 1:80(1); for design purposes, twice the minimum fall should be assumed, unless a detailed analysis of the roof is available, including overall and local deflection, direction of falls, etc.

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

4.9 Zero fall roofs are those with a finished fall of between 0 and 1:80(1); reference should also be made to the appropriate clauses in *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

4.10 Imposed loads, dead loading and wind loads specifications are calculated 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.

4.11 When the systems are used in gravel-ballasted protected roof or inverted roof specifications, a suitable filter layer/water-reducing layer must be used between the ballast and the rest of the specification.

4.12 When the systems are used in roof garden or green roof specifications, Graviflex HM must be used as part of the systems.

4.13 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*.

4.14 The drainage systems for inverted roofs, zero fall roofs, green roofs or roof gardens 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*.

4.15 Insulation systems or materials used in conjunction with the systems must be:

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

5 Practicability of installation

The systems should only be installed by trained contractors using specialist equipment.

6 Weathertightness

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

7 Properties in relation to fire

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

- when used in irrigated roof gardens or green roofs
- a roof garden covered with a drainage layer of gravel 100 mm thick and a soil layer of 300 mm
- when protected by an inorganic covering (eg gravel or paving slabs) listed in the Annex of Commission Decision 2000/553/EC.

7.2 Exposed areas of the capsheet, when used with one of the surface finishes detailed in Approved Document B, Appendix A, Table A5, part iii (Wales) and Technical Booklet E, Table 4.6, part iv (Northern Ireland) (listed below), would be deemed to be unrestricted:

- bitumen-bedded stone chippings covering the whole surface to a depth of not less than 12.5 mm
- bitumen-bedded tiles of non-combustible materials
- sand and cement screed
- macadam.

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

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

8 Resistance to wind uplift

8.1 The adhesion of the systems 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 The ballast requirements for inverted specifications should be calculated by a suitably competent and experienced individual in accordance with the relevant parts of BS EN 1991-1-4 : 2005 and its UK National Annex. The systems should always be ballasted with a minimum depth of 50 mm of aggregate. In areas of high wind exposure, the Certificate holder's advice should be sought. Alternatively, concrete slabs on suitable supports can be used.

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 Resistance to mechanical damage

9.1 The systems can accept the limited foot traffic and light concentrated loads associated with installation and maintenance. Reasonable care should be taken to avoid puncture of the systems by sharp objects or concentrated loads. Where traffic in excess of this is envisaged, such as for maintenance of lift equipment or pedestrian areas, suitable protection (for example, using concrete slabs supported on bearing pads) must be used.

9.2 Whilst the membrane can withstand distributed loads, it can be damaged by concentrated point loads and these should be avoided.

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

9.4 The systems are capable of accepting the minor structural movement likely to occur under normal service conditions while remaining weathertight, including, when used over construction or bridging joints. When used over expansion joints, the membrane should be correctly detailed in accordance with the Certificate holder's instructions.

10 Resistance to root penetration

Results of root penetration resistance tests on Graviflex HM, including joints, indicate that it is resistant to root penetration and can be used in roof waterproofing specifications for roof gardens and green roofs.

11 Maintenance

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

11.2 Guidance is available within the latest edition of *The GRO Green Roof Code – Green Roof Code of Best Practice for the UK.*

12 Durability

When fully protected and subject to normal service conditions, the systems can provide an effective barrier to the transmission of liquid water and water vapour for the service life of the roof in which they are incorporated.

Installation

13 General

13.1 Installation of the Paratech 40 Hot-Melt Roofing Systems must be carried out only by specialist roofing contractors trained and approved by the Certificate holder, in accordance with the relevant clauses of BS 8000-0 : 2014 and BS 8000-4 : 1989, Liquid Roofing and Waterproofing Association (LRWA) Note 7 – *Specifier Guidance for Flat Roof Falls,* the Certificate holder's instructions and this Certificate.

13.2 The system must be installed on a dry and frost-free substrate. After rain or snow, the substrate must be allowed to dry before installation can commence. The installing contractor can aid drying by suitable means approved by the Certificate holder. Once applied, the systems are not affected by rain, snow or frost.

13.3 The surface of the concrete substrate must be sound and free of contaminants with a surface finish in accordance with the Certificate holder's criteria.

13.4 To assess the suitability of a substrate to receive the membranes, bond tests must be carried out in accordance with the Certificate holder's instructions. If bonding problems occur, advice should be sought from the Certificate holder.

13.5 The substrate is primed using Parabit HM primer at a nominal coverage rate of 5 $m^2 \cdot \ell^{-1}$, or Langley Hi-Pen HM Primer at a nominal coverage rate of 4 $m^2 \cdot \ell^{-1}$, depending on substrate porosity, and allowed to dry.

13.6 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 Procedure

14.1 Langley Paratech HM blocks are heated in an air jacketed boiler (with continuous agitation) or a thermostatically controlled bitumen boiler to a temperature of approximately 180°C, with a maximum allowable temperature of 200°C. Overheating of the hot-melt compound must be avoided.

14.2 Paratech R Reinforcing Fabric is unrolled over the primed substrate, with a minimum overlap of 75 mm at the sides and end of a roll.

14.3 Paradiene 35 SR4 HM is unrolled over the reinforcement with overlaps of 100 mm at the side and 150 mm at the end. The membranes must always be installed with end laps staggered a minimum of 300 mm and in such a manner that no counter-seams in the direction of outlets are made. The membrane is rolled back on itself prior to the application of the hot-melt compound.

14.4 The hot-melt compound is poured through the reinforcement at an application rate of 3 $kg \cdot m^{-2}$, ensuring that the reinforcement is fully encapsulated by the hot melt.

14.5 Paradiene 35 SR4 HM is immediately unrolled into the hot-melt compound; excess compound may extrude from the edges of the membrane. The hot-melt is poured ahead of the unrolled membrane. The membrane must be fully bonded to the hot-melt.

14.6 Roof garden and green roof specifications use Graviflex HM instead of Paradiene 35 SR4 HM.

14.7 Upstands and other detailing are carried out in accordance with the Certificate holder's installation instructions.

15 Repair

In the event of minor damage, the membranes can be fully repaired with an additional patch of the applicable membrane bonded to the damaged area using the appropriate installation method.

Technical Investigations

16 Tests

16.1 Tests were conducted on Langley Paratech HM and the results assessed to determine:

- fines content
- cone penetration at 50°C
- flow at 60°C for 5 hours at 75° angle
- low temperature flexibility
- effects of re-melting
- effects of prolonged heating.

16.2 Tests were conducted on Graviflex HM and the results assessed to determine:

- roll weight
- thickness
- length

- low temperature flexibility
- heat resistance
- dimensional stability
- tensile strength and elongation
- nail tear resistance
- root resistance
- resistance to leakage at joints
- tensile shear of joints
- adhesion
- peel resistance of joints
- water exposure (for 180 days at 60°C)
- chemical resistance.

16.3 An assessment was made of test data in relation to:

- low temperature flexibility of coating mass
- elastic recovery of coating mass
- ring and ball of coating mass
- low temperature flexibility unaged and heat aged for 90 days at 80°C
- heat resistance unaged and heat aged for 90 days at 80°C
- dimensional stability
- static indentation
- resistance to sliding
- dynamic indentation
- fatigue resistance unaged and heat aged for 28 days at 80°C
- peel from support unaged and heat aged for 28 days at 80°C.

16.4 Tests were conducted on an assembled system and the results assessed to determine:

- water vapour permeability
- watertightness
- dynamic indentation, control and after heat ageing
- static indentation, control and after water exposure
- fatigue cycling, control and heat aged.

17 Investigations

17.1 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.

17.2 Data on CE marking for the roofing membranes to EN 13707 : 2013 were examined.

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 636 : 2012 + A1 : 2015 *Plywood — Specifications*

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 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*

EN 13707 : 2013 *Flexible sheets for waterproofing — Reinforced bitumen sheets for roof waterproofing — Definitions and characteristics*

18 Conditions

18.1 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.

18.2 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.

18.3 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.

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

18.5 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.

18.6 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.