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Agrément Certificate

03/4009

Product Sheet 5 Issue 1

PERMATEC HOT MELT ROOFING AND WATERPROOFING SYSTEMS

PERMATEC LI ANTI-ROOT HOT MELT ROOF WATERPROOFING SYSTEMS

This Agrément Certificate Product Sheet⁽¹⁾ relates to Permatec LI Anti-Root Hot Melt Roof Waterproofing Systems, for use as waterproofing systems in protected flat roofs (including zero fall), inverted roofs, green roofs, biodiverse roofs, roof gardens, and blue roof specifications in combination with a stormwater attenuation system⁽²⁾.

(1) Hereinafter referred to as 'Certificate'.

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

The assessment includes

Product factors:

- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

Process factors:

- compliance with Scheme requirements
- installation, delivery, handling and storage
- production and quality controls
- maintenance and repair

Ongoing contractual Scheme elements†:

- regular assessment of production
- formal 3-yearly review



KEY FACTORS ASSESSED

- Section 1. Mechanical resistance and stability
- Section 2. Safety in case of fire
- Section 3. Hygiene, health and the environment
- Section 4. Safety and accessibility in use
- Section 5. Protection against noise
- Section 6. Energy economy and heat retention
- Section 7. Sustainable use of natural resources
- Section 8. Durability

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 issue: 23 September 2024

Hardy Giesler
Chief Executive Officer

This BBA Agrément Certificate is issued under the BBA's Inspection Body accreditation to ISO/IEC 17020. Sections marked with † are not issued under accreditation.

The BBA is a UKAS accredited Inspection Body (No. 4345), Certification Body (No. 0113) and Testing Laboratory (No. 0357).

Readers MUST check that this is the latest issue of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

The Certificate should be read in full as it may be misleading to read clauses in isolation.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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SUMMARY OF ASSESSMENT AND COMPLIANCE

This section provides a summary of the assessment conclusions; readers should refer to the later sections of this Certificate for information about the assessments carried out.

Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that Permateg LI Anti-Root Hot Melt Roof Waterproofing 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 Building Regulations 2010 (England and Wales) (as amended)

Requirement: B4(2) Comment:	External fire spread Roofs incorporating the systems, when used with suitable surface protection, may enable a roof to be unrestricted by this Requirement. See section 2 of this Certificate.
Requirement: C2(b) Comment:	Resistance to moisture The systems will enable a roof to satisfy this Requirement. See section 3 of this Certificate.
Regulation: 7(1) Comment:	Materials and workmanship The systems are acceptable. See sections 8 and 9 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2) Comment:	Fitness and durability of materials and workmanship The use of the systems satisfies this Regulation. See sections 8 and 9 of this Certificate.
Regulation: 9 Standard: 2.8 Comment:	Building standards – construction Spread from neighbouring buildings Roofs incorporating the systems, when used with suitable surface protection, may enable a roof to be unrestricted by this Standard, with reference to clause 2.8.1 ⁽¹⁾⁽²⁾ . See section 2 of this Certificate.
Standard: 3.10 Comment:	Precipitation The systems will enable a roof to satisfy this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.7 ⁽¹⁾⁽²⁾ . See section 3 of this Certificate.
Standard: 7.1(a) Comment:	Statement of sustainability 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 Comment:	Building standards – conversion Comments given for 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(1)(a)(i)(ii) Comment:	Fitness of materials and workmanship The systems are acceptable. See sections 8 and 9 of this Certificate.
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Regulation:	28(b)	Resistance to moisture and weather
Comment:		The systems will enable a roof to satisfy this Regulation. See section 3 of this Certificate.
Regulation:	36(b)	External fire spread
Comment:		Roofs incorporating the systems, when used with suitable surface protection, may enable a roof to be unrestricted by this Regulation. See section 2 of this Certificate.

Additional Information

NHBC Standards 2024

In the opinion of the BBA, Permateg LI Anti-Root Hot Melt Roof Waterproofing 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, terraces and balconies*.

In addition, in the opinion of the BBA, the systems, when installed and used in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards for Conversions and Renovations*, taking account of other relevant guidance within the chapter and the suitability of the substrate to receive the systems.

The *NHBC Standards* do not cover the refurbishment of existing roofs.

Fulfilment of Requirements

The BBA has judged Permateg LI Anti-Root Hot Melt Roof Waterproofing Systems to be satisfactory for use as described in this Certificate. The systems have been assessed as waterproofing systems in protected flat roofs (including zero fall), green roofs, biodiverse roofs, roof gardens, and blue roof specifications in combination with a stormwater attenuation system.

ASSESSMENT

Product description and intended use

The Certificate holder provided the following description for the systems under assessment. Permateg LI Anti-Root Hot Melt Roof Waterproofing Systems consist of:

- Permateg LI Membrane — a hot-applied, polymer modified bitumen waterproofing compound
- Permateg LI Anti-Root Membrane — an anti-root, hot-applied, polymer modified bitumen waterproofing compound.

The membranes are applied in two layers to provide a waterproofing layer with a nominal coating thickness of 6 mm. Typical system build ups are given in Annex A of this Certificate.

Ancillary Items

PermaFLASH-R is a 55 g·m⁻² polyester reinforcing scrim is essential to use with the systems and has been assessed with the systems.

The Certificate holder recommends the following ancillary items for use with the systems, but these materials have not been assessed by the BBA and are outside the scope of this Certificate:

- PermaGUARD-PB — a 3.2 mm thick protection board
- IKO Permateg High Penetration Primer — a brush or roller-applied bituminous priming solution used in the preparation of cementitious surfaces prior to the application of the system
- IKO Permateg Polymer Primer — a brush or roller-applied synthetic rubber-based priming solution used in the preparation of cementitious surfaces prior to the application of the system

- PermaFLASH-D150 — a detailing sheet, used as a reinforcement layer over cracks, construction joints and changes in materials, and where minor movement may occur
- PermaFLASH-D500 — a detailing sheet, used as a reinforcement at rainwater outlets
- PermaGUARD-HDPB — a polymeric protection board
- PermaGUARD-M — a torch-applied bitumen membrane protection layer for use on details which will not be covered by the surface finishes
- IKO Roofgarden 4 SBS ADF Cap Sheet — a protection layer used over Permateg LI in green roof specifications
- PermaGUARD-F — a protection layer
- Foamglass insulation — cellular glass insulation slabs
- IKO Plasdrain — a range of drainage boards
- Inverted Roof Insulation Board — insulation used in inverted/protected roof specifications
- Upstand Insulation Board — insulation used for upstand detailing
- proprietary expansion joint systems
- PermaFLASH-UN — a reinforcement sheet used at construction joints and where minor structural movement is anticipated
- IKOgreen Vegetation — for use in roof garden applications
- IKOgreen Growing Medium — for use in roof garden applications
- IKOgreen Plasfeed — a range of drainage/moisture retention layers for use in roof gardens applications.

Applications

The systems are intended for use as waterproofing layers on protected flat roofs (including zero fall) with limited access in:

- roof gardens
- green roofs
- biodiverse specifications
- blue roof specifications in combination with a storm water attenuation system⁽¹⁾.

(1) The storm water attenuation system is outside the scope of the Certificate.

The systems are suitable for use on the following substrates:

- in-situ structural concrete
- precast concrete
- concrete block
- timber
- foamglass insulation
- modified screeds and levelling compounds.
- flat metal decks
- profiled metal decks with a suitable cover board

Definitions for products and applications inspected

The following terms have been defined for the purpose of this Certificate as:

- limited access roof — a roof subjected only to pedestrian traffic for the maintenance of the roof covering, cleaning of gutters, etc
- flat roof — a roof having a minimum finished fall of 1:80⁽¹⁾
- pitched roof — a roof having a fall in excess of 1:6
- zero fall roof — a roof having a minimum finished fall between 0 and 1:80⁽¹⁾
- root barrier — a root resistant membrane meeting the requirements of BS EN 13948 : 2007
- 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
- invasive plant species — vegetation species having vigorous and/or invasive root systems likely to cause damage to components of the inverted roof insulation system and roof waterproofing.
- biodiverse roof (extensive or intensive) — a roof planted with the aim either to recreate the habitat that was lost when a building was erected or to enhance it
- blue roof — a flat or zero fall roof which is designed to allow controlled attenuation of rain fall during heavy and storm events, as part of sustainable urban drainage systems (SUDS)⁽²⁾.

(1) *NHBC Standards 2024* require a minimum fall of 1:60 for green roofs and roof gardens.

(2) The stormwater attenuation system is outside the scope of this Certificate.

Product assessment – key factors

The systems were assessed for the following key factors, and the outcome of the assessment is shown below. Conclusions relating to the Building Regulations apply to the whole of the UK unless otherwise stated.

1 Mechanical resistance and stability

Not applicable.

2 Safety in case of fire

Data were assessed for the following characteristic.

2.1 External fire spread

2.1.1 A roof incorporating the systems will be unrestricted by the documents supporting the national Building Regulations with respect to proximity to a relevant boundary in the following circumstances:

- protected or inverted roof specifications, including an inorganic covering (eg gravel or paving slabs) 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.

2.1.2 In Wales and Northern Ireland, when used using a substrate designated in the supporting documents with the surface finishes listed below, a roof incorporating the systems will be similarly unrestricted:

- 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.

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

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

3 Hygiene, health and the environment

Data were assessed for the following characteristics.

3.1 Weathertightness

3.1.1 The weathertightness of the systems was assessed using test data from a representative related system and met the requirement of remaining watertight when subjected to a six metre head of water for 24 hours.

3.1.2 On the basis of the data assessed, the systems will adequately resist the passage of moisture to the interior of a building and so satisfy the relevant requirements of the national Building Regulations.

3.2 Resistance to mechanical damage

3.2.1 Results of resistance to mechanical damage tests are given in Table 1.

<i>Table 1 Resistance to mechanical damage</i>			
Product assessed	Assessment method	Requirement	Result
Permatec LI Membrane	Low temperature flexibility to BS EN 15813 : 2011	Value achieved	0°C
PermaFLASH-R	Tensile strength to BS EN 29073-3 : 1992	Value achieved	
	Longitudinal direction		154 N
	Transverse direction		66 N
PermaFLASH-R	Elongation to BS EN 29073-3 : 1992	Value achieved	
	Longitudinal direction		30.6%
	Transverse direction		41.8%

3.2.2 The tensile properties, resistance to indentation and fatigue properties of the systems were assessed using test data from a representative related system.

3.2.3 On the basis of data assessed, the systems can accept, without damage, the limited foot traffic and light concentrated loads associated with installation and maintenance and the effects of minor structural movement likely to occur under normal service conditions while remaining weathertight.

3.2.4 Where traffic in excess of the examples given in section 3.2.3 is envisaged, such as for maintenance of lift equipment, suitable protection (for example, using concrete slabs supported on bearing pads) must be used. Reasonable care must be taken to avoid puncture of the systems by sharp objects or concentrated loads.

3.3 Resistance to root penetration

3.3.1 The resistance to root penetration of the Permatec LI Anti-Root Membrane was assessed using test data to EN 13948 : 2007, from a representative related system and met the requirement of no root penetration after 2 years.

3.3.2 On the basis of data assessed, Permatec LI Anti-Root Membrane, when used in green roofs and roof gardens, will resist penetration by plant roots and remain weathertight.

3.3.3 In green roofs, when installed in accordance with this Certificate, the inverted roof insulation, water flow reducing layer (WFRL) and roof waterproofing layer will be adequately protected against root damage, subject to routine maintenance being carried out in accordance with this Certificate and as recommended by the Green Roof Organisation (GRO) *Code of Best Practice*.

3.3.4 In roof gardens, when installed in accordance with this Certificate, the inverted roof insulation and WFRL must be protected from damage from invasive plant roots, for example, by using root resistant planter boxed or tree pits lined with an effective root barrier.

4 Safety and accessibility in use

Not applicable.

5 Protection against noise

Not applicable.

6 Energy economy and heat retention

Not applicable.

7 Sustainable use of natural resources

7.1.1 Permaterc LI Membrane and Permaterc LI Anti-Root Membrane have a recycled content of 45% by mass of the total product.

7.1.2 The recycled materials are limestone filler and ground rubber crumb, the latter manufactured from post-consumer vehicular tyres. Post-consumer material is defined in BS EN ISO 14021 : 2016, and the Waste & Resources Action Programme (WRAP) *'Rules of Thumb' Guide to Recycled Content in Construction Products*.

7.1.3 The recycled content has been calculated in accordance with BS EN ISO 14021 : 2016 by expressing the input mass of recycled material as a percentage of the total input mass for the product.

7.1.4 The source and quantity of recycled material added to the product is verified by the BBA as part of post Certification auditing.

8 Durability

8.1 The potential mechanisms for degradation and the known performance characteristics of the materials in the systems were assessed.

8.2 The results of a durability test are given in Table 2.

<i>Table 2 Durability</i>			
Product assessed	Assessment method	Requirement	Result
Permaterc LI Membrane	Dimensional stability to BS EN 15818 : 2011	No sliding or draining down	Pass

8.3 The durability of the systems was also assessed using test data from a representative related system.

8.4 Service life

Under normal service conditions, the systems will have a life at least equivalent to the structure in which they are incorporated, provided they are designed, installed and maintained in accordance with this Certificate and the Certificate holder's instructions.

Information provided by the Certificate holder was assessed for the following factors:

9 Design, installation, workmanship and maintenance

9.1 Design

9.1.1 The design process was assessed by the BBA, and the following requirements apply in order to satisfy the performance specified in this Certificate.

9.1.2 Decks to which the systems are to be applied must comply with the relevant requirements of BS 6229 : 2018, BS 8217 : 2005 and, where appropriate, *NHBC Standards 2024*, Chapter 7.1.

9.1.3 For design purposes of flat roofs, twice the minimum finished fall must be assumed unless a detailed structural analysis of the roof is available, including overall and local deflection, direction of falls, etc.

9.1.4 Structural decks to which the systems 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.

9.1.5 Imposed loads, wind loading and dead loads 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.

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

9.1.7 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.

9.1.8 The growing medium used in roof gardens must not be of a type that will be removed or become delocalised owing to wind scour.

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

9.1.10 For green roofs and roof gardens, invasive non-native alien plant species as defined by UK Government guidance must not be used.

9.1.11 For roof garden finishes, to protect the WFRL, inverted roof insulation and the roof waterproofing, invasive plant species must not be used, or alternatively if utilised in the planting, they must be confined within either a proprietary root resistant planter box or a planter box lined with an impervious root barrier or a tree pit lined with an impervious root barrier. In particular, the following species must be excluded or managed:

- invasive weeds including Buddleia
- plants and grasses with aggressive rhizomes such as Bamboo
- self-setting woody weeds such as Sycamore and Ash seedlings should be removed at early germination stage
- other woody plants which spread aggressively including Rhododendron.

9.1.12 The Green Roof Organisation (GRO) can provide guidance on species not included in section 9.1.10 but such advice is outside the scope of this Certificate.

9.1.13 Where a root resistant planter box is installed over the inverted roof insulation and WFRL a suitable drainage board must be installed beneath the planter box to allow the inverted roof system to function correctly, the planter box to drain and to enable rainwater to reach drainage outlets without impediment.

9.1.14 The drainage systems for inverted roofs, protected zero fall roofs, green roofs, roof gardens or blue roofs must be correctly designed, and the following points must be addressed:

- provision made for access for maintenance purposes
- for protected zero fall roofs, it is particularly important to identify the correct drainage points, to ensure that drainage is sufficient and effective
- the attenuation system and drainage for blue roofs must be designed by a suitably competent and experienced individual to allow the short-term storage and discharge at a set flow rate of storm water to alleviate the risk of localised flooding
- dead loads for green roof, roof gardens and blue roofs can increase if the drains become partially or completely blocked causing waterlogging of the drainage layer.

9.1.15 Insulation materials to be used in conjunction with the systems must be in accordance with the Certificate holder's instructions and must be either:

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

9.2 Installation

9.2.1 Installation instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate.

9.2.2 Installation of the systems must be in accordance with this Certificate, the Certificate holder's instructions, the relevant clauses of BS 6229 : 2018, BS 8000-0 : 2014 and BS 8000-4 : 1989 and BS 8217 : 2005 and the *Liquid Roofing and Waterproofing Association (LRWA) Note 7 – Specifier Guidance for Flat Roof Falls*. A summary of instructions and guidance are provided in Annex A of this Certificate.

9.2.3 The systems 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 installer can aid drying by any suitable means approved by the Certificate holder, but such advice is outside the scope of this Certificate.

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

9.2.5 Prior to the application of the systems, defects in the substrate such as cracks, irregularities and other areas of potential weakness must be repaired using a suitable repair mortar, and the substrate cleaned in accordance with the Certificate holder's instructions. The Certificate holder can advise on suitable materials, but such advice and products are outside the scope of this Certificate. Additional membrane may be used to fill minor depressions in the substrate.

9.2.6 Cementitious substrates must be coated with a suitable primer and allowed to dry before application of the systems. The Certificate holder can advise on suitable materials, but such advice and products are outside the scope of this Certificate.

9.2.7 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.

9.2.8 Blocks of the membrane compound are heated in a mechanically agitated melter, which must have a double jacket containing either air or a heat-transfer mineral oil and be fitted with thermometers to measure the melt and air/oil temperatures.

9.2.9 The nominal temperature range for the molten membrane is 160 to 180°C. The temperature of the melt must not exceed 190°C.

9.2.10 The molten membrane must be discharged from the melter into a suitable container and applied to the roof, using a long-handled squeegee for horizontal surfaces and a suitable spreader for vertical surfaces.

9.2.11 At structural movement joints between 12 and 50 mm (maximum 50% total movement), a proprietary joint system must be installed. The Certificate holder can advise on suitable materials, but such advice and products are outside the scope of this Certificate.

9.2.12 At all non-monolithic changes in substrate materials, at structural/shrinkage cracks between 3 and 6 mm wide, at structural joints between 6 and 12 mm wide and where minor movement may occur, an appropriate detailing sheet must be applied prior to applying the systems. The Certificate holder can advise on suitable materials, but such advice and products are outside the scope of this Certificate.

9.2.13 At all joints in suitable cover boards, pre cast concrete and composite metal decks, an appropriate detailing sheet must be applied prior to applying the system. The advice of the Certificate holder must be sought, but such advice is outside the scope of this Certificate.

9.2.14 The first layer of the molten membrane must have a nominal thickness of 3 mm.

9.2.15 PermaFLASH-R polyester reinforcing scrim must be embedded by lightly brushing it into the first layer of the membrane whilst it is still hot and tacky. The reinforcement overlaps must be at least 75 mm and fully sealed by the molten membrane.

9.2.16 The second layer of the membrane, applied over the top of the reinforcement, must have a nominal thickness of 3 mm.

9.2.17 The systems must be protected immediately with an appropriate protection layer. This must be carried out prior to applying the insulation, water control layer and the protective layer or other specified surface finish (see Figures 1 to 6 in Annex A for typical design specifications). The Certificate holder can advise on suitable materials, but such advice and products are outside the scope of this Certificate.

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

9.2.19 The NHBC requires that the systems, once installed, are inspected in accordance with *NHBC Standards 2024*, Chapter 7, Clause 7.1.11, including undergoing an appropriate integrity test, where required. Any damage to the systems assessed in this Certificate must be repaired in accordance with section 9.4 of this Certificate and reinspected, in order to maintain system performance.

9.3 Workmanship

Practicability of installation was assessed by the BBA, on the basis of the Certificate holder's information. To achieve the performance described in this Certificate, installation of the systems must be carried out by installers who have been trained and approved by the Certificate holder.

9.4 Maintenance and repair

9.4.1 Ongoing satisfactory performance of the systems in use requires that they are suitably maintained. The guidance provided by the Certificate holder was assessed and found to be appropriate and adequate.

9.4.2 The following requirements apply in order to satisfy the performance assessed in this Certificate:

9.4.2.1 The systems must be the subject of visual six-monthly inspections and maintenance in accordance with the recommendations in BS 6229 : 2018, Chapter 7, and the Certificate holder's own maintenance requirements. These inspections must be carried out by a suitably experienced individual to ensure continued satisfactory performance. This must include an examination of the condition of the roof finishes and ensure that drain outlets and gutters are kept clear and unblocked.

9.4.2.2 Green 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 is cleared from the roof and drainage outlets. Guidance is available within the latest edition of *The GRO Green Roof Code of Best Practice*.

9.4.2.3 For green roofs, to protect the waterproofing and any system components above the waterproofing, such as insulation or WFRL, invasive plant species (see sections 9.1.10 and 9.1.11 of this Certificate) must be eliminated through maintenance.

9.4.2.4 The use of chemicals to control invasive species (eg, weed killers and pesticides) must be avoided. The removal of invasive species must be carried out by hand. If chemicals are to be used, they must first be checked for compatibility with the insulation, WFRL and roof waterproofing layer. The Certificate holder can advise on the suitability of a particular product, but such advice is outside the scope of this Certificate. Note, if using chemicals on a green roof or roof garden rainwater outlets may need to be disconnected from the main drainage system to prevent contamination of the local water system and/or harm to flora and fauna.

9.4.2.5 The use of chemical fertiliser (inorganic material of wholly or partially synthetic origin used to sustain plant growth) must be checked for compatibility with the insulation, WFRL and roof waterproofing layer. The Certificate holder can advise on the suitability of a particular product, but such advice is outside the scope of this Certificate.

9.4.2.6 If a leak occurs in the roof waterproofing membrane, it must be repaired following removal of the gravel ballast, paving ballast, green roof or roof garden layer, WFRL and the insulation boards. Correct reinstatement of these layers must be carried out with particular care and the advice of the Certificate holder must be sought, but such advice is outside the scope of this Certificate.

9.4.2.7 Maintenance must include checks and operations to ensure that the systems and drainage outlets are free from the build-up of silt and other debris, and that protection layers, eg walkways, are in good condition.

9.4.2.8 In the event of the systems being contaminated by oil, grease or other chemicals, the advice of the Certificate holder must be sought, but such advice is outside the scope of this Certificate.

9.4.2.9 Any damage to the systems must be repaired as soon as possible to ensure that the integrity of the waterproofing is maintained. The advice of the Certificate holder must be sought, but such advice is outside the scope of this Certificate.

9.4.2.10 Where maintenance or repair of any of the roof components above the waterproofing system is necessary, care must be taken to avoid damage to the membrane. If damage to the membrane occurs, then it must be repaired in accordance with the Certificate holder's instructions.

10 Manufacture

10.1 The production processes for the systems have been assessed, and provide assurance that the quality controls are satisfactory according to the following factors:

10.1.1 The manufacturer has provided documented information on the materials, processes, testing and control factors.

10.1.2 The quality control operated over batches of incoming materials has been assessed and deemed appropriate and adequate.

10.1.3 The quality control procedures and product testing to be undertaken have been assessed and deemed appropriate and adequate.

10.1.4 The process for management of non-conformities has been assessed and deemed appropriate and adequate.

10.1.5 An audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

† 10.2 The BBA has undertaken to review 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.

11 Delivery and site handling

11.1 The Certificate holder stated that the hot melt component is delivered to site in 12 kg blocks covered with EcoWrap heat-dispersible film.

11.2 Delivery and site handling must be performed in accordance with the Certificate holder's instructions and this Certificate, including:

11.2.1 PermaFLASH-R must be stored under cover and kept dry.

†ANNEX A – SUPPLEMENTARY INFORMATION

Supporting information in this Annex is relevant to the systems but has not formed part of the material assessed for the 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.

CLP Regulations

The Certificate holder has taken the responsibility of classifying and labelling the systems components under the *GB CLP Regulation* and the *CLP Regulation (EC) No 1272/2008 - classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

Management Systems Certification for production

The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BSI (Certificate FM 595512).

The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 14001 : 2015 by Lucideon (Certificate 24709) and BES 6001 : Issue 3.1 by Lucideon (Certificate 24703).

Additional information on installation

A.1 Additional guidance on maintenance for green roofs is available within the latest edition of the GRO *Green Roof code – Green Roof Code of Best Practice for the UK*.

A.2 For zero fall roofs reference must be made to the appropriate clauses in Liquid Roofing and Waterproofing Association (LRWA) Note 7 – *Specifier Guidance for Flat Roof Falls*.

A.3 Additional guidance for inverted roof specifications is given in BBA Information Bulletin No 4 *Inverted roofs – Drainage and U value corrections*.

A.4 Guidance on the design of blue roofs is available in NFRC *Technical Guidance Note for the construction and design of Blue Roofs – Roofs and podiums with controlled temporary water attenuation*.

A.5 Typical design specifications are shown in Figures 1 to 6.

Figure 1 Example extensive green roof

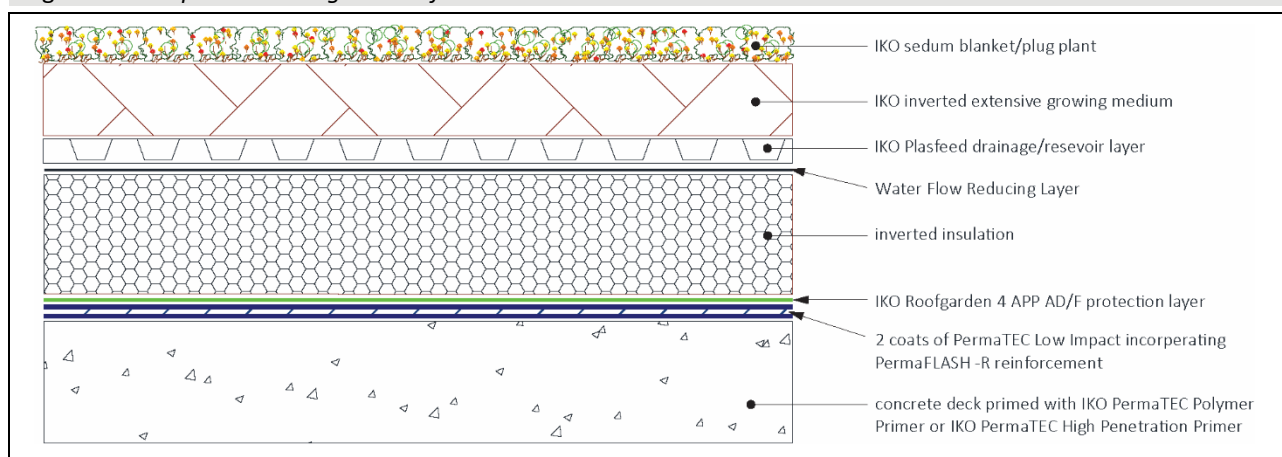


Figure 2 Example extensive green roof

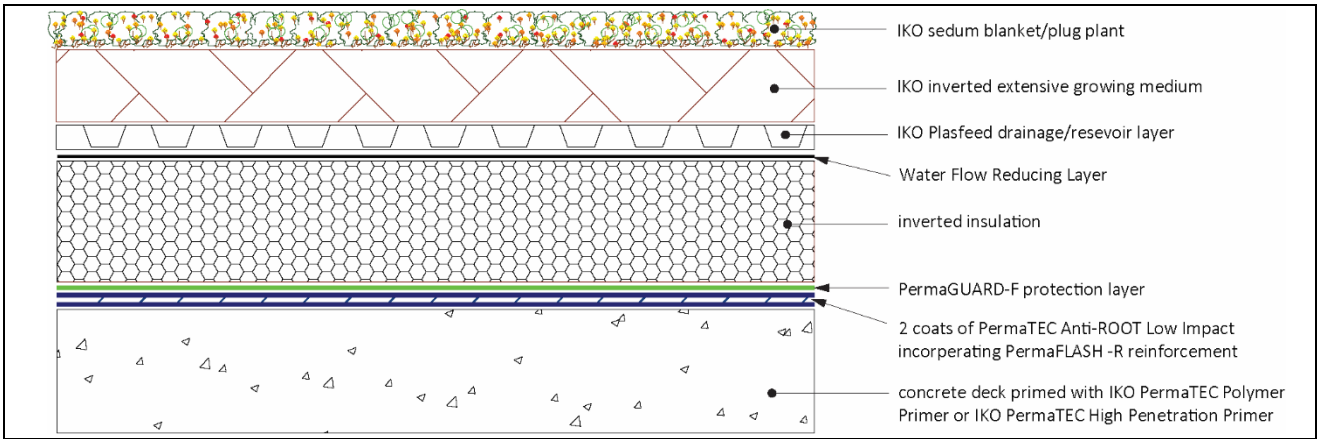


Figure 3 Example intensive roof garden

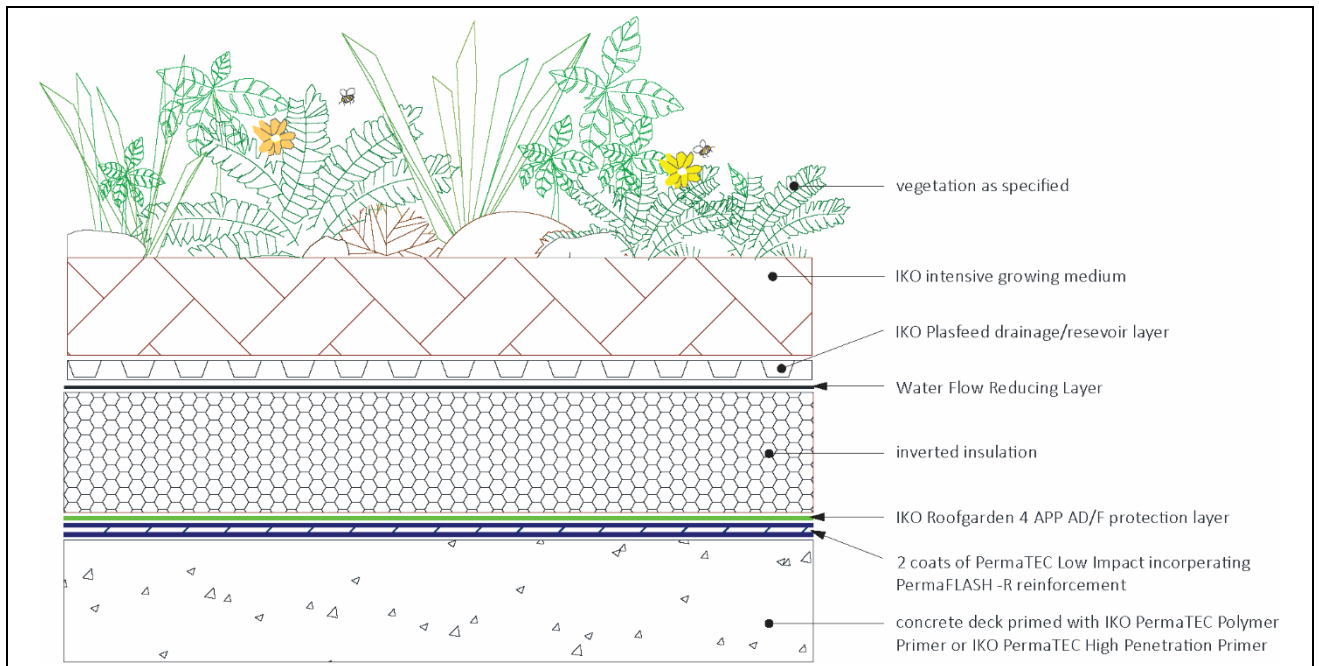


Figure 4 Example intensive roof garden

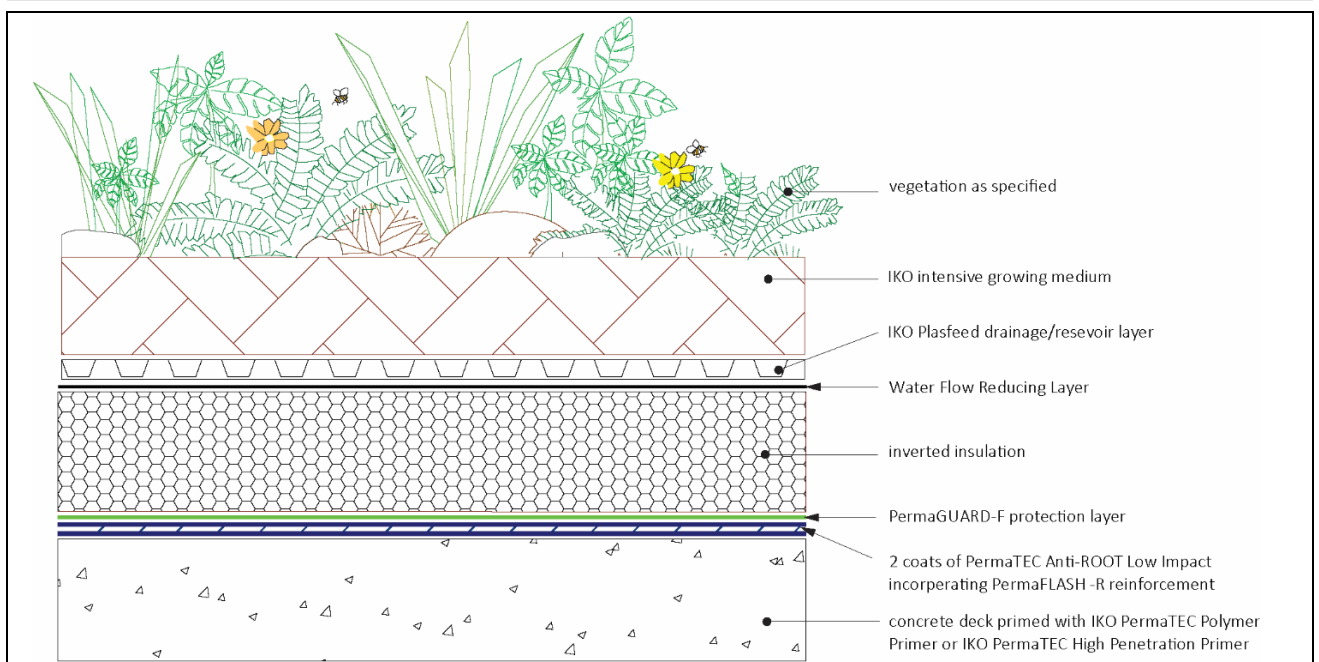


Figure 5 Example intensive roof garden

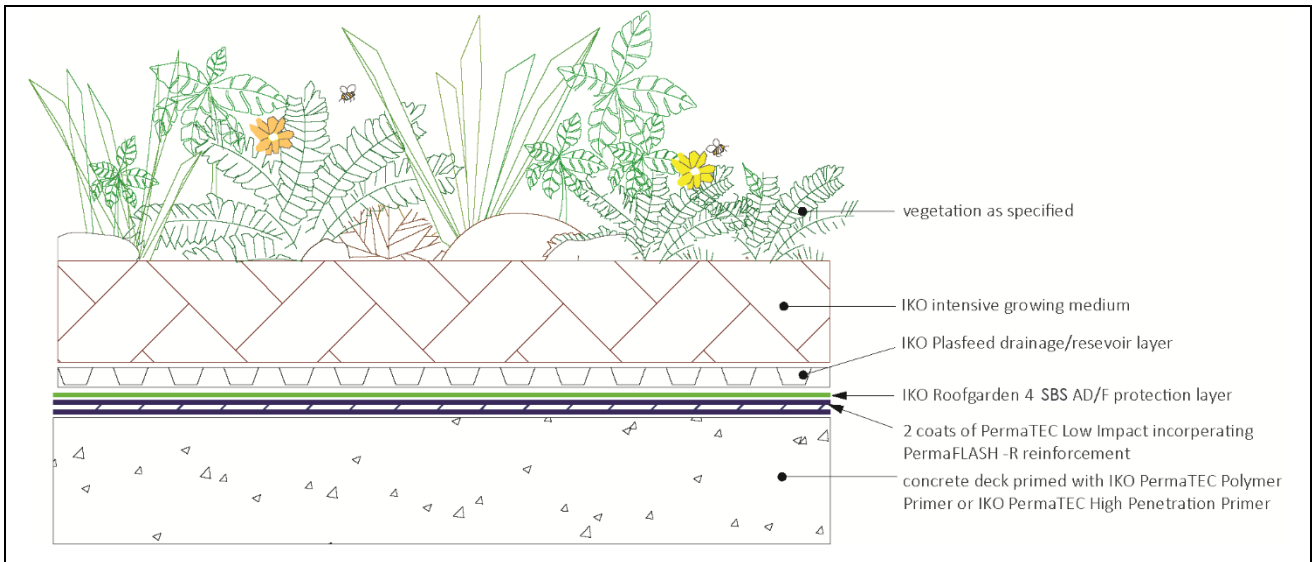
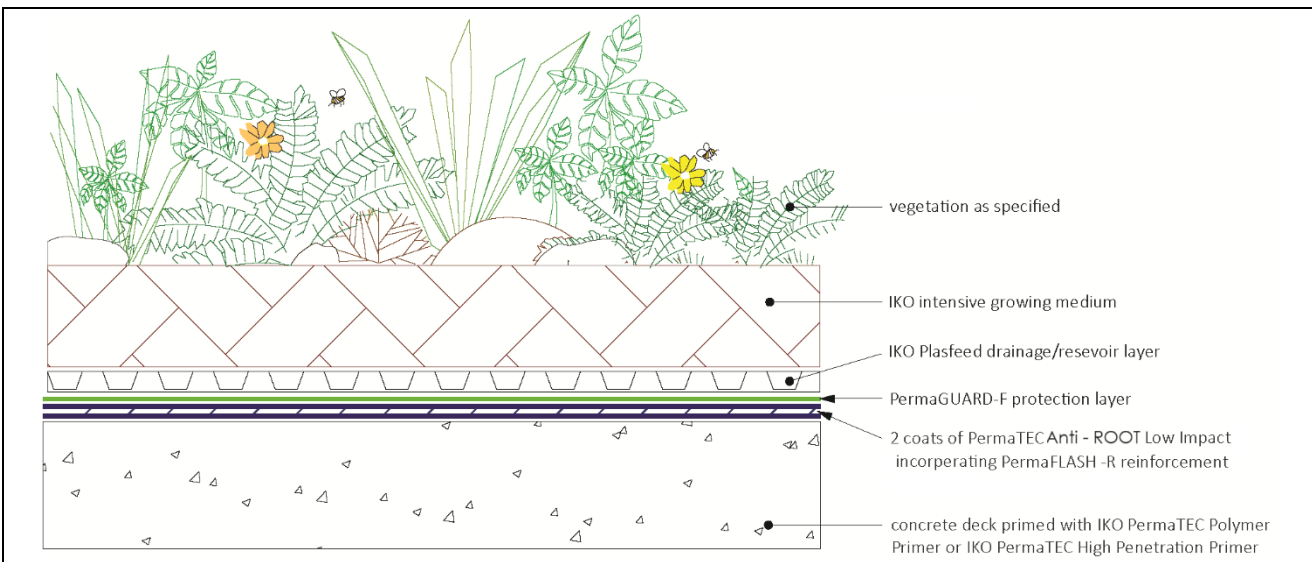


Figure 6 Example intensive roof garden



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