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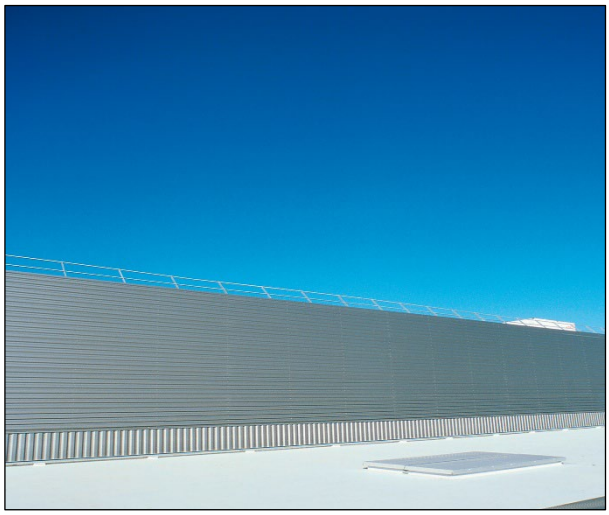
Agrément Certificate
21/5984
Product Sheet 2 Issue 2

AXTER SINGLE PLY PVC ROOF WATERPROOFING SYSTEMS

ECOFLEX FM WATERPROOFING MEMBRANES

This Agrément Certificate Product Sheet(1) relates to Ecoflex FM Waterproofing Membranes, a range of mechanically fastened and fully adhered reinforced PVC membranes, for use on flat and pitched roofs with limited access in exposed, protected, inverted, roof garden and green roof applications.

(1) Hereinafter referred to as '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 products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Second issue: 12 June 2025
Originally certified on 24 January 2022

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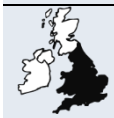
SUMMARY OF ASSESSMENT AND COMPLIANCE

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 Ecoflex FM Waterproofing Membranes, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations:



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

Requirement:	**B4(1)**	**External fire spread**
Comment:		The products are restricted by this Requirement in some circumstances. See section 2 of this Certificate.
Requirement:	**B4(2)**	**External fire spread**
Comment:		On a suitable substructure, the products may enable a roof to be unrestricted by this Requirement. See section 2 of this Certificate.
Requirement:	**C2(b)**	**Resistance to moisture**
Comment:		The products, including joints, will enable a roof to satisfy this Requirement. See section 3 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The products are acceptable. See sections 8 and 9 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)(2)**	**Fitness and durability of materials and workmanship**
Comment:		The use of the products can satisfy this Regulation. See sections 8 and 9 of this Certificate.
Regulation:	**9**	**Building standards – construction**
Standard:	2.8	Spread from neighbouring buildings
Comment:		The products, when applied to a suitable substructure, 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	Precipitation
Comment:		The products, including joints, 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)	Statement of sustainability
Comment:		The products can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 7, and there will contribute a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	**12**	**Building standards – conversion**
Comment:		Comments in relation to the products under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1[(1)(2)] and Schedule 6[(1)(2)].

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).

The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	**23(1)(a)(i) (iii)(b)(i)**	**Fitness of materials and workmanship**
Comment:		The products are acceptable. See sections 8 and 9 of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The products, including joints, will enable a roof to satisfy this Regulation. See section 3 of this Certificate.
Regulation:	**36(a)**	**External fire spread**
Comment:		The products are restricted by this Regulation in some circumstances. See section 2 of this Certificate.
Regulation:	**36(b)**	**External fire spread**
Comment:		On a suitable substructure, the products may enable a roof to be unrestricted by this Regulation. See section 2 of this Certificate.

Additional Information

NHBC Standards 2025

In the opinion of the BBA, Ecoflex FM Waterproofing Membranes, 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 products, 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 products.

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

The opinion of the BBA does not amount to any endorsement or approval by NHBC and does not in any way guarantee that NHBC will approve such product / system as compliant with the NHBC Technical Requirements and Standards.

Fulfilment of Requirements

The BBA has judged Ecoflex FM Waterproofing Membranes to be satisfactory for use as described in this Certificate. The products have been assessed for use as mechanically fastened and fully adhered membranes on flat and pitched roofs with limited access in exposed, protected, inverted, roof garden and green roof applications.

ASSESSMENT

Product description and intended use

The Certificate holder provided the following description for the products under assessment. Ecoflex FM Waterproofing Membranes are a range of mechanically fastened and fully adhered polyester reinforced PVC membranes.

The membranes are available in a selection of RAL colours and have the nominal characteristics given in Table 1.

Table 1 Nominal characteristics of Ecoflex FM Roof Waterproofing Systems

Characteristic (unit)	Ecoflex FM 1.5	Ecoflex FM 2.0
Thickness (mm)	1.5	2.0
Width[(1)] (m)	1.6, 2.1	1.6, 2.1
Length[(1)] (m)	20	20
Standard roll weight[(3)] (kg)	57.6	76.8
Mass per unit area (kg·m^{-2})	1.8	2.4

Ancillary Items

The following ancillary items are essential to use with the products and have been assessed with the products:

- Axter PVC Corners — preformed Ecoflex membrane for internal and external corners
- Axter PVC Coated Metal Sheet — prefabricated PVC coated galvanized steel sheet used for flashing or profiles
- E-STEP Walkway Membrane— a PVC membrane with anti-slip surface for maintenance traffic
- Axter ADH Adhesive — a single-component, polyurethane contact adhesive for bonding Ecoflex ADH membranes to the substrate
- Axter FM/D Contact Adhesive — a single-component, polyurethane contact adhesive for bonding PVC membranes to the substrate for upstands and detail work
- Axter mechanical fixings and tubular washers — approved by the manufacturer for use with the products
- Bituminous air and vapour control layers (AVCLs).

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

- Axter rainwater outlets, pipe flashings and accessories.
- ECO/200 — a 200 g·m^{-2} non-woven polyester fleece for use as a separation layer and for providing protection to the membrane surface in ballasted and paved applications
- Axter Restraint Bar — galvanised steel channel bars used for termination of membrane and at roof perimeters in combination with Axter PVC cord
- Axter Stickband Tapes — self-adhesive tapes for use in sealing AVCLs
- HYRASTIK EVO (SPR) — a single-component polyurethane spray applied adhesive for bonding insulation boards to the substrate
- HYRASTIK EVO — a single-component polyurethane liquid applied adhesive for bonding insulation boards to the substrate
- Hytherm line of insulation boards.

Applications

Ecoflex FM Waterproofing Membranes are satisfactory for use as mechanically fastened waterproofing for:

- exposed flat and pitched roofs with limited access
- protected flat roofs with limited access
- inverted flat roofs with limited access
- green roofs and roof gardens (1.5 and 2.0 mm membranes).

Definitions for products and applications inspected

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

- limited access roof — a roof subjected only to pedestrian traffic for 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
- 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

- 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.

(1) *NHBC Standards* 2025 require a minimum fall of 1:60 for green roofs and roof gardens.

Product assessment – key factors

The systems were assessed for the following key factors, and the outcome of the assessments 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 characteristics.

2.1 External fire spread

2.1.1 When tested to CEN/TS 1187 : 2012, Test 4, and classified to EN 13501-5 : 2016 the constructions given in Table 2 achieved B_{ROOF}(t4) for slopes up to 10° and will be unrestricted by the requirements of the national Building Regulations with respect to proximity to a relevant boundary.

Table 2 Tested system

Layer	System
Substrate	≥ 16 mm wood particle board or ≥ 0.75 mm profiled steel deck or ≥ 8 mm non-combustible board
Primer	Bitumen primer
AVCL	SBS bituminous with E or better reaction to fire classification
Insulation	PU/PIR insulation, single layer 40 – 140 mm or double layer up to any thickness,
Membrane Fixing Method	Mechanically or adhered using Hyrastik EVO
Membrane	1.5 – 2.0 mm Ecoflex FM Membrane

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

- when used in 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 or green roofs.

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

2.2 Reaction to fire

2.2.1 The results of reaction to fire tests are given in Table 3.

Table 3 Reaction to fire

Product assessed	Assessment method	Field of application	Result
Ecoflex FM	Reaction to fire to UNI EN ISO 11925-2 : 2020 and classified to UNI EN 13501-1 : 2019	1.2 to 3 mm thickness, any colour	Class E

2.2.2 On the basis of data assessed, the products will be restricted in use under the documents supporting the national Building Regulations in some cases.

2.2.3 In England, the products, when used in pitches greater than 70°, excluding upstands, must not be used less than 1 m from a relevant boundary, or on residential buildings more than 11 m in height or on other buildings more than 18 m in height. Restrictions apply on assembly and recreation buildings. These constructions must also be included in calculations of unprotected area.

2.2.4 In Wales and Northern Ireland, the products, when used in pitches greater than 70°, excluding upstands, must not be used less than 1 m from a relevant boundary, or on buildings more than 18 m in height or in some cases, on assembly and recreation buildings. These constructions must also be included in calculations of unprotected area.

2.2.5 In Scotland, the use of the products is unrestricted with respect to building height and proximity to a relevant boundary. However, restrictions on the overall construction may apply, depending on the reaction to fire classification achieved by the complete system, which must be established on a case-by-case basis.

3 Hygiene, health and the environment

Data were assessed for the following characteristics.

3.1 Weathertightness

3.1.1 Results of weathertightness tests are given in Table 4.

Table 4 Weathertightness

Product assessed	Assessment method	Requirement	Result
Ecoflex FM 1.5	Watertightness under 10 kPa pressure for 24 hours to EN 1928 : 2000	No leakage	Pass
Ecoflex FM 2.0			Pass

3.1.2 On the basis of data assessed, the products, when completely sealed and consolidated, will adequately resist the passage of moisture into the inside of a building and will enable a roof to comply with the requirements of the national Building Regulations.

3.1.3 When mechanically fastened, the products, will sufficiently resist the effects of wind suction likely to be experienced in the UK.

3.1.4 When fully adhered to a decking or to a reinforced bituminous membrane, the Flagon SRF Roof Waterproofing System will have sufficient adhesion to resist the effects of wind suction, elevated temperatures and thermal shock conditions likely to occur in practice while remaining weathertight.

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

3.2 Resistance to mechanical damage

3.2.1 Results of resistance to mechanical damage tests are given in Table 5.

Table 5 Resistance to mechanical damage

Product assessed	Assessment method	Requirement	Result
Ecoflex FM	Tensile strength to MOAT 60 : 4.8.1 : 1997	≥ 800 N·(50 mm)$^{-1}$	
	Longitudinal direction		Pass
	Transverse direction		Pass
Ecoflex FM	Elongation to MOAT 60 : 4.8.2 : 1997	≥ 15%	
	Longitudinal direction		Pass
	Transverse direction		Pass
Ecoflex FM	Tear resistance to MOAT 60 : 4.12 : 1997	≥ 200 N	
	Tested at 23°C		
	Longitudinal direction		Pass
	Transverse direction		Pass
	Tested at 40°C		
	Longitudinal direction		Pass
	Transverse direction		Pass
	Tested at –10°C		
	Longitudinal direction		Pass
	Transverse direction		Pass
Representative related product	Dynamic indentation to MOAT 27 : 5.1.10 : 1983	Value achieved	
- on perlite			I_4
- on EPS			I_4
Ecoflex FM	Static indentation to MOAT 27 : 5.1.10 : 1983	Value achieved	
- on concrete			L_4
- on EPS			L_4
Ecoflex FM	Low temperature foldability to MOAT 60 : 4.10 : 1997	≤ –20°C	
	Longitudinal direction		Pass
	Transverse direction		Pass

3.2.2 On the basis of data assessed, the products can accept, without damage, the limited foot traffic and light concentrated loads associated with installation and maintenance and are capable of accepting minor structural movement while remaining weathertight.

3.2.3 Where traffic in excess of this is envisaged, such as maintenance of lift equipment, a walkway must be provided (for example, using concrete slabs supported on bearing pads or E-STEP Walkway). Reasonable care must be taken to avoid puncture by sharp objects or concentrated loads.

3.3 Resistance to root penetration

3.3.1 Results of resistance to root penetration tests are given in Table 6.

Table 6 Resistance to root penetration

Product assessed	Assessment method	Requirement	Result
Representative related product	Resistance to root penetration to FLL Method (2002)	No root penetration after 2 years	Pass

3.3.2 On the basis of data assessed, the 1.5 and 2.0 mm thick membranes, when used in green roof and roof garden applications, will resist penetration by plant roots and remain weathertight.

3.3.3 For green roofs in inverted roof specifications, when installed in accordance with this Certificate, the inverted roof insulation and water-flow-reducing layer (WFRL) 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 For roof gardens in inverted roof specifications, when installed in accordance with this Certificate, the inverted roof insulation and water-flow-reducing layer (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.

3.4 Resistance to wind uplift

3.4.1 Results of resistance to wind uplift tests are given in Table 6.

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

- wind uplift forces to be restrained
- pull-out strength of the fasteners
- tensile properties of the membrane
- appropriate calculation of safety factors.

3.4.3 The wind uplift forces must be calculated by a suitably experienced and competent individual in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. On this basis, the number of fixings required must be established using a maximum permissible load of 0.4 kN per fixing.

Table 7 Wind uplift results

	Lap fixing method	OMG fixing method
Load per fixing (N)	1000	1500
Admissible load per fixing (N)	461	900

3.4.4 The Certificate holder provides a design service which takes into account all the relevant information supplied and gives assistance for the preparation of drawings for the positioning of fastening bars or washers, and the number of fixings required. The Certificate holder assumes liability for the calculations of the design of the mechanically fastened system.

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

The products comprise PVC, which can be recycled.

8 Durability

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

8.2 Specific test data were assessed as given in Table 8.

Table 8 Durability

Product assessed	Assessment method	Requirement	Result
Ecoflex FM	Dimensional stability to MOAT 60 : 4.15.1 : 1997	Value achieved	
	Longitudinal direction		-0.22%
	Transverse direction		-0.06%
	after heat ageing for 168 days at 80°C		
	Longitudinal direction		-0.28%
	Transverse direction		-0.06%
	after water soak for 180 days at 23°C		
	Longitudinal direction		0.00%
	Transverse direction		0.00%
Ecoflex FM	Low temperature foldability to MOAT 60 : 4.10 : 1997	No change to initial value	
	after heat ageing for 168 days at 80°C		
	Longitudinal direction		Pass
	Transverse direction		Pass

8.3 An inspection visit was conducted to an existing site over 20 years old.

8.4 Service life

8.4.1 Under normal service conditions, the products will have a life in excess of 35 years, provided they are designed, installed and maintained in accordance with this Certificate and the Certificate holder's instructions.

8.4.2 In environments where the products are in contact with organic solvents, the life expectancy may be reduced. In cases of doubt, the advice of the Certificate holder must be sought, but such advice is outside the scope of this Certificate.

PROCESS ASSESSMENT

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 assessed in this Certificate.

9.1.2 Decks to which the products are to be applied must comply with the relevant requirements of BS 6229 : 2018, and, where appropriate, *NHBC Standards* 2025, 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 for inverted roofs, green roofs and roof gardens must be suitable to transmit the dead and imposed loads experienced in service. Allowance needs to be made for loading deflections to ensure the free drainage of water is maintained.

9.1.5 Imposed loads, dead loading and wind load specifications must be calculated by a suitably experienced and competent individual in accordance with BS EN 1991-1-1 : 2002, BS EN 1991-1-3 : 2003 and BS EN 1991-1-4 : 2005, and their UK National Annexes.

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

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

- wind uplift forces to be restrained
- pull-out strength of the fasteners
- tensile properties of the membrane
- appropriate calculation of safety factors.

9.1.8 The wind uplift forces must be calculated by a suitably experienced and competent individual in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. On this basis, the number of fixings required must be established using a maximum permissible load of 0.4 kN per fixing.

9.1.9 The Certificate holder provides a design service which takes into account all the relevant information supplied and gives assistance for the preparation of drawings for the positioning of fastening bars or washers, and the number of fixings required. The Certificate holder assumes liability for the calculations of the design of the mechanically fastened system.

9.1.10 The growing medium used in green roofs and roof gardens must not be of a type that will be removed or become delocalised owing to wind scour experienced on the roof.

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

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

9.1.13 For green roof and roof garden finishes, to protect the roof waterproofing and any system components above the waterproofing, such as insulation or water flow reducing layer, invasive plant species must not be used. In particular, the following species must be excluded:

- invasive weeds including buddleia
- plants and grasses with aggressive rhizomes such as bamboo
- self-setting woody weeds such as sycamore and ash seedlings must be removed at early germination stage
- other woody plants which spread aggressively including rhododendron.

9.1.14 The Green Roof Organisation (GRO) can provide guidance on species not included in section 9.1.13 but such advice is outside the scope of this Certificate.

9.1.15 The drainage systems for inverted roofs, green roofs or roof gardens must be correctly designed, and the following points must be addressed:

- provision made for access for maintenance purposes
- dead loads for green roof and roof gardens can increase if the drains become partially or completely blocked causing waterlogging of the drainage layer
- additional guidance for inverted roof specifications is given in BBA Information Bulletin No 4 *Inverted roofs – Drainage and U value corrections*.

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

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

9.2 Installation

9.2.1 Installation of Versitex MF Roof Waterproofing Membrane must be carried out by installers trained and approved by the Certificate holder in accordance with the relevant clauses of BS 6229 : 2018, BS 8000-0 : 2014, BS 8000-4 : 1989 and BS 8217 : 2005, the Certificate holder's instructions and this Certificate.

9.2.2 Substrates to which the product are to be applied must be sound, dry, clean and free from sharp projections such as nail heads and concrete nibs. When used over a rough substrate, a suitable protection layer must be placed over the substrate.

9.2.3 Installation must not be carried out during inclement weather (eg rain, fog or snow). The product can be installed below 0°C; however, at temperatures below 5°C, suitable precautions against surface condensation must be taken.

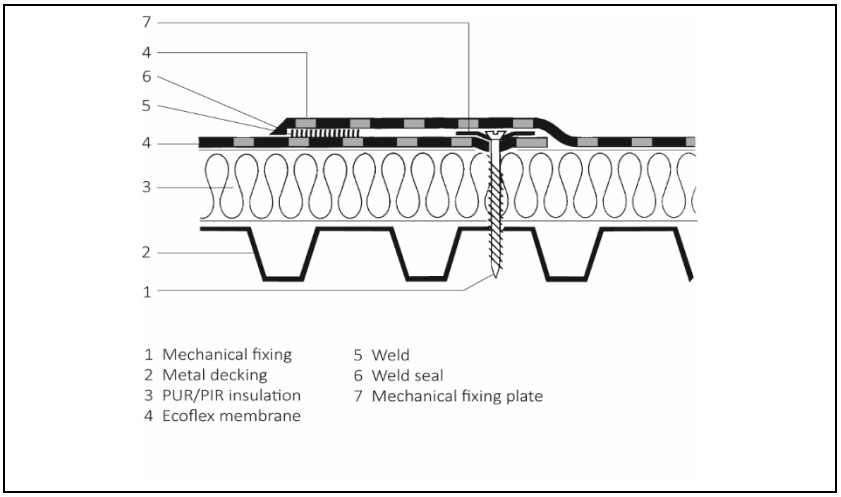
9.2.4 In all cases, an AVCL must be used directly over the deck. When internal temperatures and humidity conditions will exceed 22°C/50% relative humidity, special precautions should be taken and the Certificate holder consulted.

9.2.5 Insulation boards must be fixed to the substrate in such a way as not to impair the performance of the waterproofing membrane.

9.2.6 All flashings must be formed in accordance with the Certificate holder's instructions.

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.

Figure 1 Application to steel decks — lap fixing method



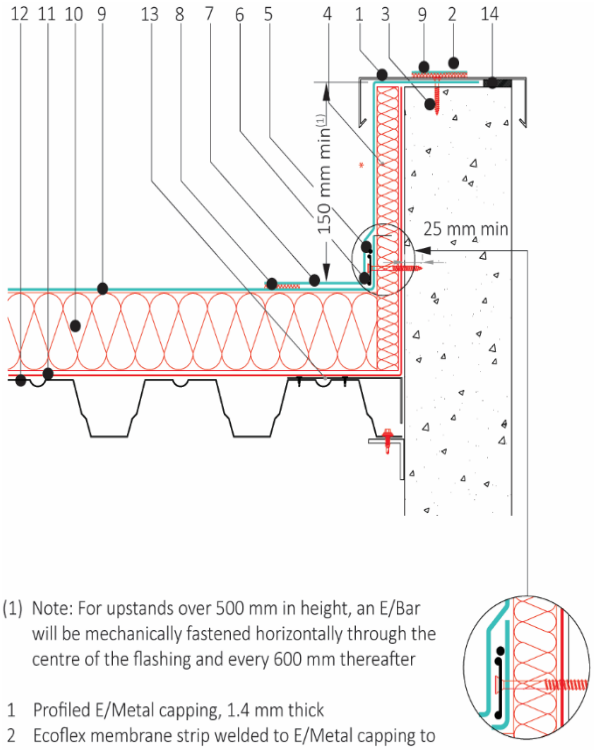
9.2.8 The position of the number of fasteners required must be in accordance with the fixing specifications provided by the Certificate holder.

9.2.9 For mechanically fastened applications using the OMG method, the appropriate number of fasteners are installed in the position required in accordance with the fixing specifications provided by the Certificate holder.

9.2.10 The membrane is laid flat onto the substrate without folds or ripples, and fixed to the deck by tool, to induction-weld the membrane to all of the Rhinobond plates (see Figure 2).

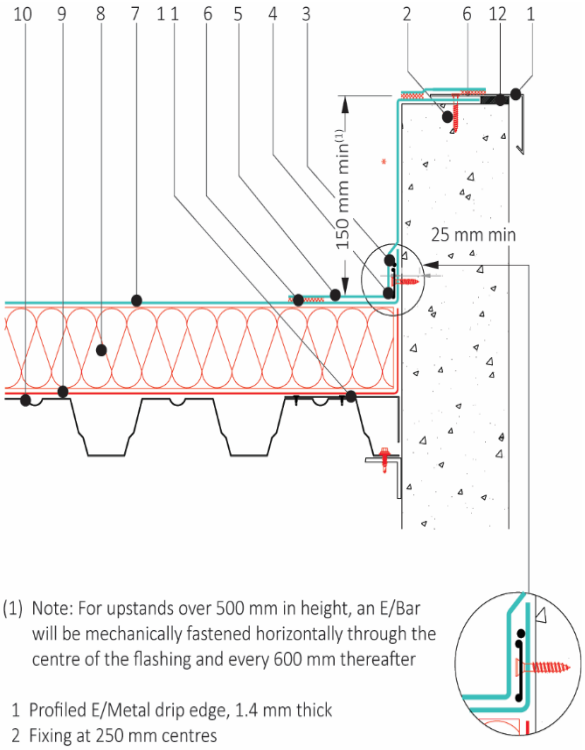
9.2.11 For continuous fixing, the fixing bars are positioned with a 10 mm gap to allow for expansion. The Certificate holder can advise on suitable materials for this purpose, but such advice and products are outside the scope of this Certificate..

Figure 2 Application to steel decks - OMG fixing method



(1) Note: For upstands over 500 mm in height, an E/Bar will be mechanically fastened horizontally through the centre of the flashing and every 600 mm thereafter

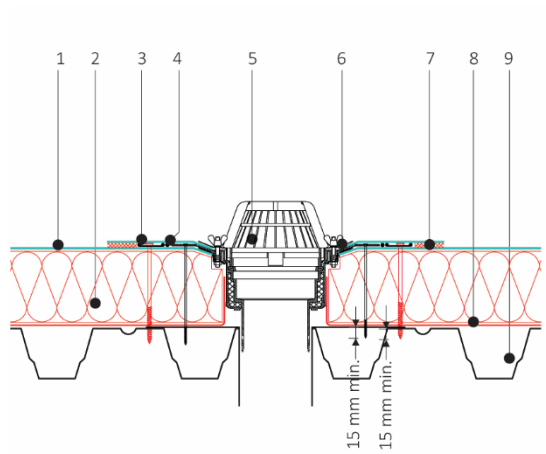
1 Profiled E/Metal capping, 1.4 mm thick
2 Ecoflex membrane strip welded to E/Metal capping to cover fixings
3 Fixings at 250 mm centres
4 Insulation to upstand
5 PVC E/CORD welded to field sheet direct behind E/Bar
6 E/Bar fixed through all perimeter edges as per wind uplift calculation
7 Ecoflex Flashing membrane
8 Homogeneous manual welded lap
9 Ecoflex field sheet membrane, mechanically fastened to wind uplift schedules
10 Insulation thickness to suit U-value
11 ECO-Vap vapour control layers, sealed at all laps with AFT tape
12 Profiled metal decking to engineers specifications
13 End profile
14 AFT tape



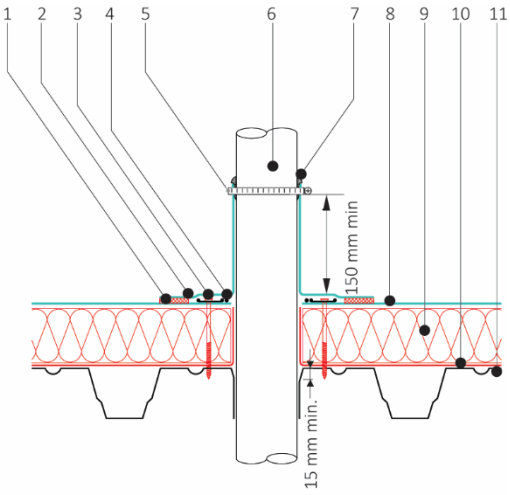
(1) Note: For upstands over 500 mm in height, an E/Bar will be mechanically fastened horizontally through the centre of the flashing and every 600 mm thereafter

1 Profiled E/Metal drip edge, 1.4 mm thick
2 Fixing at 250 mm centres
3 PVC E/CORD welded to field sheet direct behind E/Bar
4 E/Bar fixed through all perimeter edges as per wind uplift calculation
5 Ecoflex Flashing membrane
6 Homogeneous manual welding
7 Ecoflex field sheet membrane, mechanically fastened to wind uplift schedules
8 Insulation-thickness to suit U-value
9 ECO/VAP vapour control layer, sealed at all laps with AFT tape
10 Profiled metal decking to engineers specifications
11 End profile
12 AFT tape

Figure 3 Perimeter upstands



1 Ecoflex sheet membrane, mechanically fixed to wind uplift schedules
2 Insulation thickness to suit U-value
3 E/Bar fixed around pipe (fixings as per wind uplift calculation)
4 PVC E/CORD welded to filed sheet direct behind E/Bar
5 Ecoflex RO Outlet with leaf guard
6 Clamping ring to secure membrane
7 Homogeneous manual welded lap
8 ECO/Vap vapour control layer sealed at all laps with AFT tape
9 Profiled metal decking to engineers' specification



1 Homogeneous manual welded lap
2 Ecoflex preformed pipe collar
3 E/Bar fixed around pipe (fixings as per wind uplift calculation)
4 PVC E/CORD welded to field sheet direct behind E/Bar
5 Stainless steel banding
6 Pipe
7 Sealant
8 Ecoflex field sheet membrane, mechanically fixed to wind uplift schedules
9 Insulation thickness to suit U-value
10 ECO/Vap vapour control layer, sealed at all laps with AFT tape
11 Profiled metal decking to engineers' specification

9.2.12 For mechanically fixed applications to steel decks, the steel decks must be manufactured from galvanized steel with a minimum thickness of 0.7 mm.

9.2.13 Self-drilling and self-tapping screws must be selected in accordance with the Certificate holder's instructions.

9.2.14 For mechanically fixed applications to reinforced concrete decks, the concrete decks will require pre-drilling. The diameter of the holes must be at least 6 mm, and nylon dowels or self-drilling anchors are recommended.

9.2.15 When re-roofing on concrete decks, dowels must be anchored for their full length in solid concrete. This must be noted particularly when using cement screeds or intermediate layers.

9.2.16 For mechanically fixed applications to timber decks, fixing bars must be positioned above beams or joists and secured in place. If this is not possible, fastening bars must be positioned across the direction of timber planks, provided the planks are sufficiently fastened to withstand the imposed wind loads.

9.2.17 Fixing bars must be fixed by screws (nails are not suitable for this purpose). Acceptable loads on each screw and corresponding space between screws in each case are calculated before installation.

9.2.18 For hot-air welding, the welding area must be dry and clean. If the membrane in the weld area has become contaminated, it must be cleaned in accordance with the Certificate holder's instructions.

9.2.19 The temperature for the welding machine must be set in accordance with the Certificate holder's instructions, depending on the thickness of the membrane and the ambient temperature.

9.2.20 When welding the joint using the welding machine and the handheld gun, care must be taken to ensure that overheating of the membrane does not occur, as possible impairment of the membrane may result.

9.2.21 The overlap width of the membranes must be a minimum of 120 mm, effecting a 40mm weld.

9.2.22 When welding with a handheld welding gun, the membrane must be spot welded at regular centres as required, to prevent movement during pre- and primary welding

9.2.23 When welding with a handheld welding gun, the full length of the membrane joint must be pre-welded, which is tested for delamination, prior to the primary weld being carried out.

9.2.24 The seam must be tested with a suitable metal probe and any weakness repaired immediately.

9.2.25 Flashing and detailing must be formed in accordance with the Certificate holder's instructions.

9.2.26 The NHBC requires that the products, once installed, are inspected in accordance with *NHBC Standards* 2025, Chapter 7.1, Clause 7.1.12, including undergoing an appropriate integrity test, where required. Any damage to the products must be repaired in accordance with section 9.4 of this Certificate and reinspected.

9.3 Workmanship

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

9.4 Maintenance and repair

9.4.1 Ongoing satisfactory performance of the products in use requires that they are suitably maintained. The guidance provided by the Certificate holder was assessed by the BBA 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 products 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 and competent 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 roof waterproofing and any system components above the waterproofing, such as insulation or water flow reducing layer, invasive plant species (see sections 9.1.13 and 9.1.14 of this Certificate) must be eliminated through maintenance.

9.4.2.4 The control and removal of invasive plant species is carried out by hand. Where this is not possible, any chemicals used must be checked for compatibility with the roof waterproofing layer and any system components above the waterproofing, such as insulation or water flow reducing 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 chemical fertiliser used on green roofs and roof gardens must be checked for compatibility with the roof waterproofing layer and any system components above the waterproofing, such as insulation or water flow reducing 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 Should a leak occur in the roof waterproof membrane, it must be repaired following removal of the gravel ballast, paving ballast, green roof or roof garden layer, water-flow-reducing layer and the insulation boards.

9.4.2.7 Where damage has occurred, it must be repaired by cleaning the area around the damage and applying a patch as described in the Certificate holder's instructions.

10 Manufacture

10.1 The production processes for the products 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 products are delivered to site in rolls wrapped in polythene, on pallets, with labels bearing the Certificate holder's name and address, product identification, batch number and the BBA logo incorporating the number of this Certificate.

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

11.2.1 The adhesives are delivered to site in 5 or 20 litre tins. These must be kept tightly sealed, and stored in a cool, ventilated location away from ignition sources and other chemicals.

11.2.2 Rolls must be stored on their side, on a clean, level surface and under cover.

† ANNEX A – SUPPLEMENTARY INFORMATION

Supporting information in this Annex is relevant to the products 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 products and ancillary items under the *GB CLP Regulation* and *CLP Regulation (EC) No 1272/2008 - classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

CE marking

The Certificate holder has taken the responsibility of CE marking the products in accordance with harmonised European Standard EN 13956 : 2012.

Additional information on installation

A.1 Additional guidance for the design of green roof and roof garden specifications, and 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*.

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*

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

EN 1928 : 2000 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of watertightness*

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

EN 13956 : 2012 *Flexible sheet for waterproofing — Plastic and rubber sheets for roof waterproofing — Definitions and characteristics*

MOAT 27 : 1983 *General directive for the assessment of roof waterproofing systems*

MOAT 55 : 1991 *UEAtc Supplementary guide for the assessment of mechanically fastened roof waterproofing*

MOAT 60 : 1997 *UEAtc Technical Guide for the approval of reinforced and/or backed roof waterproofing systems made of plasticised PVC Sheeting incompatible with bitumen*

UNI EN ISO 11925-2 : 2020 *Reaction to fire tests — Ignitability of products subjected to direct impingement of flame — Part 2: Single-flame source test*

UNI EN 13501-1 : 2019 *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

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
- 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
- and any matter arising out of or in connection with it or its subject matter (including non-contractual disputes or claims) is governed by and construed in accordance with the law of England and Wales.
- the courts of England and Wales shall have exclusive jurisdiction to settle any matter arising out of or in connection with this Certificate or its subject matter (including non-contractual disputes or claims).

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 marking and 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.

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