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Agrément Certificate
15/5223
Product Sheet 1 Issue 5

ENKOPUR COLD APPLIED LIQUID ROOF WATERPROOFING SYSTEM

ENKOPUR 1K POLYURETHANE WATERPROOFING SYSTEM

This Agrément Certificate Product Sheet(1) relates to the Enkopur(2) 1K Polyurethane Waterproofing System, a single-component, cold liquid-applied polyurethane-based roof waterproofing membrane with a polyester fleece reinforcement, for use on pitched, flat and protected zero fall roofs with limited access, including green roof and roof garden specifications, balconies and podiums.

(1) Hereinafter referred to as 'Certificate'.
(2) Enkopur is a registered trademark.

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

On behalf of the British Board of Agrément

Date of Fifth issue: 21 May 2024
Originally certified on 30 June 2015

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. 3537).

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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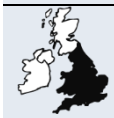
SUMMARY OF ASSESSMENT AND COMPLIANCE

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 the Enkopur 1K Polyurethane Waterproofing System, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations:



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

Requirement:	**B4(1)**	**External fire spread**
Comment:		The system is restricted by this Requirement in some circumstances. See section 2 of this Certificate.
Requirement:	**B4(2)**	**External fire spread**
Comment:		When used under suitable protection, the system will enable a roof to be unrestricted under this Requirement. See section 2 of this Certificate.
Requirement:	**C2(b)**	**Resistance to moisture**
Comment:		The system will enable a roof to satisfy this Requirement. See section 3 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The system is 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 system can satisfy the requirements of this Regulation. See sections 8 and 9 of this Certificate.
Regulation:	**8(3)**	**Fitness and durability of materials and workmanship**
Comment:		The use of system on balconies is restricted by this Regulation. See section 2 of this Certificate.
Regulation:	**9**	**Building standards – construction**
Standard:	2.2	Separation
Standard:	2.7	Spread on external walls
Comment:		The use of the system is restricted under clauses 2.2.7(1) and 2.7.2(1)(2) of these Standards, in some circumstances. See section 2 of this Certificate.
Standard:	2.8	Spread from neighbouring buildings
Comment:		When used under suitable protection, the system will enable a roof to be unrestricted under clause 2.8.1(1)(2) of this Standard. See section 2 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The use of the system will enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1(1)(2) and 3.10.6(1)(2). See section 3 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The system 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 – conversions**
Comment:		Comments in relation to the system under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1[(1)(2)] and Schedule 6[(1)(2)]. (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).

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

Regulation:	**23(1)(a)(i)(ii)(iii)(iv)(b)(i)**	**Fitness of materials and workmanship**
Comment:		The system is acceptable. See sections 8 and 9 of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The system will enable a roof to satisfy the requirements of this Regulation. See section 3 of this Certificate.
Regulation:	**36(a)**	**External fire spread**
Comment:		The system is restricted by this Regulation in some circumstances. See section 2 of this Certificate.
Regulation:	**36(b)**	**External fire spread**
Comment:		When used under suitable protection, the use of the system will 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, the Enkopur 1K Polyurethane Waterproofing System, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 7.1 *Flat roofs, terraces and balconies*.

In addition, in the opinion of the BBA, the system, 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 into account other relevant guidance within the chapter and the suitability of the substrate to receive the system.

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

Fulfilment of Requirements

The BBA has judged the Enkopur 1K Polyurethane Waterproofing System to be satisfactory for use as described in this Certificate. The system has been assessed as a roof waterproofing membrane with a polyester fleece reinforcement, for use on pitched, flat and protected zero fall roofs with limited access, including green roof and roof garden specifications, podiums and balconies.

ASSESSMENT

Product description and intended use

The Certificate holder provided the following description for the system under assessment. The Enkopur 1K Polyurethane Waterproofing System consists of:

- Enkopur 1K — a single part, liquid-applied, (moisture triggered) polyurethane prepolymer-based membrane
- Enketop — a single-part, weatherproof polyurethane coating based on PUR prepolymers
- Enke Polyflex Fleece — a 110 $g \cdot m^{-2}$ polyester fleece for use a reinforcement
- Enke Universal 933 Primer — a transparent, solvent-based, fast-drying synthetic resin solution, slightly yellowish in colour, for use on concrete, bitumen sheets, extruded polystyrene foam, steel and timber
- Enke P-O Primer — a solvent-based yellow primer for use on thermoplastic polyolefin membranes
- Enke Primer 2K — a two-part polyurethane-based primer for use on concrete, bitumen sheets, extruded polystyrene foam, steel, timber and plasticised PVC membranes
- Enke Glass Primer — a silane-based primer for use on glass and glazed tiles
- Enketop chips — coloured plastic chips for the decoration of coatings
- Enketop Clear Sealer - moisture-curing, 1K polyurethane coating used to seal over Enketop and Enketop chips

The product has the physical characteristics given in Table 1.

Table 1 Physical characteristics of the Enkopur 1K Polyurethane Waterproofing System

Physical characteristic	Enkopur 1K	Enketop	Enke Universal 933 Primer	Enke Primer P-O	Enke Primer 2K	Enke Glass Primer	Enketop Clear Sealer
Colour	silver-grey and black	grey	yellowish transparent	yellowish transparent	yellowish transparent	transparent	transparent
Consumption ($g \cdot m^{-2}$)	3000	2000 to 3000	100 to 200	50 to 100	100 to 200	50	250-300

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

- bitumen vapour control layer
- polyisocyanurate (PIR) insulation board.

Applications

The Enkopur 1K Polyurethane Waterproofing System is satisfactory for use on pitched, flat and protected zero fall roofs with limited access on:

- concrete
- polymer-modified bitumen sheets
- metal
- TPO roofing membranes
- PVC roofing membranes
- glass.

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)
- zero fall roof — a roof having a finished fall which can vary between 0 and 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.

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

Product assessment – key factors

The system was 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 The Certificate holder has not performed external fire spread testing in accordance with DD CEN/TS 1187 : 2012, Test 4.

2.1.2 On the basis of data assessed, a roof incorporating the system will be restricted by the documents supporting the national Building Regulations with respect to proximity to a relevant boundary, in some cases. Restrictions may apply at junctions with compartment walls.

2.1.3 A roof incorporating the system will be unrestricted with respect to proximity to a relevant boundary under the documents supporting the national Building Regulations, in the following circumstances:

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

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

2.1.5 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.

2.2 Reaction to fire

2.2.1 The Certificate holder has not declared a reaction to fire classification to BS EN 13501-1: 2018 for the Enkopur 1K Polyurethane Waterproofing System.

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

2.2.3 In England, the system, 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 should also be included in calculations of unprotected area.

2.2.4 In Wales, the system, 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. Restrictions apply on assembly and recreation buildings. These constructions must also be included in calculations of unprotected area.

2.2.5 In Northern Ireland, for systems used in pitches greater than 70°, excluding upstands, that do not achieve the minimum Class E reaction to fire classification to BS EN 13501-1 : 2018, designers should seek guidance on the proposed use of the system from the relevant Building Control Body.

2.2.6 In Scotland, the use of the system 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 build-up, which must be established on a case by case basis.

2.2.7 In England, unless covered with protection with a reaction to fire of class A1 or A2-s1, d0 (for example, 40 mm thick cast stone slabs), the system must not be used on balconies of residential buildings with a storey 11 m or more in height, or on balconies of buildings that have a storey at least 18 m above ground level and which contain one or more dwellings, an institution, a room for residential purposes, student accommodation, care homes, sheltered housing, hospitals, dormitories in boarding schools, hotels, hostels or boarding houses.

2.2.8 In Wales, unless covered with protection with a reaction to fire of class A1 or A2-s1, d0 (for example, 40 mm thick cast stone slabs), the system must not be used on balconies of buildings that have a storey at least 18 m above ground level and which contain one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals, dormitories or boarding schools.

2.2.9 In Northern Ireland, unless covered with protection with a reaction to fire of class A1 or A2-s1, d0 (for example, 40 mm thick cast stone slabs), the system must not be used on balconies of buildings that have a storey at least 18 m above ground level and which contain one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals, dormitories in boarding schools, nursing homes and places of lawful detention.

2.2.10 In Scotland, the system must not be used on balconies of buildings with a storey 11 m or more above the ground.

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 2.

Table 2 Weathertightness results

Product assessed	Assessment method	Requirement	Result
Enkopur 1K Polyurethane Waterproofing System	Watertightness to EOTA TR 003 : 2004	No leakage	Pass
Enkopur 1K Polyurethane Waterproofing System	Equivalent air layer thickness (s_d) to BS EN 1931 : 2000	Value achieved	4.9 m
Enkopur 1K Polyurethane Waterproofing System	Delamination strength to EOTA TR 004 : 2004	≥ 50 kPa	
- on concrete			Pass
- on glass			Pass
- on TPO			Pass
- on steel			Pass
- on PVC			Pass
- on bitumen sheet			Pass
- day joint			Pass
Enkopur 1K Polyurethane Waterproofing System plus Enketop, Enketop Chips and Enketop Clear Sealer, on concrete			Pass

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

3.1.3 The adhesion of the system to the substrates given in the *Product description and intended use* part of this Certificate is sufficient to resist the effects of wind suction, thermal cycling or other minor structural movements likely to occur in service.

3.2 Resistance to mechanical damage

3.2.1 Results of resistance to mechanical damage tests are given in Table 3.

Table 3 Results of mechanical damage

Product assessed	Assessment method	Requirement	Results
Enkopur 1K Polyurethane Waterproofing System, on steel	Dynamic indentation to EOTA TR 006 : 2004	Value achieved	
	Control		I_4
	cured at 5°C (tested at 23°C)		I_4
	cured at 30°C (tested at 23°C)		I_4
Enkopur 1K Polyurethane Waterproofing System, on concrete	cured at 5°C (tested at 23°C)		I_4
	cured at 30°C (tested at 23°C)		I_4
Enkopur 1K Polyurethane Waterproofing System, on steel	Static indentation to EOTA TR 007 : 2004 tested at 23°C	Value achieved	L_4
Enkopur 1K Polyurethane Waterproofing System	Fatigue to EOTA TR 008 : 2004 tested at –10°C for 1000 cycles	Watertight and less than 75 mm delamination from substrate	Pass
Enkopur 1K Polyurethane Waterproofing System	Tensile strength to EN ISO 527-3 : 2003	Value achieved	
	longitudinal direction		
	control		2.8 MPa
	cured at 5°C		2.1 MPa
	cured at 30°C		2.7 MPa
	transverse direction		
	control		3.5 MPa
	cured at 5°C		2.3 MPa
	cured at 30°C		3.3 MPa
Enkopur 1K Polyurethane Waterproofing System	Elongation to EN ISO 527-3 : 2003	Value achieved	
	longitudinal direction		
	control		31%
	cured at 5°C (tested at 23°C)		32%
	cured at 30°C (tested at 23°C)		31%
	transverse direction		
	control		32%
	cured at 5°C (tested at 23°C)		33%
	cured at 30°C (tested at 23°C)		30%

3.2.1 On the basis of data assessed, the system can accept, without damage, the foot traffic and light concentrated loads associated with installation, maintenance and the effects of minor movement likely to occur in practice while remaining weathertight.

3.2.2 Where traffic in excess of the examples given in section 3.2.1 is envisaged, such as for maintenance of lift equipment, a walkway must be provided (for example, using concrete slabs supported on bearing pads). Reasonable care must be taken to avoid puncture by sharp objects or concentrated loads.

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

3.3 Resistance to root penetration

3.3.1 Results of root penetration tests are given in Table 4.

Table 4 Root penetration results

System assessed	Assessment method	Requirement	Result
Enkopur 1K Polyurethane Waterproofing System plus Enketop system	Root penetration to FLL (2008) (EN 13948 : 2007)	No penetration	Pass

3.3.2 The system will resist penetration by plant roots and rhizomes and can be used as a waterproofing system in green roof and roof garden specifications.

4 Safety and accessibility in use

4.1 Slip resistance

4.1.1 Results of slip resistance tests are given in Table 5.

Table 5 Slip resistance results

System assessed	Assessment method	Requirement	Result
Enkopur 1K Polyurethane Waterproofing System plus Enketop, Enketop Chips and Enketop Clear Sealer	BBA Internal Test Specification T1/10, Issue 2 : 2016	≥36 PTV(1)	
	Wet		Pass
	Dry		Pass

(1) Mean pendulum test value

5 Protection against noise

Not applicable.

6 Energy economy and heat retention

Not applicable.

7 Sustainable use of natural resources

Not applicable.

8 Durability

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

8.2 Specific test data were assessed as given in Table 6.

Table 6 Results of durability tests

System assessed	Assessment method	Requirement	Tensile strength result (Mean)
Enkopur 1K Polyurethane Waterproofing System on the following substrates: - glass - TPO - PVC - concrete - steel	Delamination strength to EOTA TR 004 : 2004 Exposed to hot water at 60°C for 180 days.	≥50kPa	 Pass Pass Pass Pass Pass
Enkopur 1K Polyurethane Waterproofing System on steel	Dynamic indentation to EOTA TR 006 : 2004 UV aged for 1000 MJ·m^{-2} at 70°C Tested at -10°C	Declared Value	I_4
Enkopur 1K Polyurethane Waterproofing System on steel on EPS	Heat ageing at 80°C for 200 days Tested at -30°C		 I_3 I_3
Enkopur 1K Polyurethane Waterproofing System: on concrete	Static indentation to EOTA TR 007 : 2004 Water ageing (at 60°C for 30 days) Tested at 80°C	Declared Value	L_2
Enkopur 1K Polyurethane Waterproofing System: On EPS On steel	Water ageing at 60°C for 180 days, (tested at 90°C)		 L_4 L_4
Enkopur 1K Polyurethane Waterproofing System	Tensile strength to EN ISO 527-1 : 2019 Heat aged for 200 days at 80°C Longitudinal direction Transverse direction UV aged for 1000 MJm^{-2} (70°C) Longitudinal direction Transverse direction	Value achieved	 3.6 MPa 3.7 MPa 3.0 MPa 3.7 MPa
Enkopur 1K Polyurethane Waterproofing System	Elongation to EN ISO 527-1 : 2019 Heat aged for 200 days at 80°C Longitudinal direction Transverse direction UV aged for 1000 MJm^{-2} (70°C) Longitudinal direction Transverse direction	Value achieved	 30 % 26% 31 % 31%
Enkopur 1K Polyurethane Waterproofing System	Fatigue to EOTA TR 008 : 2004 -10°, 50 cycles Heat aged for 200 days at 80 °C	Watertight and less than 75 mm delamination from substrate	Pass
Enkopur 1K Polyurethane Waterproofing System plus Enketop, Enketop Chips and Enketop Clear Sealer, on concrete	Delamination to EOTA TR 004 : 2004 Hot water at 60°C for 90 days	≥50kPa	Pass

8.3 Service life

Under normal service conditions, the system will have a life in excess of 25 years, provided it is designed, installed and maintained in accordance with this Certificate and the Certificate holder's instructions.

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 system is to be applied must comply with the relevant requirements of BS 6229 : 2018 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 analysis of the roof is available, including overall and local deflection, and direction of falls.

9.1.4 Imposed loads, dead loading and wind 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.

9.1.5 The system, when used with a suitable roof garden or green roof specification, will adequately resist the effects of wind uplift likely to occur in practice.

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

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

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

9.1.9 For green roof and roof garden finishes, in order to protect the roof waterproofing and any components of the system above the waterproofing, 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 should be removed at early germination stage
- other woody plants which spread aggressively including rhododendron.

9.1.10 The Green Roof Organisation (GRO) can provide guidance on species not included in section 9.1.9 of this Certificate but such advice is outside the scope of this Certificate.

9.1.11 The drainage systems for 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.

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

- as described in the relevant clauses of BS 6229 : 2018 and BS 8217 : 2005, 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 instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate, and visits were carried out to sites in progress to assess the practicability of installation.

9.2.2 Installation of the system must be in accordance with the relevant clauses of BS 8000-0 : 2014 and BS 8000-4 : 1989, the Certificate holder's instructions and this Certificate. A summary of instructions and guidance is provided in Annex A of this Certificate.

9.2.3 All of the components must be applied when the air and substrate temperatures are greater than 5°C. Special precautions may be necessary when temperatures exceed 30°C; advice can be obtained from the Certificate holder but such advice is outside the scope of this Certificate.

9.2.4 Substrates to which the system is to be applied must be sound, dry, clean and free from sharp projections, such as nail heads and concrete nibs. Rough substrates must be made good using the appropriate levelling compound in accordance with the Certificate holder's instructions.

9.2.5 Adhesion checks must be carried out to ensure that the system is compatible with the existing surfaces. The Certificate holder must be consulted for details of suitable test methods and requirements before use.

9.2.6 Expansion or construction joints must be additionally reinforced prior to the application of the main waterproofing layer, in accordance with the Certificate holder's instructions.

9.2.7 The substrate is primed with Enke Universal 933 Primer at a minimum rate of 0.1 $kg \cdot m^{-2}$. Once joint treatments have cured, Enkopur 1K is applied at a minimum application rate of 2.0 $kg \cdot m^{-2}$.

9.2.8 The membrane is applied by rolling or brushing in multiple layers to provide a waterproofing membrane with a minimum dry film thickness of 2.1 mm.

9.2.9 Enke Polyflex Fleece is applied to the wet resin and embedded using a brush or roller, ensuring that any trapped air pockets are removed.

9.2.10 A top layer of Enkopur 1K is applied to the substrate at a minimum application rate of 1.0 $kg \cdot m^{-2}$, ensuring that the fleece is saturated.

9.2.11 In the event of uneven, undulating or heavily structured substrates, or at low temperatures, the total application of Enkopur 1K may exceed 3.0 $kg \cdot m^{-2}$. Recommended application rates for various substrates are given in Table 7.

9.2.12 For further recommended application rates in various situations, the Certificate holder's technical application instructions must be followed.

Table 7 Application rates of Enkopur 1K

Substrate	Application rate ($kg \cdot m^{-2}$)
Smooth	3.0
Fine-grained	3.2
Rough	3.5

9.2.13 For balcony applications, Enketop is applied evenly with a smoothing or notched trowel, at an application rate of at least 2.0 to 3.0 $kg \cdot m^{-2}$ to the cured top layer of Enkopur. Afterwards, the coating must be deaerated by carefully (without pressure) rolling a spiked-roller crossways, to achieve an optimal surface appearance.

9.2.14 Enketop chips are then sprinkled into the wet Enketop at an application rate of 10 - 80 $g \cdot m^{-2}$ and left to dry.

9.2.15 A coat of Enketop (approximately 500 $g \cdot m^{-2}$) is applied to the dried Enketop and sprinkled with Enketop chips, over the entire surface (consumption rate of approximately 800 $g \cdot m^{-2}$). Any excess chips must be swept off on the following day.

9.2.16 After the Enketop coating has cured, a transparent topcoat of Enketop Clear Sealer is applied using a velour roller. This sealant is available both as a smooth and an anti-slip version. Recommended application rates for various substrates are given in Table 8.

Table 8 Application rates of Enketop Clear Sealer

Substrate	Application rate ($g \cdot m^{-2}$)
Enke plastic chips with partial sprinkling	250
Enketop chips with full-surface sprinkling	300

9.2.16 The NHBC requires that Enkopur 1K Polyurethane Waterproofing System, once installed, is inspected in accordance with *NHBC Standards* 2024, Chapter 7.1, Clause 7.1.12, and undergoes an appropriate integrity test, where required. Any damage to the system 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, the system must only be installed by contractors who have been trained and approved by the Certificate holder.

9.4 Maintenance and repair

9.4.1 Ongoing satisfactory performance of the system in use requires that it is suitably maintained. The guidance provided by the Certificate holder was assessed by the BBA and found to be appropriate and adequate. The following requirements apply in order to satisfy the performance assessed in this Certificate:

9.4.2 The system must be the subject of six-monthly inspections and maintenance in accordance with the recommendations of BS 6229 : 2018, Chapter 7, and the Certificate holder's own maintenance requirements, where relevant, to ensure continued satisfactory performance. 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 the drain outlets and gutters to ensure they are kept clear and unblocked.

9.4.3 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 are cleared from the roof and drainage outlets. Guidance is available within the latest edition of The GRO Green Roof Code of Best Practice (see section 9.1 of this Certificate).

9.4.4 For green roofs, in order to protect the water-flow-reducing-layer (WFRL) and insulation, invasive plant species (see sections 9.1.11 and 9.1.12 of this Certificate) must be eliminated through maintenance.

9.4.5 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. 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.

9.4.6 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. The Certificate holder can advise on the suitability of a particular product, but such advice is outside the scope of this Certificate.

9.4.7 Should minor damage occur, it can be repaired by cleaning back to the unweathered material and recoating the damaged area with the membrane at the appropriate application rate.

9.4.8 Should a leak occur in the waterproofing layer in green or inverted roof specifications, access to it is achieved by removing the layers above the waterproofing and replacing them once the repair has been carried out.

10 Manufacture

10.1 The production processes for the system 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 system 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:

11.1.1 Enkopur 1K is delivered to site in 4, 12.5 or 25 kg disposable containers bearing the product's name, safety data and batch number, and the BBA logo incorporating the number of this Certificate.

11.1.2 Enketop is delivered to site in 12.5 disposable tin packing drums bearing the system's name, safety data and batch number, and the BBA logo incorporating the number of this Certificate.

11.1.3 Enke Universal VA 933 Primer is delivered to site in 2.5, 8 or 20 kg disposable containers bearing the product's name, safety data and batch number, and the BBA logo incorporating the number of this Certificate.

11.1.4 Enke Polyflex Fleece is delivered to site in 50 m rolls with the widths and weights shown in Table 9. Other widths are available on request.

Table 9 Enke Polyflex reinforcing fleece – roll widths and weights

Roll width (cm)	Roll weight (kg)
15.0	0.825
20.0	1.100
30.0	1.650
50.0	2.750
100.0	5.500

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

11.2.1 Resins must be stored in ventilated, dry locations, away from heat and oxidising agents and out of direct sunlight, and at a temperature between 0 and 50°C.

ANNEX A – SUPPLEMENTARY INFORMATION †

Supporting information in this Annex is relevant to the system 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 system under the *GB CLG 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).

UKCA marking

The Certificate holder has taken the responsibility of UKCA marking the system in accordance with UKTA-0836-22/6378 of 22 September 2022.

CE marking

The Certificate holder has taken the responsibility of CE marking the system in accordance with ETAG 005 : 2000, Revision March 2004, Parts 1 and 6.

Additional information on installation

General

A.1 Detailing (eg upstands) is carried out in accordance with the Certificate holder's instructions.

A.2 Where applicable, the Certificate holder must be consulted for advice on suitable protection (eg pavers) depending on the use of the roof, but such advice is outside the scope of this Certificate. The product can be used on balconies as a protected waterproofing layer in conjunction with pavers, for pedestrian access.

A.3 Installation must also be in accordance with the relevant clauses of Liquid Roofing and Waterproofing Association (LRWA) Note 7 - *Specifier Guidance for Flat Roof Falls.*

Green roofs and roof gardens

A.4 Recommendations for the design of green roof 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*.

A.5 Green roofs and roof gardens must be of a suitable design. In cases of doubt, the Certificate holder's advice should be sought, but such advice is outside the scope of this Certificate.

Bibliography

BS 6229 : 2018 *Flat roofs with continuously supported flexible waterproof coverings — Code of practice*

BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*

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 EN 1991-1-1 : 2002 *Eurocode 1 : Actions on structures — General actions*
NA to BS EN 1991-1-1 : 2002 UK National Annex to *Eurocode 1 : Actions on structures — General actions*
BS EN 1991-1-3 : 2003 + A1 : 2015 *Eurocode 1 : Actions on structures — General actions*
NA to BS EN 1991-1-3 : 2003 + A1 : 2015 UK National Annex to *Eurocode 1 : Actions on structures — General actions*
BS EN 1991-1-4 : 2005 + A1 : 2015 *Eurocode 1 : Actions on structures — General actions*
NA to BS EN 1991-1-4 : 2005 + A1 : 2015 UK National Annex to *Eurocode 1 : Actions on structures — General actions*

BS EN 1931 : 2000 *Flexible sheets for waterproofing — bitumen, plastic and rubber sheets for roof waterproofing - determination of water vapour transmission properties*

BS EN 13501-1 : 2018 *Fire classification of construction products and building elements — Classification using data from reaction to fire tests*

BS EN 13948 : 2007 *Flexible sheets for waterproofing. Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to root penetration*

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

EN ISO 527-1 : 2019 Plastics — *Determination of tensile properties - Part 1: Test conditions for films and sheets*
EN ISO 527-3 : 2003 *Plastics — Determination of tensile properties - Part 3: Test conditions for films and sheets*

ETAG 005 : 2000, Revision 2004, Part 1 *Liquid applied roof waterproofing kits — General*
ETAG 005 : 2000, Revision 2004, Part 6 *Liquid applied roof waterproofing kits — Specific stipulations*

EOTA TR 003 *Determination of the watertightness*
EOTA TR 004 *Determination of the resistance to delamination*
EOTA TR 006 *Determination of the resistance to dynamic indentation*
EOTA TR 007 *Determination of the resistance to static indentation*
EOTA TR 008 *Determination of the resistance to fatigue movement*

Conditions of Certificate

Conditions

1 This Certificate:

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

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

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

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

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

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

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