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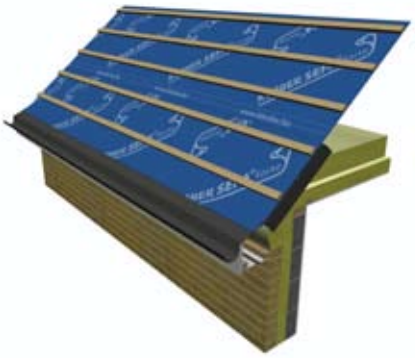
INDEPENDENT ASSESSMENTS
FOR THE EUROPEAN BUILDING AND
CONSTRUCTION INDUSTRY

CERTIFICATE OF ASSESSMENT



PRODUCT

Sepa® forte

SUPPLIED BY

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SUMMARY

Sepa® forte is a reinforced multi-layer membrane and is blue in colour on the upper side. It is suitable, within conditions, as a roof underlay for use in pitched roof construction, under slates or tiles as a secondary weather resistant layer, for protection against wind-driven rain and snow, tile wind-uplift and ingress of dust. The underlay has good resistance to tearing during installation and remains flexible at low temperatures. The characteristics of the product and the method of application have been reviewed with respect to current Building Regulations, British and European Standards and other publications in the United Kingdom and Ireland in April 2008.

The assessment is described in the following pages which form integral parts of this certificate and which should be read in its entirety.

CONDITIONS OF USE

1. Sepa® forte Roof Underlay is certified for use as an unsupported roof underlay for installation on pitched roofs constructed with adequate strength and stability to support safely the imposed wind loads. The design and installation shall be in accordance with BS 5534 *Code of practice for slating and tiling (including shingles)*, BS 5250 *Code of practice for control of condensation in buildings*, the Certificate holder's installation instructions, as inspected by BRE Certification, and the requirements of this certificate.
2. Sepa® forte Roof Underlay shall be fully protected with the roof covering as soon as practicable after installation. There shall be no manual or mechanical trafficking access directly onto the underlay during installation or subsequent operations.
3. The maximum net wind pressure shall not exceed 2.5 kN/m^2 as calculated in accordance with BS 6399-2 *Loading for buildings. Code of practice for wind loads*.
4. Sepa® forte Roof Underlay shall not be left permanently exposed to UV radiation and should be used in conjunction with an eaves guard.
5. The product should be permanently covered as soon as possible after installation. Sepa® forte should not be left permanently exposed to UV radiation for more than one month. Within this period, the product will provide temporary protection against rain prior to slating or tiling.
6. The performance of the membrane depends on correct installation. The product shall be installed strictly in accordance with the Certificate holder's installation instructions and the requirements of this Certificate. The quality of installation achieved on site is not covered by this Certificate. Therefore it is recommended that the quality of installation and workmanship is subject to appropriate checks by a competent person for each installation.
7. Organic solvents must not be allowed to come into contact with this product.

STATEMENT

It is the opinion of BRE Certification that Sepa® forte is satisfactory for use within the stated conditions provided that it is used in accordance with the supplier's instructions and the requirements of this certificate.

CONFIRMATION

For and on behalf of
BRE Certification

Director
Date: 14 April 2008

UKAS PRODUCT CERTIFICATION
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1. TECHNICAL SPECIFICATION

1.1 Description of Product

1.1.1 Sepa® forte is a multi-layer laminated membrane comprising two layers of spunbonded polypropylene with a polypropylene interlayer. Sepa® forte is manufactured to BS EN 13859-1 *Flexible sheets for waterproofing. Definitions and characteristics of underlays. Underlays of discontinuous roofing* in standard rolls as shown in Table 1, the top surface is blue in colour.

1.1.2 Details of standard rolls of Sepa® forte are given in Table 1.

TABLE 1: Details of standard rolls of Sepa® forte

Product characteristic	Dimensions
Length	45 m
Width	1.0 m
Thickness	0.6 mm
Roll weight (inc packaging)	7 kg
Weight of sheet	155 g/m^2

1.1.3 The underlay is continuously printed with parallel lines spaced at 100 and 150 mm from one edge to facilitate provision of the correct overlap between runs when laying.

1.2 Usage

Sepa® forte is a polymeric roof underlay for use unsupported in pitched roofs under slating or tiling.

1.3 Ancillaries

Ancillaries for use with the product (outside the scope of this certificate) include:

- timber battens
- corrosion resistant staples or clout nails to BS 5534
- support tray or eaves guard -tile/ridge ventilators
- eaves ventilators
- rigid sarking boards
- soaker trays

2. PRODUCT PERFORMANCE

2.1 General

2.1.1 Sepa® forte will provide a satisfactory unsupported underlay in tiled and slated, ventilated cold pitched roofs designed and constructed in accordance with BS 5534. It is flexible at low temperatures, resistant to tearing by nails or from handling on site and has adequate strength and ductility. Performance testing has been based in part on the requirements of ETAG 006 *Systems of mechanically fastened flexible roof waterproofing membranes*.

2.2 Strength

2.2.1 Design wind speeds should be determined and wind uplift forces calculated, in accordance with BS 6399-2. In all cases it shall be established or ensured that the timber roof supporting structure is adequately secured to the building, and capable of withstanding the maximum expected wind uplift forces; this includes existing roofs previously tiled without an underlay.

2.2.2 Loading tests on Sepa® forte to determine flexibility have shown that the material will adequately resist net wind uplift forces with up to 2.5 kN/m^2, determined from BS 6399-2 with up to 330 mm batten spacings for 38 mm wide battens, on 600 mm centred rafters. Where batten spacings are greater than 330 mm, or rafter spacing exceeds 600 mm, it shall be established by testing that the wind uplift forces do not produce a deflection in the underlay of greater than 25 mm.

2.3 Fire

2.3.1 The product has been categorised as Class F to BS EN 13501-1 *Fire classification of construction products and building elements. Classification using data from reaction to fire tests*, for reaction to fire, as no performance determined.

2.4 Weathertightness

2.4.1 Sepa® forte is water penetration resistant, and when installed in a roof constructed to BS 5534, the material will resist the passage of water to the interior of the building.

2.5 Condensation

2.5.1 Water vapour resistance tests on Sepa® forte have shown it is highly vapour impermeable and should therefore be considered for design purposes in accordance with BS 5250 and BS 5534 as a high water vapour resistance (HR) underlay suitable for unsupported uses.

2.5.2 Provision shall be made in the loft space to provide, as a minimum, ventilation equivalent to the requirements of BS 5534 and BS 5250 for each designed roof pitch. Ventilation tiles or ridge ventilators may be considered only in combination with low level ventilation. The amount of ventilation should be equivalent to a 25 mm gap at low level and a 5 mm gap at high level. In roofs where insulation is installed at rafter level a ventilation cavity 50 mm deep shall be provided between the underlay and insulation. The method of assessment given in BS 5250, should be used to ensure that harmful condensation will not develop. See also BRE Digest 180 *Condensation in roofs* and BRE Digest 369 I*nterstitial condensation and fabric degradation*.

2.5.3 Care shall be taken in the design and installation to minimise the risk of condensation by water vapour entering the loft space from the ceiling below and from services within the loft space.

2.6 Durability

2.6.1 Accelerated tests for resistance to ageing have shown the product to be satisfactory. Accelerated tests for stability in hot weather have shown that no significant deterioration in strength or flexibility occurs. Test results are shown in Table 3.

2.6.2 Unrolling Sepa® forte after cooling to -5°C does not cause cracking. It should not be unrolled at lower temperatures when being installed on site.

2.6.3 Sepa® forte is not considered to be suitable for use in conditions where it is exposed to prolonged UV radiation and must be covered to protect it from this radiation as soon as reasonably practicable after installation (maximum exposure time of four weeks). To prevent prolonged exposure to UV radiation at eaves, an eaves fitting should be used to direct water into the gutter.

2.6.4 Sepa® forte is considered to be as durable as traditional roof underlays. This is provided the roofing system is designed and installed in accordance with the relevant requirements of BS 5534, BS 5250 and BS 8000-6 *Workmanship on building sites. Code of practice for slating and tiling of roofs and claddings*, the requirements of this certificate, and the tiling/slating has been maintained.

3. BUILDING REGULATIONS

3.1 Building Regulations

Sepa® forte when used in accordance with the requirements and conditions of this certificate, can contribute towards satisfying the following relevant Building Regulations, Requirements and Standards:

- The Building Regulations (England and Wales) 2000 (as amended) (E&W)
- The Building (Scotland) Regulations 2004 (S)
- The Building Regulations (Northern Ireland) 2000 (NI)
- The Building Regulations 1997 Ireland (as amended) (I)

3.2 Resistance to moisture (precipitation and wind-driven spray)

Country	Requirement	Opinion
E & W	C2(b) Resistance to moisture - precipitation and wind-driven spray	The installed membrane will adequately resist the passage of precipitation to the underlying structure. See section 2.4.
S	3.10 Precipitation 3.10.1, 3.10.7	
NI	C4 Resistance to ground moisture and weather	
I	C4 Resistance to weather and ground moisture	

3.3 Fitness and durability of materials and workmanship

Country	Requirement	Opinion
E & W	Regulation 7 Materials and workmanship	Sepa® forte is manufactured from suitable materials and can be installed satisfactorily with a normal degree of workmanship. See section 2.6.
S	8(1) Fitness and durability of materials and workmanship	
NI	B2 Fitness of materials and workmanship	
I	D1 Materials and workmanship	

3.4 CDM Regulations

- Construction (Design and Management) Regulations 2007
- Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)
- Safety, Health and Welfare Regulations 2006 (Ireland).

The Certificate should form part of the information used by the client, planning supervisor, designer and contractors to discharge their responsibilities under these Regulations.

4. INSTALLATION/PRACTICAL APPLICATION

4.1 General

4.1.1 The performance of the membrane depends on correct installation. Sepa® forte shall be installed strictly in accordance with the Certificate holder's installation instructions, taking account of the delivery, storage and handling requirements of this certificate. The quality of installation actually achieved on specific sites is not covered by this certificate. Therefore it is recommended that the quality of installation and workmanship is subject to appropriate checks by a competent person for each installation.

4.2 Delivery, storage and handling

4.2.1 Sepa® forte is supplied in rolls wrapped in polythene. Each roll bears a label showing the manufacturer's and product name including batch number, nominal dimensions and BRE Certification logo incorporating the number of this Certificate.

4.2.2 All rolls shall be securely stacked on their side on a level surface, preferably under cover, and shall not be allowed to rest on sharp projections. Rolls stacked in the open shall be protected from accidental damage, and unwrapped material shall not be left exposed to UV light for a prolonged period.

4.2.3 Reasonable precautions shall be taken in handling the rolls to prevent damage, such as tears or perforations, occurring before and during installation, and prior to the application of the roof covering.

4.3 Installation (Informative)

4.3.1 The installation and fixing of the Sepa® forte underlay should be in accordance with BS 5534, BS 5250 and BS 8000-6, the Certificate holder's installation instructions and with the requirements of this certificate.

4.3.2 It is important that installers follow the Certificate holder's instructions paying particular attention to the following:

- The minimum width of horizontal laps, reproduced from BS 5534 shall be as shown in Table 2. Horizontal laps should preferably be under a batten, but where a lap occurs between battens, it should be held down with an extra batten. Vertical joints shall overlap by at least 150 mm and shall be secured on a rafter.
- At the eaves Sepa® forte should be used in conjunction with a support tray or eaves guard (not assessed) running continuously along the length of the eaves so that run-off water is directed into the gutter. The first roll of Sepa® forte shall be cut to overlap and installed onto the underlay support tray.
- Battens shall be installed as work progresses from eaves to ridge for achieving purchase for feet and avoiding damage to the underlay surface. No materials or implements should be rested on the underlay.
- A minimum ventilation gap of 15 mm is recommended. However, where the ceiling or insulation follows the pitch of the roof, the ventilation gap shall be 50 mm between the insulation and the underside of the membrane.
- It shall be ensured that the roof design and construction allows for adequate ventilation of the roof space by providing sufficient eaves openings, or tile/ridge ventilators in conjunction with eaves ventilators with an equivalent opening area. Due care shall be taken that the underlay does not obstruct the flow of air at any ventilation opening.
- Where the underlay is used with rigid sarking boards, counter battens at least 25 mm in depth should be used, located between the rigid boards and the underlay to allow ventilation below the underlay to occur.

- Standard methods of workmanship should be used to apply Sepa® forte at penetrations and abutments. Adequate soaker trays should be provided at holes and above openings. With chimneys or roof windows, Sepa® forte should be taken up 50 -100 mm and fixed directly to the support. It shall be ensured that the underlay is turned up not less than 50 mm at all abutments to be overlapped by the flashings and that it overlaps the lining tray by not less than 100 mm at the back face of any abutment.
- Care should be taken to avoid the material becoming ignited by torch during building and maintenance operations.

TABLE 2: Minimum horizontal overlap

Rafter Pitch	Min Horizontal Lap – mm	
degrees	Not fully supported	Fully supported
12.5 -14	225	150
15 -34	150	100
35 and above	100	75

4.4 Repair and maintenance

4.4.1 Repairs shall be carried out in accordance with the Certificate holder's installation instructions by overlaying the damaged area with a layer of additional material ensuring a 150 mm overlap all round, but ensuring that the up-slope side is overlapped by the next higher horizontal run of underlay, and secured under a batten.

4.4.2 During its life, the external roof covering over Sepa® forte shall be subject to regular inspection and maintenance with any defects promptly repaired.

5. TECHNICAL APPRAISAL

5.1 Performance Tests

Tests and investigations have been carried out by BRE Certification to determine the following properties and performance characteristics of Sepa® forte:

- tensile strength and elongation before and after ageing at temperatures above ambient and after exposure to UV light
- resistance to tearing
- flexibility under uniformly distributed load at the maximum batten spacing
- water vapour permeability
- watertightness
- cold temperature flexibility test

5.2 Assessment

Assessment has been made of the product design, with reference to its application and practicality of installation of the material.

5.3 Technical data

Technical data for the product and the results of performance tests are given in Table 3.

5.4 Quality Control

Traceable quality records are maintained by the manufacturer. The manufacturer carries out checks at regular intervals to ensure the quality of the product is maintained within the defined product specification. BRE Certification undertakes regular monitoring of the factory production control audits on the manufacture of the product against an Agreed Quality Plan for the product.

TABLE 3: Typical properties of Sepa® forte

Characteristic	Test Description	Result
Resistance to uplift during wind loading	Deflection of membrane by force of 2500N/m^2	Less than 25mm deflection
Resistance to passage of water vapour	BS 3177 *Water vapour permeability*	0.21 g/m^2/24h
Resistance to water penetration	EN 1928 *Leakage at 24h Watertightness Category* EN 13859-1	Nil W1
Tensile Properties	EN12311-1 Unaged Tensile strength MD CD	 333 N/50mm 289 N/50mm
	EN12311-1 Unaged Elongation MD CD	Elongation at Max Force 71% 80%
Resistance to Tearing	Nail tear, EN12310-1 Unaged MD CD	 225 N 265N
Dimensional Stability	EN1107-2 Mean % change MD CD	 +0.2% +0.01%
Flexibility at Low Temperature (pliability)	Flexibility on unrolling after cooling at -5°C for 24 hours	No tearing or cracking
Artificial Ageing Behaviour	EN12311-1 UV and Heat aged Tensile strength MD CD	250 N/50mm 215 N/50mm
	EN12311-1 UV and Heat aged Elongation MD CD	25 % 27 %
	Watertightness Class EN13859-1	W1
KEY: MD = Machine Direction CD = Cross Direction		

5.5 Standards

The following Standards and other publications have been referred to for this assessment:

BS 2782-8:1996	Method 820A:1996 - Methods of testing plastics. Other properties. Determination of water vapour transmission rate (dish method).
BS 5250:2002	Code of practice for control of condensation in buildings.
BS 5534:2003	Code of practice for slating and tiling (including shingles).
BS 6399-2:1997	Loading for buildings. Code of practice for wind loads.
BS 8000-6:1990	Workmanship on building sites. Code of practice for slating and tiling of roofs and claddings.
BS EN 1928:2000	Flexible sheets for waterproofing. Bitumen, plastic and rubber sheets for roof waterproofing. Determination of watertightness.
BS EN 12311-1:2000	Flexible sheets for waterproofing. Determination of tensile properties. Bitumen sheets for roof waterproofing.
BS EN 13859-1:2005	Flexible sheets for waterproofing. Definitions and characteristics of underlays. Underlays of discontinuous roofing.
BS EN 12310-2:2000	Flexible sheets for waterproofing. Determination of resistance to tearing (nail shank). Plastic and rubber sheets for roof waterproofing.
BS EN 13501-1:2007	Fire classification of construction products and building elements. Classification using data from reaction to fire tests.
DIN 53122-1:2001	Determination of the water vapour transmission rate of plastic film, rubber sheeting, paper, board and other sheet materials by gravimetry.
BRE Digest 180:1986	Condensation in roofs.
BRE Digest 369:1992	Interstitial condensation and fabric degradation.
UEAtc MOAT 27: 1983	General Directive for the Assessment of Roof Waterproofing Systems.
ETAG 006:2000	Systems of mechanically fastened flexible roof waterproofing membranes.

6. CONDITIONS OF CERTIFICATE ISSUE

6.1 Validity

This certificate will be valid for a period of three years. It will remain valid in so far as:

a) The materials and methods of manufacture are unchanged.

b) The design and specification are unaltered from those examined by BRE Certification.

c) Klober Ltd continues to have the product regularly checked by BRE Certification through factory production control inspections.

6.2 Health and safety

This certificate and the recommendations herein do not purport in any way to restate the requirements of the Health and Safety at Work Act 1974 or any statutory or common law duty of care which exists now or in the future; nor is compliance with these recommendations to be assumed as satisfying the requirements of the said Act or any existing or future statutory or common law duty of care.

6.3 Reference to other documentation

Where reference is made in this certificate to any Act of Parliament, Regulation, Code of Practice, British or other Standard or other publications, it shall be construed as reference to such publication in the form in which it is in force at the date of the certificate re-issue.

6.4 Patents

BRE Certification makes no representational warranty that any patent or similar industrial property right is valid or that the manufacture, use, sale, lease or any other dealing or disposition of the products in whole or in part is not an infringement of any patent or industrial property right not owned by Industrial Textiles & Plastics Ltd..

Confirmation that a certificate is current may be obtained from the BRE Certification website (www.redbooklive.com)

BRE Certification

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INDEPENDENT ASSESSMENTS

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