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INDEPENDENT ASSESSMENTS
FOR THE EUROPEAN BUILDING AND
CONSTRUCTION INDUSTRY

CERTIFICATE OF ASSESSMENT

PRODUCT

PROTECT A1

SUPPLIED BY

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SUMMARY

Protect A1 has been assessed to confirm its suitability 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, against tile wind-uplift, and ingress of dust. Protect A1 is a laminated membrane comprising a non-woven layer and a water resistant coating. Protect A1 is an impermeable roof underlay as defined by BS 5250 *Code of practice for the control of condensation in buildings*.

The characteristics of the product and the method of application have been reviewed with respect to the Building Regulations, British and European Standards current at the time of issue of this certification in the United Kingdom.

The assessment is described in the following pages which form integral parts of this certificate.

LIMITATIONS OF USE

Protect A1 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, (see 1.2.2). The design, installation and method of application must be in accordance with BS 5534 *Code of practice for slating and tiling* and BS 5250. Protect A1 must be fully protected with a waterproofing roof covering system as soon as reasonably practicable after installation (see 1.2.10). There must be no manual or mechanical trafficking access directly onto the underlay during installation or subsequent operations (see 3.2.4). The maximum net wind pressure must not exceed 2500 N/m² as calculated in accordance with BS 6399:Part 2 *Loading for buildings – code of practice for wind loads*, (see 1.2.6). The product must not be left exposed at the eaves to ultraviolet radiation and should be used in conjunction with a Glidevale PVC-U eaves skirt (not assessed).

The installation of Protect A1 must be strictly in accordance with the relevant requirements of BS 5534, the supplier's instructions, and the requirements of this certificate.

Solvents must not be allowed to come into contact with this product.

Protect A1 must remain protected from ultraviolet light degredation and physical damage until immediately prior to use.

UKAS PRODUCT CERTIFICATION
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STATEMENT

It is the opinion of BRE Certification that Protect A1 is satisfactory for use within the stated limitations provided that it is used in accordance with the manufacturer's specifications, their instructions and the requirements of this certificate.

CONFIRMATION

For and on behalf of
BRE Certification

R Zammitt
Technical Manager

1 TECHNICAL SPECIFICATION

1.1 Description of Product

1.1.1 Protect A1 is a polymeric roof underlay, and is assessed for use unsupported in pitched roofs under slating or tiling.

1.1.2 Protect A1 membrane comprises a polypropylene non-woven layer which is coated on one surface with a continuous film of polypropylene/ polyethylene blend. Protect A1 is manufactured in standard rolls as shown in Table 1, and is black in colour on the lower surface and dark grey on the upper (coated) surface with Protect A1 and a unique production code printed on the surface.

TABLE 1 Nominal Characteristics of Protect A1

Length	15 m	30 m	45 m
Width	1.0 m	1.5 m	1.0 m
Thickness	0.6 mm	0.6 mm	0.6 mm
Roll weight	2.2 kg	7 kg	7 kg
Weight of sheet	145 g/m^2	145 g/m^2	145 g/m^2

1.2 Product performance

1.2.1 Protect A1 will provide a satisfactory underlay in tiled and slated pitched roofs constructed in accordance with BS 5534:Part 1. It is flexible at low temperatures and resistant to tearing by nails and from handling on site.

1.2.2 Protect A1 may be installed on new or existing buildings. In all cases it must 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.

1.2.3 Water penetration resistance tests have confirmed that Protect A1 is water penetration resistant, and when installed in a roof constructed to BS 5534:Part 1, the material will resist the passage of water to the interior of the building.

1.2.4 Tests have shown that the water vapour permeability of Protect A1 is 1.6 g/m^2/day. It should therefore be considered for design purposes, in accordance with BS 5250 and BS 5534 as an impermeable high water vapour resistance (HR) roof underlay. Provision must be made in the roof design 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. In roofs where insulation is installed at rafter level a ventilation cavity 50 mm deep must be provided between the underlay and insulation. The amount of ventilation should be equivalent to a 25mm gap at low level and a 5mm gap at high level. Additional guidance should be obtained by reference to BS 5250. The method of assessment given in BS 5250 should be used to ensure harmful condensation will not develop.

1.2.5 As Protect A1 has a permeability less than 36 g/m^2/day then, in line with BS 5534, it is not recommended for use in fully supported applications. If Protect A1 is to be used with rigid timber sarking, then either counter-battens (minimum 12mm deep) should be located between the sarking and the underlay (the maximum drape of Protect A1 shall be limited to 10mm) or, if it is decided to lay Protect A1 directly onto the sarking (as is conventional practice in Scotland), then counter battens and tiling battens should be used above to prevent trapping moisture on the underlay top surface. In all cases of use, the cold roof loft space below the sarking boards must be fully ventilated as specified in BS 5250.

1.2.6 Loading tests on Protect A1 to determine flexibility have shown that the material will adequately resist net wind uplift pressures up to 2500N/m^2 (determined from BS 6399:Part 2) with up to 343 mm batten spacings for 50 mm wide battens, on 600 mm centred rafters.

Where batten spacings are greater than 343 mm, or rafter spacing exceeds 600 mm, it must be established by testing that the wind uplift forces do not produce a deflection in the underlay of greater than 25 mm.

1.2.7 Accelerated tests for resistance to ageing have shown the product to be satisfactory. Results of the tests appear in Table 2.

1.2.8 No additional hazard in the event of fire will be introduced by the use of Protect A1 when compared to roofing felts produced to BS 747 *Reinforced bitumen sheets for roofing - specification*. The underlay comprises acceptable alternative materials to those complying with BS 747 for use in accordance with BS 5534, with adequate strength and flexibility.

1.2.9 Exposure to UV light in tests has indicated that Protect A1 should not be dressed over the guttering at the eaves as the sole means of directing run-off water into the guttering. A compatible proprietary eaves skirt (such as a Glidevale PVC-U skirt) or eaves strip membrane may be used for this purpose but these have not been assessed and are therefore outside the scope of this certificate.

1.2.10 In accordance with good building practice the product should be permanently covered as soon as possible after installation. In all cases Protect A1 should not be left exposed to the effects of ultraviolet degradation for more than one month. Within this period, when correctly installed, Protect A1 will provide temporary protection against rain prior to installation of slates or tiling.

1.2.11 Unrolling Protect A1 after cooling to -60°C does not cause cracking.

1.2.12 In the opinion of BRE Certification Protect A1, used in accordance with the requirements of this certificate, is considered to be as durable as traditional roof underlays in the building in which it is incorporated. This is provided the roofing system is designed, installed and maintained in accordance with the relevant requirements of BS 5534, BS 5250 and BS 8000: Part 6:1990 *Workmanship on building sites – Codes of practice for slating and tiling of roofs and cladding*, and the requirements of the limitations of this assessment.

2 BUILDING REGULATIONS

The relevant Building Regulation requirements for these products are:

2.1 The Building Regulations (England & Wales) 2000 (as amended)

Requirement

C2 Resistance to moisture - Protect A1 will adequately resist the passage of moisture to the underlying structure, provided it is appropriately installed in a roof constructed in accordance with BS 5534.

Condensation in roofs – when Protect A1 is applied to pitched roof constructions, in accordance with the requirements of this certificate and BS 5250, this Regulation can be satisfied.

Regulation

7 Materials and workmanship – Protect A1 is manufactured from materials which are suitably safe and durable for the intended application and will perform satisfactorily when correctly installed in accordance with the suppliers instructions and the requirements of this certificate.

2.2 The Building Standards Scotland Regulations 2004

Regulation 8 (1): Fitness and Durability of materials and workmanship

Protect A1 is manufactured from materials considered to be suitable for the intended application and is able to resist deterioration provided that it is correctly installed in accordance with the suppliers instructions and the requirements of this Certificate.

Regulation 9: Building Standards Construction
Section 3 Environment

3.10 Precipitation – Protect A1 is resistant to the passage of water. When appropriately installed in a roof to meet the requirements of BS 5534, it will resist the passage of water and wind blown snow to the interior of the building.

3.15 Condensation – When Protect A1 is applied to pitched roof construction in accordance with the requirements of this certificate, this regulation can be satisfied.

2.3 The Building Regulations (Northern Ireland) 2000

Regulation

B2 Fitness of materials and workmanship – Protect A1 is manufactured from materials which are considered to be safe and to be suitable for use as a damp proof membrane and will resist deterioration provided that it is correctly installed in accordance with the manufacturer's instructions and the requirements of this certificate.

C4 Resistance to ground moisture and weather – When incorporated in a pitched roof construction in accordance with BS 5534, and appropriately installed, Protect A1 will satisfy this requirement.

C5 Condensation - when Protect A1 is applied to pitched roof constructions, in accordance with the requirements of this certificate, this Regulation can be satisfied.

2.4 The Building Regulations 1997 - 2002 Ireland (as amended)

Regulation

C4 Resistance to weather and ground moisture - Protect A1 will adequately resist the passage of moisture to the underlying structure, provided it is appropriately installed in a roof constructed in accordance with BS 5534.

F2 Condensation in roofs - when Protect A1 is applied to pitched roof constructions which have requirements for ventilation as described in Section 1.2.4 of this certificate, this Regulation can be satisfied.

D1/2 Materials and workmanship - Protect A1 is manufactured from materials which are considered to be suitable for the intended application and will resist deterioration provided that it is installed in accordance with the requirements of this certificate.

3 INSTALLATION/PRACTICAL APPLICATION

3.1 Identification

3.1.1 Protect A1 is supplied in rolls, each secured by wrapping bearing the product name, installation instructions and a unique production code printed onto the top surface.

3.2 Storage and Handling

3.2.1 All rolls should be securely stacked on site, on a level surface, preferably under cover, and must not be allowed to rest against sharp projections. Rolls stacked in the open must be protected from accidental damage, and unwrapped material must not be left exposed to prolonged UV light.

3.2.2 Reasonable precautions must 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.

3.2.3 Protect A1 can be used for installation in accordance with BS 5534: Part 1 for general applications. In all cases of use the loft space must be ventilated following the recommendations of BS 5250.

3.3 Installation

3.3.1 The installation and fixing of Protect A1 should be in accordance with BS 5534, BS 8000:Part 6, and with the requirements of this certificate.

3.3.2 Installation is commenced by unrolling Protect A1 horizontally across the rafters starting at the eaves and working towards the ridge of the roof. The surface with the blacker colouring should face the rafters on unrolling. The printed side should face upwards and each horizontal run is slightly draped (maximum 10mm) in accordance with the recommendations of BS 5534 to avoid excess sagging, creases, and gaps between underlay courses. It is tack-nailed in position, and secured by through-nailed horizontal battens keeping the number of perforations to a minimum. The minimum width of horizontal laps must be as recommended in BS 5534 and as reproduced in Table 3. 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 must overlap by at least 150 mm and must be secured on a rafter. Corrosion resistant staples or clout nails must be used and should comply with the requirements of BS 5534.

3.3.3 Protect A1 has adequate resistance to tearing but is not designed to withstand the weight of operatives or tiles being loaded out and battens must therefore 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. Where pressure on the membrane over say a rafter is unavoidable it should be noted that the membrane does not offer substantial grip particularly at overlaps.

3.3.4 It must be ensured that the roof design and construction allows for adequate ventilation of the roof space by providing sufficient eaves openings, Fig 1, or tile/ridge ventilators with an equivalent opening area. See Section 1.2.4. Due care must be taken that the underlay does not obstruct the flow of air at any ventilation opening.

3.3.5 In order to prevent the underlay sagging behind the fascia and forming a water trap, the underlay must be supported at the eaves with a Glidevale PVC-U eaves skirt (not assessed) so that run-off water is directed into the gutter, see Fig 1. The first roll of Protect A1 must be cut to overlap the eaves skirt.

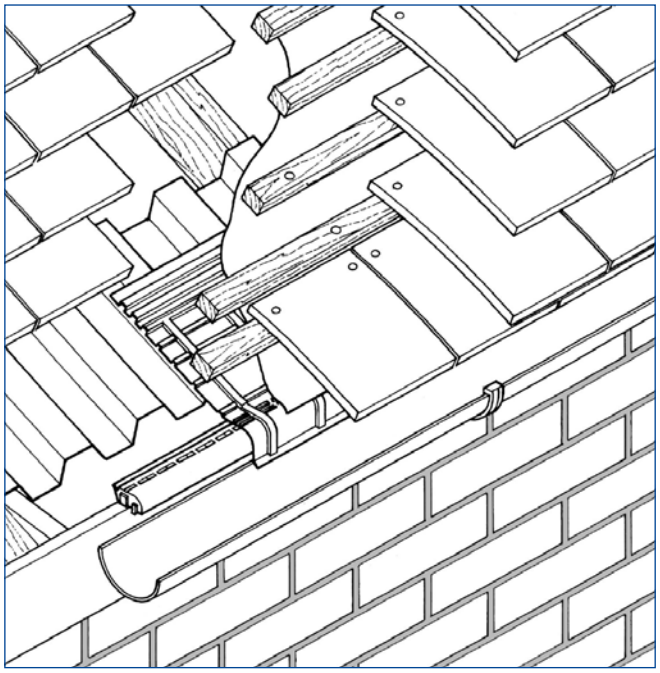
3.3.6 Courses of the underlay over a hip should be overlapped by the minimum amounts stated in Table 3. Each course should overlap the underlay course(s) on the adjacent elevation of the roof.

3.3.7 At ridges and hips a double layer of Protect A1 should be applied by dressing over the apex. Where the overlap is insufficient a 600 mm wide strip of underlay centrally above the underlay to the main roof must be overlaid. In valleys, a strip of Protect A1 at least 600 mm wide, must be laid over the gutter bed, but under the main roof underlay, and be held down by valley battens where used. The main roof underlay must be dressed over the valley battens in this case.

3.3.8 Standard methods of workmanship should be used to apply Protect A1 at penetrations and abutments. It must 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. Penetrations by soil and vent pipes, and the like, must be dealt with as follows. The underlay must be star-cut carefully to prevent tears, closely fitted over the pipe, ensuring that all the tabs project upwards along the pipe, and then the tabs taped around the circumference. A proprietary collar must be fitted over the pipe to protect the tape.

3.3.9 Repairs can be carried out 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.

FIG 1 Protect A1 in Gutter



4 TECHNICAL APPRAISAL

4.1 Performance Tests

Laboratory measurements of the physical properties of the material have been made. Tests have been carried out to determine the following properties and performance characteristics of Protect A1:-

- Dimensions
- Thickness and mass per unit
- Water tightness
- Durability against artificial ageing
- Tensile properties
- Cold temperature flexibility
- Flexibility under uniformly distributed load at the maximum batten spacing
- Reaction to fire, Class F - (no performance determined) is assumed for the product

Assessment has been made of the product design, with reference to its application and practicality of installation of the material. Technical data for the product and the results of performance tests are given in Table 2.

TABLE 2 Technical Data for Protect A1

Property	Test Description	Manufacturer Declared Values with tolerances
Thickness	BS EN 1849-2	0.55mm (typical value)
Dimensional stability	BS EN 1107-2 Mean % Change Machine direction Cross direction	 -0.25 +0.25 (typical values)
Mass per unit area	BS EN 1849-2	145 (-5) g/m^2
Watertightness Unaged Aged	BSEN 13859-1 Annex C followed by EN 1928 modified to BS EN 13859	 Pass Pass
Resistance to tearing (nail shank) in machine direction	BS EN 12310-1 as modified by BSEN 13859-1	200 (-20) N
Resistance to tearing (nail shank) in cross direction	BS EN 12310-1 as modified by BSEN 13859-1	200 (-20) N
Max tensile strength in machine direction Elongation	BS EN 12311-1 as modified by BSEN 13859-1	Unaged:300 (-30)N/50mm Aged:1% reduction in unaged value Unaged:70 (+0)% Aged:21% reduction in unaged value
Max tensile strength in cross direction Elongation	BS EN 12311-1 as modified by BSEN 13859-1	Unaged:260 (-20)N/50mm Aged:14% reduction in unaged value Unaged:70 (+0)% Aged:32% reduction in unaged value
Resistance to uplift during wind loading	Sandbox Method 2500N/m^2	<25mm deflection at 343mm batten gauge with 50 x 25mm battens
Low temperature flexibility	BS EN 1109	No cracks were observed in the coating at any of the temperatures down to -60°C
Water vapour transmission properties	BS EN 1931	1.6 gms/m^2/day (typical value)

TABLE 3 Minimum horizontal overlap

Rafter Pitch (degrees)	Minimum horizontal lap (mm) Not fully supported
12.5 – 14	225
15 – 34	150
35 and above	100

4.2 Quality Control

In the opinion of BRE Certification Protect A1 is manufactured from materials suitable for the application. The product is supplied under a documented quality system certified to BS EN ISO 9001, and regular tests and inspections are carried out during manufacture. The quality control procedures include measurement of roll size, weight of material, and physical properties of the material.

4.3 British Standards

The following British (and other) Standards have been referred to for this assessment:

BS 747:2000	Reinforced bitumen sheets for roofing – specification.
BS EN 1107-2:2001	Flexible sheets for waterproofing – determination of dimensional stability.
BS EN 1109	Flexible sheets for waterproofing – bitumen sheets for roof waterproofing – determination of flexibility at low temperature.
BS EN 1296: 2001	Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for roof waterproofing – Method of artificial ageing by long term exposure to elevated temperature.
prEN 1297: 1994	Flexible sheets for roofing – Determination of resistance to UV and water ageing – Part 1: Bitumen sheets.
BS EN 1848-2: 2001	Flexible sheets for waterproofing – Determination of length, width, straightness and flatness – Part 2: Plastic and rubber sheets for roof waterproofing.
BS EN 1849-2: 2001	Flexible sheets for waterproofing – Determination of thickness and mass per unit area – Part 2: Plastic and rubber sheets for roof waterproofing.
BS EN 1850-2: 2001	Flexible sheets for waterproofing – Determination of visible defects – Part 2: Plastic and rubber sheets for roof waterproofing.
BS EN 1928: 2000	Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for roof waterproofing – Determination of water tightness.
BS EN 1931: 2000	Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for roof waterproofing – Determination of water vapour transmission properties.
BS 5250:2002	Code of practice for control of condensation in buildings.
BS 5534: Part 1: 2003	Code of practice for slating and tiling: Design.
BS 6399: Part 2: 1997	Loading for buildings: Code of practice for wind loads.
BS 8000-4:1989	Workmanship on building sites – Codes of practice for waterproofing.
BS 8000-6:1990	Workmanship on building sites – Codes of practice for slating and tiling of roofs and claddings.
BS EN 12310-1: 2000	Flexible sheets for waterproofing – Determination of resistance to tearing (nail shank) – Part 1: Bitumen sheets for waterproofing.
BS EN 12311-2: 2000	Flexible sheets for waterproofing – Determination of tensile properties – Part 2: Plastic and rubber sheets for roof waterproofing.
BS EN 13501-1: 2002	Fire classification of construction products and building elements – Classification using data from reaction to fire tests.
BS EN 13859-1	Flexible sheets for waterproofing – Definitions and characteristics of underlays – Part 1: Underlays for discontinuous roofing.

5 CONDITIONS OF CERTIFICATE ISSUE

5.1 Validity

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

a) The materials and method of manufacture are unchanged or BRE Certification has assessed any changes and found them to be satisfactory.

b) The designs and specifications are unaltered from those examined by BRE Certification.

c) Glidevale Limited continues to have the product checked by BRE Certification.

5.2 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.

5.3 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 publication, it shall be construed as reference to such publication in the form in which it is in force at the date of the certificate.

5.4 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 product in whole or in part is not an infringement of any patent or industrial property right not owned by Glidevale Limited.

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

BRE Certification

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