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CERTIFICATE OF ASSESSMENT



PRODUCT

PROTECT VP 400

SUPPLIED BY

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SUMMARY

Protect VP 400 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 VP 400 is a water vapour permeable type LR underlay as defined by BS 5250 Code of practice for the control of condensation in buildings.

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

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

LIMITATIONS OF USE

Protect VP 400 is certified for use as a roof underlay for installation on pitched roofs constructed with adequate strength and stability to support safely the imposed wind loads, (see 1.2.2). Protect VP 400 can be used either in boarded roofs or unsupported. The design of installation and method of application must be in accordance with BS 5534 Code of practice for slating and tiling and BS 5250. Protect VP 400 is also certified for use in cold pitched roofs with reduced loft space ventilation (compared to that required for a type HR underlay) on buildings of any shape in plan, (see 1.2.4).

Protect VP 400 must be fully protected with a waterproofing roof covering system as soon as reasonably practicable after installation (see 1.2.9). There must be no manual or mechanical trafficking access directly onto the underlay during installation or subsequent operations (see 3.2.4). The product is for use only where the maximum dynamic wind pressure(gust) does not exceed 2500 N/m² as determined, for each specific location, by reference to BS 6399:Part 2 Loading for buildings: Code of practice for wind loads. (see 1.2.5). The product must not be left exposed at the eaves to ultraviolet radiation and should be used in conjunction with Glidevale eaves skirt (not assessed).

The installation of Protect VP 400 must be strictly in accordance with the relevant requirements of BS 5534, the manufacturer's instructions, and the requirements of this certificate.

Solvents should not be allowed to come into contact with these products.

STATEMENT

It is the opinion of BRE Certification that Protect VP 400 is satisfactory for use within the stated limitations provided that it is used in accordance with the manufacturer's 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 VP 400 is a polymeric roof underlay, assessed for use in pitched roofs under slating or tiling.

1.1.2 Protect VP 400 comprises a microporous polypropylene film with a non-woven layer laminated onto each surface. VP 400 is dark grey on the upper surface (as installed) and dark blue on the lower surface. Protect VP 400 is manufactured in standard rolls as shown in Table 1. The underlay displays the product name on its upper surface.

TABLE 1: Details of standard rolls of Protect and VP 400

Product Characteristic	Nominal Value for VP 400
Roll Length	50m
Width	1.0 or 1.5m
Coverage per roll	50m ² or 75m ²
Roll weight	9.5kg or 14.25kg
Weight of sheet	180gm ⁻²

1.2 Product performance

1.2.1 Protect VP 400 provides a satisfactory underlay in tiled and slated pitched roofs constructed in accordance with BS 5534. It is flexible at low temperatures and resistant to tearing by nails and to damage from handling on site.

1.2.2 Protect VP 400 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 VP 400 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.

1.2.4 Protect VP 400 has low vapour resistance, see Table 3. For traditional applications it should therefore be considered for design purposes in accordance with BS 5534 and BS 5250 as a type LR vapour permeable underlay suitable for unsupported or fully supported uses on timber sarking boards or insulated sarking. BS5250 splits the use of type LR underlays into roofs with small or no voids above sloping insulation (warm roofs) and roofs with large voids above horizontal insulation (cold roofs).

In roofs with small or no voids above sloping insulation (warm roofs), condensation can be controlled using Protect VP400 with no additional ventilation provided the ceiling is well sealed as defined in BS5250. To ensure the integrity of a well sealed ceiling, a separate vapour control layer such as Protect VC Foil (not assessed) must also be used on the warm side of the insulation. Protect VP400 can be laid either fully supported on insulation or draped unsupported over rafters or counterbattens. Consideration should be given (see below) as to whether ventilation of the batten space above the underlay is required.

In roofs with large voids above horizontal insulation (cold roofs) and assuming the ceiling is well sealed as defined in BS5250, condensation in dwelling sized roofs can be controlled by the use of Protect VP400 and a reduced level of ventilation from that required with impermeable (ie type HR underlays). This would typically either be 3,000mm² per metre at eaves or low level using Glidevale proprietary eaves ventilators (not assessed) or 5,000mm² per metre at ridge or high level using for example Glidevale RediRoll dry ventilated ridge system (not assessed). For any particular use of VP400 additional ventilation may be appropriate (eg for new build construction or where ceilings cannot be considered to be well sealed) and the recommendations of BS 5250 should always be followed.

In larger than dwelling sized roofs the ventilation should be 5,000mm² per metre at eaves or low level and 5,000mm² per metre at ridge or high level. If the ceiling is not well sealed as may be likely in re-roofing situations, then ventilation should be increased to 10,000mm² per metre at low level.

In all cases where type LR underlays such as Protect VP400 are used to contribute to condensation control, they do so by allowing water vapour to escape to atmosphere via the roof covering. Most concrete and clay tiles are sufficiently air open but if a tight roof covering is installed such as fibre cement slates or metal tiles etc, it is necessary to ventilate the batten space (BS5250 provides a test method for assessing air openness where there is a need to quantify this). In this case, 25mm counterbattens must be used above the underlay and 25,000mm² per metre provided at eaves or low level and 5,000mm² per metre at ridge or high level.

1.2.5 Loading tests on Protect VP 400 to determine flexibility have shown that the material will adequately resist net wind uplift pressures up to 2500 N/m² (determined from BS 6399:Part 2) with up to 343mm batten spacing for 50mm wide battens, on 600mm centered 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.

1.2.6 Accelerated tests for resistance to ageing have shown the product to be satisfactory. Results of the test appear in table 3.

1.2.7 Unrolling Protect VP 400 after cooling to -60°C does not cause cracking.

1.2.8 No additional hazard in the event of fire will be introduced by the use of Protect VP 400 when compared to roofing felts produced to BS 747 Reinforced bitumen sheets for roofing - specification, other materials for underlays being acceptable in BS 5534, provided they are of adequate strength and flexibility.

1.2.9 Exposure to UV light in tests to BS EN 4892 has indicated that Protect VP 400 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 have not been assessed and are therefore outside the scope of this certificate..

In accordance with good building practice the product should be permanently covered as soon as possible after installation. In all cases VP 400 should not be left exposed to the effects of ultraviolet degradation for more than one month. Within this period, when correctly installed, VP 400 will provide temporary protection against rain prior to installation of slates or tiling.

1.2.10 In the opinion of BRE Certification Protect VP400, used in accordance with the requirement 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 & 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 & tiling of roofs and cladding, and the requirements of this assessment.*

2 BUILDING REGULATIONS

The relevant Building Regulation requirements for the product are:-

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

Requirement

C2 Resistance to moisture - Protect VP 400 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 VP 400 is applied to pitched roof constructions, in accordance with the requirements of this certificate and BS5250, this Regulation can be satisfied.

Regulation

7 Materials and workmanship - Protect VP 400 is manufactured from materials considered to be suitable for the intended application and are able to resist deterioration provided that they are installed in accordance with the requirements of this certificate.

2.2 The Building (Scotland) Regulations 2004

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

Protect VP400 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 VP400 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 VP 400 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 VP 400 is manufactured from materials which are considered to be safe and to be suitable for use as roof underslating and will resist deterioration provided that they are installed in accordance with the requirements of this certificate.

C5 Resistance to ground moisture and weather - when incorporated in a pitched roof construction in accordance with BS 5534:Part 1, and appropriately installed, Protect VP 400 will satisfy this requirement.

C7 Condensation - when Protect or VP 400 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.

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

BRE Certification have also assessed VP400 against the requirements of the Irish Building Regulations and have the following opinion regarding compliance:

Regulation

C4 Resistance to weather and ground moisture - Protect VP 400 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:Part 1.

F2 Condensation in roofs - when Protect VP 400 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 VP 400 is manufactured from materials which are considered to be safe and to be suitable for use as roof underslating and will resist deterioration provided that it is installed in accordance with the requirements of this certificate.

3 INSTALLATION/PRACTICAL APPLICATION

3.1 Storage and Handling

3.1.1 Protect VP 400 is supplied in rolls, each secured by wrapping bearing the product name and installation instructions.

All rolls should be securely stacked on their end, 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 UV light.

3.1.2 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 Installation

3.2.1 The installation and fixing of the Protect VP400 should be in accordance with BS 5534, BS 8000:Part 6, and with the requirements of this certificate.

3.2.2 Protect VP 400 can be used with rigid sarking boards, or in any fully supported application. In these cases it must 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 with an equivalent opening area. Due care must be taken that the underlay does not obstruct the flow of air at any ventilation opening.

3.2.3 Installation is commenced by unrolling Protect VP400 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 BS5534 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 2. Horizontal laps should preferably be under a batten, but where a lap occurs between battens, consideration should be given to either including an extra batten at the overlap or extending the overlap to coincide with the next 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.

3.2.4 Protect VP 400 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 membranes do not offer substantial grip particularly at overlaps.

3.2.5 Courses of the underlay over a hip should be overlapped by the minimum amounts stated in Table 2. Each course should overlap the underlay course(s) on the adjacent elevation of the roof.

3.2.6 At ridges and hips the Protect VP 400 should be dressed over the adjoining pitch at the apex. Where the overlap prescribed in BS 5534:Part 1 is insufficient a 600 mm wide strip of underlay must be overlaid centrally above the junction. In valleys, a strip of Protect VP 400 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.

3.2.7 Standard methods of workmanship should be used to apply Protect VP 400 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.

3.2.8 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.

3.2.9 During its life, the external roof covering over VP400 must be subject to regular inspection and maintenance with any defects promptly repaired.

4 TECHNICAL APPRAISAL

4.1 Laboratory measurements of the typical physical properties of the materials have been made. Tests and inspection of data have been carried out to determine the following properties and performance characteristics of Protect VP 400:-

- tensile strength and nail tear resistance before and after ageing at temperatures above ambient and before and after exposure to UV light and condensation
- resistance to tear propagation
- flexibility under uniformly distributed load at the maximum batten spacing
- water vapour permeability
- water penetration resistance
- cold temperature flexibility.

Assessment has been made of the product design, with reference to its application and practicality of installation. Typical technical data for the product is given in Table 3.

The installation of Protect VP 400 has been assessed and was found to present no practical difficulties.

TABLE 2: Minimum horizontal overlap

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

TABLE 3: Typical Technical Data for Protect VP400

Property	Test Description	Manufacturer Declared Values with tolerances
Thickness	BS EN 1849-2	0.60mm (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	180 (-5) g/m ²
Watertightness	BSEN 13859-1 Annex C followed by EN 1928 modified to BS EN 13859	
Unaged		Pass
Aged		Pass
Resistance to tearing (Nail shank) in Machine direction	BS EN 12310-1 as modified by BS EN 13859-1	160 (-15) N
Resistance to tearing (Nail shank) in Cross direction	BS EN 12310-1 as modified by BS EN 13859-1	160 (-15) N
Max Tensile strength in Machine direction	BS EN 12311-1 as modified by BS EN 13859-1	Unaged: 350 (-20)N/50mm Aged: 310 N/50mm
Elongation		Unaged: 40 (+5)% Aged: 31%
Max Tensile strength in Cross direction	BS EN 12311-1 as modified by BS EN 13859-1	Unaged: 310 (-20)N/50mm Aged: 273N/50mm
Elongation		Unaged: 51 (+5)% Aged:42%
Resistance to uplift during Wind Loading	Sandbox Method 2500N/m ³	<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 resistance properties	EN ISO 12572 -permeable Water vapour diffusion equivalent air layer thickness S _d (m)	0.022
	Water vapour resistance	0.11 MNs/g (typical value)

4.2 Quality Control

In the opinion of BRE Certification Protect VP 400 is manufactured from materials suitable for the application. The products are 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 12572:2001	Hygrothermal performance of building materials & products Determination of water vapour transmission properties.
BS 5250:2002	Code of practice for control of condensation in buildings (Amendment 1 : 2005)
BS 5534: 2003	Code of practice for slating and tiling (Including shingles)
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:Part 6:1990	Workmanship on building sites: Code 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 :2005	Flexible sheets for waterproofing – Definitions and characteristics of underlays – Part 1: Underlays for discontinuous roofing.
BS EN ISO 9001:2000	Quality systems : model for quality assurance in production, installation and servicing.

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 publications, it shall be construed as reference to such publication in the form in which it is in force at the date of issue 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 the BRE Certification website (www.redbooklive.com)

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