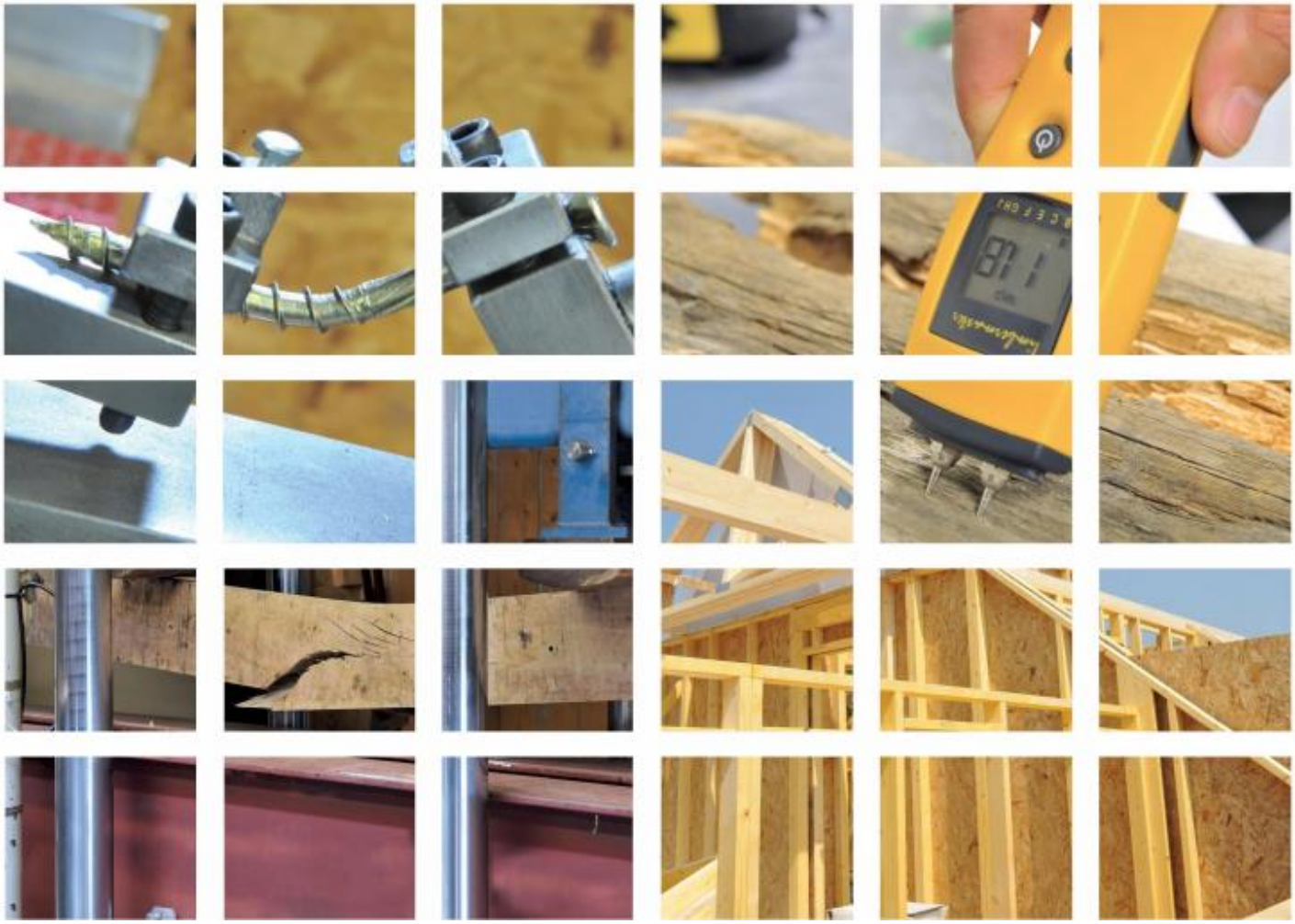
Q-Mark Registration Schedule

Vapour Permeable Roof Underlay

Protect VP200

Building Product Design Ltd
2 Brooklands Road
Sale
Cheshire

M33 3SS



Q-Mark Registration Schedule

Holder of Q-Mark		Building Product Design Ltd
Product Name		Protect VP200
Type and Use of Product		Vapour Permeable Roof Underlay
Validity:	**From**	12/10/2022
	To	11/10/2025
Date of This Issue		12/10/2022
Issue Number		1
This Issue Replaces		N/A
Relates to Certificate Number		CPS-028
Manufacturing Address/s		2 Brooklands Road Sale Cheshire M33 3SS
This Schedule Contains		17 Pages, including 2 Annexes

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1 INTRODUCTION

The Q-Mark Scheme is a third-party product certification scheme operated by BM TRADA Certification Ltd.

The scheme is based on the principles of ISO 9001, ISO 17065, ISO 17021 and confirms compliance with BS 5250 and BS 5534, together with a specific set of performance criteria set by BM TRADA (as defined in Clause 4 of this document) in order to attain a product which performs to a high standard. The relevant standards listed above are to be read in conjunction with this document.

The scheme covers factory production control, documentation and test/assessment evidence, and the resultant certification is specific to clearly defined products and their constituent components.

The objectives of the scheme are:

- To improve the quality and performance of Construction Products.
- To provide unambiguous evidence of compliance with the standards or methods listed.
- To provide specifiers, regulators and inspection authorities with the appropriate information for them to identify suitable products.

2 DEFINITIONS & ABBREVIATIONS

The following definitions and abbreviations are used throughout the document. Other definitions are as given in the relevant standards.

Assessment	A considered judgement whether products meet the criteria laid down in the relevant Technical Specification
Audit	Visit by BM TRADA or other certification body to examine the quality management system and production processes of a manufacturer or supplier, usually to determine appropriate compliance to ISO 9001, with specific emphasis on the factory production control elements
Member	Company holding membership of the Q-Mark scheme
QMS	Quality Management System (e.g. one meeting BS EN ISO 9001)
Schedule	The certification schedule, which identifies the scope and range of products covered by the membership certificate
Scheme	The BM TRADA Q-Mark Construction Products Scheme

3 SCOPE

The Scheme is applicable to construction products which fall within the scopes of the product standards referenced in Clause 1 of this document, and applies to products as manufactured and supplied, and before being installed into the works.

3.1 Product Description

Protect VP200 is a water vapour permeable roof underlay comprising of two layers of spun bond non-woven polypropylene fabric and a thermally bonded microporous film interlayer. It is a low water vapour resistance (Type LR) underlay as defined in BS 5250. The product is Blue on the upper surface (as installed) and White/Grey on the lower surface.

Protect VP200 provides a satisfactory underlay in tiled and slated pitched roofs constructed in accordance with BS 5534. It may be installed on new or existing buildings and is flexible at low temperatures and resistant to tearing by nails and to damage from handling on site.

Table 1: Nominal dimensional characteristics of Protect VP200

Property	Nominal Size
Thickness (mm)	0.48
Mass/unit area (g/m²)	125
Roll length (m)	50
Roll width (m)	1.0 and 1.5

3.2 Intended Use

Under the scope of this certification, Protect VP200 has been approved, within limitations, as an underlay for use in pitched roofs beneath a weatherproof covering of discontinuous units, such as slates or tiles, laid on battens. Protect VP200 is intended as a secondary, water vapour permeable, weather resistant layer providing protection against wind driven rain or snow, tile wind-uplift and dust ingress. Protect VP200 may be installed in warm roofs (i.e. roofs with insulation between or above the rafters) and in cold roofs (i.e. roofs where the insulation is at ceiling level).

4 BUILDING REGULATIONS

Protect VP200 is certified under the BM TRADA Q-Mark Construction Products Scheme. It is the opinion of BM TRADA that if used in accordance with the requirements of this scheme and in accordance with the installation manual, then the product will satisfy, or contribute to satisfying the relevant requirements of the following Regulations:

- The Building Regulations 2010 (as amended)
- The Building (Scotland) Regulations 2004 (as amended)
- The Building Regulations (Northern Ireland) 2012 (as amended)
- The Building Regulations (Ireland) 1997 (as amended)

5 SCHEME REQUIREMENTS

BM TRADA has determined that the Member conforms with the requirements within these clauses by auditing and/or other forms of verification where appropriate.

5.1 Quality Management System (QMS)

The manufacture of the products has been conducted under the control of an appropriate QMS.

The QMS is subject to periodic audit (not less than once per year).

All new Members are subject to an Initial Inspection.

5.2 Documentation

The following documents are controlled under the requirements of this scheme:

- Manufacturing documentation (e.g. Quality Manual, procedures)
- Product specification/range documentation and assessment

- Installation instructions
- Test reports and sampling
- Q-Mark certificate and schedule(s)

5.2.1 Manufacturing Documentation

The Member has supplied details of its manufacturing documentation to BM TRADA for review. This comprised of Quality Plans, Procedures, Works Instructions and Test Data.

5.3 Minimum QMS requirements

5.3.1 Factory Production Control

As part of the documented process control procedures the company has:

- Demonstrated that the products are being fabricated in accordance with documented manufacturing procedures from purchase of raw material to the production of the finished product.
- These procedures control all critical aspects of the production.
- Target limits are defined at each one of these areas.
- All performance characteristics claimed are controlled in order to remain consistent by including appropriate checks or testing in the QMS to ensure a consistent and similar product is produced.

5.3.2 Management Responsibility

The management of the company carries out regular reviews of the system, which shall include production records and any complaints that have been received. Notes are kept of any topics discussed and decisions made.

5.3.3 Company Representative

A member of the management team is responsible for the QMS.

5.3.4 Internal Audits

Routine internal audits are carried out to ensure compliance with the requirements of the scheme is met.

5.3.5 Documentation

Inspection and test records are kept in a format that is acceptable to BM TRADA Certification for a minimum of 5 years.

5.3.6 Work Instructions

Work instructions and target values are placed at the critical production points throughout the manufacturing process.

5.3.7 Procedures for Non-conforming Product

Where factory production control/target values are out of specification there is a procedure for identifying and correcting these deficiencies. The factory production control system has been assessed and found to be able to detect non-conforming product quickly enough so that affected product can be quarantined.

5.3.8 Traceability

There are procedures, which enable appropriate traceability of production runs through to dispatch.

5.3.9 Training

The company maintains records to show that staff have been satisfactorily trained to undertake the manufacturing and inspection tasks that they have been assigned. Records are kept of this training and the personnel's job description shall be clearly defined.

5.3.10 Complaints

The company maintains a register of all complaints received on the quality of their product, which shows the steps they have taken to deal with the problem and their analysis of the causes. These records are kept for a minimum of 5 years.

5.3.11 Document Control

There are procedures in place for effectively controlling the quality of documentation issued to the relevant personnel, so that they have up-to-date procedures.

5.3.12 Machinery Maintenance and Calibration

All machinery and measuring / testing equipment that could affect the quality of the product is properly maintained and calibrated so that a consistent product can be produced and tested. There is a maintenance and calibration schedule. A record is kept of the maintenance and calibration carried out.

5.4 Other Requirements of the Scheme

5.4.1 Product Specification/Range Documentation and Assessment

The member has supplied BM TRADA with product details for review. These included material specifications, dimensions, tolerances and components. This product specification forms part of the manufacturing procedure.

Should the product specification of the certified product/s change, the member shall inform BM TRADA of the changes. A decision on the way forward shall be made to ensure continuation of certification.

5.5 Transport Storage and Installation Instructions

5.5.1 General

The member shall ensure that adequate installation, storage and transport instructions are supplied with each pack or consignment of product. Any alterations to the instructions shall only be made following consultation with BM TRADA.

5.5.2 Identification

The products are supplied in rolls wrapped in polyethylene on pallets. Each roll shall bear a label indicating the manufacturers name, the product name, nominal dimensions and the BM TRADA Q-Mark logo and Certificate Number. Installation instructions shall also be supplied with each roll/consignment.

5.5.3 Storage and Handling

- All rolls shall be securely stacked on their end, on site, on a dry level surface, preferably under cover.
- Rolls shall not be allowed to rest against sharp projections.

- Rolls stacked in the open shall be protected from accidental damage, and unwrapped material shall not be left exposed to UV light.
- Care shall be taken in handling the rolls to prevent damage such as tears or perforations, occurring before and during installation and prior to the installation of the roof covering.

5.5.4 Installation

5.5.4.1 General

Protect VP200 underlay may be used in cold roofs with or without a ventilated void beneath the weatherproof covering (Figure 1 and Figure 2) or in warm roofs either with a ventilated void between the underlay and the insulation or directly supported by the insulation (Figure 3 and Figure 4).

In accordance with good building practice, this product shall be covered as soon as possible after installation and preferably not more than one month after initial exposure. Within this period, if correctly installed, Protect VP200 will provide temporary protection against rain prior to installation of slates or tiles. If the exposure periods exceed one month, advice shall be sought from the manufacturer.

Protect VP200 shall not be laid on or come into contact with any undried solvent based timber preservative.

Protect VP200 can be easily cut with a sharp knife and remains flexible at normal working temperatures. It shall be fixed with corrosion resistant staples or clout nails of copper, aluminium alloy or galvanized steel to comply with the requirements of BS 5534.

The installation and fixing shall be in accordance with BS 5250, BS 5534, BS 8000-6, the supplier's instructions and the requirements of this certificate, as the performance of the product is dependent on correct installation. The manufacturer's instructions shall be followed at all times.

5.5.4.2 Control of Condensation

Protect VP200 can contribute to condensation control by allowing water vapour to escape to atmosphere via the roof covering. Most discontinuous coverings such as slates and clay or concrete tiles are sufficiently ventilated to be air permeable as defined in BS 5250, so the underlay may be installed directly below the tiling battens (Figure 1). If an air impermeable covering, e.g. tightly fitting fibre cement slates or metal tiles, is installed above either a cold or a warm roof, the batten space shall be ventilated by fixing minimum 25 mm deep counterbattens above the underlay (Figure 2). The counterbattens should provide ventilation with a free area of at least 25000 mm² per metre run at eaves or low level and 5000 mm² per metre run at ridge or high level.

Protect VP200 can contribute to condensation control in dwelling sized cold roofs where the level of loft-space ventilation provided is lower than that required for a non-breathable underlay. For a well-sealed ceiling, the free area required is either at least 3000 mm² per metre run at a low level in the roof (e.g. eaves level), or 5000 mm² per metre run at ridge or high level. For any particular use of Protect VP200 additional ventilation may be appropriate, and the recommendations of BS 5250 shall always be followed.

Protect VP200 can be used in designs where it is fully supported, such as directly on rigid sarking boards. If the supporting material is not vapour or air permeable the designer shall treat Protect VP200 as an HR underlay and provide loft ventilation in accordance with BS 5250. If the supporting material has sufficient ventilation, e.g. timber sarking with minimum 2 mm gaps between boards, the designer shall treat Protect VP200 as an unsupported LR underlay.

Figure 1: Cold roof – air permeable weatherproof covering

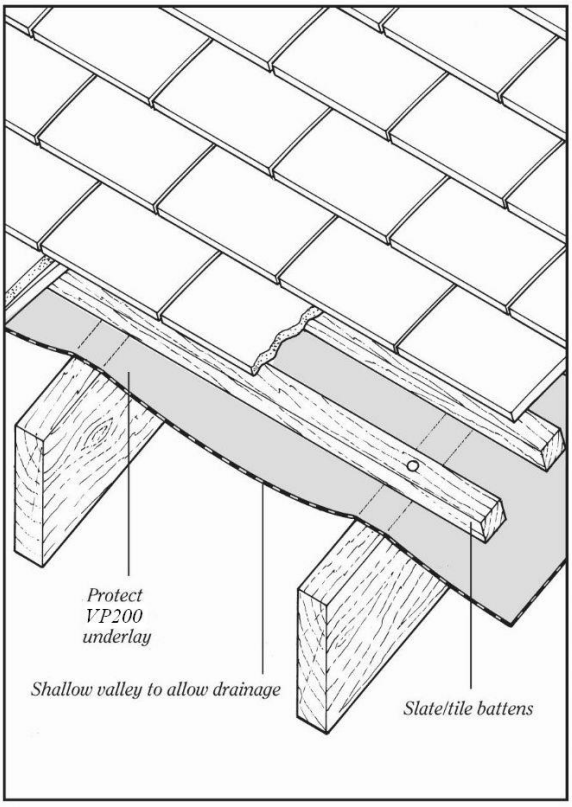


Figure 2: Cold roof – air impermeable weatherproof covering

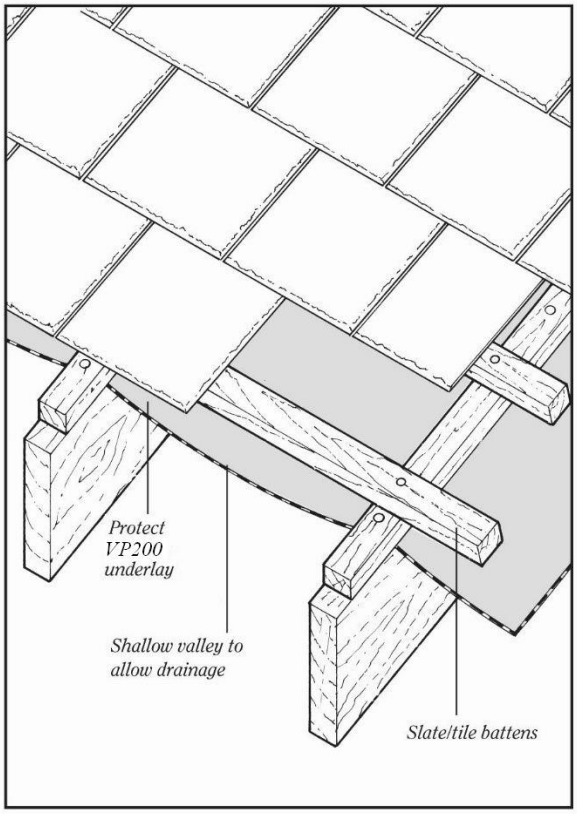


Figure 3: Warm roof – ventilation void below underlay

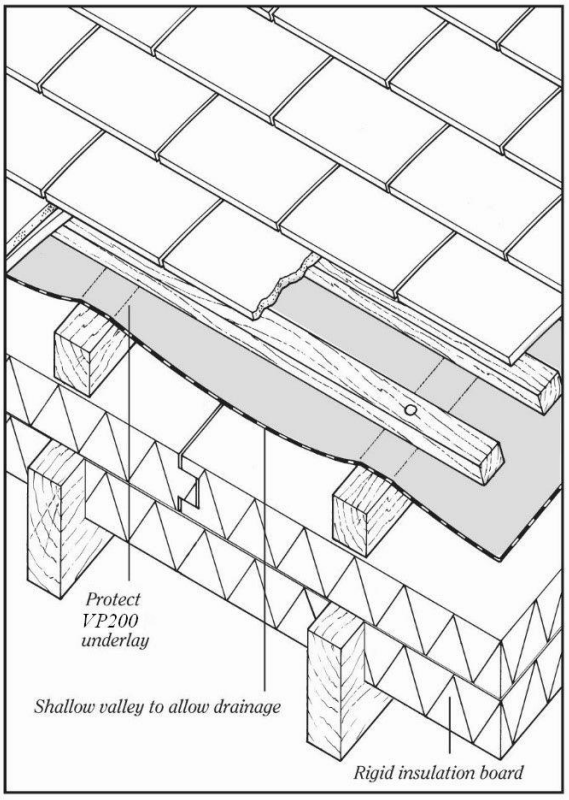
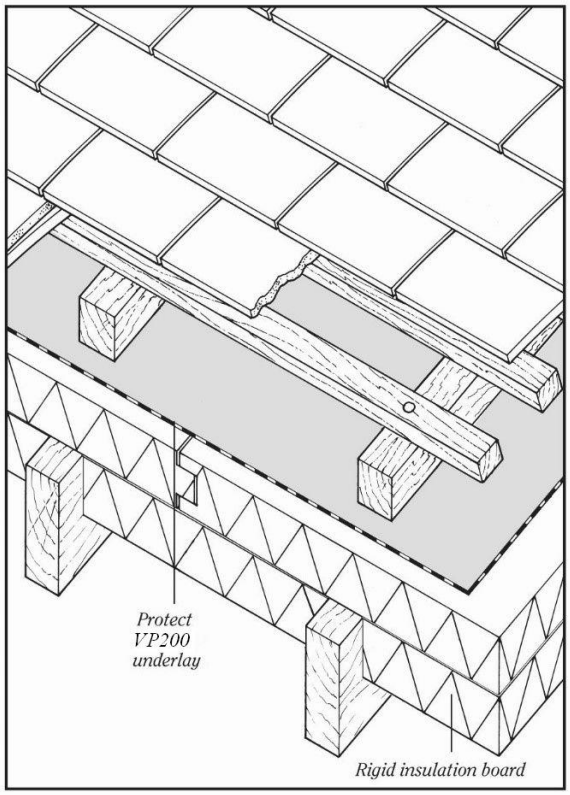


Figure 4: Warm roof – underlay fully supported



Protect VP200 can contribute to condensation control in warm roofs with no additional ventilation, provided an effective air and vapour control layer (AVCL) is incorporated in the ceiling in accordance with BS 5250. However, the use of counterbattens is recommended, whereby the Protect VP200 can be laid either fully supported on insulation under the counterbatten or draped unsupported over the counterbattens (Figure 3 and Figure 4).

5.5.4.3 Installation Procedure

Installation shall commence by unrolling Protect VP200 horizontally across the rafters or counterbattens starting at the eaves and working towards the ridge of the roof. The white/grey surface shall face the rafters on unrolling while the blue printed side shall face upwards.

Each unsupported horizontal run shall be slightly draped (maximum 15 mm) between the rafters or counterbattens in accordance with BS 5534 to avoid excess sagging, creases and gaps between the underlay courses. Draping also allows any moisture on the upper surface of the underlay to drain away safely under the tiling/slating battens, so preventing ponding or wetting.

Protect VP200 shall be tack-nailed in position with corrosion resistant staples or preferably clout nails that comply with the requirements for fasteners of roofing underlays in BS 5534.

Protect VP200 has adequate resistance to tearing but is not designed to withstand large weights. Slating/tiling battens shall therefore be installed as work progresses from eaves to ridge for achieving foothold and avoiding damage to the underlay surface. Battens shall be through-nailed keeping the number of perforations in the underlay to a minimum.

The minimum width of horizontal overlaps (head-laps) shall be in accordance with Table 10 of BS 5534 (reproduced in Table 2). Head-laps shall preferably be below a tiling/slating batten. Where a lap occurs between battens, consideration shall be given to either including an extra batten at the overlap or extending the overlap to coincide with the next batten. The minimum width of vertical overlaps (side-laps) shall be at least 150 mm. Side-laps shall be secured on a rafter. Each course of underlay shall overlap the adjacent underlay courses on the neighbouring elevation of the roof.

Table 2: Unsealed head-laps for underlay

Rafter Pitch (^{0})	Minimum Head Lap	
	Not Fully Supported (mm)	Fully Supported (mm)
12.5 – <15	225	150
≥15	150	100

At ridges, the underlay shall be dressed over the adjoining pitch at the apex. Where the overlap prescribed in BS 5534 is insufficient, a 600 mm wide strip of underlay shall be overlaid centrally above the junction. In valleys, a strip of underlay at least 600 mm wide shall be laid over the gutter bed but under the roof underlay, and be held down by valley battens where used. The main roof underlay shall be dressed over the valley battens in this case.

Exposure to UV light in tests to BS EN 4892 has indicated that Protect VP200 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 Protect PVC-U skirt) or eaves protection felt Type 5U (as defined in Annex C.2 of BS 5534) may be used for this purpose. These products have not been assessed for this certification and are therefore outside the scope of this certification.

Standard methods of workmanship shall be used to apply Protect VP200 at penetrations and abutments. The underlay shall be turned up by not less than 50 mm at all abutments to be overlapped by the flashings and shall overlap the lining tray by not less than 100 mm at the back face of any abutment, as described in Clause 6.2.1.1 of BS 5534.

Penetrations by soil or vent pipes and the like shall be dealt with as follows: The underlay must be star cut carefully to prevent tears and closely fitted over the pipe, ensuring that all the tabs project upwards along the pipe

Repairs shall be carried out by overlaying the damaged area with a layer of additional material ensuring a 150 mm overlap all round. The up-slope side shall be overlapped by the next higher horizontal run of underlay and secured under a batten.

During its life, the external roof covering over Protect VP200 and the ventilation paths shall be subject to regular inspection and maintenance, and any defects shall be repaired promptly.

6 TEST AND VERIFICATION REQUIREMENTS

6.1 Test Reports and Sampling

BM TRADA has assessed the results of testing and sampling, and/or calculation that has been carried out in accordance with the scheme rules.

6.1.1 Mechanical Resistance and Stability

Protect VP200 has been tested to determine the following properties:

- Tensile strength and elongation to BS EN 12311-1 modified by BS EN 13859-1
- Resistance to nail tearing to BS EN 12310-1 modified by BS EN 13859-1

Tests were carried out on un-aged or artificially aged specimens as appropriate, whereby aging was conducted by the manufacturer in accordance with Annex C of BS EN 13859-1

Where appropriate, tests were carried out in the machine direction of the weave and across the machine direction.

The test results are summarised in the tables below.

Table 3: Tensile strength to BS EN 12311-1 modified by BS EN 13859-1

Direction	Protect VP200	
	Before Aging (N/50mm width)	After Aging (N/50mm width)
Machine	260	230
Cross	185	170

Table 4: Elongation at maximum force to BS EN 12311-1 modified by BS EN 13859-1

Direction	Protect VP200	
	Before Aging (%)	After Aging (%)
Machine	46	28
Cross	56	44

Table 5: Resistance to nail tearing to BS EN 12310-1 modified by BS EN 13859-1

Direction	Protect VP200
	Before Aging (N)
Machine	141
Cross	143

6.1.2 Safety in Case of Fire

The fire performance of Protect VP200 has not been determined. Fire performance shall be determined for the structure as a whole.

6.1.2.1 Reaction to Fire

Protect VP200 is likely to have similar fire properties to those of other polypropylene sheets. It will melt and shrink away from a heat source and will burn in the presence of an ignition source.

6.1.2.2 Resistance to Fire

Resistance to fire should be assessed for the structure as a whole.

6.1.3 Hygiene, Health and Environment

6.1.3.1 Resistance to Water Penetration

Protect VP200 has been tested to determine its resistance to water penetration in accordance with BS EN 1928, modified by BS EN 13859-1. Tests were carried on un-aged and on artificially aged specimens, whereby aging was conducted by the manufacturer in accordance with Annex C of BS EN 13859-1.

Table 6: Resistance to water penetration to BS EN 1928, modified by BS EN 13859-1

	Protect VP200	
	Before Aging	**After Aging**
Class	W1	W1

The test results met the requirements of BS EN 13859-1 for a Class W1 underlay. Protect VP200 is resistant to water penetration and when installed in a roof constructed to BS 5534 the material will resist the passage of water to the interior of the building.

6.1.3.2 Water Vapour Transmission

Protect VP200 has been tested to determine its water vapour transmission properties in accordance with BS EN ISO 12572, using Set C conditions. Tests were carried on un-aged specimens. The tests were conducted in both directions, i.e. a set of tests with the grey face exposed to the wet cup and a set with the blue face exposed to the wet cup.

The test results are summarised in the table below, whereby the results have been corrected for the resistance of the air gap between the saturated solution in the cup and the base of the specimen.

Table 7: Water vapour transmission properties to BS EN ISO 12572, Method C

	Protect VP200	
	Before Aging	
Water vapour diffusion, equivalent layer thickness – S_d (m)	Blue face to wet cup	0.010
	Grey face to wet cup	0.007
Water vapour resistance – *Z* (MNs/g)	Blue face to wet cup	0.051
	Grey face to wet cup	0.037

The test results met the requirements of BS 5534 for a low water vapour resistance (type LR) underlay also known as a vapour permeable underlay.

6.1.4 Safety in Use

Not relevant

6.1.5 Protection against Noise

Protection against noise has not been evaluated. This shall be evaluated for the structure as a whole.

6.1.6 Energy Economy and Heat Retention

Thermal performance has not been evaluated. This shall be evaluated for the structure as a whole.

6.2 Aspects of Durability

In the opinion of BM TRADA Certification, Protect VP200, if used in accordance with the requirements of this certificate, is considered to be as durable as a traditional roof underlay in the building in which it is incorporated. This is on the provision that the roofing system is designed, installed and maintained in accordance with the relevant requirements of BS 5534, BS 5250 and BS 8000: Part 6.

6.3 Serviceability

6.3.1 Dimensional Stability

Protect VP200 has been tested to determine its dimensional stability to BS EN 1107-2. Tests were carried out on un-aged specimens in the machine direction of the weave and across the machine direction.

The test results are summarised in the table below.

Table 8: Dimensional Stability to BS EN 1107-2

Direction	Protect VP200
	Before Aging (% change)
Machine	-0.57
Across	+0.13

6.3.2 Flexibility at Low Temperature

Protect VP200 has been tested to determine its flexibility at low temperature in accordance with BS EN 1109. Tests were carried out on un-aged specimens at -40 °C. No cracks were observed.

6.3.3 Resistance to Wind Uplift

Protect VP200 has been tested to determine its resistance to wind uplift in accordance with BS 5534 Annex A. Protect VP200 can resist the pressures given in Table 9 at the stated batten gauges with an uplift of 35 mm. The stated pressure determines the geographical wind zones where Protect VP200 is suitable for use in the UK, as defined in BS 5534.

Table 9: Resistance to wind uplift and Zone Use to BS 5534 Annex A

Protect VP200		
Batten Gauge (mm)	Resistance to Wind Pressure (Pa)	Zone Use
310	2029	1 to 5
345	1022	1 to 2

Protect VP200 is satisfactory for use in unsupported systems where a continuous ceiling is present and the roof has a ridge height ≤15m, a pitch between 12.5° and 75°, a site altitude ≤100m and where site topography is not significant.

Where the batten spacing is greater than 345 mm, underlay laps are less than 150 mm or the rafter spacing exceeds 600 mm it shall be established by testing that the wind uplift forces do not produce a deflection in the underlay that will enable it to make contact with the underside of the roof covering.

7 IDENTIFICATION AND USE OF THE BM TRADA AND Q-MARK LOGOS

Correct identification of certified construction products is vital in order that purchasers and controlling authorities clearly understand the status of products presented to them. It is therefore a requirement that all products or at least the packaging of the products, covered under the Scheme are identified as “BM TRADA Q-Mark Certified” or with other similar wording, and/or display the Q-Mark badges. This will assist subsequent inspection authorities to recognise acceptable products. For similar reasons, Members are encouraged to make use of the Marks on marketing and technical documentation.

8 GUARANTEES

The Scheme makes no requirement on its Members to give a minimum guarantee. This is entirely up to the discretion of the Member.

ANNEX A EVIDENCE/DOCUMENTS USED IN THIS ASSESSMENT

BTTG High Performance Materials: Test Report 10/24145, Dated 07/07/2021

BPD Test Report 5451F Assessment and classification of roof underlay in accordance with BS 5534:2014 Annex A. Dated 19/05/2022

BPD Test Report 5451G Assessment and classification of roof underlay in accordance with BS 5534:2014 Annex A. Dated 12/05/2022

ANNEX B NORMATIVE REFERENCES

BS 5250: 2021	Management of moisture in buildings. Code of practice
BS 5534: 2014 +A1: 2018	Slating and tiling for pitched roofs and vertical cladding. Code of practice
BS 6399-2: 1997	Loading of Buildings: Code of Practice for Wind loads
BS 8000-4: 1989	Workmanship on Building Sites – Codes of Practice for Waterproofing.
BS 8000-6: 2013	Workmanship on Building Sites: Code of Practice for Slating and tiling of roofs and claddings
BS 9250: 2007	Code of practice for design of air tightness of ceilings and pitched roofs
BS EN 1107-2: 2001	Flexible Sheets for Waterproofing – determination of Dimensional Stability
BS EN 1109: 2013	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 Waterproofing – Method of artificial ageing by long term exposure to elevated temperature.
BS EN 1297: 2004	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 waterproofing.
BS EN 1849-2: 2019	Flexible Sheets for Waterproofing - Determination of thickness and mass per unit area – 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 tightness
BS EN 12310-1: 2000	Flexible sheets for waterproofing. Determination of resistance to tearing. Part 1: Bitumen sheets for waterproofing.
BS EN 12311-1: 2000	Flexible sheets for waterproofing. Determination of tensile properties. Part 1: Bitumen sheets for roof waterproofing.
BS EN 13501-1: 2018	Fire Classification of Construction Products and Building elements – Classification using data from Reaction to Fire Tests.

BS EN 13859-1: 2014[1]	Flexible Sheets for Waterproofing – Definitions and Characteristics of Underlay's – Part 1: Underlay's for discontinuous roofing
BS EN ISO 9001: 2015	Quality Systems: model for Quality assurance in production, installation and servicing.
BS EN ISO 12572: 2016	Hygrothermal performance of building materials and products. Determination of water vapour transmission properties.
BS EN ISO/IEC 17021: 2018	General requirements for bodies operating assessment and certification/registration of Quality Systems

[1] BS EN 13859-1: 2010 remains the designated standard for UKCA marking, although it has been superseded by BS EN 13859-1: 2014