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**Agrément Certificate**

**22/6033**

Product Sheet 1

## PROTEUS BITUMINOUS ROOF WATERPROOFING MEMBRANES

### PROTEUS PRO-FELT ENDURA

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Proteus Pro-Felt Endura, for use as a roof waterproofing system and an air and vapour control layer (AVCL) in warm roof specifications on flat and pitched roofs with limited access.

(1) Hereinafter referred to as 'Certificate'.

#### CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production†
- formal three-yearly review.†



#### KEY FACTORS ASSESSED

**Weathertightness** — the system, including joints, will resist the passage of moisture into the interior of a building (see section 6).

**Condensation risk** — roofs incorporating the system may adequately limit the risk of interstitial and surface condensation (see section 7).

**Properties in relation to fire** — the system can enable a roof to be unrestricted under the national Building Regulations (see section 8).

**Resistance to wind uplift** — when correctly specified, the system will resist the effects of any likely wind suction acting on the roof (see section 9).

**Resistance to mechanical damage** — the system will accept, without damage, the limited foot traffic and loads associated with the installation and maintenance (see section 10).

**Durability** — under normal service conditions, the system will provide a durable waterproof covering with a service life of at least 35 years (see section 12).

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

On behalf of the British Board of Agrément

Date of First issue: 5 September 2022

Hardy Giesler  
Chief Executive Officer

This Certificate was amended on 22 May 2024 as part of a transition of The BBA Agrément Certificate scheme delivered under the BBA's ISO/IEC 17020 accreditation. This Certificate was issued originally under accreditation to ISO/IEC 17065. Sections marked with the symbol † are not issued under accreditation. Full conversion to the ISO/IEC 17020 format will take place at the next Certificate review. The BBA is a UKAS accredited Inspection Body (No.4345). Readers MUST check the validity of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly. Any photographs are for illustrative purposes only, do not constitute advice and must not be relied upon.

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## Regulations

In the opinion of the BBA, Proteus Pro-Felt Endura, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



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

<b>Requirement</b> Comment:	<b>B4(1)</b>	<b>External fire spread</b> The system is restricted by this Requirement in some circumstances. See section 8.5 of this Certificate.
<b>Requirement:</b> Comment:	<b>B4(2)</b>	<b>External fire spread</b> On a suitable substructure, the system may enable a roof to be unrestricted under this Requirement. See sections 8.1, 8.2, 8.3 (Wales only) and 8.4 of this Certificate.
<b>Requirement:</b> Comment:	<b>C2(b)</b>	<b>Resistance to moisture</b> The system, including joints, will enable a roof to satisfy this Requirement. See section 6 of this Certificate.
<b>Requirement:</b> Comment:	<b>C2(c)</b>	<b>Resistance to moisture</b> The system can contribute to enabling a roof to satisfy this Requirement. See section 7 of this Certificate.
<b>Regulation:</b> Comment:	<b>7(1)</b>	<b>Materials and workmanship</b> The system is acceptable. See section 12.1 and the <i>Installation</i> part of this Certificate.



### The Building (Scotland) Regulations 2004 (as amended)

<b>Regulation:</b> Comment:	<b>8(1)(2)</b>	<b>Fitness and durability of materials and workmanship</b> The use of the system satisfies the requirements of this Regulation. See sections 11.1 and 12.1 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> Standard: Comment:	<b>9</b> 2.6	<b>Building standards applicable to construction</b> Spread to neighbouring buildings The system is restricted under clause 2.6.4 <sup>(1)(2)</sup> of this Standard in some circumstances. See section 8.6 of this Certificate.
Standard: Comment:	2.8	Spread from neighbouring buildings The system, when applied to a suitable substructure, may enable a roof to be unrestricted under clause 2.8.1 <sup>(1)(2)</sup> of this Standard. See sections 8.1, 8.2 and 8.4 of this Certificate.
Standard: Comment:	3.10	Precipitation The system, including joints, will enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1 <sup>(1)</sup> and 3.10.7 <sup>(1)</sup> . See section 6 of this Certificate.
Standard: Comment:	3.15	Condensation The system will enable a roof to satisfy this Standard, with reference to clauses 3.15.1 <sup>(1)(2)</sup> , 3.15.3 <sup>(1)(2)</sup> , 3.15.5 <sup>(1)(2)</sup> and 3.15.6 <sup>(1)(2)</sup> . See section 7 of this Certificate.
Standard: Comment:	7.1(a)	Statement of sustainability The system can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.

<b>Regulation:</b>	<b>12</b>	<b>Building standards applicable to conversions</b>
<b>Comment:</b>	Comments in relation to the system under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 <sup>(1)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> .	
	(1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).	



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

<b>Regulation:</b>	<b>23(a)(i)</b>	<b>Fitness of materials and workmanship</b>
<b>Comment:</b>	<b>(iii)(b)(i)</b>	The system is acceptable. See section 12.1 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b>	<b>28(b)</b>	<b>Resistance to moisture and weather</b>
<b>Comment:</b>		The system, including joints, can satisfy the requirements of this Regulation. See section 6 of this Certificate.
<b>Regulation:</b>	<b>29</b>	<b>Condensation</b>
<b>Comment:</b>		The system can contribute to a roof satisfying this Regulation. See section 7 of this Certificate.
<b>Regulation:</b>	<b>36(a)</b>	<b>External fire spread</b>
<b>Comment:</b>		The product is restricted by this Requirement in some circumstances. See sections 8.5 of this Certificate.
<b>Regulation:</b>	<b>36(b)</b>	<b>External fire spread</b>
<b>Comment:</b>		On a suitable substructure, the use of the system can enable a roof to be unrestricted under the requirements of this Regulation. See sections 8.1 to 8.4 of this Certificate.

## Construction (Design and Management) Regulations 2015

## Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 1 *Description* (1.3) and 3 *Delivery and site handling* (3.3) of this Certificate.

## Additional Information

### NHBC Standards 2022

In the opinion of the BBA, Proteus Pro-Felt Endura, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards, 7.1 Flat roofs, terraces and balconies*.

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

## Technical Specification

### 1 Description

1.1 Proteus Pro-Felt Endura is a warm roof system using a self-adhesive air and vapour control layer (AVCL) which can be safely and securely bonded to any roof deck without the use of a torch. Thermal insulation is then bonded to the AVCL, followed by a polymer modified, self-adhesive underlay and a choice of high-performance torch-on capsheets. Proteus Pro-Felt Endura AVCL Sanded can be used as an alternative on suitable non-combustible substrates.

## 1.2 Proteus Pro-Felt Endura comprises the following waterproofing membranes and AVCLs:

- Proteus Pro-Felt Endura Mineral — a torch on, elastomeric modified bitumen membrane, reinforced with polyester (180 - 200 g·m<sup>-2</sup>), with a slate finish on the upper surface and a thermofusible polyethylene film on the lower surface
- Proteus Pro-Felt Endura-Plus Mineral — a torch on, elastomeric modified bitumen membrane, reinforced with polyester (250 g·m<sup>-2</sup>), with a slate finish on the upper surface and a thermofusible polyethylene film on the lower surface
- Proteus Pro-Felt Endura SA Mineral — a self-adhesive, elastomeric modified bitumen membrane, reinforced with polyester (280 g·m<sup>-2</sup>). The membrane has a slate finish on the upper surface and a release film on the lower surface. For use in the perimeter zone of the roof
- Proteus Pro-Felt Endura SA Underlay Sanded — a self-adhesive, elastomeric modified bitumen membrane, reinforced with glass fibre (200 g·m<sup>-2</sup>). The membrane has a sand finish on the upper surface and a release film on the lower surface
- Proteus Pro-Felt Endura SA Underlay Film — a self-adhesive, elastomeric modified bitumen membrane, reinforced with glass fibre (200 g·m<sup>-2</sup>). The membrane has a thermofusible polyethylene film on the upper surface and a release film on the lower surface
- Proteus Pro-Felt Endura SA AVCL Sanded — a self-adhesive, elastomeric modified bitumen AVCL with a glass fibre/aluminium composite (200 g·m<sup>-2</sup>) acting as reinforcement. The membrane has a sand finish on the upper surface and a release film on the lower surface
- Proteus Pro-Felt Endura AVCL Sanded — a torch-on, elastomeric modified bitumen AVCL with a glass fleece/aluminium composite (60 g·m<sup>-2</sup>) acting as reinforcement. The membrane has a sand finish on the upper surface and a thermofusible polyethylene film on the lower surface.

1.3 The nominal characteristics of the waterproofing membranes and AVCLs are given in Tables 1 and 2 respectively.

*Table 1 Nominal characteristics – waterproofing membranes*

Characteristic (unit)	Proteus Pro-Felt Endura SA Underlay Sanded	Proteus Pro-Felt Endura SA Underlay Film	Proteus Pro-Felt Endura Mineral	Proteus Pro-Felt Endura-Plus Mineral	Proteus Pro-Felt Endura SA Mineral
Thickness (mm)	3.0	3.0	4.2	5.2	4.2
Roll width (m)	1.00	1.00	1.00	1.00	1.00
Roll length (m)	10.0	7.5	7.5	5.0	7.5
Mass per unit area (kg·m <sup>-2</sup> )	4.1	4.3	5.5	7.5	6.0
Roll weight (kg)	41.0	35.0	42.0	37.5	45
Watertightness – one metre head	pass	pass	pass	pass	pass
Tensile strength (N per 50 mm)					
longitudinal	≥ 1000	≥ 1000	≥ 900	≥ 800	≥ 1000
transverse	≥ 1000	≥ 1000	≥ 600	≥ 800	≥ 1000
Elongation (%)					
longitudinal	≥ 2	≥ 2	≥ 35	≥ 35	20
transverse	≥ 2	≥ 2	≥ 35	≥ 35	25
Low temperature flexibility (°C)	≤ -15	≤ -20	≤ -25	≤ -25	≤ -25
Flow resistance (°C)	≥ 90	≥ 100	≥ 100	≥ 100	≥ 100

**Table 2 Nominal characteristics – AVCLs**

Characteristic (unit)	Proteus Pro-Felt Endura SA AVCL	Proteus Pro-Felt Endura AVCL
	Sanded	Sanded
Thickness (mm)	2.5	3.5
Roll width (m)	1.00	1.00
Roll length (m)	10.0	10.0
Mass per unit area (kg·m <sup>-2</sup> )	3.3	5.2
Roll weight (kg)	36	39
Equivalent air layer thickness – sd (m)	≥1500	≥1500
Watertightness – one metre head	pass	pass
Tensile strength (N per 50 mm)		
longitudinal	≥ 1000	≥ 400
transverse	≥ 1000	≥ 400
Elongation (%)		
longitudinal	≥ 2	≥ 2
transverse	≥ 2	≥ 2
Low temperature flexibility (°C)	≤-25	≤-20
Flow resistance (°C)	≥ 100	≥ 100

1.4 Pro-Prime Bitumen is a bitumen primer for preparation of substrates prior to the application of the system..

## 2 Manufacture

2.1 The membranes and AVCLs are manufactured by saturating and coating the reinforcement with styrene-butadiene-styrene (SBS) modified bitumen, then calendaring to the correct thickness. The lower and upper surfaces are applied as appropriate and the sheets are cooled, trimmed and rolled for packaging.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

## 3 Delivery and site handling

3.1 The membranes and AVCLs are delivered to site in rolls with either paper wrappers or tape bands bearing the product name and product dimensions. The rolls are packed on pallets and shrink wrapped in polythene, the pallets bear a label with product number, product name, dimensions and batch number.

3.2 Rolls should be stored upright on a clean, level surface, away from excessive heat and kept under cover. The self-adhesive products should be stored out of direct sunlight.

3.3 The Certificate holder has taken the responsibility of classifying and labelling the system components under the *CLP Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Proteus Pro-Felt Endura.

### 4 General

4.1 Proteus Pro-Felt Endura is satisfactory for use as a fully bonded roof waterproofing and AVCL in a warm roof waterproofing system on flat and pitched roofs with limited access.

4.2 Decks to which the system is to be applied must comply with the relevant requirements of BS 6229 : 2018, BS 8217 : 2005 and, where appropriate, *NHBC Standards 2022*, Chapter 7.1.

4.3 Limited access roofs are defined for the purpose of this Certificate as those subjected only to pedestrian traffic for maintenance of the roof covering, cleaning of gutters, etc. Where traffic in excess of this is envisaged, such as pedestrian access roofs, additional protection must be provided (see section 10 of this Certificate and the relevant clauses of the Certificate holder's installation instructions).

4.4 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80. For design purposes, twice the minimum finished fall should be assumed unless a detailed analysis of the roof is available, including overall and local deflection, direction of falls, etc.

4.5 Pitched roofs are defined for the purpose of this Certificate as those having a fall in excess of 1:6.

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

- as described in the relevant clauses of BS 8217 : 2005, or
- the subject of a current BBA Certificate and be used in accordance with, and within the limitations of, that Certificate.

4.7 The NHBC requires that the waterproofing membranes, once installed, are inspected in accordance with *NHBC Standards 2022*, Chapter 7.1, Clause 7.1.12, and undergo an appropriate integrity test, where required. Any damage to the membrane is repaired in accordance with section 16 of this Certificate and reinspected.

### 5 Practicability of installation

Installation of the system must only be carried out by roofing contractors trained and approved by the Certificate holder.

### 6 Weathertightness



The waterproofing membranes, including joints, when completely sealed and consolidated, will adequately resist the passage of moisture to the interior of a building and so satisfy the requirements of the national Building Regulations.

### 7 Condensation risk



The AVCLs provide effective control to the passage of liquid water and water vapour.

### 8 Properties in relation to fire



8.1 When classified to EN 13501-5 : 2016, the systems given in Table 3 of this Certificate achieved  $B_{ROOF}(t_4)$  for slopes below 10°.

**Table 3 Systems given  $B_{ROOF}(t4)$  classification**

Substrate	AVCL	Insulation	Underlay	Capsheet
18 mm plywood	Proteus Pro-Felt Endura SA AVCL Sanded or Proteus Pro-Felt Endura AVCL Sanded	glass faced polyisocyanurate (PIR) boards bonded with polyurethane adhesive 50 mm to 240 mm	Proteus Pro-Felt Endura SA Underlay Film or Proteus Pro-Felt Endura SA Underlay Sanded	Proteus Pro-Felt Endura Mineral, Proteus Pro-Felt Endura-Plus Mineral or Proteus Pro-Felt Endura SA Mineral
18 mm plywood	Proteus Pro-Felt Endura SA AVCL Sanded or Proteus Pro-Felt Endura AVCL Sanded	layer aluminium faced polyisocyanurate (PIR) boards bonded with polyurethane adhesive 50 mm to 240 mm	Proteus Pro-Felt Endura SA Underlay Film or Proteus Pro-Felt Endura SA Underlay Sanded	Proteus Pro-Felt Endura Mineral, Proteus Pro-Felt Endura-Plus Mineral or Proteus Pro-Felt Endura SA Mineral
18 mm plywood	Proteus Pro-Felt Endura SA AVCL Sanded or Proteus Pro-Felt Endura AVCL Sanded	bitumen faced mineral wool boards greater than 60 mm	Proteus Pro-Felt Endura SA Underlay Film or Proteus Pro-Felt Endura SA Underlay Sanded	Proteus Pro-Felt Endura Mineral, Proteus Pro-Felt Endura-Plus Mineral or Proteus Pro-Felt Endura SA Mineral

8.2 When used in conjunction with one of the inorganic coverings listed in the Annex of Commission Decision 2000/553/EC, the system can be considered to be unrestricted, with respect to the proximity of relevant boundaries, under the national Building Regulations.



8.3 In Wales and Northern Ireland, when used on flat roofs with the surface finishes listed below, the roof is also deemed to be unrestricted:

- bitumen-bedded stone chippings covering the whole surface to a depth of not less than 12.5 mm
- bitumen-bedded tiles of a non-combustible material
- sand and cement screed
- macadam.



8.4 The designation of other specifications should be confirmed by reference to the requirements of the documents supporting the national Building Regulations.



8.5 In England, Wales and Northern Ireland, the system, when used in pitches of greater than 70° excluding upstands, should not be used on buildings that have a storey at least 18 m above ground level and contain: one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools and additionally, in Northern Ireland, nursing homes and places of lawful detention.



8.6 In Scotland, the system, when used in pitches of greater than 70° excluding upstands, should not be used on buildings that have a storey more than 11 m above ground level.

## 9 Resistance to wind uplift

The adhesion of the bonded membranes is sufficient to resist the effects of wind-suction, elevated temperature and thermal shock conditions likely to occur in practice.

## 10 Resistance to mechanical damage

10.1 The membranes and AVCLs can accept, without damage, the foot traffic and light concentrated loads associated with installation and maintenance. Where traffic in excess of this is envisaged, such as for maintenance of lift

equipment, a walkway must be provided (for example, using concrete slabs supported on bearing pads). Reasonable care should be taken to avoid puncture by sharp objects or concentrated loads.

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

## 11 Maintenance



11.1 The system must be the subject of six-monthly inspections and maintenance in accordance with BS 6229 : 2018, Chapter 7 and the manufacturers own maintenance requirements, to ensure continued satisfactory performance.

11.2 Where damage has occurred, it should be repaired in accordance with section 16 of this Certificate and the Certificate holder's instructions.

## 12 Durability



12.1 Under normal service conditions, the system will provide a durable waterproof covering with a service life at least 35 years.

12.2 Localised loss of the mineral surfacing may occur after some years in areas where complex detailing of the roof design is incorporated.

## 13 Reuse and recyclability

The membranes are made from bitumen, polyester and glass, which can be recycled.

## Installation

### 14 General

14.1 Installation of Proteus Pro-Felt Endura is carried out in accordance with the Certificate holder's instructions, the relevant clauses of BS 8000-0 : 2014, BS 8000-4 : 1989 and BS 8217 : 2005, and this Certificate.

14.2 Deck surfaces must be dry, clean and free from sharp projections such as nail heads and concrete nibs. The substrate should be prepared using Pro-Prime Bitumen as specified and at the recommended rate, prior to the installation of the AVCL.

14.3 The system may be laid in conditions normal to roofing work and must not be laid in rain, snow or heavy fog. If the temperature is below 5°C, suitable precautions must be taken against the formation of condensation on the substrate.

14.4 The waterproofing layers must always be installed with staggered overlaps and in such a manner that no counter-seams in the direction of the outlets are made.

14.5 At falls in excess of 5° (1:11), precautions against slippage and requirements for mechanical fixing as required by BS 8217 : 2005 should be observed. For slopes above 10° (1:5.7), the Certificate holder's Technical Service Department should be contacted for advice.

14.6 Installation of the insulation boards must be carried out in accordance with the insulation manufacturer's instructions.

### 15 Procedure

#### AVCL

15.1 Where thermal break insulation is installed, the AVCL must extend up all upstands by a sufficient height to ensure that the insulation is encapsulated.



15.2 The AVCL is installed in accordance with the appropriate method for the product and substrate as follows:

- Proteus Pro-Felt Endura SA AVCL Sanded on timber substrates mechanically fastened with galvanized clout nails in rows hidden with a 100 mm wide strip of Proteus Pro-Felt Endura SA AVCL Sanded
- Proteus Pro-Felt Endura SA AVCL Sanded on other substrates by self-adhesion
- Proteus Pro-Felt Endura AVCL Sanded on all substrates by torch-bonding.

15.3 The overlaps for the AVCLs are a minimum of 80 to 100 mm wide. The laps are sealed together using either hot air welding for the Proteus Pro-Felt Endura SA AVCL Sanded or gas torch for Proteus Pro-Felt Endura AVCL Sanded in accordance with the Certificate holder's instructions.

15.4 Insulation boards are bonded to the AVCL using a suitable polyurethane adhesive.

### **Waterproofing layer**

15.5 The self-adhesive underlays are installed by removing the release film from the lower surface and unrolling the membrane onto the substrate, ensuring that it is properly bonded and that no air is trapped under the membrane.

15.6 End laps and side laps for the underlays are 80 mm and the joint is consolidated using a hand roller.

15.7 The underlay must be taken a sufficient distance up all upstands and protrusions to ensure a secure lap with the AVCL and should be a minimum height of 150 mm above the roof surface.

15.8 Laps between the underlays and the capsheets should be offset by a minimum of 300 mm.

15.9 Proteus Pro-Felt Endura SA Mineral is installed in the perimeter zone of the roof for a minimum of 900 mm from any areas of detailing. The membrane is installed in accordance with section 15.5 of this Certificate.

15.10 Bonding of Proteus Pro-Felt Endura Mineral and Proteus Pro-Felt Endura-Plus Mineral capsheets is achieved by melting their lower surfaces by torching and pressing the membranes down. Care must be taken not to overheat the membranes.

15.11 End laps and side laps for the capsheets are 80 mm wide and fully bonded, ensuring that a continuous bead of bitumen exudes from the lap.

15.12 Detailing should be carried out in accordance with the Certificate holder's instructions and following guidelines specified in the NFRC *Safe2Torch Guidance For the safe installation of torch-on reinforced bitumen membranes and use of gas torches in the workplace* document.

## **16 Repair**

In the event of damage, the capsheet can be effectively repaired after cleaning the surrounding areas, with a patch of the appropriate capsheet torch-bonded over the damaged area in accordance with the Certificate holder's instructions.

## **Technical Investigations**

### **17 Tests**

17.1 Tests were carried out on the capsheets and the results assessed to determine:

- thickness
- mass per unit area
- tensile strength and elongation
- low temperature flexibility
- heat resistance.

17.2 Tests were carried out on the AVCLs and the results assessed to determine:

- thickness
- mass per unit area
- tensile strength and elongation
- nail tear
- peel strength from concrete substrate of self-adhesive membrane control and heat aged for 28 days.

17.3 Tests were carried out on the underlays and the results assessed to determine:

- thickness
- mass per unit area
- head of water.

17.4 Samples were taken from an existing site and further artificially heat aged to a 35 year equivalent and heat resistance tested.

## **18 Investigations**

18.1 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

18.2 Data on fire performance were assessed.

18.3 Existing test data for a capsheet reinforced with the 250 g·m<sup>-2</sup> polyester fleece was assessed to determine:

- head of water
- tensile strength and elongation
- nail tear
- resistance to impact
- resistance to static loading
- dimensional stability
- shear strength of joints
- peel strength of joints
- adhesion of granules
- low temperature flexibility after heat ageing
- tensile strength and elongation after heat ageing.

## Bibliography

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

BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*

BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*

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

EN 13501-5 : 2016 *Fire classification of construction products and building element — Classification using data from external fire exposure to roofs tests*

EN 13707 : 2013 *Flexible sheets for waterproofing — reinforced bitumen sheets for roof waterproofing — Definitions and characteristics*

EN 13970 : 2004 *Flexible sheets for waterproofing — Bitumen water vapour control layers — Definitions and characteristics*

## Conditions of Certificate

### Conditions

1. This Certificate:

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

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

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

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

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

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

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

6. Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product which is contained or referred to in this Certificate is the minimum required to be met when the product is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

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