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Agrément Certificate
17/5399
Product Sheet 1

CANLON-HITCHINS ROOF WATERPROOFING MEMBRANES

NURAPLAN V ROOF WATERPROOFING MEMBRANES

This Agrément Certificate Product Sheet(1) relates to Nuraplan V Roof Waterproofing Membranes, a range of single-ply polyester reinforced PVC membranes for use in mechanically fastened or fully adhered 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 products will resist the passage of moisture into the interior of a building (see section 6).
Properties in relation to fire — the products may enable a roof to be unrestricted under the national Building Regulations (see section 7).
Resistance to wind uplift — the products will resist the effects of any wind suction likely to occur in practice (see section 8).
Resistance to mechanical damage — the products will accept the limited foot traffic and loads associated with installation and maintenance (see section 9).
Durability — under normal service conditions, the products will provide a durable waterproof covering with a service life in excess of 25 years (see section 11).

The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

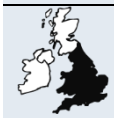
Date of Second issue: 25 September 2020

Originally certificated 2 March 2017

Hardy Giesler
Chief Executive Officer

Regulations

In the opinion of the BBA, Nuraplan V Roof Waterproofing Membranes, 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)

Requirement:	**B4(1)**	**External fire spread**
Comment:		The products, in some circumstances, are restricted by this Requirement. See section 7.3 of this Certificate.
Requirement:	**B4(2)**	**External fire spread**
Comment:		On suitable substructures, the use of the products can enable a roof to be unrestricted under the requirements of this Regulation. See sections 7.1 and 7.2 of this Certificate.
Requirement:	**C2(b)**	**Resistance to moisture**
Comment:		The products, including joints, will enable a roof to satisfy this Requirement. See section 6 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The products are acceptable. See section 11 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)(2)**	**Durability, workmanship and fitness of materials**
Comment:		The use of the products satisfies the requirements of this Regulation. See sections 10.1 and 11 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	2.8	Spread from neighbouring buildings
Comment:		The products, when applied to a suitable substructure, are regarded as having low vulnerability under clause 2.8.1(1)(2) of this Standard. See sections 7.1 and 7.2 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The products, including joints, can enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1(1)(2) and 3.10.7(1)(2) . See section 6 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The products can contribute to meeting 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.
Regulation:	**12**	**Building standards applicable to conversions**
Comment:		Comments in relation to the products under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1(1)(2) and Schedule 6(1)(2).

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).

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

Regulation:	**23(a)(i)**	**Fitness of materials and workmanship**
Comment:	**(iii)(b)(i)**	The products are acceptable. See section 11 and the *Installation* part of this Certificate.

Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The products, including joints, can enable a roof to satisfy the requirements of this Regulation. See section 6 of this Certificate.
Regulation:	**36(b)**	**External fire spread**
Comment:		On suitable substructures, the use of the products can be unrestricted by the requirements of this Regulation. See sections 7.1 and 7.2 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* (1.2) and 3 *Delivery and site handling* (3.3) of this Certificate.

Additional Information

NHBC Standards 2020

In the opinion of the BBA, Nuraplan V Roof Waterproofing Membranes, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 7.1 *Flat roofs and balconies.*

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

CE marking

The Certificate holder has taken the responsibility of CE marking the products in accordance with harmonised European Standard BS EN 13956 : 2012.

Technical Specification

1 Description

1.1 Nuraplan V Roof Waterproofing Membranes are single-ply PVC membranes. Nuraplan V F is reinforced with a polyester net (89 $g \cdot m^{-2}$), Nuraplan V A includes a polyester fleece-backing (130 $g \cdot m^{-2}$) and Nuraplan V D (for use in completing details) is unreinforced.

1.2 The products are manufactured to the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Characteristic (unit)	Nuraplan V F	Nuraplan V A	Nuraplan V D
Roll length (m)	20	20	15
Roll width (m)	2	1.05, 2.05	2
Thickness (mm)	1.5	1.5 (2.5 with fleece)	1.5
Weight ($kg \cdot m^{-2}$)	2.03	2.24	2.06
Roll weight (kg)	81	50/94.35	46.8
Colour – upper and lower faces	Dark Grey	Dark Grey	Dark Grey
Watertightness	Pass	Pass	Pass
Tensile strength (N per 50 mm)			
longitudinal	1696	1360	1425
transverse	1545	1234	1511
Elongation (%)			
longitudinal	28	320	409
transverse	24	316	385
Tear resistance (N)			
longitudinal	643	539	301
transverse	690	399	296
Low temperature foldability (°C)	-30	-35	-35
Impact resistance (mm)	900	800	800
Static load (kg)	20	20	20
Joint peel resistance (N per 50 mm)	710	566	583
Joint shear resistance (N)	1526	1200	1084

1.3 Ancillary items for use with the products, and included in this Certificate, are:

- Canlon approved Cold Applied Adhesive — for bonding the fleece-backed membrane to the substrate
- Ejot flat roof fasteners and plastic tube washers.

1.4 Ancillary items for use with the products, but which are outside the scope of the Certificate, include:

- a range of PVC coated metal sheets in dark grey to form drip edges, water-checks, flashing profiles, etc
- a range of adhesives and sealants
- outlets, vents, standing seam profiles, solar fixing profiles, lightning conductor clips and rooflights
- a range of thermal insulation boards
- a range of Vapour Control Layers (VCLs).

2 Manufacture

2.1 The products are manufactured by an extrusion/calendering process.

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.

2.3 The management system of the manufacturer has been assessed and registered as meeting the requirements of ISO 9001 : 2015 and ISO 14001 : 2015 by Beijing Xingguo Global Certification Co. Ltd (Certificates 00219Q23841R1M and 00216E31929R0M respectively).

3 Delivery and site handling

3.1 The products are delivered to site in rolls with paper wrappings bearing the product name, nominal length, nominal width, manufacturing date, batch code and the BBA logo incorporating the number of this Certificate. The rolls are packed on pallets and shrink-wrapped in polythene.

3.2 Rolls should be stored flat on a clean, level surface, away from excessive heat and kept under cover.

3.3 The Certificate holder has taken the responsibility of classifying and labelling the products 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 Nuraplan V Roof Waterproofing Membranes.

Design Considerations

4 General

4.1 Nuraplan V F is satisfactory for use in mechanically fastened roof waterproofing systems, Nuraplan V A is for use in fully adhered roof waterproofing systems and Nuraplan V D is for completing details on flat and pitched roofs with limited access.

4.2 Decks to which the membranes are to be applied must comply with the relevant requirements of either BS 6229 : 2018 or BS 8217 : 2005 and, where appropriate, *NHBC Standards* 2020, Chapter 7.1 *Flat roofs and balconies*.

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, additional protection to the membrane must be provided (see section 9).

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 greater than 1:6.

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

- as described in the relevant clauses of BS 6229 : 2018, or
- the subject of a current BBA Certificate and used in accordance with, and within the scope of, that Certificate.

4.7 The products can be adversely affected by contact with bituminous products and polystyrene insulation boards. In these cases, Nuraplan V A or a suitable separating layer must be used. Where doubt arises, the advice of the Certificate holder should be sought.

5 Practicability of installation

Installation of the products must be only carried out by installers trained and approved by the Certificate holder.

6 Weathertightness

The products, including joints, when completely sealed and consolidated, will adequately resist the passage of moisture into the interior of a building and enable a roof to comply with the requirements of the national Building Regulations.

7 Properties in relation to fire

7.1 The following systems will be unrestricted in terms of proximity to a boundary under the national Building Regulations:

- When tested and classified in accordance with EN 13501-5 : 2005, a system comprising an 18 mm plywood deck, one layer of a self-adhesive vcl, a 115 mm thick mineral wool insulation board, and a layer of 1.5 mm thick Nuraplan V F mechanically fastened, achieved a fire classification of B_{ROOF}(t4)
- When tested to BS 476-3 : 2004, a system comprising an 18 mm thick plywood deck, one layer of 40 mm thick PIR insulation board fully bonded with a polyurethane adhesive and one layer of Nuraplan V A, achieved a fire classification of EXT.F.AB, and so is unrestricted with respect to proximity to a boundary by the national Building Regulations
- When tested to DD CEN/TS 1187 : 2012, Test 4, and classified in accordance with EN 13501-5 : 2016, a system comprising an 18 mm thick plywood deck primed with solvent based synthetic rubber, one layer of a self-adhesive Elastomeric polymer distilled bitumen vcl, a 210 mm thick mineral coated glass tissue faced PIR insulation board, fully bonded with a polyurethane adhesive and one layer of 1.5 mm (2.5 mm with fleece) thick Nuraplan V A, fully bonded with solvent based Canlon approved Adhesive, achieved a fire classification of B_{ROOF}(t4).

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

7.3 The products, when used in pitches of greater that 70°, excluding upstands, should not be used on buildings in England and Wales 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.

8 Resistance to wind uplift

8.1 The resistance to wind uplift of a mechanically fastened waterproofing layer is provided by the fasteners passing through the membrane into the substrate. The amount and position of fixings will depend on a number of factors, including:

- wind uplift forces to be restrained
- pull-out strength of the fasteners
- tensile properties of the membrane
- appropriate calculation of safety factors.

8.2 The wind uplift forces are calculated, by a suitably experienced and competent individual, in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. On this basis, the number of fixings required should be established using a maximum permissible load of 0.7 kN per fixing.

8.3 When Nuraplan V A is fully adhered to insulation boards, the resistance to wind uplift will be dependent on the cohesive strength of the insulation and the method by which it is secured to the roof deck. This must be taken into account when the insulation material is selected.

8.4 The Certificate holder provides a design service which takes into account all the relevant information supplied and a specification for the positioning of fastening bars or washers, and the number of fixings required. Liability for the calculations of the design of the mechanically fastened system lies with the Certificate holder.

9 Resistance to mechanical damage

9.1 The products can accept the limited foot traffic and light concentrated loads associated with installation and maintenance. Reasonable care should be taken to avoid puncture by sharp objects or concentrated loads. Where traffic in excess of this is envisaged, such as for maintenance of lift equipment or pedestrian access, suitable protection must be provided, eg using concrete slabs supported on bearing pads.

9.2 The products are capable of accepting minor structural movement while remaining weathertight.

10 Maintenance

10.1 The systems should be the subject of six monthly inspections and maintenance in accordance with BS 6229 : 2018, Chapter 7, to ensure continued satisfactory performance.

10.2 Any damage must be repaired in accordance with section 16 and the Certificate holder's instructions.

11 Durability

Under normal service conditions, the products will provide a durable roof waterproofing with service life in excess of 25 years.

12 Reuse and recyclability

The products comprise polyvinyl chloride and copolymers, which can be recycled.

Installation

13 General

13.1 Installation of Nuraplan V Roof Waterproofing Membranes must be carried out by installers trained and approved by the Certificate holder in accordance with their instructions and the relevant clauses of BS 8000-0 : 2014, BS 8000-4 : 1989 and BS 8217 : 2005, the Certificate holder's instructions and this Certificate.

13.2 Substrates to which the products are to be applied must be sound, dry, clean and free from sharp projections such as nail heads and concrete nibs. When used over a rough substrate, a suitable protection layer must be laid first.

13.3 The products may be laid in conditions normal to roofing work and must not be laid in rain, snow or heavy fog, nor if the temperature falls below 5°C, if adhered.

14 Procedure

Fully bonded (adhered)

14.1 Nuraplan V A is fully unrolled onto the substrate without tension and then re-rolled for half its length.

14.2 Canlon approved Cold Applied Adhesive is applied to the substrate by applicator in accordance with the Certificate holder's instructions. Any concentration of adhesive must be avoided.

14.3 Immediately following application of the adhesive, the membrane is rolled into the adhesive and suitable pressure applied to ensure satisfactory bonding of the fleece.

14.4 The procedure is repeated for the second half of the roll and subsequent rolls.

14.5 Overlaps in the membrane must remain free of adhesive. The side lap joints must be a minimum of 50 mm and are hot-air welded in accordance with section 15.

Mechanically fastened

14.6 Nuraplan V F should be secured by corrosion-resistant plates and mechanical fixings as per the Certificate holder's instructions.

14.7 The membrane is unrolled onto the substrate, without folds or ripples, with 100 mm overlaps. Flashing and lap jointing must be carried out as described in section 15.

14.8 The membrane is fixed through the insulation board in the joint overlaps positioned 50 mm from the edge, prior to welding of the joints, in accordance with the Certificate holder's instructions. The fixings should be installed at centres calculated from the average wind force in that location.

14.9 A minimum distance of 200 mm between fasteners should be observed at all times. This may require the use of narrower membranes to obtain the correct number of fasteners per square metre.

15 Jointing and Flashing

15.1 Joints must be made using hot-welding techniques, using either an automatic or hand-operated machine, with the temperature set in accordance with the Certificate holder's instructions.

15.2 All joints must be a minimum width of 50 mm for both automatic and hand-held machines.

15.3 The seam is then tested with a metal probe after welding, to highlight poorly welded areas. Any such areas should be made good.

15.4 Flashing is completed with Nuraplan V D in accordance with the Certificate holder's instructions.

16 Repair

Any damage can be repaired by cleaning around the affected area and applying a patch of Nuraplan V D in accordance with the Certificate holder's instructions.

Technical Investigations

17 Tests

Tests were carried out and the results assessed to determine:

- mass per unit area
- width, straightness and flatness
- plasticiser content
- water absorption
- water vapour permeability
- tensile strength and elongation
- tear strength
- dimensional stability
- low temperature flexibility
- resistance to static loading
- resistance to dynamic impact
- shear resistance of joints
- peel strength from support
- resistance to UV ageing
- effect of water soak
- effect of heat ageing
- resistance to wind uplift.

18 Investigations

18.1 An evaluation was made of existing data on fire performance.

18.2 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.

Bibliography

BS 476-3 : 2004 *Fire tests on building materials and structures – Part 3: Classification and method of test for external fire exposure to roofs*

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*

BS EN 1991-1-4 : 2005 + A1 : 2010 *Eurocode 1 — Actions on structures — General actions*
NA to BS EN 1991-1-4 : 2005 + A1 : 2010 *Eurocode 1 — Actions on structures — General actions*

BS EN 13956 : 2012 *Flexible sheets for waterproofing — Plastic and rubber sheets for roof waterproofing — Definitions and characteristics*

DD CEN/TS 1187 : 2012 *Test methods for external fire exposure to roofs*

EN 13501-5 : 2005 + A1 : 2009 *Fire classification pf construction products and building elements — Classification using data from external fire exposure to roofs tests*

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

ISO 9001 : 2015 *Quality management systems — Requirements*

ISO 14001 : 2015 *Environmental management systems — Requirements*

19 Conditions

19.1 This Certificate:

- relates only to the product/system 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.

19.2 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.

19.3 This Certificate will remain valid for an unlimited period provided that the product/system 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.

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

19.5 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/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

19.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system 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.