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Agrément Certificate

21/5864

Product Sheet 1

DELTA MEMBRANE LIQUID APPLIED ROOF WATERPROOFING SYSTEMS

DELTA ROOFGUARD

This Agrément Certificate Product Sheet⁽¹⁾ relates to Delta RoofGuard liquid-applied polyurethane system for use as a waterproofing layer on new or existing flat or pitched roofs with limited access and for waterproofing balconies, terraces and podiums.

(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 will resist the passage of moisture into a building (see section 6).

Properties in relation to fire — the system may enable a roof to be unrestricted under the Building Regulations (see section 7).

Adhesion — the system will resist the effects of any likely wind suction acting on the roof (see section 8).

Resistance to mechanical damage — the system will accept the limited foot traffic and loads associated with installation and maintenance (see section 9).

Durability — under normal service conditions, the system will provide a durable roof waterproofing 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 system described herein. This system have 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 March 2021

Hardy Giesler
Chief Executive Officer

The BBA is a UKAS accredited certification body – Number 113.

*The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk
Readers MUST check the validity and latest issue number 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 should not be relied upon.

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Regulations

In the opinion of the BBA, Delta RoofGuard, 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 system, in some circumstances, are restricted by this Requirement. See section 7.4 of this Certificate.
Requirement:	B4(2)	External fire spread
Comment:		On a suitable substructure, the system can enable a roof to be unrestricted under this Requirement. See sections 7.1 to 7.3 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The system will enable a roof to satisfy this Requirement. See section 6 of this Certificate.
Regulation:	7(1)	Materials and workmanship
Comment:		The system is acceptable. See section 11 and the <i>Installation</i> 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 system satisfies the requirements of this Regulation. See sections 10.1 and 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.6	Spread to neighbouring buildings
Comment:		The system is restricted under clause 2.6.4 ⁽¹⁾⁽²⁾ of this Standard in some circumstances. See section 7.5 of this Certificate.
Standard:	2.8	Spread from neighbouring buildings
Comment:		The system, when applied to a suitable substructure, can be regarded as having low vulnerability under clause 2.8.1 ⁽¹⁾⁽²⁾ of this Standard. See sections 7.1 to 7.3 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The system will 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 system 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 system 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 system is acceptable. See section 11 of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The system will enable a roof to satisfy the requirements of this Regulation. See section 6 of this Certificate.
Regulation:	36b	External fire spread
Comment:		On suitable substructures, the use of the system can enable a roof to be unrestricted under the requirements of this Regulation. See sections 7.1 to 7.3 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: 3 *Delivery and site handling* of this Certificate.

Additional Information

NHBC Standards 2021

In the opinion of the BBA, Delta RoofGuard, 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, 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 Delta RoofGuard system is built up by applying the following components on site:

- Delta RoofGuard CP — a one-component, polyurethane, liquid-applied waterproofing membrane available in black, light grey (similar to RAL 7001), dark grey (similar to RAL 7011), dark red and tile red
- Delta RoofGuard QC — a one-component, polyurethane, liquid-applied 'Quick Cure' variant of Delta RoofGuard CP waterproofing membrane, available in black, light grey (similar to RAL 7001), dark grey (similar to RAL 7011), dark red and tile red, and with a typical curing time of 2.5 hours at 14°C >85% RH and 4 hours at 7°C >50% RH
- RoofGuard PUR Cat Additive — a catalyst for mixing into Delta RoofGuard CP or Delta RoofGuard QC to reduce the curing time. The catalyst must not be used at temperatures above 20°C
- RoofGuard Reinforcement Fabric 80 — a 80 g·m⁻² polyester reinforcement fabric for embedding into Delta RoofGuard CP or Delta RoofGuard QC over existing cracks, at upstands and other changes of plane in the unreinforced system
- RoofGuard Concrete Primer — a two-component primer for use on concrete surfaces where the moisture content of the concrete is greater than 4%.

1.2 Other materials available for use with the system, but outside the scope of this Certificate, are:

- RoofGuard PU Solvent — a general-purpose cleaning solvent and diluent viscosity modifier. When blended at a maximum addition rate of 10% with Delta RoofGuard CP or Delta RoofGuard QC, the mixture may be used as a sealer/primer on porous substrates
- RoofGuard General Primer — a single-component primer for use over porous and dry substrates

- RoofGuard Metal Primer — a one-component, non-film forming primer for use on a range of non-porous substrates including glass and steel
- RoofGuard Colodur (pigmented) — a single-component, firm, flexible, UV-resistant decorative and protective aliphatic polyurethane coating for application over Delta RoofGuard CP or Delta RoofGuard QC
- Super Accelerant PU — a curing agent mixed into Delta RoofGuard CP for use when a fast ‘cure-through’ is required.

2 Manufacture

2.1 The system components are manufactured by a batch-blending 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.

3 Delivery and site handling

3.1 The liquid components of the system are delivered to site in sealed containers with labels bearing the Certificate holder’s name, product description and the appropriate hazard and risk labels (see section 3.3). They have a storage life of 12 months and are available in the pack sizes detailed in Table 1.

Table 1 Pack sizes

Component	Pack sizes (kg)
Delta RoofGuard CP	5, 10, 19.5 and 25
Delta RoofGuard QC	5, 10, 19.5 and 25
RoofGuard PUR Cat Additive	1
RoofGuard Concrete Primer (Parts A + B)	5 and 18
Roofguard Reinforcement Fabric 80	
0.3 x 100 m	2.4
1.0 x 100 m	8.0

3.2 All containers must be stored under cover in a cool, dry, ventilated location away from other chemicals and any source of ignition. Storage temperatures should preferably be below 20°C with all materials protected from sub-zero temperatures and direct sunlight. Each container carries a label bearing the manufacturer’s name, product name and health and safety information. Rolls of reinforcement fabric should be stored flat in a dry, clean environment and protected from moisture. The Certificate holder’s product data sheets should be consulted for details.

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 Delta RoofGuard.

Design Considerations

4 General

4.1 Delta RoofGuard system is satisfactory for use as a fully-adhered, exposed waterproofing layer on new and existing flat and pitched roofs with limited access and, when fully protected, on pedestrian access roofs.

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 2021*, 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, additional protection to the membrane must be provided (see section 13.8).

4.4 Pedestrian access roofs are defined for the purpose of this Certificate as those suitable for foot traffic only, eg terraces, balconies and podium decks. Special precautions must be taken to protect the membrane when used in these areas (see section 13.8).

4.5 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 and direction of falls, etc.

4.6 Pitched roofs are defined for the purpose of this Certificate as those having a fall greater than 1:6.

4.7 The adhesion of the system has been assessed as suitable on concrete, including damp concrete⁽¹⁾, substrates. Acceptable adhesion of the system to other substrates should be confirmed by test.

(1) Concrete with a humidity level $\geq 4\%$ must be primed with RoofGuard Concrete Primer.

4.8 The NHBC requires that the roof membranes, once installed, be inspected in accordance with of NHBC Standards 2021, Chapter 7.1, Clause 7.1.12, including the use of an appropriate integrity test, where required. Any damage to the membrane is repaired in accordance with section 14 of this Certificate and reinspected.

5 Practicability of installation

Installation of the system must only be carried out by installers who have been trained and approved by the Certificate holder.

6 Weathertightness



The system will adequately resist the passage of moisture into the building and will enable a roof to comply with the requirements of the national Building Regulations.

7 Properties in relation to fire



7.1 When classified in accordance with BS EN 13501-5 : 2005, a flat roof system comprising an 18 mm WBP plywood substrate and two coats of Delta RoofGuard CP, each applied at a coverage rate of $1 \text{ kg}\cdot\text{m}^{-2}$ is designated B_{ROOF}(t4).

7.2 The system, when used in protected specifications, including an inorganic covering listed in the Annex of Commission Decision 2000/553/EC, can also be considered to be unrestricted under the national Building Regulations.

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



7.4 The system, when used in pitches of greater than 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.



7.5 The system when used in pitches of greater than 70°, excluding upstands, should not be used on buildings in Scotland that have a storey at least 11 m above ground level.

8 Adhesion

The adhesion of the system to concrete is sufficient to resist the effects of wind suction, thermal cycling or other minor structural movement likely to occur in service. Acceptable adhesion to other substrates should be confirmed by test.

9 Resistance to mechanical damage

9.1 The system can accept the limited 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 should 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.

9.2 When used on pedestrian access roofs, the system must be fully protected (see section 13.8).

9.3 Results of testing for dynamic and static indentation are given in Table 2.

Table 2 Dynamic and static indent

Test	Result	Method
Dynamic indentation		
Unaged		
Hard substrate ⁽¹⁾		
23°C	I4	EOTA TR 006
-20°C	I4	
Soft substrate ⁽²⁾ at 23°C	I4	
Heat aged ⁽³⁾		
Hard substrate ⁽¹⁾ at -20°C	I4	
UV aged ⁽⁴⁾		
Hard substrate ⁽¹⁾ at -20°C	I4	
Static indentation		
Unaged		
Hard substrate ⁽¹⁾		
23°C	L4	EOTA TR 007
90°C	L2	
80°C	L3	
60°C	L4	
Soft substrate ⁽²⁾		
23°C	L3	
90°C	L1	
80°C	L1	
60°C	L1	
Water exposure		
Hard substrate ⁽¹⁾		
90°C	L2	
80°C	L3	
60°C	L4	

(1) Steel substrate.

(2) Polyurethane foam.

(3) Heat aged at 80°C for 200 days.

(4) UV aged at 60°C for an exposure of 1000 MJ·m⁻².

(5) Water exposure at 60°C for 60 days.

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

10 Maintenance



10.1 The system 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 should be repaired in accordance with section 14 and the Certificate holder's instructions.

11 Durability



With adequate maintenance and repair, the system will have an expected service life in excess of 25 years.

Installation

12 General

12.1 Installation of Delta RoofGuard must be in accordance with the relevant clauses of BS 8000-0 : 2014, BS 8000-4 : 1989, BS 6229 : 2018, Liquid Roofing and Waterproofing Association (LRWA) Note 7 – *Specifier Guidance for Flat Roof Falls*, the Certificate holder's instructions and this Certificate.

12.2 Installation should not be carried out during inclement weather, eg rain, fog or snow, and the ambient temperature at the time of laying must be between 5°C and 35°C. Surfaces to be coated must be at least 3°C above the dew-point.

12.3 Substrates to which the system is to be applied must be sound, dry, clean and free from sharp projections such as nail heads and concrete nibs. The Certificate holder's advice should be sought for suitable cleaning procedures and the use of a proprietary surface cleaner/HSE approved fungicidal wash.

12.4 Previously-coated areas must be checked for integrity and adequate adhesion to the substrate. Defects such as cracks and blisters must be repaired prior to application of the system in accordance with the Certificate holder's instructions.

12.5 Defects in the substrate (eg cracks) must be repaired, prior to application, in accordance with the Certificate holder's instructions. Cracks are treated with a reinforced Delta RoofGuard coating layer consisting of a 300 mm strip of reinforcement fabric embedded in Delta RoofGuard CP or Delta RoofGuard QC prior to the application of the main waterproofing layer.

12.6 Active joints must also be treated with a reinforced Delta RoofGuard CP or Delta RoofGuard QC coating layer, prior to the application of the main waterproofing layer, to ensure that the designed movement accommodation is maintained. The Certificate holder's advice should be sought for suitable specifications.

12.7 Substrates must be prepared and primed in accordance with the Certificate holder's instructions. Adhesion checks should be carried out to ensure that the system is fully compatible with the existing surfaces and to determine the necessity for a primer (see section 4.7).

12.8 The Certificate holder should be consulted on specifications for detailing around drains and other penetrations.

12.9 After use, all equipment must be cleaned with RoofGuard PU Solvent. The Certificate holder's advice can be sought on the use of other cleaning products.

13 Procedure

13.1 Delta RoofGuard CP or Delta RoofGuard QC is mixed for at least two minutes using a slow-speed drill fitted with a suitable paddle stirrer, taking care to avoid excessive air entrainment and ensuring that any settlement occurring during storage is re-dispersed and the product is homogeneous.

13.2 Cracks and upstands must be treated with a reinforced Delta RoofGuard CP or Delta RoofGuard QC coating layer in accordance with the Certificate holder's instructions.

13.3 Delta RoofGuard CP or Delta RoofGuard QC is applied by roller, squeegee or suitable airless spray machine in two coats each at a rate of $1 \text{ kg}\cdot\text{m}^{-2}$ to achieve a minimum total application rate of $2 \text{ kg}\cdot\text{m}^{-2}$ and a minimum total coating thickness of 1.6 mm. At least 24 hours should be allowed between coats of Delta RoofGuard CP, and 1 to 4 hours between coats of Delta RoofGuard QC.

13.4 When applied by roller, it is recommended that the membrane application is carried out in two or three coats to achieve the required application rate.

13.5 Following application, a spiked roller is used to eliminate air bubbles that form in the wet membrane.

13.6 A check must be made on the cured membrane for the presence of pinholes and missed areas. These are rectified by applying additional coats of membrane as necessary.

13.7 Where protection is required, eg when used on public access roofs, the fully cured system must be covered with a protective membrane prior to bedding suitable paving or tiles on a sand or mortar bed. The Certificate holder must be consulted for details.

14 Repair

14.1 Damage to system must be repaired as soon as possible to ensure that the waterproofing integrity is maintained.

14.2 The system can be repaired by cutting back the damaged or de-bonded coating to sound, well-bonded material and reinstating it to the original specification ensuring an overlap of at least 30 mm onto the existing coating.

14.3 Areas of existing coating to be overlapped must be cleaned, dried and primed with RoofGuard Metal Primer and allowed to fully dry for at least one hour prior to overcoating in accordance with the Certificate holder's instructions.

14.4 If repairs to the substrate are required, the Certificate holder's advice must be sought for suitable repair materials.

14.5 On completion, and when the coating has fully cured, the repair is inspected to ensure it is sound and well bonded to the existing coating.

Technical Investigations

15 Tests

15.1 Tests on the Delta RoofGuard system were carried out and the results assessed to determine:

- tensile strength and elongation
- water vapour resistance
- water absorption
- watertightness
- tensile bond strength on concrete, ceramic, polyurethane foam and day joints
- dynamic indentation
- static indentation
- resistance to fatigue cycling
- resistance to crack-bridging
- resistance to low temperatures
- resistance to high temperatures
- heat ageing at 80°C for 200 days
- resistance to UV ageing
- resistance to water exposure
- the effect of application temperatures
- wind uplift resistance before and after thermal shock.

15.2 Additional characterisation tests were carried out on the system components.

16 Investigations

16.1 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.

16.2 An assessment was made of fire data.

16.3 Visits were made to existing sites to assess the in-service performance of the system.

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*

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

EOTA TR 006 : 2004 *Determination of the resistance to dynamic indentation*

EOTA TR 007 : 2003 *Determination of the resistance to static indentation*

17 Conditions

17.1 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.

17.2 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.

17.3 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.

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

17.5 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.

17.6 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.