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Agrément Certificate

17/5443

Product Sheet 1

MARIS POLYMERS LIQUID APPLIED ROOF WATERPROOFING SYSTEMS

MARISEAL 250 SYSTEMS

This Agrément Certificate Product Sheet⁽¹⁾ relates to MARISEAL 250 Systems, for use as liquid applied roof waterproofing on flat and pitched roofs with limited access and on flat roofs with pedestrian 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 systems will resist the passage of moisture into the building (see section 6).

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

Adhesion — the adhesion of the systems are sufficient to resist the effects of any likely wind suction and the effects of thermal or other minor movement likely to occur in practice (see section 8).

Resistance to mechanical damage — the systems will accept, without damage, the limited foot traffic and loads associated with installation and maintenance (see section 9).

Durability — under normal service conditions, the systems will provide a durable waterproof covering with a service life of at least 10 years for the 1.6 mm system and 25 years for the 2.9 mm system (see section 11).

The BBA has awarded this Certificate to the company named above for the systems described herein. These systems 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 First issue: 25 July 2017

John Albon – Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

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 are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.*

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Regulations

In the opinion of the BBA, MARISEAL 250 Systems, 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(2)	External fire spread
Comment:		On suitable substructures the use of the systems can enable a roof to be unrestricted under this Requirement. See sections 7.1 and 7.2 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The systems will satisfy this Requirement. See section 6.1 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The systems are 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:		Use of the systems satisfy the requirements of this Regulation. See sections 10 and 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.8	Spread from neighbouring buildings
Comment:		The systems, when applied to a non-combustible substrate, can be 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 use of the systems 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 6.1 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The systems 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 systems 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 systems are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The use of the systems can enable a roof to satisfy the requirements of this Regulation. See section 6.1 of this Certificate.

Regulation:	36(b)	External fire spread
Comment:	On suitable substructures the use of the systems can enable a roof to be unrestricted under 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: 3 *Delivery and site handling* (3.2, 3.3 and 3.4) and *General* (4.2) of this Certificate.

Additional Information

NHBC Standards 2017

NHBC accepts the use of the 2.9 mm MARISEAL 250 System (25 year version only), provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.1 *Flat roofs and balconies*.

CE marking

The Certificate holder has taken the responsibility of CE marking the systems, in accordance with European Technical Assessment 05/0197, issued by the DIBT under ETAG 005 : 2004, Parts 1 and 6. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 MARISEAL 250 Systems consist of:

- MARISEAL 250 — a cold-applied and cold-curing, one-component polyurethane membrane based on elastomeric hydrophobic resins. The polymer cures by reaction with ground and air moisture. Available in white and light grey
- MARISEAL FABRIC — a 110 g·m⁻² non-woven polyester reinforcement used to reinforce the systems
- MARISEAL 710 — a solvent-based polyurethane for porous substrate preparation
- MARISEAL AQUA PRIMER — a water-based, two-part, epoxy primer for porous and non-porous substrate preparation.

1.2 The levels of use categories in accordance with ETAG 005 : March 2004 from ETAs 05/0197 are given in Table 1.

Table 1 ETAG 005 categories

Characteristics	Categories	
	1.6 mm	2.9 mm
External fire performance*	F _{ROOF} ⁽¹⁾	F _{ROOF} ⁽¹⁾
Reaction to fire*	Euroclass E	Euroclass E
Categorisation by working life*	W2 (10 years)	W3 (25 years)
Categorisation by climatic zone*	M (moderate) and S (severe)	M (moderate) and S (severe)
Categorisation by imposed loads*	P3	P4
Categorisation by roof slope*	S1 (<5%) to S4 (>30%)	S1 (<5%) to S4 (>30%)
Categorisation by surface temperature*		
lowest	TL3 (-20°C)	TL4 (-30°C)
highest	TH4 (90°C)	TH4 (90°C)
Resistance to wind loads*	≥50 kPa	≥50 kPa
Statement on dangerous substances*	None contained ⁽²⁾	

(1) No performance determined to any of the DD CEN/TS 1187 test methods.

(2) Dangerous substances as listed in EOTA TR034.

2 Manufacture

2.1 The liquid components of the systems 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.

2.3 The management system of Maris Polymers S.A. has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and BS EN ISO 14001 : 2004 by TÜV (Certificates 01 100 045987 and 01 104 087358 respectively).

3 Delivery and site handling

3.1 The liquid components are delivered to site in containers bearing the product's name, batch number and the BBA logo incorporating the number of this Certificate.

3.2 The components should be stored in a dry, shaded area and away from ignition sources at storage temperatures of between 5°C and 30°C. The liquid components have a shelf-life of 9 months and up to 24 months for the reinforcement.

3.3 The packaging type and size for the systems components are given in Table 2.

Table 2 Packaging

Component	Packaging type	Packaging size
MARISEAL 250	pail drum (250 kg only)	1, 6, 15, 25 and 250 kg
MARISEAL FABRIC	roll	1 m x 100 m 0.2 m x 100 m
MARISEAL 710	pail	1, 5, 10 and 17 kg
MARISEAL AQUA PRIMER (Component A + Component B)	pail	4 (3 + 1) and 20 kg (15 + 5)

3.4 The Certificate holder has taken the responsibility of classifying and labelling the systems 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 MARISEAL 250 Systems.

Design Considerations

4 General

4.1 MARISEAL 250 Systems are satisfactory for use as a liquid applied roof waterproofing on flat and pitched roofs with limited access and flat roofs with pedestrian access. The systems can be used on the following substrates:

- concrete
- insulation
- steel.

4.2 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.

4.3 Pedestrian access roofs are defined for the purposes of this Certificate as those not subjected to vehicular traffic.

4.4 The systems have a low coefficient of friction when wet and therefore walkways for maintenance traffic or roofs with pedestrian access should be provided, for example, a suitable aggregate incorporated into the final coat or pavements and suitable bearing pads.

4.5 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80. Pitched roofs are defined as those having falls in excess of 1:6.

4.6 When designing flat roofs, 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.

4.7 Decks to which the systems are to be applied must comply with the relevant requirements of BS 6229 : 2003 and BS 8217 : 2005.

4.8 Insulation systems or materials used in conjunction with the systems must be approved by the Certificate holder and must be either:

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

5 Practicability of installation

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

6 Weathertightness



6.1 The systems will adequately resist the passage of moisture to the inside of the building and so satisfy or comply with the relevant requirements of the national Building Regulations.

6.2 The systems are impervious to water and, when used as described, will give a weathertight roofing capable of accepting minor movement without damage.

6.3 To achieve a weathertight coating it is essential that the application rate is as quoted in the Certificate holder's literature for the systems.

7 Properties in relation to fire



7.1 When tested, a system comprising a 18 mm plywood substrate, a polyurethane adhesive applied at a rate of 2.5 to 5.0 kg·m⁻², a 50 mm thick polyisocyanurate insulation board and an unreinforced 1.2 mm thick layer of MARISEAL 250, applied in two coats of 0.6 mm, was classified in accordance with BS EN 13501-5 : 2005 as B_{ROOF} (t4).

7.2 The designation of other specifications, eg when used on combustible substrates, should be confirmed by:

England and Wales — test or assessment in accordance with Approved Document B, Appendix A, clause 1

Scotland — test to conform to Mandatory Standard 2.8, clause 2.8.1⁽¹⁾⁽²⁾.

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland — test or assessment by a UKAS-accredited laboratory, or an independent consultant with appropriate experience.

7.3 When tested for reaction to fire to EN ISO 11925-2 : 2010 and classified to EN 13501-1 : 2007, the systems achieved Euroclass E*.

8 Adhesion

The adhesion of the systems to the substrates indicated in section 4.1 is sufficient to resist the effects of any wind suction, elevated temperatures, thermal shock or minor movement likely to occur in practice.

9 Resistance to mechanical damage

The systems can accept, without damage, the limited foot traffic and light concentrated loads associated with installation and maintenance. However, reasonable care should be taken to avoid puncture by sharp objects or concentrated loads.

10 Maintenance



10.1 The systems must be the subject of annual inspections and maintenance to ensure continued performance in line with good practice.

10.2 Where damage has occurred, it should be repaired in accordance with section 15 and the Certificate holder's instructions.

11 Durability



The 1.6 mm thick MARISEAL 250 System will achieve an initial life expectancy of at least 10 years and the 2.9 mm MARISEAL 250 System will achieve an initial life expectancy of at least 25 years.

Installation

12 General

12.1 Installation of the MARISEAL 250 Systems must be carried out only by specialist roofing contractors trained and approved by the Certificate holder.

12.2 The systems are applied when the air and substrate temperatures are 5°C or greater and not exceeding an ambient temperature of 35°C.

13 Site and surface preparation

13.1 Substrates on which the systems are to be applied must be properly prepared in accordance with the Certificate holder's instructions.

13.2 Adhesion to substrates will depend on the condition and cleanness of the substrate. Substrates must be visibly dry, sound and free from loose materials or contamination (eg moss or algae).

13.3 Damaged areas of the substrate must be removed, replaced or repaired. Substrate defects (eg shallow-bottomed cracks and indentations) must be filled. The Certificate holder can advise on suitable filling materials.

13.4 All points of potential weakness such as splits, cracks, joints and crazed surfaces must be additionally reinforced in accordance with the Certificate holder's instructions prior to application of the main system.

13.5 Deck surfaces must be free from sharp projections, such as protruding fixing bolts and concrete nibs.

13.6 Priming is carried out in accordance with the Certificate holder's instructions with the appropriate primer for the substrate, using the coverage rates given in Table 3.

Table 3 Priming

Primer	Substrate type	Coverage rate (g·m ⁻²)
MARISEAL 710	Porous	200 in one layer
MARISEAL AQUA PRIMER	Non-porous	100 – 200 in one or two coats

14 Procedure

14.1 Application can be by brush, roller or airless spray. Brush application is normally used only for small roof areas and for embedding the reinforcement into the waterproofing.

14.2 Prior to application, checks must be made to ensure that the substrate is dry (ie free from rainwater, surface condensation and frost) and that the prevailing weather and site conditions are correct. The following normal limitations apply:

- application must not take place when the relative humidity is in excess of 95%, or in fog. The temperature/humidity must be such that there is no risk of surface condensation occurring before or during application
- the primer, where used, must be cured
- the wind speed must be such that it does not interfere with the application or cause overspray. No attempt to spray should be made if the wind speed exceeds 6.7 m·s⁻¹ (15 mph), unless precautions such as the use of wind barriers are taken.

14.3 Only areas that can be sprayed to the full thickness before weather changes occur should be attempted.

14.4 The systems are applied using the build-up for a smooth texture substrate given in Table 4. The advice of the Certificate holder on coverage rates for intermediate, rough, porous and undulating substrates must be sought. When using MARISEAL FABRIC, this is embedded in the first coat while the membrane is still wet with a 50 to 100 mm overlap of the reinforcement. Once the first coat is partially cured the second coat is applied:

Table 4 System coverage rates and finished thickness

System	10 year system (1.6 mm)	25 year system (2.9 mm)
Base coat (kg·m ⁻²)	1.2	2.0
Reinforcement	MARISEAL FABRIC	MARISEAL FABRIC
Second coat (kg·m ⁻²)	1.2	2.1
Finished thickness (mm)	1.6	2.9

14.5 The second layer should be applied 12 to 18 hours after the base coat and no later than 48 hours after initial coat.

14.6 Detailing (eg upstands) is carried out in accordance with the Certificate holder's instructions.

15 Repair

The repair of minor damage to the systems can be achieved effectively by cleaning back to the unweathered material, priming and recoating the damaged area with the membrane at the coverage rates stated in section 14.4.

Technical Investigations

16 Tests

Test data on MARISEAL 250 Systems were assessed by the BBA to determine:

- water vapour diffusion resistance coefficient (μ)

- tensile strength and elongation
- watertightness
- tensile bond strength
- resistance to fatigue
- resistance to dynamic indentation
- resistance to static indentation
- resistance to low temperatures
- resistance to high temperatures
- effect of heat ageing 100 days (1.6 mm) and 200 days (2.9 mm) at 80°C
- effect of exposure to surface water at 60°C for 30 days (1.6 mm) and 180 days (2.9 mm)
- UV aged for 400 MJ·m⁻² (1.6 mm) and 1000 MJ·m⁻² (2.9 mm) at 60°C (severe conditions)
- effect of day joints.

17 Investigations

17.1 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.

17.2 Data on external fire performance and reaction to fire were evaluated.

Bibliography

BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*

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

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

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

BS EN ISO 14001 : 2004 *Environmental management systems — Requirements with guidance for use*

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

EN 13501-1 : 2007 + A1 : 2009 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

EN ISO 11925-2 : 2010 *Reaction to fire tests — Ignitability of products subjected to direct impingement of flame — Single-flame source test*

EOTA TR034 *General BWR3 Checklist for EADs/ETAs — Dangerous substances*

ETAG 005 : March 2004 Part 1 *Liquid applied roof waterproofing kits — General*

ETAG 005 : March 2004 Part 6 *Liquid applied roof waterproofing kits — Specific stipulations*

18 Conditions

18.1 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 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.

18.2 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.

18.3 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.

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

18.5 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.

18.6 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.