

Test reports
MasterSeal Roof 2689

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Agrément Certificate

22/5992

Product Sheet 1

MASTER BUILDERS SOLUTIONS ROOF WATERPROOFING SYSTEMS

MASTERSEAL ROOF 2689 SPRAY-APPLIED WATERPROOFING SYSTEM

This Agrément Certificate Product Sheet⁽¹⁾ relates to the MasterSeal Roof 2689 Spray-Applied Waterproofing System, a two-component, liquid-applied polyurea membrane (applied by spray) and a range of primers, for use in protected roof specifications, including green roof and roof garden specifications, on flat and pitched roofs, including those with protected zero fall, and podium decks.

(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 the interior of a building (see section 6).

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

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

Resistance to mechanical damage — the system will accept, without damage, the limited foot traffic and loads associated with installation and maintenance and the effects of thermal or other minor movement likely to occur in practice (see section 9).

Resistance to root penetration — the system will adequately resist plant root penetration in green roof and roof garden specifications (see section 10).

Durability — under normal service conditions, the system will provide a durable roof waterproofing with a service life in excess of 25 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: 3 February 2022

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, the MasterSeal Roof 2689 Spray-Applied Waterproofing System, 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, is restricted by this Requirement. See section 7.3 of this Certificate.
Requirement:	B4(2)	External fire spread
Comment:		The system, when used with suitable surface protection, may 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 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 12 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 system is acceptable and satisfies the requirements of this Regulation. See sections 11.1 and 12 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 7.4 of this Certificate.
Standard:	2.8	Spread from neighbouring buildings
Comment:		The system, when used with suitable surface protection, can be regarded as having a low vulnerability and can enable a roof to be unrestricted under this Standard, with reference to clause 2.8.1 ⁽¹⁾⁽²⁾ . See sections 7.1 and 7.2 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 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.
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)(b)(i)	Fitness of materials and workmanship
Comment:		The system is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The system can enable a roof to satisfy the requirements of this Regulation. See section 6 of this Certificate.
Regulation:	36(b)	External fire spread
Comment:		The system, when used with suitable surface protection, 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 section: 3 *Delivery and site handling* (3.1 and 3.3) of this Certificate.

Additional Information

NHBC Standards 2022

In the opinion of the BBA, the MasterSeal Roof 2689 Spray-Applied Waterproofing System, 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*.

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

Technical Specification

1 Description

1.1 The MasterSeal Roof 2689 Spray-Applied Waterproofing System comprises MasterSeal M 689, a two-component (Part A resin , Part B isocyanate) spray-applied polyurea membrane, and a range of primers.

1.2 The membrane is spray-applied in two or three passes, to provide a waterproofing membrane with a minimum dry film thickness of 2.4 mm.

1.3 Ancillary items which may be necessary for installation of the system, and within the scope of this Certificate, include:

- MasterTop P 622 — a two-part, low viscosity solvent-free, epoxy primer for use on concrete and cementitious screed substrates
- MasterTop P 684 — a single-component primer for use on non-ferrous metal substrates prior to the application of the MasterSeal Roof 2689 membrane
- MasterTop P 691 — a single-component, polyurethane adhesive for use on plastic surfaces and aged membranes when renewing or repairing the UV protective top coat
- kiln-dried quartz sand — graded quartz sand (0.8 to 1.2 mm) for broadcasting into MasterTop P 622.

1.4 Ancillary items or components which may be used with the system, but outside the scope of this Certificate, include:

- specialist primers

- concrete repair products
- proprietary joint systems
- drainage membranes
- surface protection.

Note: Details of suitable products and their specifications can be obtained from the Certificate holder.

2 Manufacture

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

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 system components are delivered to site in drums bearing a label that includes the component's name, health and safety information, and batch number. The pack sizes are detailed in Table 1.

Table 1 Pack sizes

Component	Pack size (kg)
MasterSeal M 689 (Part A)	200
MasterSeal M 689 (Part B)	225
MasterTop P 622 (Part A)	11.8
MasterTop P 622 (Part B)	5.4
MasterTop P 691	19.5
MasterTop P 684	4.7
Kiln dried quartz sand	25

3.2 The MasterSeal Roof 2689 membrane components, and MasterTop P 622, P 691 and P 684 primers, must be stored off the ground in dry locations, out of direct sunlight and at a temperature between 20 and 25°C (15 and 25°C for primers). When stored in accordance with the Certificate holder's instructions, they will have a shelf-life of 12 months.

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 the MasterSeal Roof 2689 Spray-Applied Waterproofing System.

Design Considerations

4 General

4.1 The MasterSeal Roof 2689 Spray-Applied Waterproofing System is satisfactory for use as a fully adhered waterproofing layer on new and existing flat roofs, including those with zero fall, and pitched protected roof specifications including:

- podium decks and covered walkways for pedestrian access in flat and zero fall roofs
- inverted roofs in flat and zero fall roofs below XPS and other suitable insulation boards
- terraces in flat and zero fall roofs
- ballasted roofs in flat and zero fall roofs using stone, paved finishes etc
- roof gardens in flat and zero fall roofs
- green roofs in flat, zero fall and pitched roofs.

4.2 The system has been assessed for use on the following substrates:

- concrete substrates primed with MasterTop P 622
- metal substrates primed with MasterTop P 684
- bitumen-based reinforced roofing membranes, PVC and EPDM primed with MasterTop P 691.

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

4.4 The following terms are defined for the purpose of this Certificate as:

- roof garden (intensive) — a roof with a substantial layer of growing medium with planting that can include shrubs and trees, generally accessible to pedestrians
- green roof (extensive) — a roof with a shallow layer of growing medium planted with low-maintenance plants such as mosses, sedums, grasses and some wildflower species.

4.5 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 waterproofing membrane must be provided as specified by the Certificate holder.

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

(1) *NHBC Standards 2022* require a minimum fall of 1:60 for green roofs and roof gardens.

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

4.8 Zero fall roofs are those with a finished fall of between 0 to 1:80⁽¹⁾, reference should also be made to the appropriate clauses in Liquid Roofing and Waterproofing Association (LRWA) Note 7 – *Specifier Guidance for Flat Roofs*.

(1) *NHBC Standards 2022* require a minimum fall of 1:60 for green roofs and roof gardens.

4.9 Terraces should be designed in accordance with BS 8579 : 2020.

4.10 Structural decks to which the system is to be applied must be suitable to transmit the dead and imposed loads experienced in service. Allowance needs to be made for loading deflections to ensure that the free drainage of water is maintained.

4.11 Imposed loads, dead loading and wind load specifications are calculated by a suitably experienced and competent individual in accordance with BS EN 1991-1-1 : 2002, BS EN 1991-1-3 : 2003 and BS EN 1991-1-4 : 2005, and their UK National Annexes.

4.12 Recommendations for the design of green roofs and roof garden specifications are available within the latest edition of *The GRO Green Roof Code – Green Roof Code of Best Practice for the UK*.

4.13 The drainage systems for inverted roofs, zero fall roofs, green roofs or roof gardens must be correctly designed, and the following points should be addressed:

- provision made for access for maintenance purposes
- for zero fall roofs, it is particularly important to identify the correct drainage points, to ensure that drainage is sufficient and effective

- dead loads for green roofs and roof gardens can increase if the drains become partially or completely blocked causing waterlogging of the drainage layer
- additional guidance for inverted roof specifications is given in BBA Information Bulletin No 4 *Inverted roofs — Drainage and U value corrections*.

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

- 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 limitations of, that Certificate.

4.15 The Certificate holder must be consulted for advice on suitable protection (e.g. pavers), depending on the use of the roof.

4.16 The NHBC requires that the roof membrane, once installed, be visually inspected and electronically tested for its waterproofing integrity prior to the installation of the green roof/roof garden system in accordance with *NHBC Standards 2022*, Chapter 7.1, Clause 7.1.9. Any damage to the membrane is repaired in accordance with section 15 of this Certificate.

5 Practicability of installation

The system must only be installed by installers who have been trained by the Certificate holder.

6 Weathertightness



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

7 Properties in relation to fire



7.1 A roof incorporating the system will be unrestricted under the national Building Regulations with respect to proximity from a boundary in the following circumstances:

- when protected by an inorganic covering (e.g. gravel or paving slabs) listed in the Annex of Commission Decision 2000/553/EC
- a roof garden covered with a drainage layer of gravel 100 mm thick and a soil layer 300 mm thick
- irrigated green roofs or roof gardens.

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



7.3 In England and Wales, the system, when used in pitches 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.



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

7.5 If allowed to dry, plants used in a roof garden may allow flame spread across the roof. This should be taken into consideration when selecting the plants. Appropriate planting, irrigation and/or protection must be applied to ensure the overall fire rating of the roof is not compromised.

8 Adhesion

8.1 The adhesion of the system to the substrates listed in section 4.2, is sufficient to resist the effects of any wind suction, elevated temperatures, thermal shock or minor movement likely to occur in practice.

8.2 The ballast requirements for inverted specifications should be calculated by a suitably competent and experienced individual in accordance with the relevant parts of BS EN 1991-1-4 : 2005 and its UK National Annex. The system should always be ballasted with a minimum depth of 50 mm of aggregate. In areas of high wind exposure, the Certificate holder's advice should be sought. Alternatively, concrete slabs on suitable supports can be used.

8.3 Where the system is installed over insulation boards, the resistance to wind uplift will be dependent on the cohesive strength of the insulation and the method used to secure the boards to the roof deck. This must be taken into account when selecting a suitable insulation material.

8.4 The growing medium used in intensive plantings must not be of the type that will be removed, or become delocalised, owing to wind scour experienced on site.

8.5 It should be recognised that the type of plants used in roof gardens could significantly affect the expected wind loads experienced in service.

9 Resistance to mechanical damage

9.1 The system 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. Extra care should be taken when walking across the roof if surface water is present.

9.2 The system achieved a result of I₄ with respect to dynamic indentation and L₄ with respect to static indentation, for both concrete and mineral wool substrates, when tested in accordance with EOTA TR006 and EOTA TR007, respectively.

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

10 Resistance to root penetration

When used in green roofs and roof gardens, the roof waterproofing system will adequately resist penetration by plant roots.

11 Maintenance



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

11.2 Green roofs and roof gardens must be the subject of regular inspections, particularly in autumn after leaf fall and in spring, to ensure unwanted vegetation and other debris are cleared from the roof and drainage outlets (see section 4.13). Guidance is available within the latest edition of *The GRO Green Roof Code – Green Roof Code of Best Practice for the UK*.

12 Durability



12.1 Under normal service conditions, the system will have a service life in excess of 25 years.

12.2 When fully protected and subject to normal service conditions in an inverted roof specification with an open covering (e.g. aggregate pavers), the system can provide an effective barrier to the transmission of liquid water and water vapour for the design life of the roof in which it is incorporated.

13 General

13.1 Installation of the MasterSeal Roof 2689 Spray-Applied Waterproofing System must be in accordance with the relevant clauses of BS 6229 : 2018, BS 8000-0 : 2014 and BS 8000-4 : 1989, Liquid Roofing and Waterproofing Association (LRWA) Note 7 – *Specifier Guidance for Flat Roof Falls*, the Certificate holder's instructions and the provisions of this Certificate.

13.2 Installation must not be carried out during inclement weather, e.g. rain, fog or snow.

13.3 Substrates to which the system is to be applied must be sound, clean, frost free and dry, and free from laitance, fatty/oily residues, contaminants and sharp projections such as nail heads and concrete nibs. Concrete surfaces must be prepared by scabbing or blast tracking methods and have a moisture content of no greater than 5%. The Certificate holder's advice must be sought for the suitability of the substrate to receive the system and for suitable cleaning procedures, including the use of a proprietary surface cleaner/HSE approved fungicidal wash, where required.

13.4 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.

13.5 Adhesion checks may be carried out to ensure that the system is compatible with the existing surfaces. The Certificate holder must be consulted for details of suitable test methods and requirements before use.

13.6 MasterTop P 622 and MasterTop P 684 must be applied to the prepared substrate at an ambient and substrate temperature between 8 and 30°C. MasterTop P 691 must be applied to the prepared substrate at an ambient and substrate temperature between 5 and 25°C. The primers are applied by brush or roller at a typical coverage rate (dependent on condition and porosity of the substrate) of:

- MasterTop P 622 — 300 to 500 g·m⁻²
- MasterTop P 684 — 40 to 60 g·m⁻²
- MasterTop P 691 — 50 to 100 g·m⁻².

13.7 On particularly porous concrete a second coat of primer MasterTop P 622 at a coverage rate of 200 to 400 g·m⁻² may be required to completely seal the surface.

13.8 The MasterSeal Roof 2689 membrane components must be applied to the primed substrate at an ambient temperature between 5 and 35°C, and the substrate must be at least 3°C above the dew point.

13.9 Detailing, such as at upstands, penetrations and joints, must be carried out in accordance with the Certificate holder's instructions.

13.10 Equipment should be cleaned with a suitable solvent such as a glycol-ether-based spray gun cleaner.

14 Procedure

14.1 MasterSeal Roof 2689 membrane is processed using a two-component high pressure spray machine, typically set at 75°C and pressure of 160 bar.

14.2 The resin component of MasterSeal Roof 2689 membrane must be thoroughly stirred or agitated prior to use.

14.3 A first pass is applied at a rate of 0.7 kg·m² to achieve a thickness of 0.7 mm.

14.4 Further layers are applied in a 'crisscross' application, 90° difference in direction of spray at a rate of 1 kg·m² to achieve an overall target thickness of 2.4 mm.

14.5 If work is interrupted for more than 4 hours, it is recommended to use MasterTop P 691. For extended periods of interruption, it is recommended to clean and degrease the old layer prior to the application of MasterTop P 691.

14.6 The applied layers must not be walked on within the first 10 minutes after application. Full cure is achieved after 48 hours.

14.7 The cured system must be overlaid with suitable finishes. The Certificate holder must be consulted for details of suitable specifications.

15 Repair

15.1 Any loose debris needs to be removed. Damaged membrane must be cut back to sound, well-adhered material, abraded with a slow-moving rotary disc at least 100 mm larger than the area which needs to be repaired.

15.2 The abraded surface is solvent wiped with xylene or acetone, which is allowed to fully evaporate.

15.3 The MasterSeal Roof 2689 Spray-Applied Waterproofing System is applied as described in sections 14.1 to 14.6, ensuring that there is at least a 100 mm overlap over the existing sound material.

15.4 A check for adequate adhesion must be carried out once the system has cured, taking care not to damage the repair.

Technical Investigations

16 Tests

Tests were conducted on the MasterSeal Roof 2689 Spray-Applied Roof Waterproofing System and the results assessed to determine:

- water vapour permeability/water vapour diffusion resistance coefficient (μ)
- tensile strength and elongation
- watertightness at a one metre head of water
- tensile bond strength
- resistance to fatigue
- crack bridging capability
- resistance to dynamic indentation
- resistance to static indentation
- resistance to low temperatures
- resistance to high temperatures
- effect of heat ageing
- effect of exposure to surface water at 60°C
- effect of short term exposure to UVA radiation
- root resistance.

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.

17.3 Data on root resistance were evaluated.

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 8579 : 2020 *Guide to the design of balconies and terraces*
- BS EN 1991-1-1 : 2002 *Eurocode 1 — Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*
- NA to BS EN 1991-1-1 : 2002 UK National Annex to *Eurocode 1 — Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*
- BS EN 1991-1-3 : 2003 + A1 : 2015 *Eurocode 1 — Actions on structures — General actions — Snow loads*
- NA + A2 : 18 to BS EN 1991-1-3 : 2003 + A1 : 2015 UK National Annex to *Eurocode 1 — Actions on structures — General actions — Snow loads*
- BS EN 1991-1-4 : 2005 + A1 : 2010 *Eurocode 1 — Actions on structures — General actions — Wind actions*
- NA to BS EN 1991-1-4 : 2005 + A1 : 2010 UK National Annex to *Eurocode 1 — Actions on structures — General actions — Wind actions*
- EN ISO 9001 : 2015 *Quality management systems — Requirements*
- ETAG 005 : March 2004 Part 1 *Guideline for European Technical Approval of Liquid Applied Roof Waterproofing Kits - General*
- ETAG 005 : March 2004 Part 6 *Guideline for European Technical Approval of Liquid Applied Roof Waterproofing Kits – Specific Stipulations for Kits Based on Polyurethane*

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 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.

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:

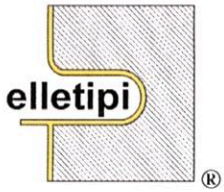
- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

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.



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Laboratorio Materiali da Costruzione autorizzato con Dec. n. 0000006 del 27/01/2015, art. 59 del D.P.R. 380/2001, Circolare Ministeriale 7617/STC
Laboratorio Geotecnico autorizzato con Dec. n. 6572 del 07/10/2014, art. 59 del D.P.R. 380/2001, Circolari Ministeriali 7618/STC
Organismo Notificato n° 1308 (DM 826149 del 22/03/2004 del Ministero delle Attività Produttive) rinnovata ai sensi della circ. 305/2011, DM 156/2003

CUSTOMER: BASF COATINGS GMBH
ADDRESS: Donnerschweer Str. 372 - 26123 Oldenburg

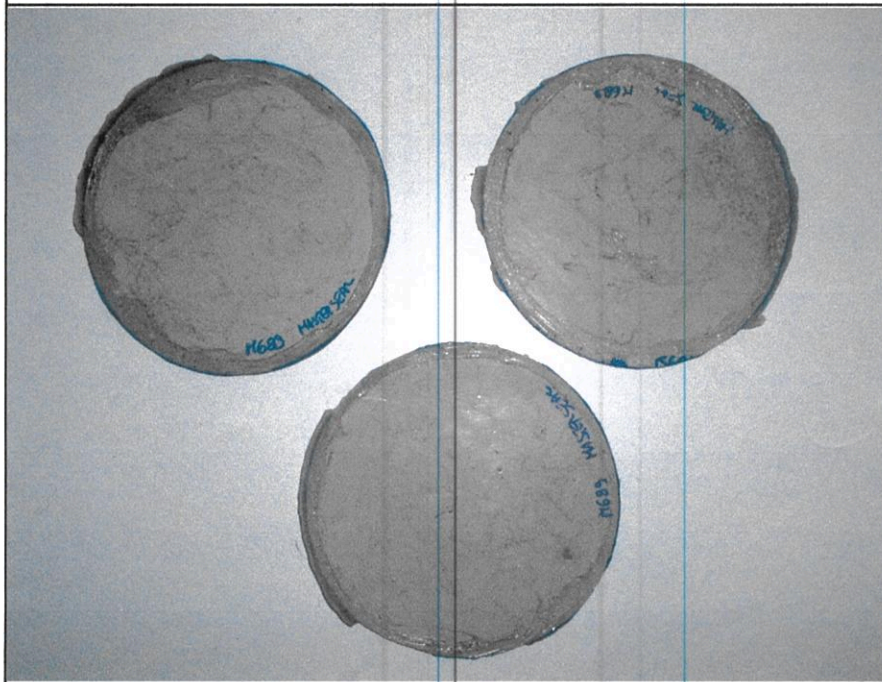
SAMPLE: MasterSeal M 689

WORK NUMBER: 15600/16

PROT. N. 36512/16 rev.0 of 22/11/16

TEST METHOD FOR DETERMINING THE RESISTANCE TO ROOTS - UNI CEN/TS 14416

Test N°	Test piece dimensions (mm)	Testing time (days)	Evaluation at the end of test
1	ø 220 x 4	42	The roots have not penetrated
2	ø 220 x 4	42	The roots have not penetrated
3	ø 220 x 4	42	The roots have not penetrated
4 - Control specimen in bitumen 85/40	ø 220 x 4	42	The roots have penetrated the bitumen



Specimen at the end of test

NOTE:

Test carried out on sample prepared by cutting from the mould .

Date of testing: 07/10/16 -18/11/16

Internal code equipments used: 115 - 311.

Il Direttore del laboratorio tecnologico

Paolo Bet

m_TEE250 (rev.0 del 05/14)

Lo sperimentatore

Dott. Alessandro Marchia

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Testing. Advising. Assuring.

Title:

CLASSIFICATION REPORT
FOR ROOFS/ROOF
COVERINGS EXPOSED TO
EXTERNAL FIRE
EN 13501-5: 2005 +A1:
2009

Notified Body No:

0833

Product Names:

"MasterSeal M 689"

Report No:

WF 347501

Issue No:

1

Prepared for:

BASF Construction
Chemicals Europe AG
Industriestrasse 26, 8207
Schaffhausen
Switzerland

Date:

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0249

1. Introduction

This classification report defines the classification assigned to “MasterSeal M 689”, a polyurea membrane roof coating system, which is fully described in paragraph 2.2, in accordance with the procedures given in EN 13501-5: 2005: + A1: 2009

2. Details of classified product

2.1 General

The product, “MasterSeal M 689”, a polyurea membrane roof coating system, is defined as being suitable for roof covering applications.

2.2 Product description

The product, “MasterSeal M 689”, a polyurea membrane roof coating system, is fully described below and in the test reports provided in support of classification listed in Clause 3.1.

General description		A polyurea membrane spray applied to a concrete deck used for roofing
Product reference of reinforced coating system		“MasterSeal M 689”
Overall thickness of composite		63mm (Stated by sponsor) 62.6mm (Determined by Exova Warringtonfire)
Final coating product (Test face)	Generic type	Polyurea
	Product reference	“MasterSeal M 689”
	Name of manufacturer	BASF
	Colour	Grey
	Number of coats	One
	Application rate per coat	2 mm
	Application method	Spray
Flame retardant details		See Note 1
First coating product	Generic type	Epoxy
	Product reference	“PR Epoxy standard cure”
	Name of manufacturer	PR Epoxy
	Colour	Clear
	Number of coats	Two (2 nd coat including broadcasted fire dried quartz)
	Application rate per coat	0.2-0.8 mm
	Application method	Roller
Flame retardant details		See Note 1
Quartz	Generic type	Fire dried quartz
	Product reference	See Note 2
	Name of manufacturer	See Note 2
	Colour	Yellow/Brown
	Diameter	0.3-0.8mm
	Application rate per coat	1 kg/m ²
	Application method	By hand
Flame retardant details		See Note 1

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Substrate	Product reference	See Note 2
	Generic type	Concrete
	Name of manufacturer	See Note 2
	Thickness	60 mm
	Density	See Note 2
	Flame retardant details	See Note 2
Brief description of manufacturing process of coatings	Resin blend is a mixture of various liquids and solid which are added by weight into a mixing vessel and mixed according to internal specification.	
Brief description of construction of specimens	<ul style="list-style-type: none"> • Concrete tiles were cleaned • 1st layer of primer (PR epoxy) was roll applied • This layer was left to cure for 6 hours • 2nd layer of primer (PR epoxy) was roll applied and quartz was broadcasted in before the primer was cured • This layer was left to cure overnight • Polyurea was spray applied 	

Note 1: The sponsor of the test has confirmed that no flame retardant additives were utilised in the manufacture of this component.

Note 2: the sponsor was unable to provide this information.

3. Test reports & test results in support of classification

3.1 Test reports

Name of Laboratory	Name of sponsor	Test reports/extended application report Nos.	Test method / extended application rules & date
Exova warringtonfire	BASF Construction Chemicals Europe AG	Additional Report WF 345655	ENV 1187:2002 Test 4

3.2 Test results

3.2.1 Test 4

Test pitch: 0 degrees

Substrate/Deck: 60mm concrete deck

Supporting structure: N/A

Preliminary test (Stage 1):

Parameter	Criteria	Test Results	Compliance
	Class B _{ROOF} (t4)	Specimen 1	Class B _{ROOF} (t4)
Burn time	<5min	NIL	Y
Flame spread distance	<0,38m	NIL	Y
Penetration	None	None	Y

Penetration test (Stage 2):

Parameter	Criteria	Test Results				Compliance
	Class B _{ROOF} (t4)	Specimen 1	Specimen 2	Specimen 3	Mean ^a	Class B _{ROOF} (t4)
Penetration time	≥60min	60min	60min	60min	60min	Y

^a If one or two of the specimens have not failed at one hour, a time of 60min shall be used in calculating the mean time of penetration.

4. Classification and field of application

4.1 Reference of classification

This classification has been carried out in accordance with EN 13501-5: 2005: + A1: 2009

4.2 Classification

The product, "MasterSeal M 689", a polyurea membrane roof coating system, in relation to its external fire performance is classified:

B_{ROOF} (t4)

4.3 Field of application

This classification is valid for the following conditions:

Range of pitches	0 - 10 degrees
Substrate/Deck	60mm concrete deck
Coating composition	No variation allowed
Coating application method	No variation allowed
Coating thickness	No variation allowed
Coating colour	No variation allowed
Supporting structure	N/A

5. Limitations

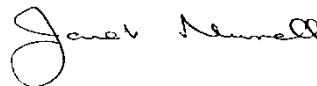
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SIGNED



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APPROVED



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Exova Warringtonfire

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