Alumasc Exterior Building Products Ltd
White House Works
Bold Road
Sutton
St Helens
Merseyside WA9 4JG
Tel: 01744 648400
e-mail: info@alumasc-exteriors.co.uk
website: www.alumascroofing.co.uk

Agrément Certificate
90/2431
Product Sheet 1

HYDROTECH MONOLITHIC MEMBRANES

HYDROTECH MONOLITHIC MEMBRANE 6125 ROOF WATERPROOFING SYSTEM

This Agrément Certificate Product Sheet[1] relates to the Hydrotech Monolithic Membrane 6125 Roof Waterproofing System, a protected waterproofing layer for use on flat and completely flat roofs, podiums, green roofs and roof gardens.

(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 — use of the system can enable a roof to be unrestricted under the Building Regulations (see section 7).

Resistance to wind uplift — 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, and the effects of thermal or other minor movement likely to occur in service (see section 9).

Resistance to penetration of roots — the system will resist the penetration of roots (see section 10).

Durability — under normal service conditions and when fully protected, the system will provide a durable roof waterproofing for the design life of the roof in which it is incorporated (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 Second issue: 10 March 2015

Originally certificated on 13 March 1990

Simon Wroe
Head of Approvals — Materials

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.

British Board of Agrément
Bucknalls Lane
Watford
Herts WD25 9BA
tel: 01923 665300
fax: 01923 665301
clientservices@bba.star.co.uk
www.bbacerts.co.uk

Regulations

In the opinion of the BBA, the Hydrotech Monolithic Membrane 6125 Roof 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(2)	External fire spread
Comment:		On flat roofs the system, when used with a suitable surface protection, will 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 structure to meet this Requirement. See section 6.1 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The system is acceptable. See section 12 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The use of the system satisfies the requirements of this Regulation. See sections 11 and 12 and the *Installation* part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.8	Spread from neighbouring buildings
Comment:		On flat roofs the system, when used with suitable protection, can be regarded as having low vulnerability and will enable a roof to be unrestricted, with reference to 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 6.1 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 made 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

Regulation:	23(a)(b)(i)	Fitness of materials and workmanship
Comment:		The system is acceptable. See section 12 and the *Installation* part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The system will enable a roof to meet the requirements of this Regulation. See section 6.1 of this Certificate.
Regulation:	36(b)	External fire spread
Comment:		On flat roofs the system, when used with a suitable surface protection, will enable a roof to be unrestricted under this Requirement. See sections 7.1 to 7.3 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors 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 2014

NHBC accepts the use of the Hydrotech Monolithic Membrane 6125 Roof Waterproofing System, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Part 7 *Roofs*, Chapter 7.1 *Flat roofs and balconies*.

Technical Specification

1 Description

1.1 The Hydrotech Monolithic Membrane 6125 Roof Waterproofing System is a hot-applied, polymer-modified, rubberised bitumen-based membrane used with a range of reinforcement membranes and protection sheets to form a waterproofing layer for flat, and completely flat, roofs, podiums, green roofs and roof gardens. The system is applied in two layers to provide a coating with a nominal thickness of 6 mm.

1.2 Reinforcement membranes and protection sheets available for use with the system, and included in the assessment, are:

- Flex Flash F — a spunbond polyester fabric reinforcement sheet
- Flex Flash UN — an uncured neoprene rubber reinforcement sheet
- Hydrogard 10 — a lightweight oxidised-bitumen glassfibre-reinforced protection sheet
- Hydrogard 20 — a polyester-reinforced modified-bitumen protection sheet
- Hydrogard 30 — a heavy-duty dual-reinforced modified-bitumen protection sheet
- Hydrogard 40-AR — a root-resistant polyester-reinforced modified-bitumen protection sheet, incorporating root repellent
- Hydrogard 50 — a dual glass/polyester-reinforced, APP-modified bitumen heavy-duty protection sheet
- Alumasc Bitumen Primer — a cold, spray-applied bituminous primer for use on horizontal, vertical and sloping surfaces. The coating can also be applied by brush or roller at a rate of from 8 m^2 per litre to 16 m^2 per litre.

2 Manufacture

2.1 The membrane is manufactured by heating and blending bitumen, process oils, fillers (including inert clay) and other additives in a temperature-controlled cycle. After blending, the mix is held in a temperature-controlled tank until it is packaged. The reinforcement sheets are purchased to a specification.

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 membrane is manufactured in Canada by the Hydrotech Membrane Corporation and marketed in the UK by the Certificate holder.

3 Delivery and site handling

3.1 The system membrane is supplied in the form of solid 18 kg blocks, wrapped in polythene film and in cardboard boxes bearing the product description, the BBA logo and the production batch number. The membrane must be stored under cover, away from heat sources.

3.2 Reinforcement and protection sheets are packaged in rolls with labels bearing the product trade name. They should be stored under cover and kept dry.

3.3 Alumasc Bitumen Primer is delivered to site in 25 litre cans. The product has a flashpoint of 38°C and is classified as 'flammable' and 'harmful' under *The Chemicals (Hazard Information and Packaging for Supply Regulations 2009* (CHIP4) */Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) 2009*. The product should be stored in accordance with the *Dangerous Substances and Explosives Atmospheres Regulations (2002)*.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Hydrotech Monolithic Membrane 6125 Roof Waterproofing System.

Design Considerations

4 Use

4.1 The Hydrotech Monolithic Membrane 6125 Roof Waterproofing System is satisfactory for use as a protected waterproofing layer on flat roofs (including zero-pitch) and podiums with limited access in:

- inverted roof specifications
- protected roof specifications, eg covered by pavers or other suitable protection, or
- green roof and roof garden specifications.

4.2 Limited access roofs are defined for the purpose of this Certificate as those roofs subjected only to pedestrian traffic for such duties as maintenance of the roof covering and cleaning of gutters. Where traffic in excess of this is envisaged, special precautions such as additional protection to the membrane must be taken.

4.3 For the purposes of this Certificate, flat roofs are defined as those having a minimum finished fall of 1:80, completely flat roofs as those having a finished fall of less than 1:80 and pitched roofs as those having falls in excess of 1:6.

4.4 When designing flat roofs, twice the minimum finished fall should be assumed unless a detailed analysis of the roof is available, including such information as overall and local deflection, and direction of falls.

4.5 Precast concrete, concrete block and timber decks to which the system is to be applied must comply with the relevant requirements of BS 6229 : 2003 and, where appropriate, *NHBC Standards* 2014, Chapter 7.1.

4.6 Structural decks to which the system is to be applied must be suitable to transmit the dead and imposed loads experienced in service. Dead loads, wind loading and imposed loads are calculated in accordance with BS EN 1991-1-1 : 2002, BS EN 1991-1-3 : 2003, BS EN 1991-1-4 : 2005 and their respective UK National Annexes.

4.7 The system is not suitable for direct application to metal decking, which must be overlaid with a suitable flat deck of exterior grade plywood or calcium silicate board.

4.8 Insulation materials used in conjunction with the system must be:

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

4.9 In the event of contamination of the system by chemicals, oils or grease, the advice of the Certificate holder must be sought.

4.10 The drainage system for completely flat green roofs or roof gardens must be correctly designed, and provision made for access for maintenance purposes. Dead loads for green roofs and roof gardens can increase if the drains become partially or completely blocked causing waterlogging of the drainage layer.

4.11 In inverted roof specifications the ballast requirements should be calculated in accordance with the relevant parts of BS EN 1991-1-4 : 2005 and its UK National Annex. Additional guidance for inverted roof specifications is given in BBA Information Bulletin No 4 *Inverted roofs — Drainage and U value corrections*.

5 Practicability of installation

The system should only be installed by contractors who have been trained and approved by the Certificate holder, from whom details can be obtained.

6 Weathertightness

6.1 Results of tests confirm that the system will adequately resist the passage of moisture into a structure and enable it to satisfy the following requirements of the National Building Regulations:

England and Wales — Approved document C, Requirement C2(b), section 6

Scotland — Mandatory Standard 3.10, clauses 3.10.1[(1)(2)] to 3.10.7[(1)(2)]

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland — Regulation 28(b).

6.2 The system is impervious to water and will act as a waterproof layer capable of accepting minor structural movement without damage.

7 Properties in relation to fire

7.1 The membranes, when used in protected or inverted roof specifications including an inorganic covering listed in the Annex of Commission Decision 2000/553/EC, can be considered to be unrestricted under the national Requirements.

7.2 In the opinion of the BBA, when used in irrigated roof gardens or green roofs, the system will be unrestricted under the national Requirements.

7.3 The designation of other specifications (eg on combustible substrates) should be confirmed by:

England and Wales — test or assessment in accordance with Approved Document B, Appendix A, clause A1

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, BRE or an independent consultant with appropriate experience.

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

8 Resistance to wind uplift

8.1 The system will resist the effects of wind uplift likely to occur in practice.

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

9 Resistance to mechanical damage

9.1 The system can accept the foot traffic and light concentrated loads associated with installation and maintenance. Reasonable care must 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, a walkway should be provided, for example using concrete slabs supported on bearing pads.

9.2 When used over construction and expansion joints, the system can accommodate the minor structural movement likely to occur in service.

10 Resistance to root penetration

The system, when used with the Hydrogard 40-AR root-resistant polyester-reinforced modified-bitumen protection sheet incorporating root repellent, has been assessed by the BBA as suitable for use as a root-resistant system.

11 Maintenance

11.1 Roofs must be the subject of regular inspections, particularly in autumn after leaf fall and in spring to ensure that unwanted vegetation and other debris are cleared from the roof and drainage outlets (see section 4.6). Guidance is available within the latest edition of *Guidelines to Green Roofing*, published by The Green Roof Organisation (GRO).

11.2 It is imperative that the drainage system of a green roof or roof garden is designed correctly, and provision is made for access for maintenance purposes. Inspection of the drains must be carried out at regular intervals to avoid waterlogging of the garden and the subsequent increase in dead weight load.

12 Durability

12.1 The system has been in use in Canada since 1963, and in the UK since 1988. In the opinion of the BBA, when fully protected and subject to normal service conditions, the system will provide an effective barrier to the transmission of moisture for the design life of the roof in which it is incorporated.

12.2 In situations where maintenance or repair of any of the components in the roof structure is necessary (eg the protection layer or insulation), the waterproof integrity of the membrane may be reduced. In these circumstances, the Certificate holder should be consulted.

12.3 An estimate cannot be given for the life of green roof and roof garden specifications owing to the nature of use. However, under normal circumstances, it should be significantly greater than for open coverings.

Installation

13 General

13.1 The Hydrotech Monolithic Membrane 6125 Roof Waterproofing System must be installed in accordance with the Certificate holder's instructions and this Certificate, on a dry and frost-free substrate. After rain or snow, the substrate must be allowed to dry before installation can commence. The installer can aid drying by any suitable means approved by the Certificate holder. Once applied, the membrane is not affected by rain, snow or frost.

13.2 To assess the suitability of a substrate to receive the membrane, bond tests must be carried out to ensure adequate adhesion can be achieved. If bonding problems occur, advice must be sought from the Certificate holder.

13.3 The substrate should be conditioned with Alumasc Bitumen Primer or other Alumasc approved bitumen conditioner and allowed to dry before application of the system.

13.4 Prior to application of the system, defects in the substrate such as cracks, irregularities and other areas of potential weakness must be repaired using an approved repair mortar, and the substrate cleaned in accordance with the Certificate holder's instructions. Additional membrane may be used to fill minor depressions in the substrate.

13.5 The system must be covered by a protective layer immediately after installation, in accordance with the Certificate holder's instructions.

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

13.7 Soil or other bulk material must not be stored on one area of the roof prior to installation, to ensure that localised overloading does not occur.

14 Procedure

14.1 Blocks of the membrane are heated in a mechanically-agitated melter which has a double jacket containing either air or a heat-transfer oil and is fitted with thermometers to measure the melt and/or oil temperatures.

14.2 The nominal temperature range for the molten membrane is from 180°C to 190°C. The temperature of the melt must never exceed 205°C.

14.3 The molten membrane is discharged from the melter into a suitable container and applied to the surface using three passes of a long handled squeegee for horizontal surfaces and a suitable spreader for vertical surfaces.

14.4 When used over construction joints or other minor cracks, the membrane must be reinforced with Flex-Flash UN. The Certificate holder must be consulted for suitable details at expansion joints.

14.5 The first layer of molten membrane should have a nominal thickness of 3 mm.

14.6 Flex-Flash F polyester reinforcing sheet is embedded by lightly brushing it into the first layer of the membrane while still warm and tacky. The reinforcement overlaps must be at least 75 mm and fully sealed by the membrane.

14.7 The second layer of the membrane, applied over the top of the reinforcement, must have a nominal thickness of 3 mm.

14.8 The membrane must be protected immediately with the specified protection sheet in accordance with the Certificate holder's instructions.

14.9 The completed membrane must be electronically tested for damage (and repaired where necessary) prior to the application of the covering layers.

15 Repair

Any damage to the system must be repaired as soon as possible and before being confined within the structure. The membrane is repaired by removing the damaged area and reinstating to the original specification. The advice of the Certificate holder should be sought.

Technical Investigations

16 Tests

Tests were conducted on samples of the system components and the results assessed to determine:

- unreinforced membrane
  - fines content
  - elastic recovery (aged and unaged)
  - oil loss
  - water absorption
  - static indentation
  - dynamic indentation
  - flow
  - imposed load resistance
  - ring and ball softening point
  - viscosity (unaged and heat aged)
- reinforcement
  - thickness
  - mass per unit area
  - tensile strength and elongation
- reinforced membrane
  - mass per unit area
  - dimensional stability
  - low temperature flexibility
  - water vapour permeability
  - water vapour resistance
  - resistance to cracking
  - resistance to cyclic movement (aged and unaged)
  - static indentation
  - dynamic indentation
  - peel strength
  - slide 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 Visits were made to sites to assess the practicability of installation.

Bibliography

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

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

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 *Eurocode 1: Actions on structures — General actions — Snow loads*
NA to BS EN 1991-1-3 : 2003 UK National Annex to *Eurocode 1: Actions on structures — General actions — Snow loads*

BS EN 1991-1-4 : 2005 *Eurocode 1: Actions on structures — General actions — Wind actions*
NA to BS EN 1991-1-4 : 2005 UK National Annex to *Eurocode 1: Actions on structures — General actions — Wind actions*

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.

British Board of Agrément
Bucknalls Lane
Watford
Herts WD25 9BA

tel: 01923 665300
fax: 01923 665301
clientservices@bba.star.co.uk
www.bbacerts.co.uk