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Agrément Certificate

06/4350

Product Sheet 3

BAKOR HOT-APPLIED MONOLITHIC STRUCTURAL WATERPROOFING SYSTEM

BAKOR 790-11EV HOT-APPLIED MONOLITHIC MEMBRANE DAMP-PROOFING SYSTEM

This Agrément Certificate Product Sheet⁽¹⁾ relates to the Bakor 790-11EV Hot-Applied Monolithic Membrane Damp-Proofing System, a modified bitumen-based waterproofing system for use in forming a sandwich membrane on new or existing horizontal and vertical surfaces for above-ground and basement waterproofing, or to form a damp-proof membrane (dpm) for solid floors.

(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

Resistance to water and water vapour — the system will resist the passage of moisture into the building (see section 6).

Resistance to mechanical damage — the system will accept, without damage, the limited foot traffic and loads associated with installation (see section 7).

Durability — under normal service conditions, the system will remain waterproof for the design life of the structure in which it is incorporated (see section 11).

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

John Albon – Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

Date of Third issue: 15 November 2018

Originally certificated on 28 July 2006

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.
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 Bakor 790-11EV Hot-Applied Monolithic Membrane Damp-Proofing 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:	C2(b)	Resistance to moisture
Comment:		The system will enable a structure to satisfy this Requirement. See section 6 of this Certificate.
Regulation:	7	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)	Durability, workmanship and fitness of materials
Comment:		Use of the system satisfies the requirements of this Regulation. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	3.4	Moisture from the ground
Comment:		The system will enable a structure to satisfy the requirements of this Standard, with reference to clauses 3.4.2 ⁽¹⁾⁽²⁾ and 3.4.7 ⁽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 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 (as amended)

Regulation:	23(a)(b)(i)	Fitness of materials and workmanship
Comment:		The system is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	28(a)	Resistance to ground moisture and weather
Comment:		The system will enable a structure to satisfy the requirements of this Regulation. See section 6 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* (3.1 and 3.3) and 11 *Procedure* (11.1) of this Certificate.

Additional Information

NHBC Standards 2018

In the opinion of the BBA, the Bakor 790-11EV Hot-Applied Monolithic Damp-Proofing 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 5.1 *Substructure and ground bearing floors*, Clause 5.1.20 *Damp-proofing concrete floors for use below the slab*, and 5.4 *Waterproofing of basements and other below ground structures*.

Where Grade 3 protection is required and the below ground wall retains more than 600 mm measured from the top of the retained ground to the lowest finished floor level, the system must be used in combination with either Type B or C waterproofing protection.

Technical Specification

1 Description

1.1 The Bakor 790-11EV Hot-Applied Monolithic Membrane Damp-Proofing System is applied in two layers sandwiching a reinforcement layer, to provide a waterproofing layer with a nominal coating thickness of 6 mm. The system consists of:

- Bakor 790-11EV Hot-Applied Monolithic Membrane — a formulated waterproofing membrane based on a combination of refined bitumen, synthetic rubbers, 25% recycled rubber content and other additives
- Bauder Polyester Reinforcement Sheet — a 60 g·m⁻² spunbonded polyester reinforcing scrim
- Bauder Butyl Flashing — 1 mm thick, flexible detailing sheet, used to reinforce the membrane at expansion joints where movement is likely to occur, and for details and upstands
- Bauder Neoprene Flashing — 1 mm thick, flexible detailing sheet, used to reinforce the membrane at expansion joints where movement is likely to occur, and for details and upstands
- Bauder AP2 Protection Sheet — polyester-based, mineral-surfaced, root-resistant bitumen protection sheet
- Bauder AP3 Protection Sheet — high-density, polymeric protection sheet
- Bauder Quick Dry Bitumen Primer — for surface preparation
- Bauder Polymer Primer — for surface preparation
- Bauder K4E Protection Sheet — polyester-based, mineral surfaced, bitumen protection sheet for exposed detailing (subject to BBA Certificate 10/4744 Product Sheet 3)
- Bauder K5E Protection Sheet — polyester-based, mica-surfaced, bitumen heavy duty protection sheet for use under hard landscaping (subject to BBA Certificate 10/4744 Product Sheet 1).

1.2 Other items or components which may be used with the system, but which are out of the scope of this Certificate, are:

- AP1 Access Sheet — a reinforced, modified bitumen
- Bauder G4E Sheet — a torch-applied detailing base sheet (the subject of BBA Certificate 10/4744, Product Sheet 1)
- Bauder X4S Protection Sheet — polyester based mica-surfaced, bitumen protection sheet for use under hard landscaping
- Bauder TEC KSA Duo Underlay — a self-adhesive detailing base sheet (the subject of BBA Certificate 10/4744, Product Sheet 1)
- Inverted Roof Insulation Board — an insulation board used in combination with a water control layer in inverted/protected roofs including intensive green roofs
- Upstand Insulation Board — an insulation board with a weather-resistant facing board, used for upstand detailing
- Bauder Mineral Drain — for use in roof garden applications
- Bauder Drainage, Protection, Moisture Retention Layers and Ancillaries — for use in roof garden and hard landscaping applications.

2 Manufacture

2.1 The bituminous component of the Bakor 790-11EV Hot-Applied Monolithic Membrane Damp-Proofing System is manufactured by heating and blending together the raw materials.

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 system components are manufactured in Canada and marketed in the UK by the Certificate holder.

3 Delivery and site handling

3.1 Bakor 790-11EV Monolithic Membrane is delivered to site in 22.6 kg recyclable cardboard boxes which are lined with a polythene film. The boxes bear the product name, the manufacturer's name and the BBA logo incorporating the number of this Certificate.

3.2 Reinforcing and protection layers are packaged with labels bearing the Bauder trade name and should be stored under cover and kept dry.

3.3 The Certificate holder has taken responsibility of classifying and labelling the system components under the *CLP Regulations (EC) No 12721/2008 on the classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Datasheet(s).

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Bakor 790-11EV Hot-Applied Monolithic Membrane Damp-Proofing System.

Design Considerations

4 Use

4.1 The Bakor 790-11EV Hot-Applied Monolithic Membrane Damp-Proofing System is satisfactory for use as a sandwich membrane, on new or existing horizontal and vertical surfaces, for above and below ground waterproofing within a structure of concrete, brickwork, blockwork or masonry (Type A waterproofing as defined in BS 8102 : 2009), or as a dpm for solid floors in accordance with the relevant clauses of CP 102 : 1973, Section 3.

4.2 The system can be used to provide an effective barrier to the transmission of liquid water where Grades 1 to 3 waterproofing protection is required, as defined in Table 2 of BS 8102 : 2009.

4.3 Where Grade 3 waterproofing protection is required, the environment must also be controlled by the use of ventilation, dehumidification and/or air conditioning, as appropriate, to ensure dampness does not occur. See also the *Additional Information* part of this Certificate relating to *NHBC Standards*.

4.4 The membrane is compatible with the substrate and is resistant to the chemicals likely to occur in normal practice.

4.5 Where contact with material used as a damp-proof course is likely, consideration must be given to the thermal stability of that material, owing to the high temperatures reached during installation.

5 Practicability of installation

The system should only be installed by trained contractors using specialist equipment. Details of these are available from the Certificate holder.

6 Resistance to water and water vapour



6.1 The system will adequately resist the passage of moisture into the structure and so satisfy or comply with the relevant requirements of the national Building Regulations.

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

7 Resistance to mechanical damage

7.1 The system can accept, without damage, the limited foot traffic and light concentrated loads associated with installation. Reasonable care is required, however, to avoid puncture by sharp objects or concentrated loads.

7.2 Whilst the membrane can withstand distributed loads, it can be damaged by concentrated point loads and these should be avoided.

7.3 When used over construction or bridging joints the membrane can accommodate the minor structural movement likely to occur under normal service conditions without damage.

8 Adhesion

The adhesion of the membrane to the substrate is satisfactory.

9 Effects of temperature

Providing the substrate is dry and frost free, the membrane can be installed down to the lowest possible site working temperatures found in the UK.

10 Maintenance

As the system is confined within the structure and has satisfactory durability (see section 11), maintenance is not required. However, it must be ensured that any damage occurring before enclosure is repaired (see section 14).

11 Durability



The Bakor 790-11EV Hot-Applied Monolithic Membrane Damp-Proofing System will provide an effective barrier to the transmission of moisture for the design life of the structure in which it is incorporated.

Installation

12 General

12.1 The Bakor 790-11EV Hot-Applied Monolithic Membrane Damp-Proofing System must be installed in accordance with the relevant requirements of CP 102 : 1973, BS 8102 : 2009 and the Certificate holder's instructions.

12.2 Concrete or screeded surfaces should have a smooth finish, free from loosely adhering material and sharp protrusions. Concrete should be dry and dust free. Surfaces must be conditioned with either Bauder Quick Dry Bitumen Primer or Bauder Polymer Primer, at a nominal coverage rate of between 4 and 8 m² per litre, and allowed to dry before the application of the membrane.

12.3 Vertical surfaces of brickwork, blockwork and, if necessary, masonry should be rendered to give an even surface. Brickwork or blockwork not rendered must be flush pointed to give a smooth surface without sudden changes in level.

12.4 The membrane must be covered with a protection layer, in accordance with the Certificate holder's instructions, immediately after installation.

13 Procedure

13.1 Cakes of Bakor 790-11EV Monolithic Membrane are heated in a mechanically agitated melter which has a double jacket containing either air or a heat transfer mineral oil, and is fitted with thermometers to measure the melt and air/oil temperatures.

13.2 The nominal temperature range for the molten membrane is 180 to 200°C. The temperature of the melt must never exceed 215°C.

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

13.4 When used over construction joints or other minor cracks the membrane must be reinforced with Bauder Polyester Reinforcement Sheet.

13.5 When used across expansion joints, the membrane must be reinforced with Bauder Butyl or Neoprene Flashing.

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

13.7 Bauder Polyester Reinforcement Sheet is embedded by lightly brushing it into the first layer of the membrane whilst it is still warm and tacky. The reinforcement overlaps should be at least 75 mm and fully sealed by the Bakor 790-11EV Monolithic Membrane.

13.8 The second layer of the molten membrane, applied over the top of the reinforcement, should have a nominal thickness of 3 mm.

13.9 The membrane must be protected immediately with either a specified access or protection sheet in accordance with the Certificate holder's instructions.

13.10 When used for internal tanking, the membrane should be loaded against back pressure in accordance with BS 8102 : 2009.

14 Repair

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

Technical Investigations

15 Tests

Tests were conducted on samples of the Bakor 790-11EV Monolithic Membrane, reinforcement, flashing and protection, and the results assessed. Characteristic and performance tests on the components, membrane and system included:

- thickness
- mass per unit area
- tensile strength and elongation
- fines content
- penetration
- flow
- low temperature flexibility
- water vapour permeability
- head of water

- dynamic indentation
- static indentation
- fatigue cycling
- effects of long-term heat ageing
- effects of long-term water exposure.

16 Investigations

The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

Bibliography

BS 8102 : 2009 *Code of practice for protection of below ground structures against water from the ground*

CP 102 : 1973 *Code of practice for protection of buildings against water from the ground*

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.