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Agrément Certificate

06/4350

Product Sheet 1

BAKOR HOT-APPLIED MONOLITHIC STRUCTURAL WATERPROOFING SYSTEM

BAKOR 790-11EV HOT-APPLIED MONOLITHIC MEMBRANE ROOFING SYSTEM

This Agrément Certificate Product Sheet⁽¹⁾ relates to the Bakor 790-11EV Hot-Applied Monolithic Membrane Roofing System, a modified bitumen-based waterproofing system for use on flat roofs, zero fall roofs, inverted roofs, green roofs, roof gardens, blue roof specifications in combination with a stormwater attenuation system⁽²⁾, and other protected roofs with limited access.

(1) Hereinafter referred to as 'Certificate'.

(2) The stormwater attenuation system is outside the scope of this Certificate.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

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

Properties in relation to fire — the use of the system can enable a roof to be unrestricted under the national 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, without damage, the limited foot traffic and loads associated with installation and maintenance, and the effects of thermal or other minor movements likely to occur in practice (see section 9).

Resistance to penetration by roots — the system will resist root penetration from green roof and roof garden systems (see section 10).

Durability — under normal service conditions, the system will remain waterproof 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 Third issue: 15 November 2018

John Albon – Head of Approvals
Construction Products

Originally certificated on 28 July 2006

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.*

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

British Board of Agrément

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Regulations

In the opinion of the BBA, the Bakor 790-11EV Hot-Applied Monolithic Membrane Roofing 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 suitable surface protection, can enable a roof to be unrestricted under this Requirement. See sections 7.1 to 7.3 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The system will enable a roof to satisfy this Requirement. See section 6 of this Certificate.
Regulation:	7	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:		Use of the system satisfies the requirements of this Regulation. See sections 11 and 12 and the <i>Installation</i> 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 surface protection, can be regarded as having low vulnerability and can enable a roof to be unrestricted under clause 2.8.1 ⁽¹⁾⁽²⁾ of this Standard. See sections 7.1 to 7.3 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The system will enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.7 ⁽¹⁾⁽²⁾ . See section 6 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The system can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	12	Building standards applicable to conversions
Comment:		Comments 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 12 and the <i>Installation</i> part of this Certificate.
Regulation:	C4(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:		On flat roofs, the system, when used with suitable surface protection, will enable a roof to be unrestricted under the requirements of this Regulation. See sections 7.1 to 7.3 of this Certificate.

Construction (Design and Management) Regulations 2015 Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 3 *Delivery and site handling* (3.1 and 3.3) and 14 *Procedure* (14.1) of this Certificate.

Additional Information

NHBC Standards 2018

In the opinion of the BBA, the Bakor 790-11EV Hot-Applied Monolithic Membrane Roofing 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 and balconies*.

Technical Specification

1 Description

1.1 The Bakor 790-11EV Hot-Applied Monolithic Membrane Roofing 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 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:

- Bauder Multi-Purpose Primer — a membrane detailing primer
- AP1 Access Sheet — a reinforced, modified bitumen
- Bauder X4S Protection Sheet — a polyester based mica-surfaced, bitumen protection sheet for use under hard landscaping
- Bauder G4E Sheet — a torch-applied detailing base sheet (the subject of BBA Certificate 10/4744, Product Sheet 1)
- Bauder EGV 3.5 Underlay — a torch-applied detailing base sheet (the subject of BBA Certificate 10/4744, Product Sheet 3)
- Bauder TEC KSA Duo Underlay — self-adhesive detailing base sheet (the subject of BBA Certificate 10/4744, Product Sheet 1)

- Bauder TEC Sprint Duo Underlay — self-adhesive detailing base sheet (the subject of BBA Certificate 10/4744, Product Sheet 3)
- BauderTEC KSO-PSN & KSO-SN Cap Sheet — a self-adhesive cap sheet
- Inverted Roof Insulation Board — an insulation board used in combination with a water control layer in inverted/protected roofs including intensive, green roofs and biodiverse living roofs
- Upstand Insulation Board — an insulation board with a weather-resistant facing board, used for upstand detailing
- Bauder Growing Medium and Mineral Drain — for use in roof garden, extensive and biodiverse living roof applications
- Bauder Vegetation — for use in roof garden, extensive and biodiverse living roof applications
- Bauder Drainage, Protection, Moisture Retention Layers and Ancillaries — for use in roof garden, extensive and biodiverse living roof applications
- Bauder Hot Melt Compact Vertical Outlets — for use with the Bakor 790-11 Waterproofing System
- Bauder Hot Melt Blue Roof Vertical Outlets, Flow Restrictors and Attenuation Cells — for use with the Bakor 790-11 Blue Roof Waterproofing System
- Proprietary expansion joint systems.

2 Manufacture

2.1 The bituminous component of the Bakor 790-11EV Hot-Applied Monolithic Membrane Roofing 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.

3 Delivery and site handling

3.1 Bakor 790-11EV Monolithic Membrane is delivered to site in 22.6 kg boxes recyclable cardboard 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 the responsibility of classifying and labelling the system components under the *CLP Regulations (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 Bakor 790-11EV Hot-Applied Monolithic Membrane Roofing System.

4 Use

4.1 The Bakor 790-11EV Hot-Applied Monolithic Membrane Roofing System is satisfactory for use as a waterproofing layer on flat (including zero fall) roofs with limited or pedestrian access in:

- inverted roof specifications using aggregate ballast and paving on flat roofs, including zero fall roofs with limited access
- protected roof specifications, eg covered by pavers or other suitable protection on flat roofs, including zero fall roofs
- green roof (extensive and biodiverse living roof) specifications on flat roofs, including zero fall roofs with limited access or pitched roofs with limited access, and roof garden (intensive) specifications
- blue roof specifications in combination with a stormwater attenuation system⁽¹⁾, including zero fall roofs.

(1) The stormwater attenuation system is outside the scope of this Certificate.

4.2 The system is suitable for use on precast concrete, concrete block and timber substrates. The substrates must comply with the relevant requirements of BS 6229 : 2003 and where appropriate, *NHBC Standards* 2018, Chapter 7.1.

4.3 Limited access roofs are defined for the purpose of this Certificate as those subjected only to pedestrian traffic for maintenance of the roof covering and cleaning of gutters, etc. Where traffic in excess of this is envisaged, additional protection to the membrane must be provided (see section 9).

4.4 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80. For design purposes, twice the minimum finished fall should be assumed, unless a detailed analysis of the roof is available, including overall and local deflection and direction of falls, etc. Pitched roofs are defined for the purpose of this Certificate as those having a fall greater than 1:6. Zero fall roofs (also known as completely flat) are defined for the purpose of this Certificate as those having a finished fall which can vary between 0 and 0.7°. Reference should also be made to the appropriate clauses in Liquid Roofing and Waterproofing Association (LRWA) Note 7 – *Specifier Guidance for Flat Roofs*.

4.5 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 wild flower species.
- biodiverse living roof — a roof with a growing medium selected to allow indigenous plant species to inhabit the roof over time.

4.6 Blue roofs are defined for the purpose of this Certificate as flat roofs designed to allow controlled attenuation of rain fall during heavy and storm events, as part of sustainable urban drainage systems (SUDS). Guidance for the design and construction of blue roofs is available in the NFRC Technical Guidance Note for the construction and design of Blue Roofs.

4.7 Decks to which the system is to be applied must comply with the relevant requirements of BS 6229 : 2003, BS 8217 : 2005 and, where appropriate, *NHBC Standards* 2018, Chapters 7.1 *Flat roofs and balconies*. Additional guidance for inverted roof specifications is given in BBA Information Bulletin No 4 *Inverted roofs — Drainage and U value corrections*.

4.8 Insulation materials used in conjunction with the system must be suitable for use within inverted roofs, the subject of a current BBA Certificate and used in accordance with, and within the scope of, that Certificate, and used in accordance with the manufacturer's instructions.

4.9 For green roofs, roof gardens and inverted roofs, structural decks to which the system is to be applied must be suitable to transmit the dead and imposed loads experienced in service. Imposed loads, dead loading and wind 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 UK National Annexes.

4.10 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*.

4.11 The drainage system 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.

4.12 For zero fall roofs, it is particularly important to identify the correct drainage points, to ensure that drainage is sufficient and effective. Reference should be made to the appropriate clauses of the LRWA Guidance Note 7 and BBA Information Bulletin No.4 *Inverted Roofs - Drainage and U Value corrections*.

4.13 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.

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 Weathertightness



6.1 The system 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 system is impervious to water and, when used in the systems described, will give a weathertight roofing capable of accepting minor structural movements without damage.

7 Properties in relation to fire



7.1 The system, 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 Building Regulations.

7.2 In the opinion of the BBA, the use of the system in irrigated green roofs, biodiverse living roofs or roof gardens will be unrestricted under the national Building Regulations.

7.3 The membrane must always be used under a protective surface. The fire rating of the roof is dependent on the finish and the insulation used, the designation of which should be confirmed by:

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

Scotland — test to confirm to Mandatory Standard 2.8, clause 2.8.1

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

7.4 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 Resistance to wind uplift

8.1 The system will resist the effects of wind suction likely to occur in service.

8.2 The growing medium used in roof gardens and ballast on inverted/protected roofs must not be of a type that will be removed or become delocalised owing to wind scour experienced on the roof.

8.3 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. Reasonable care should be taken to avoid puncture by sharp objects or concentrated loads.

9.2 When used over construction or expansion joints, the system can accommodate, without damage, the minor structural movement likely to occur under normal service conditions.

10 Resistance to penetration by roots

10.1 Bauder AP2 Protection Sheets are suitable for use as root-resistant membrane and, when used with the Bakor 790-11EV System in roof garden, green roof and biodiverse living roof applications, will provide adequate protection from penetration by roots.

10.2 Advice on suitable planting specifications can be obtained from the Certificate holder.

11 Maintenance



11.1 Maintenance should include checks and operations to ensure that, where applicable:

- adequate ballast is in place and evenly distributed over the membrane
- protection layers are in good condition
- any exposed membrane is free from the build-up of silt, and other debris and unwanted vegetation is cleared.

11.2 Guidance is available within the latest edition of *The GRO Green Roof Code – Green Roof Code of Best Practice for the UK*.

12 Durability



The Bakor 790-11EV Hot-Applied Monolithic Membrane Roofing System will 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.

Installation

13 General

13.1 The Bakor 790-11EV Hot-Applied Monolithic Membrane Roofing System must be installed in accordance with the Certificate holder's instructions, on a dry and frost-free substrate. After rain or snow, the substrate must be allowed to dry before installation can commence. The installing contractor can aid drying by 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. If bonding problems occur, advice should be sought from the Certificate holder.

13.3 Prior to the application of the membrane, defects in the substrate such as cracks, irregularities and other areas of potential weakness must be repaired using an approved repair product, and the substrate cleaned in accordance with the Certificate holder's instructions. Any gaps, irregularities and areas of potential weakness may be filled with latex modified repair mortar. The membrane may be used to fill minor depressions in the substrate.

13.4 The substrate should be primed with either Bauder Quick Dry Bitumen Primer or Bauder Polymer Primer and allowed to dry before the application of the membrane. Coverage will vary depending on the porosity of the substrate, but should be between 4 and 8 m² per litre depending on which primer is used.

13.5 Bakor 790-11EV Monolithic Membrane will adhere to structural concrete, pre-cast concrete, concrete blocks, lightweight structural concrete (subject to the Certificate holder's recommendations), metal, plywood and timber details. Metal should be free from oil, rust, paint or other coatings liable to affect the bond.

13.6 The membrane is covered with an access or protective layer immediately after installation, in accordance with the Certificate holder's instructions.

13.7 Detailing must be formed in accordance with the Certificate holder's instruction.

13.8 The growing medium or other bulk material should not be stored on one area of the roof prior to installation, to ensure that localised overloading does not occur.

14 Procedure

14.1 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.

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

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

14.4 When used over construction joints, the membrane must be reinforced with Bauder Polyester Reinforcement Sheet, in accordance with the Certificate holder's instructions.

14.5 When used across expansion or bridging joints or between differing abutting substrates, eg metal outlet flange and concrete deck, the membrane must be reinforced with Bauder Butyl Flashing or Bauder Neoprene Flashing, in accordance with the Certificate holder's instructions.

14.6 At all board joints in plywood, OSB 3, calcium silicate a minimum 150mm reinforcement layer of Bauder Polyester Reinforcement must be applied prior to applying Bakor 790-11 EV membrane, in accordance with the Certificate holder's instructions.

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

14.8 Bauder Polyester Reinforcement Sheet is embedded by lightly brushing it into the first layer of the membrane while 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.

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

14.10 The membrane must be protected immediately with either a specified access or protection sheet while the second layer of the membrane is still hot, in accordance with the Certificate holder's instructions, prior to applying any insulation and ballast as defined by the specification.

15 Repair

15.1 Any damage to the system must be repaired as soon as possible to ensure that the integrity of the waterproofing is maintained. The advice of the Certificate holder should be sought.

15.2 Where maintenance or repair of any of the roof components above the waterproofing system is necessary, care must be taken to avoid damage to the membrane. If damage occurs, it should be repaired in accordance with the Certificate holder's instructions.

15.3 In the event that the system is contaminated by chemicals, oils and greases, the advice of the Certificate holder should be sought.

Technical Investigations

16 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
- resistance to root penetration.

17 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 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*

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 + A1 : 2015 *Eurocode 1 : Actions on structures — General actions — Snow loads*

NA 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*

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.