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Agrément Certificate
13/5078
Product Sheet 1

BRIGGS AMASCO WATERPROOFING SYSTEMS

FLEXIPHALTE AND FLEXIPHALTE POMPAV

This Agrément Certificate Product Sheet(1) relates to Flexiphalte and Flexiphalte Pompav, for use as a combined waterproofing and wearing surface on rooftop car park decks and heavy goods vehicle (HGV) service 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 building (see section 6).

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

Resistance to wind uplift — when used in roof constructions, the system will resist the effects of any likely wind suction acting on the roof (see section 8).

Resistance to mechanical damage — the system can accept, without damage, the traffic loads and the effects of thermal or other minor movement likely to occur in service (see section 9).

Durability — under normal service conditions, the system will provide a durable waterproof surfacing with a service life of at least 25 years (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

Date of Second issue: 9 November 2017

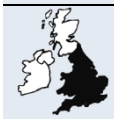
Originally certificated on 23 December 2013

John Albon – Head of Approvals Construction Products

Claire Curtis-Thomas
Chief Executive

Regulations

In the opinion of the BBA, Flexiphalte and Flexiphalte Pompav, 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:		The use of the system on concrete substrates 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 structure to satisfy this Requirement. See section 6.1 of this Certificate.
Regulation:	**7**	**Materials and workmanship**
Comment:		The system is acceptable. See section 11 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)(2)**	**Durability, workmanship and fitness of materials**
Comment:		The use of the system satisfies the requirements of this Regulation. See sections 10 and 11 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	2.8	Spread from neighbouring buildings
Comment:		Testing will be required to determine the vulnerability of a roof including the system with reference to clause 2.8.1(1)(2) of this Standard. See sections 7.1 and 7.4 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The system will enable a structure to satisfy the requirements of this Standard, with reference to clauses 3.10.1(1)(2) and 3.10.7(1)(2). See section 6.1 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The 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:		All comments given for 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 *Installation* part of this Certificate.

Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The system will enable a structure to satisfy the requirements of this Regulation. See section 6.1 of this Certificate.
Regulation:	**36(b)**	**External fire spread**
Comment:		The use of the system on concrete substrates can enable a roof to be unrestricted under 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* and 13 *Procedure* (13.1) of this Certificate.

Technical Specification

1 Description

1.1 Flexiphalte and Flexiphalte Pompav are paving grade and polymer-modified paving grade mastic asphalts, for use as waterproofing and paving respectively, for concrete car park decks and HGV service decks.

1.2 Materials used with Flexiphalte and Flexiphalte Pompav include:

- Flexiphalte Pommar — a polymer-modified, roof-grade mastic asphalt waterproof layer
- Flexiphalte Baryprene — a 2.5 mm thick, high performance, polymer-modified bitumen membrane reinforced with a 50 $g \cdot m^{-2}$ glassfibre mat
- High Bond Primer — for application to upstands and tamped concrete ramps to provide a key for the waterproofing layer.

1.3 Other items or components for use with the system, but outside the scope of this Certificate, are:

- glassfibre tissue separating membrane — for isolating the waterproofing layer from the in-situ or precast screeded concrete base
- high-density extruded polystyrene (XPS) — for use in the Certificate holder's Insulated Specifications C.D. 1-6 and L.D. 1-5 (see Figure 1), where thermal insulation is required above the structural slab
- grade 25 Lytag/sand concrete — for use with Type A142 steel wire mesh reinforcement to provide protection to the XPS in insulated systems
- Flexicolour and Flexi-Lite – coloured finishes for application to cold mastic asphalt to provide a decorative finish
- Flexiscreed mastic asphalt – for use to create a stable base for the system and to create drainage falls.

1.4 Flexiphalte and Flexiphalte Pompav specifications, description and uses are detailed in Figure 1.

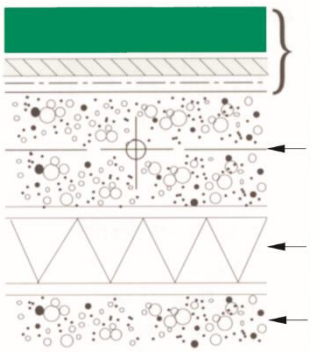
1.5 Typical installation details are shown in Figure 2.

Figure 1 Flexiphalte and Flexiphalte Pompav specifications

Figure 1 Flexiphalte and Flexiphalte Pompav specifications (continued)

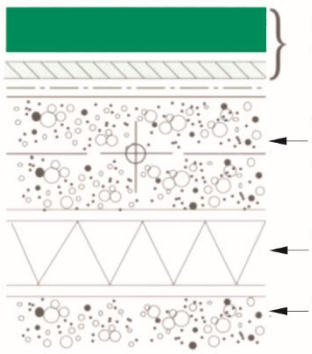
Insulated decks for cars and light commercial vehicles – maximum individual wheel load of one tonne

Economy to Super Plus C.D.1-6



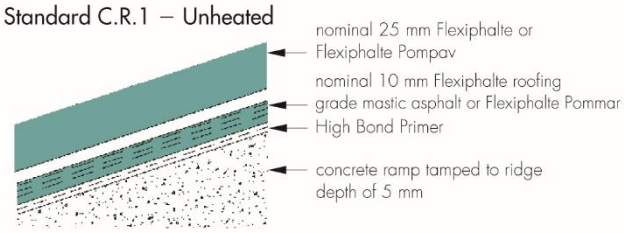
Insulated decks for heavy goods vehicles – maximum axle loads are currently 11.5 tonnes

Economy to Super Plus L.D.1-5

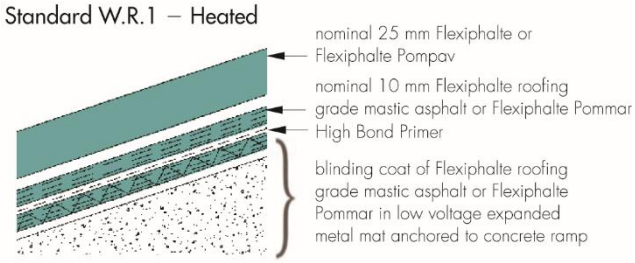


Ramps ideally not exceeding 1 in 10 gradient

Standard C.R.1 – Unheated



Standard W.R.1 – Heated



Standard W.R.2 – Heated

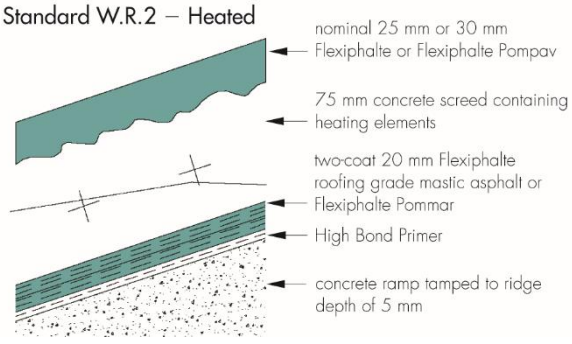
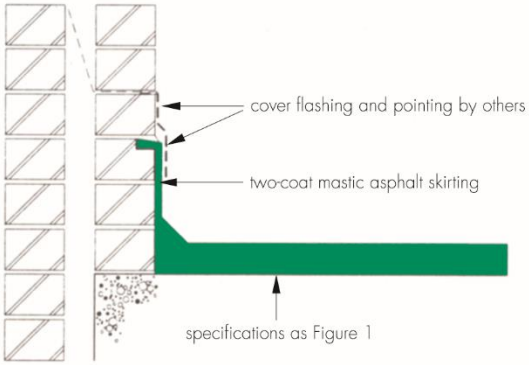
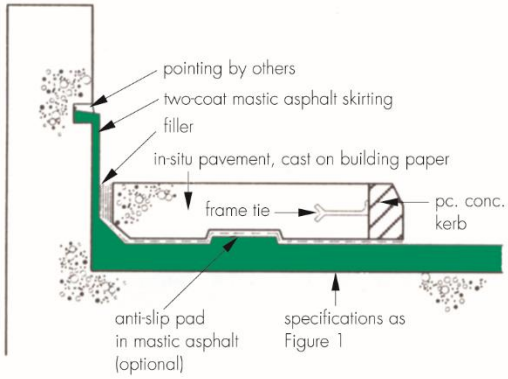


Figure 2 Typical Installation details

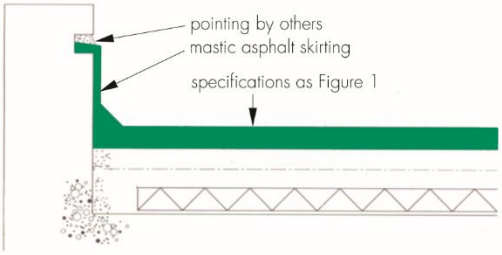
Flexiphalte skirting brickwork



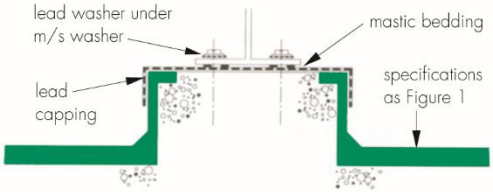
Flexiphalte skirting concrete



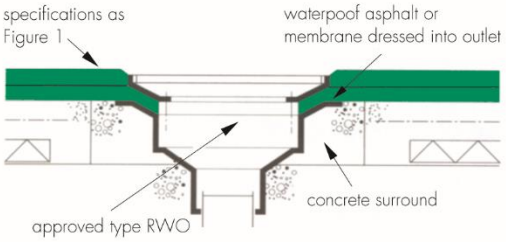
skirting – insulated deck



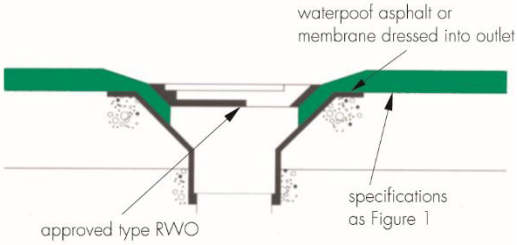
cradle track plinth



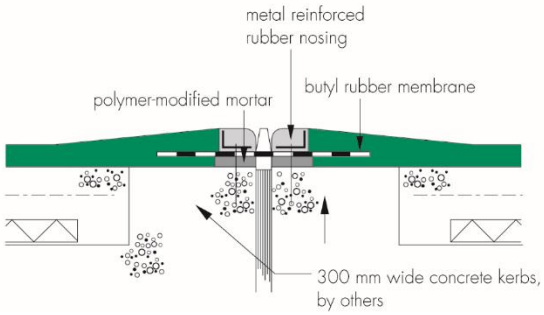
RWO – insulated deck



RWO – uninsulated deck



expansion joint



1.6 The thickness and nominal weights of the components and specifications are detailed in Table 1.

Table 1 Component and specification thickness and weight

Specification	Thickness (mm)	Nominal weight (kg·m^{-2})
Flexiphalte waterproofing	10	24
Flexiphalte waterproofing	10	24
Flexiphalte Pommar	10	24
	20	45
Flexiphalte paving	25	60
	30	72
	40	96
Flexiphalte Pompav paving	25	60
	30	72
	40	96
Lytag/sand concrete	90	164
	95	173
	100	182
	110	200
	115	209
	120	218
High-density XPS	90	2.97
	100	3.30
	110	3.63
	120	3.96
Glassfibre tissue	n/a	0.05 - 0.08
Flexiphalte Baryprene membrane	2.5	2.55

2 Manufacture

2.1 Flexiphalte and Flexiphalte Pompav are manufactured by mixing bitumen, styrene-bitumen-styrene (SBS) polymer (Pompav), limestone filler, and fine and coarse aggregates, using conventional mixing techniques.

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 Flexiphalte and Flexiphalte Pompav are supplied in hot charge (molten) form, delivered to site in purpose-built transporters. The product information is supplied on the relevant delivery notes with each consignment.

3.2 Alternatively, Flexiphalte and Flexiphalte Pompav can be supplied in block form (similar to traditional grades of mastic asphalt) with labels bearing the product type and name, and the BBA logo incorporating the number of this Certificate. Each block can weigh up to 25 kg and must be stored in the same manner as traditional mastic asphalt.

3.3 Flexiphalte Baryprene membrane is supplied in rolls 10 m long by 1 m wide with a nominal weight per unit area of 3.05 kg·m^{-2}. The rolls must be stored on end on a clean, level surface away from heat and under cover.

3.4 High Bond Primer is supplied in 5, 25 and 200 litre cans/drums.

3.5 The Certificate holder has 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 Flexiphalte and Flexiphalte Pompav.

Design Considerations

4 Use

4.1 Flexiphalte and Flexiphalte Pompav are satisfactory for use as a combined waterproof/wearing surface for rooftop car park decks and HGV service decks when applied to a float-finished, in-situ or precast and screeded concrete deck, laid in accordance with BS EN 1992-1-1 : 2004 and its UK National Annex. The design specification (see Figure 1) must be selected for the appropriate trafficking situation, ie foot traffic, cars and light commercial vehicles, or HGVs.

4.2 Details and the general principles to be followed at skirtings, upstands, abutments, gutters and expansion joints should be as described in BS 8218 : 1998 and the Certificate holder's instructions.

4.3 The concrete structure must be designed to support all static and imposed loads without undue deflection (see Table 1 for the weights imposed by the design specifications). A fall of 1:60 is recommended to ensure good drainage to outlets and gutters.

4.4 Temporary drainage holes should be provided through the structural base to allow the downward drying of residual construction moisture or entrapped rainwater.

4.5 The system can accept, without damage, the foot and vehicular traffic defined in this Certificate, but some indentation should be expected from continuous heavy point loading.

5 Practicability of installation

The system should only be installed by installers who have been trained and approved by the Certificate holder.

6 Weathertightness

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

6.2 The system is impervious to water, is flexible and can accommodate, without leakage, the movement due to cracking permitted by BS EN 1992-1-1 : 2004 and its UK National Annex.

7 Properties in relation to fire

7.1 In the opinion of the BBA, the system will have similar properties in relation to fire as the traditional grades of mastic asphalt described in BS 8218 : 1998.

7.2 When fully supported on concrete substrates, exposed mastic asphalt has a 'notional' $B_{ROOF}(t4)$ classification to BS EN 13501-5 : 2005 with reference to:

England and Wales — Approved Document B, Table A5, Part (iv)
Northern Ireland — Technical Booklet E, Table 5.6 Part (iii).

7.3 The designation of other specifications should be evaluated in accordance with the guidance given in:

England and Wales — Approved Document B, Volumes 1 and 2, paragraphs 10.4 and 14.4 respectively
Northern Ireland — test or assessment by a UKAS-accredited laboratory, or an independent consultant with appropriate experience.

7.4 All specifications should be evaluated in accordance with Mandatory Standard 2.8, Annex 2.C(1) and Annex 2.F(2).

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).

8 Resistance to wind uplift

When applied to an air-impermeable deck, the system will resist the effects of wind suction likely to occur in service.

9 Resistance to mechanical damage

9.1 The system can accept, without damage, the thermal movement likely to occur in practice, foot and vehicular traffic as defined in this Certificate, and light concentrated loads associated with installation and maintenance operations. Where access exceeding this is envisaged, this should be taken into account when determining the application thickness and surface protection.

9.2 Reasonable care is required, however, to avoid prolonged point loading by heavy and/or sharp objects.

9.3 The system can be detailed to accommodate the movement of designed expansion joints. The Certificate holder should be consulted for approved designs.

10 Maintenance

10.1 Gullies and drains should be kept free from leaves and debris. Annual inspections must be made to report on the general integrity of the paving, paying particular attention to paving joints, expansion joints, mortar pointing, cover flashings, crash barrier supports and upstands.

10.2 Deep cracks, blisters and deep indentations should be repaired as soon as possible to ensure that the waterproofing integrity of the system is maintained.

10.3 Maintenance of the system must be carried out in accordance with the Certificate holder's maintenance procedures.

11 Durability

11.1 The system will have a life expectancy in excess of that of conventional grades of mastic asphalt used in car park decks and HGV service deck situations. With proper maintenance and repair, Flexiphalte and Flexiphalte Pompav will perform satisfactorily for a period of at least 25 years.

11.2 The system has good chemical resistance to hydraulic fluids and aqueous solutions of acids, alkalis and de-icing salts, and is unaffected by contact with alkaline substrates. Prolonged exposure to petrol and diesel may cause localised softening of the binder. In high-risk situations, the advice of the Certificate holder should be sought, and a proprietary coating system used.

11.3 Flexicolor and Flexi-Lite are decorative finishes, and some degree of colour fading and wear should be expected with time.

Installation

12 General

12.1 Flexiphalte and Flexiphalte Pompav are available in block form for re-melting on site, for detail work and small horizontal areas. The size and amount of coarse aggregate added to the re-melted paving material is dependent on the laid thickness (see Table 2).

Table 2 Aggregate additions to paving material supplied in block form

Paving thickness (mm)	Size of coarse aggregate (mm)	Aggregate content (%)
25	6	30
30	10	35
40	10	45

12.2 Concrete plinths must be cast off the structural slab to accommodate such features as crash barriers and handrail stanchions. The plinths should be at least 150 mm high and weatherproofed with Flexiphalte waterproofing and a metal flashing where appropriate.

12.3 Where thermal insulation is required above the structural slab (see Figure 1 Insulated Specifications C.D. 1-6 and L.D. 1-5), high density XPS is loose-laid direct to the float-finished base. Boards are tightly butted together with staggered joints, and accurately trimmed at abutments. An overlay screed of Lytag/sand concrete grade 25 is applied direct to the XPS with type A142 steel wire mesh reinforcement placed at mid-height throughout.

12.4 Concrete structures should be designed and built in accordance with BS EN 1992-1-1: 2004 and its UK National Annex.

12.5 New concrete(1) must be well compacted and finished, preferably by power floating and power trowelling, without excessive laitance, to a dense, smooth finish, free from defects.

(1) Concrete toppings/screeds must be well compacted and bonded to the substrate, and have a wood-floated finish with minimum laitance.

12.6 A minimum curing period of 14 days is normally allowed before installing the system on new concrete substrates.

12.7 The surface must be dry, clean and free from loose particles, paint, grease and oil, or other contaminants which may affect the application of the product.

12.8 Substrates should be free from physical defects such as cracks. Small surface defects can be filled with a proprietary mortar.

12.9 When application is made to an existing substrate the advice of the Certificate holder must be sought.

12.10 Upstands should be treated in accordance with the recommendations of BS 8218 : 1998 and the Certificate holder's instructions.

13 Procedure

13.1 Installation of the waterproofing layer should be carried out using the techniques for laying mastic asphalt described in the relevant clauses of BS 8218 : 1998. Advice on the laying temperature of the paving layer, where not controlled by hot charge delivery, should be obtained from the Certificate holder.

13.2 Where a 20 mm thick coat of Flexiphalte waterproofing is required, it is applied in two coats over the glassfibre tissue separating membrane.

13.3 Flexiphalte and Flexiphalte Pompav are applied in a single layer. The surface is rubbed with coarse,

sharp sand with a wooden float, during the final floating of the hot asphalt. If required, a dimpled surface can be achieved by the use of a crimping roller.

13.4 Splayed steel gauges must be used to ensure the correct thickness of the asphalt layers and to provide a bonding edge between adjacent bays of asphalt.

13.5 Ramps must be cross-tamped and lightly primed with High Bond Primer. To prevent undue thinning of Flexiphalte waterproofing, tamps must not exceed 5 mm in height, and it may be necessary to reduce the bay size to reduce slump during application. The advice of the Certificate holder should be sought regarding the design of service deck ramps for HGVs.

14 Repair

Localised repairs should be conducted by a specialist asphalt contractor, generally in accordance with the recommendations of BS 8218 : 1998, clause 11.3 *Repair procedures* and/or the Certificate holder's instructions.

Technical Investigations

15 Tests

Tests were carried out on samples of Flexiphalte and Flexiphalte Pompav to determine:

- density
- mass per unit area
- water vapour permeability
- resistance to water pressure
- static indentation on soft and hard substrates
- hard body impact at –10°C and at 21°C
- flow resistance
- bond strength
- abrasion resistance
- resistance to chloride ion penetration
- resistance to long term loading
- hardness on unaged and heat aged samples.

16 Investigations

16.1 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.

16.2 Visits were made to established sites in the UK to assess the system's performance in service.

16.3 An assessment was made of the system's durability.

Bibliography

BS 8218 : 1998 *Code of practice for mastic asphalt roofing*

BS EN 1992-1-1 : 2004 + A1 : 2014 *Eurocode 2 — Design of concrete structures — General rule and rules for buildings*
NA to BS EN 1992-1-1 : 2004 + A1 : 2014 UK National Annex to *Eurocode 2 — Design of concrete structures — General rule and rules for buildings*

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

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 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.

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