

## Lorient Polyproducts Ltd

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**Agrément Certificate**

**92/2841**

Product Sheet 1

### LORIENT SEALS

## LORIENT COMBINED ACOUSTIC, SMOKE AND FIRE SEALS, INTUMESCENT DOOR EDGE SEALS, AND SMOKE SEALS

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Lorient Combined Acoustic, Smoke and Fire Seals, Intumescent Door Edge Seals, and Smoke Seals. These products are available in a range of sizes and designs, and are for use in new and retrofit applications, depending on the product.

(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

Behaviour in relation to smoke and fire — when used in conjunction with an appropriate door assembly, the seals satisfied the recommendations of BS 9999 : 2017 and BS 476-22 : 1987 (see section 6).

Sound insulation — the acoustic seals, when used in conjunction with an appropriate door assembly, can provide a level of resistance to sound transmission (see section 7).

Durability — these products will remain effective for the lifetime of the assembly in which they are installed (see section 9).

The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Second issue: 6 March 2018

John Albon – Head of Approvals  
Construction Products

Claire Curtis-Thomas  
Chief Executive

Originally certificated on 9 March 1993

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](http://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

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## Regulations

In the opinion of the BBA, Lorient Combined Acoustic, Smoke and Fire Seals, Intumescent Door Edge Seals, and Smoke Seals, 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)

<b>Requirement:</b>	<b>B3(3)</b>	<b>Internal fire spread (structure)</b>
Comment:		Doors incorporating the products can contribute to satisfying this Requirement. See sections 6.1 to 6.4 of this Certificate.
<b>Requirement:</b>	<b>E1</b>	<b>Protection against sound from other parts of the building and adjoining buildings</b>
<b>Requirement:</b>	<b>E4</b>	<b>Acoustic conditions in schools</b>
Comment:		The Acoustic Seals can contribute to a construction satisfying these Requirements. See section 7 of this Certificate.
<b>Regulation:</b>	<b>7</b>	<b>Materials and workmanship</b>
Comment:		The products are acceptable. See section 9 and the <i>Installation</i> part of this Certificate.



### The Building (Scotland) Regulations 2004 (as amended)

<b>Regulation:</b>	<b>8(1)(2)</b>	<b>Durability, workmanship and fitness of materials</b>
Comment:		The products can contribute to a construction satisfying this Regulation. See sections 8 and 9 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b>	<b>9</b>	<b>Building standards applicable to construction</b>
Standard:	<b>2.3</b>	Structural protection
Comment:		The products can contribute to satisfying this Standard, with reference to clause 2.3.1 <sup>(1)(2)</sup> . See sections 6.1 to 6.4 of this Certificate.
		(1) Technical Handbook (Domestic).
		(2) Technical Handbook (Non-Domestic).



### The Building Regulations (Northern Ireland) 2012 (as amended)

<b>Regulation:</b>	<b>23</b>	<b>Fitness of materials and workmanship</b>
Comment:		The products are acceptable. See section 9 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b>	<b>35(3)</b>	<b>Internal fire spread — Structure</b>
Comment:		Doors incorporating the products can contribute to satisfying this Regulation. See sections 6.1 to 6.4 of this Certificate.
<b>Regulation:</b>	<b>52</b>	<b>Acoustic conditions in schools</b>
Comment:		The Acoustic Seals can contribute to a construction satisfying this Regulation. See section 7 of this Certificate.

## Construction (Design and Management) Regulations 2015

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

In the opinion of the BBA, there is no information in this Certificate which relates to the obligations of the client, designer (including Principal Designer) and contractor (including Principal Contractor) under these Regulations.

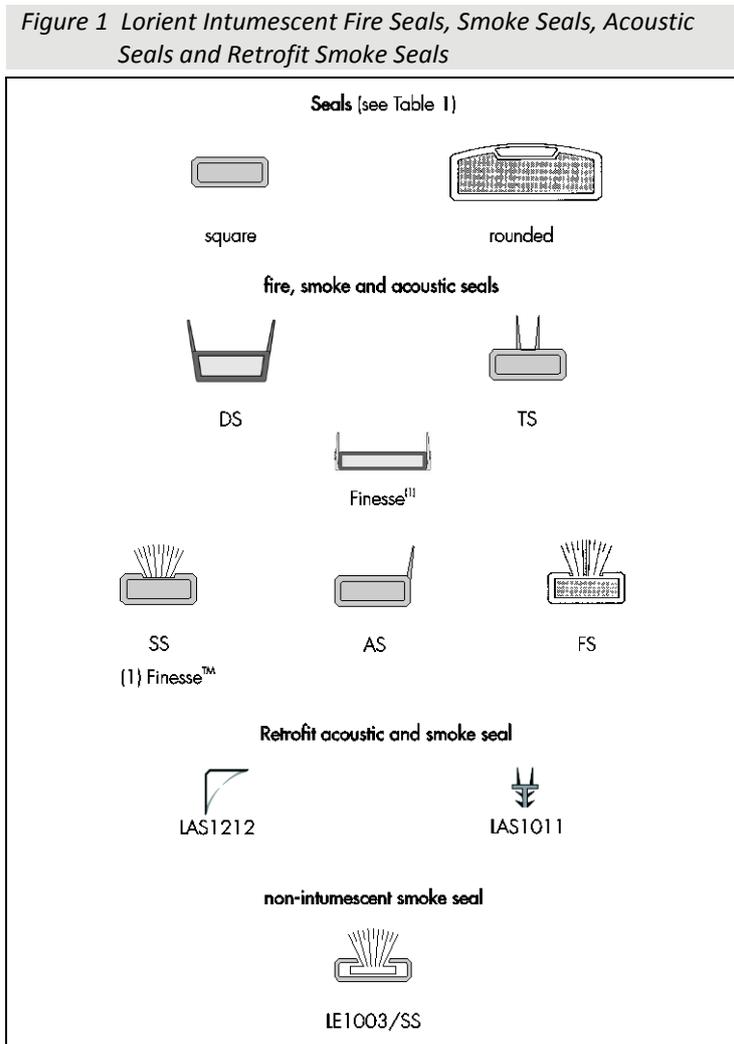
## Additional Information

The intumescent seals LP1003 and LP1004 have been certified by Warrington Certification as meeting the requirements of *Technical Schedule* TS35 and TS21.

## 1 Description

1.1 The range of seals comprises intumescent fire seals with optional smoke-control profiles, non-intumescent smoke seals, retrofit smoke seals and acoustic seals.

1.2 The fire, smoke and acoustic seals consist of a rigid PVC outer casing containing a core of intumescent material. The square and rounded edge designs available in the range are shown in Figure 1.



1.3 The seals are available in a range of colours, in the dimensions given in Table 1.

**Table 1 Range of intumescent fire seals<sup>(1)</sup>**

Classification reference	Depth (mm)	Width (mm)
LP1003	3	10
LP1004	4	10
LP1504	4	15
LP2004	4	20
LP2504	4	25
LP2006	6	20
LP2007/R <sup>(2)</sup>	7	20
LP3804	4	38
LP4804	4	48

(1) Intermediate dimensions are also available.

(2) Rounded profile, for use in particular with meeting stiles and heels of double action pairs of doors.

1.4 The intumescent fire seals can be supplied with a choice of optional smoke-control profiles. The choice of profile design will depend on the required application, as detailed in Table 2.

*Table 2 Range of Lorient smoke control profiles*

<b>Classification reference</b>	<b>Description and application</b>
SS	Plain brush pile used as an all-purpose smoke control seal for common single-action doorset applications.
FS	Brush pile incorporating a central flexible fin, for use with double-action doorsets only.
DS/Finesse	Comprises two ribbed, folding fins positioned at the base of the profile. The flexible fins fold when fitted and are designed to form a low-friction seal.
TS	Consists of two centrally positioned flexible fins. This profile is for use where the service conditions demand a high standard of hygiene and the risk of bacterial or dust entrapment in a brush pile may be considered unacceptable, eg health buildings and food preparation plants.
AS	Consists of a singular flexible fin, offset to the very edge of the profile, thus enabling the smoke seal element to bypass the hinges of a door assembly without interruption. This profile is suitable for all applications and door configurations.

1.5 The non-intumescent smoke seal consists of the PVC casing incorporating the selected smoke-control profile. The retrofit smoke seals incorporate a rigid backing with elastomeric fins and are designed for upgrading existing fire-resisting doors to accommodate current smoke control requirements but may also be introduced as part of an original design if required. These seals are used to prevent the passage of cold smoke only (limited to environments with low-combustible materials only).

1.6 Fire, smoke and acoustic seals are supplied with an approved, self-adhesive backing tape as standard, to secure the seals to the door or door frame. The retrofit smoke seal LAS1011 does not require backing tape and is secured by inserting the product into a slot cut into the door or door frame. The effectiveness of the smoke seals is dependent on the size of the leaf to frame gap and the condition of the frame and door leaf edge. Care should be taken to ensure that the seals are correctly sized to fit the gap or they will not act as a barrier against smoke.

1.7 The seals are secured in grooves cut into the head and vertical edges of the door or the door frame. The seals must run the full length of each edge. For sealing purposes, the flexible element of the seal, ie fin/brush pile, should not be interrupted at the hinge positions. Also, if smoke and acoustic sealing is required, an appropriate seal should additionally be fitted across the bottom of the door at the threshold position.

## **2 Manufacture**

2.1 The intumescent material is supplied in large sheets coated on both faces with a protective epoxy resin layer. As part of the manufacturing process, the sheets are cut into appropriately sized strips, leaving exposed edges. The edges are sealed with epoxy resin, hot melt resin or metal foil prior to insertion into the PVC outer casing.

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 management system of Lorient Polyproducts Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 (BSI Certificate Q.06104).

### 3 Delivery and site handling

3.1 The products are supplied in either cardboard boxes or tubes marked with the Certificate holder's name and trademark, seal type reference and batch number. The BBA logo, incorporating the number of this Certificate, is printed on the product or labelled on the packaging.

3.2 The seals should be stored in dry conditions until required for installation. Care must be taken not to expose the intumescent core by damaging the PVC outer casing. Damaged seals must not be used.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Lorient Combined Acoustic, Smoke and Fire Seals, Intumescent Door Edge Seals, and Smoke Seals.

## Design Considerations

### 4 General

4.1 The intumescent fire seals are suitable for use in maintaining the fire resistance of fire door assemblies. The performance figures quoted in this Certificate are specific to the individual doorset and construction tested (see Tables 3 and 4). In every case, the type, width and depth of seal must be considered by a suitably qualified and experienced individual as an aspect of the design appraisal for any fire-resistant door assembly, to ensure that the required performance is achieved. When fitted correctly into an appropriate doorset (with correct leaf to frame gaps), the smoke seals will provide a barrier to cold smoke.

4.2 The products/doorsets should be designed in accordance with BS 9999 : 2017.

4.3 The smoke seals, when fitted correctly into a doorset with appropriate door gap, are suitable for use in maintaining the resistance to smoke at ambient temperature conditions in the vicinity of a fire door assembly, as detailed in section 6.1.

4.4 The acoustic seals can contribute to reducing the transmission of sound, as detailed in section 7.

4.5 Care should be taken to ensure that the specification selected will achieve the required performance based on the available test results. The Certificate holder can advise on a suitable specification for a particular application.

4.6 The fire, smoke and acoustic seals are normally installed in the door frame rather than the door leaf as this will avoid any difficulty associated with hanging and fitting the door, for example, where planing of the door edge is required. The door manufacturer's advice should be sought if an additional seal in the door is being considered as an alternative to selecting a wider/thicker strip in the door frame. The type, size, fitment, positioning and type of seal should be chosen in accordance with the door manufacturer's guidance, based on the available test evidence.

4.7 It is essential that all other elements critical to the fire resistance of a doorset, such as locks, hinges and glazed panels, are correctly installed to ensure that the required fire resistance period is provided.

4.8 When considering the position of a fire seal in a door assembly, allowances should be made for the distortion of any elements which can occur under fire conditions. Recommendations concerning the positioning of the seals should be sought from the door manufacturer. See also the *Installation* part of this Certificate.

### 5 Practicability of installation

The products are designed to be installed by a competent general builder, or a contractor, experienced with these types of products.

## 6 Behaviour in relation to smoke and fire

### Smoke performance



6.1 The intumescent smoke seals LP1004SS, LP2004AS, LP1504DS and LP1504SS were incorporated in a single-leaf door assembly and tested to measure air leakage using the principles of BS 476-31.1 : 1983. With each seal, the door assembly satisfied the requirements of BS 9999 : 2017 in that a leakage rate of  $3 \text{ m}^3 \cdot \text{m}^{-1} \cdot \text{h}^{-1}$  was not exceeded when the assembly was subjected to a pressure of 25 Pa.

6.2 Further tests were conducted individually on intumescent smoke seals LP1004SS, LP1004AS, LP1004FS and LP1004TS and Retrofit Smoke Seals LAS1011 and LAS1212. The seals were incorporated in a single-leaf door assembly and tested to measure air leakage using the principles of BS 476-31.1 : 1983. Tests were conducted before and after 100,000 opening and closing cycles. In each case, the recommendations of BS 9999 : 2017 were satisfied.

6.3 The test results detailed in sections 6.1 and 6.2 indicate that the smoke seals can be used to provide restriction to smoke leakage at ambient temperatures, and may therefore be used to contribute towards satisfying the provisions of the supporting documents to the national Building Regulations.

### Fire performance

6.4 The intumescent seals were tested for fire resistance in accordance with BS 476-22 : 1987, Sections 6 and/or 7 and/or 8, and achieved the insulation ratings as given in Table 3.

Table 3 Integrity and insulation ratings for doorsets fitted with intumescent seals

Intumescent seals	Construction types <sup>(1)</sup>	Integrity rating/minutes	Insulation rating/minutes
Two LP1004 (one of them including a TS smoke seal)	Fully insulated, single-swing, double-leaf doorset Test report no. 51835, dated 30 August 1991	77	59
LP1004 LP2004	Unlatched, fully insulated double-swing, single-leaf doorset Test report 49841, dated 9 April 1991	40	40
LP1004TS LP2004TS	Unlatched, partially insulated, double-swing, single-leaf doorset, glazed with non-insulating wired glass Test report 49841, dated 9 April 1991	40	40
LP1003	Unlatched, double-action, double doorset, glazed with non-insulating glass Test report FR 1297, dated 22 February 1989	59	Not claimed due to presence of non-insulating glazed elements
LP2504	Unlatched, single-leaf, single-action doorset, glazed with non-insulating wired glass Test report FR 1129 A, dated 30 September 1987	66	
LP1504DS	Single-acting, single-leaf doorset, glazed with non-insulating wired glass Test report 129928, dated 21 July 2003	34	
LP1504DS	Single-acting, single-leaf doorset, glazed with insulating wired glass Test report 129928, dated 21 July 2003	24	24

(1) Test reports and detailed construction of the doorsets tested are available from the Certificate holder.

6.5 The intumescent fire seal LP1504DS was incorporated into two different doorsets. The doorsets were tested in accordance with BS EN 1634-1 : 2000. Table 4 shows the ratings achieved by each construction.

Table 4 Ratings achieved assessed in accordance with BS EN 1363-1 : 1999

	Rating	Construction type <sup>(1)</sup>	
		Unlatched, single-acting, single-leaf doorset, glazed with non-insulating wired glass	Unlatched, single-acting, single-leaf doorset, glazed with insulating glass
Integrity	Sustained flaming	31 minutes	20 minutes
	Gap gauge	38 minutes <sup>(2)</sup>	38 minutes <sup>(2)</sup>
	Cotton pad	21 minutes	20 minutes
Insulation	Area 1	31 minutes	20 minutes
	Areas 2 (vision panel)	3 minutes	20 minutes

(1) Test report 129927, Issue 2, dated 22 July 2003 and detailed construction of the doorsets tested are available from the Certificate holder.

(2) Test duration.

6.6 The results generated from the test work as detailed in sections 6.1 to 6.4 relate only to the behaviour of the specimen of the element of construction under the particular conditions of the tests. They are not intended to be the sole criteria for assessing the potential fire performance of the elements in use, nor do they reflect the actual behaviour in fires. Specific assemblies should be the subject of a design appraisal by a suitably qualified and experienced individual, including the type and size of seal, door, doorframe and choices of lock and hinges, to ensure the required fire resistance can be obtained.

6.7 Tests in accordance with BS 476-22 : 1987, BS 476-23 : 1987 and BS EN 1634-1 : 2000 show that the intumescent seal expands under fire conditions. This action seals the gaps between the door and frame of the fire door construction, contributing to the fire resistance of the construction.

## 7 Sound insulation



7.1 The acoustic seals, when used in conjunction with an appropriate door assembly, can provide a level of resistance to sound transmission.

7.2 Measures to be taken in design and during installation to avoid direct paths for airborne sound and minimise flanking sound transmission are given in the documents supporting the national Building Regulations and Standards.

## 8 Maintenance



The products, when installed in accordance with the recommendations and limitations laid down in this Certificate, will require minimum maintenance. Periodic inspection is recommended, and cleaning when required. Brush seals particularly will respond to a damp cloth. Seals which have been mechanically damaged or contaminated with water must be replaced.

## 9 Durability



9.1 The intumescent material used in the seals is protected by an epoxy resin layer which will prevent the ingress of atmospheric moisture and carbon dioxide. In addition, the material is encased in a PVC outer casing to protect the layer from abrasion. The product will remain effective for the lifetime of the assembly in which it is installed.

9.2 In a test monitored by the IFSA, the Certificate holder's fire seals were exposed to set temperature and humidity conditions for periods of 1 year, 2½ years, 5 years and 10 years, and were tested to BS 476-23 : 1987, with no significant deterioration of the intumescent properties.

### 10 General

The various types of Lorient Intumescent Fire Seals, Smoke Seals, Acoustic Seals and Retrofit Smoke Seals are for fitting prior to installation of the door assembly, screen or partition. For retrofit, the product must not be fitted to an already damaged door.

### 11 Procedure

11.1 The intumescent fire, smoke and acoustic seals are fitted to the vertical and/or horizontal edges of the doors.

11.2 Grooves of sufficient width and depth to accommodate the specified seal, as per the Certificate holder's instructions, are machined into the edges of the component or component frame. The dimension of the groove must be sufficient to ensure that the installed seal is flush with the surrounding edge and will not impede any movement of the component.

11.3 The seals, with the exception of retrofit seals, are supplied with a self-adhesive backing tape as standard, to secure the seal in the groove.

11.4 The retrofit smoke seal LAS1011 is installed by inserting the product into a machined groove, 3 mm wide and 4 mm deep.

11.5 Hinges, locks and plates are fitted after installation of the seal and accommodated by removing sections of the PVC casing using a sharp knife or suitable cutting device. The advice of the Certificate holder should be sought for particular applications to ensure that the required fire performance of the door is not compromised.

11.6 The seals are supplied with square cut ends to allow butt jointing in length or at corners. The seals can be cut to the required length using a hacksaw or shears.

#### Positioning of the seals (see Figure 2)

11.7 Positioning of the seals must take into account distortion of the assembly that can occur under fire conditions. For installation in a door leaf, the seal should be positioned centrally or towards the rebated edge. Using an increased seal width will minimise the effects of distortion.

11.8 The seal specification can be adjusted to suit the fire-resistance period required. Increasing the width coverage in the door or frame edge will improve contact area of the expanded seal should the leaf distort away from the frame under fire conditions. Alternatively, two thinner seals may be used. The advice of the Certificate holder should be sought for particular applications.

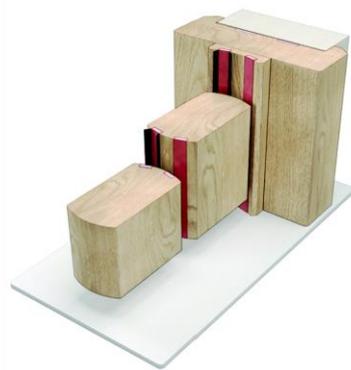
11.9 Double-leaf doors incorporating unrebated meeting stiles may require two seals. The advice of the Certificate holder should be sought for particular applications.

11.10 For sealing purposes, the flexible element of the smoke seal, ie the fin/brush pile, should not be interrupted at hinge positions, as shown in Figure 2. Also, where required for smoke sealing purposes, an appropriate smoke seal should additionally be fitted across the bottom of the door at the threshold position.

Figure 2 Examples of position of seals



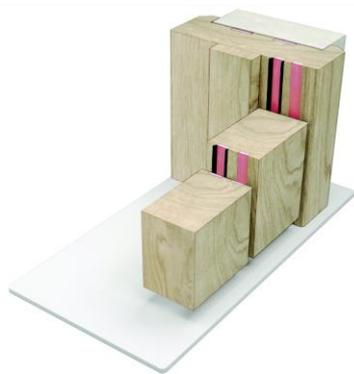
acoustic seals – alternative solutions



two thin seals for longer fire resistance period



larger seal



Note: Rebate styles are not recommended.

### 12 Investigations

12.1 An assessment was made of the existing data relating to the long-term durability of the intumescent fire seals, including edge sealing properties and susceptibility to degradation by the atmosphere. In this respect, data generated from fire tests conducted on samples subjected to long-term exposure in a variety of atmospheric conditions were examined.

12.2 Test reports to BS 476-22 : 1987, BS 476-23 : 1987, BS EN 1634-1 : 2000 and the principles of BS 476-31.1 : 1983 were examined.

12.3 Test data demonstrating the intumescent properties of the material were examined.

12.4 Test reports relating to the acoustic performance of acoustic seals were examined.

12.5 An assessment was made of the ease and practicability of installation.

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

12.7 A user survey of buildings where the seals have been installed was conducted.

### Bibliography

BS 476-22 : 1987 *Fire tests on building materials and structures — Methods for determination of the fire resistance of non-loadbearing elements of construction*

BS 476-23 : 1987 *Fire tests on building materials and structures — Methods for determination of the contribution of components to the fire resistance of a structure*

BS 476-31.1 : 1983 *Fire tests on building materials and structures — Methods for measuring smoke penetration through doorsets and shutter assemblies — Method of measurement under ambient temperature conditions*

BS 9999 : 2017 *Fire safety in the design, management and use of buildings — Code of practice*

BS EN 1363-1 : 1999 *Fire resistance tests — General requirements*

BS EN 1634-1 : 2000 *Fire resistance tests for door and shutter assemblies — Fire doors and shutters*

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

### 13 Conditions

#### 13.1 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.

13.2 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.

13.3 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.

13.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

13.5 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.

13.6 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.