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BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

Agrément Certificate
04/4165
Product Sheet 1

ADVANCED CONSTRUCTION SYSTEMS LTD CLADDING PRODUCTS

FASTCLAD

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Fastclad, a pre-bonded masonry panel secured to timber- or steel-framed buildings, or masonry buildings. It is for use as a non-structural, weatherproof cladding system externally on walls and soffits up to and including 42 m in height, and on internal walls.

AGRÉMENT 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

Strength and stability — when installed in accordance with requirements of this Certificate, the product will have adequate strength to resist the wind loads and impacts likely to occur under normal circumstances (see section 5).

Properties in relation to fire — the product is classified as Class 0 or 'low risk' as described in the national Building Regulations (see section 6).

Weathertightness — the product has satisfactory resistance to the passage of moisture (see section 8).

Durability — the product is durable and can be expected to have a minimum design life of 50 years (see section 10).

The BBA has awarded this Agrément Certificate to the company named above for the product described herein. This product 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 First issue: 28 October 2011
Originally certificated on 29 October 2004

Simon Wroe
Head of Approvals — Materials

Greg Cooper
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

Regulations

In the opinion of the BBA, Fastclad, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:

The Building Regulations 2010 (England and Wales)

Requirement:	A1	Loading
Comment:		Buildings clad with the product will meet the Requirement where the sheeting is fixed to suitably designed walls. See sections 3.5 to 3.7 and 5.1 to 5.4 of this Certificate.
Requirement:	B2(1)	Internal fire spread (linings)
Requirement:	B3(4)	Internal fire spread (structure)
Requirement:	B4(1)	External fire spread
Comment:		The product is unrestricted under these Requirements. See sections 6.1 to 6.3 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The product can contribute to meeting this Requirement. See section 8 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The product is acceptable. See section 10 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		The product is an acceptable material. See sections 9, 10 and the *Installation* part of this Certificate.
Regulation:	9	Building standards — construction
Standard:	1.1(a)(b)	Structure
Comment:		Buildings clad with the product will meet the Standard where the sheeting is fixed to suitably designed walls, with reference to clause 1.1.1[(1)(2)]. See sections 3.5 to 3.7 and 5.1 to 5.4 of this Certificate.
Standard:	2.4	Cavities
Comment:		The product is classified as 'low-risk' and is therefore unrestricted under this Standard, with reference to clause 2.4.2[(1)(2)]. See sections 6.1 to 6.3 of this Certificate.
Standard:	2.5	Internal linings
		The product is classified as 'low-risk' and is therefore unrestricted under this Standard, with reference to clause 2.5.1[(1)(2)]. See sections 6.1 to 6.3 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Standard:	2.7	Spread on external walls
Comment:		The product is classified as 'low-risk' and is therefore restricted under these Standards, with reference to clauses 2.6.4[(1)(2)] and 2.7.1[(1)(2)]. See sections 6.1 to 6.3 of this Certificate.
Standard:	3.10	Precipitation
Comment:		Walls clad with the product will satisfy this Standard, with reference to clauses 3.10.1[(1)(2)] to 3.10.3[(1)(2)]. See section 8 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The product 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 — conversions
Comment:		Comments made in relation to the product 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) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 10 and the *Installation* part of this Certificate.
Regulation:	B3(2)	Suitability of certain materials
Comment:		The product is acceptable. See section 9 of this Certificate.
Regulation:	C4(b)	Resistance to ground moisture and weather
Comment:		The product is acceptable under this Regulation when installed in accordance with section 8 of this Certificate.
Regulation:	D1	Stability
Comment:		Buildings clad with the product will meet this Regulation where the sheeting is fixed to suitably designed walls. See sections 3.5 to 3.7 and 5.1 to 5.4 of this Certificate.
Regulation:	E3(a)(b)	Internal fire spread — Linings
Regulation:	E4(4)	Internal fire spread — Structure
Regulation:	E5(a)(b)	External fire spread
Comment:		The product is unrestricted under these Regulations. See sections 6.1 to 6.3 of this Certificate.

Construction (Design and Management) Regulations 2007

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

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See sections: 1 *Description* (1.2) and 2 *Delivery and site storage* (2.2) of this Certificate.

Additional Information

NHBC Standards 2011

NHBC accepts the use of Fastclad, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Part 6 *Superstructure (excluding roofs)* Chapter 6.2 *External timber framed walls*, Chapter 6.9 *Curtain walling and cladding* and Chapter 6.10 *Light steel framed walls and floors*.

Technical Specification

1 Description

1.1 Fastclad is a factory fabricated panel system comprising 15 to 20 mm thick clay brick slips, adhesively bonded to cement-bonded particle boards to BS EN 634-1 : 1995 and BS EN 634-2 : 2007 (see Figure 1).

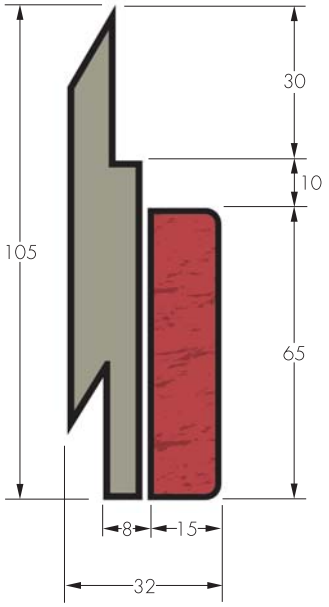
1.2 The panels provide a decorative cladding for internal and external walls up to 42 m in height. They are screw fixed to either preservative-treated timber battens or a galvanized steel frame. The nominal characteristics of the products are:

Standard unit (stretcher) (mm)	1125
Standard unit (header) (mm)	1125
Standard return unit (stretcher LH) (mm)	220 x 107.5
Standard return unit (stretcher RH) (mm)	220 x 107.5
Sill unit (mm)	1125 x 140, 1125 x 215
Standard return unit (header) (mm)	107.5 x 107.5
Thermal resistance ($m^2 \cdot KW^{-1}$)	0.09
Water vapour resistance ($MN \cdot s \cdot g^{-1}$)	2.3

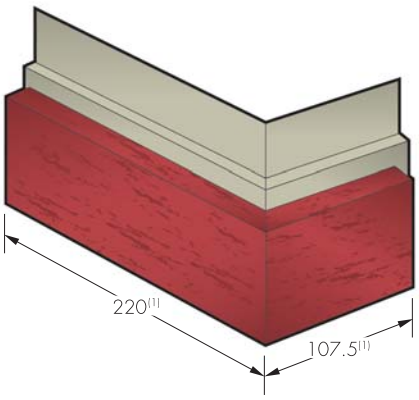
1.3 The weight of the cladding will vary according to the type and thickness of brick slip used, but will not exceed 48 $kg \cdot m^{-2}$ (which equates to an individual brick slip weight of 0.47 kg). The weight of mortar in the pointing (approximately 5 $kg \cdot m^{-2}$) should be added to the total when designing the support structure.

Figure 1 Fastclad panel and corner elements (all dimensions in mm)

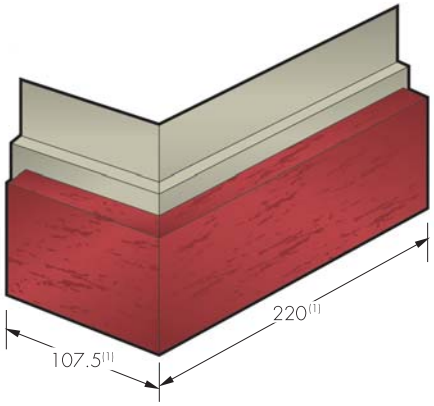
interlocking process



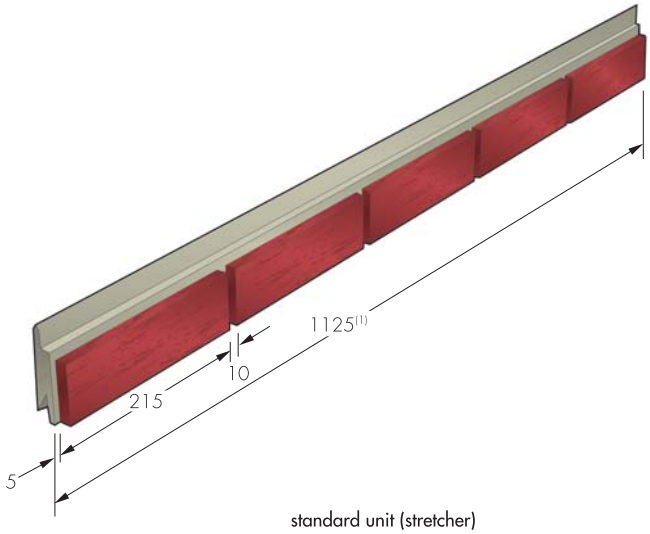
side view



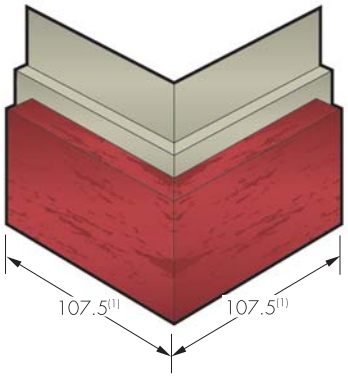
standard return unit
(stretcher right hand)



standard return unit
(stretcher left hand)



standard unit (stretcher)



standard return unit (header)

(1) including 5 mm mortar joint either side

1.4 Other materials used during installation include:

- 0.8 mm to 1.2 mm galvanized steel framework to S350GD+Z275 to BS EN 10346 : 2009(1)
- 50 mm x 50 mm timber battens(1)
- 4 mm diameter x 40 mm long, corrosion-resistant, countersunk screws for fixing panels to 50 x 50 mm timber battens
- galvanized or stainless steels screws for fixing panels to steel frameworks(2).

(1) The fixing of battens/framework to the substrate is outside the scope of this Certificate.

(2) Fixings should be chosen taking into account the properties of the steel sub-frame. In all cases the pull-out loads of the fixings should be sufficient to withstand the design loads appropriate to each structure.

1.5 Stainless steel fixing products should be used for coastal locations (up to 5 km from the sea).

1.6 Quality control is exercised over the raw materials used, during the manufacturing process and on the final products.

2 Delivery and site storage

2.1 Standard panels are delivered to site stacked flat on shrink-wrapped pallets with protective paper between layers. Return (corner) units are on pallets.

2.2 Pallets of standard panels and corners should not be stacked but should be stored on a flat, accessible space and protected from precipitation and impact damage.

2.3 Panels should be carried vertically and handled with care to avoid damage. Fixings, trims and rails should be protected from damp.

2.4 Each pallet of panels carries a label bearing the job number, description, quantity and customer name.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Fastclad.

Design Considerations

3 General

3.1 Fastclad is satisfactory for use as a weather-resistant, non-structural cladding system, screw fixed to timber-frame or steel-frame buildings(1) via timber battens, and to masonry or concrete walls, via timber or galvanized steel sub-frames. The panels are suitable for use on walls of new or existing buildings up to and including 42 m in height.

(1) With studs at 400 mm centres.

3.2 The product can also be used on horizontal (downward facing) surfaces, such as soffits, provided it can be demonstrated by calculation that the wind forces acting on the product are no greater than it would encounter on a wall 42 m high anywhere in the UK, after taking into account the dead weight of the product. Consideration should be given to ventilation, drainage and insect exclusion when designing for downward-facing applications. The Certificate holder can provide further details.

3.3 The fixing of the sub-frame to the substrate is outside the scope of this Certificate.

3.4 The designer must ensure that the strength and integrity of the intended substrate is commensurate with that required of the cladding system (see sections 3.5 to 3.7).

3.5 Masonry or concrete to which the support work and cladding are fixed must be structurally sound and constructed in the conventional manner in accordance with one or more of: the technical specifications; PD 6697 : 2010, BS EN 1992-1-1 : 2004, BS EN 1996-1-1 : 2005, BS EN 1996-1-2 : 2005, BS EN 1996-3 : 2006, BS EN 1996-2 : 2006, their respective UK National Annexes and the national Building Regulations:

England and Wales — Approved Document A1/2, Section 1C

Scotland — Technical Standard C2.1

Northern Ireland — Technical Booklet D.

3.6 Timber stud walls and timber support work must be structurally sound and constructed in accordance with BS EN 1995-1-1 : 2004, the UK National Annex and preservative treated in accordance with BS EN 351-1 : 2007.

3.7 Galvanized steel framework must be structurally sound and designed and constructed in accordance with BS EN 1993-1-3 : 2006 and its UK National Annex.

3.8 The product will improve the weather resistance of an existing wall and provide a new decorative finish. However, it should be installed only where other routes for moisture penetration have been dealt with separately (see section 8).

3.9 Walls incorporating the product should be designed in accordance with the relevant requirements of BS 5250 : 2002, taking into account the hygrothermal properties noted in Table 1.

3.10 The product has not been assessed for use with external wall insulation systems.

4 Practicability of installation

The panels should only be installed by cladding contractors experienced with this type of product.

5 Strength and stability

5.1 When fixed in accordance with the requirements of this Certificate and the Certificate holder's instructions, the product can withstand, without damage or permanent deformation, the dynamic wind pressures likely to be experienced in the UK.

5.2 The wall and sub-frame to which the product is fixed should be structurally sound and constructed in accordance with sections 3.4 to 3.6. When designing the wall for strength, stability and racking forces, contribution from the cladding should not be assumed.

5.3 Wind loads should be calculated in accordance with BS EN 1991-1-4 : 2005, its UK National Annex and BS 6399-2 : 1997. The higher-pressure coefficients applicable to corners of buildings should be used.

5.4 The panels are capable of transmitting their self-weight and wind load to the structure but the adequacy of fixing of the sub-frame to the structural frame or substrate is outside the scope of this Certificate and must be verified by a suitably qualified engineer.

5.5 The product has good resistance to the hard and soft-body impacts likely to occur in practice and is satisfactory for use in locations described in Table 1.

Table 1 Access categories

Category (1)	Category (2)	Description	Examples	
B	E_2	Readily accessible to public and others with little incentive to exercise care. Chance of accidents occurring and of misuse	Walls adjacent to pedestrian thoroughfares or playing fields when not in category A	Zone of wall up to 1.5 m above pedestrian or floor level
C	E_3	Accessible primarily to those with some incentive to exercise care. Some chance of accident occurring and of misuse	Walls adjacent to private open gardens. Back walls of balconies	
D	E_4	Only accessible, but not near a common route, to those with high incentive to exercise care. Small chance of accident occurring or of misuse	Walls adjacent to small fenced decorative gardens with no through paths	
E	E'_2	Above zone of normal impacts from people but liable to impacts from thrown or kicked objects	1.5 m to 6 m above pedestrian or floor level in public areas	
F	E_5	Above zone of normal impacts from people and not liable to those impacts from thrown or kicked objects	Wall surfaces at higher positions than defined in E and E'_2 above	

(1) BS 8200 : 1985 (withdrawn).

(2) MOAT 43 : 1987.

6 Properties in relation to fire

6.1 When tested in accordance with BS 476-6 : 1989 and BS 476-7 : 1997, Fastclad had a fire propagation index (I) of 0, a sub-index (i_1) of 0 and a Class 1 surface.

6.2 The product, therefore, is classified Class 0 or 'low risk' as described in the national Building Regulations.

6.3 The reverse side of the product is also a Class 0/'low risk' surface.

7 Proximity of flues

When installing the cladding in close proximity to certain flue pipes, the following provisions of the national Building Regulations should be met:

England and Wales — Approved Document J.

Scotland — Mandatory Standard 3.19, clauses 3.19.1 to 3.19.4 and 3.19.8

Northern Ireland — Technical Booklet L.

8 Weathertightness

The product has satisfactory resistance to the passage of moisture. However, unless the supporting wall is known to be watertight, a breather membrane should be installed.

9 Maintenance

Regular maintenance inspections followed by appropriate remedial action should be made on the installed system. Where damage has been caused by impact, advice should be sought from the manufacturer.

10 Durability

The product is manufactured from durable materials and when installed, inspected and maintained in accordance with the provisions of this Certificate, is capable of achieving a minimum design life of 50 years.

Installation

11 General

11.1 Installation of Fastclad is carried out in accordance with this Certificate and the Certificate holder's instructions.

11.2 Panels can be cut on-site using a diamond-tipped angle grinder or masonry saw.

12 Preliminary work

12.1 Any loose material must be removed from the substrate and any repairs made.

12.2 Areas of unevenness more than 5 mm deep and covering more than 20% of the area of a panel should be filled with dubbing render to ensure adequate support to the panel. Care should also be taken to ensure a flat and uniform appearance to the finished façade.

13 Procedure

13.1 The 50 mm by 50 mm timber battens or galvanized steel battens are fixed vertically plumb and square to the substrate at a maximum of 400 mm centres.

13.2 The first row of boards is fixed to the battens above dpc level, making sure that it is level from corner to corner.

13.3 Adjustment should be made to ensure that, if possible, full courses sit under/over windows, doors and openings.

13.4 Starting from one corner, the Fastclad corner profile is fixed through the rebate using the appropriate fixings for the stud type/location to both faces, ensuring the level is correct.

13.5 Installation can proceed in either direction with Fastclad standard profiles, fixing each profile at every supporting batten and with a minimum of two fixings per profile. It is not normally necessary for each strip to end on a stud as the next course overlaps it, locking it in place. However, additional bracing may be required, for example, around horizontal expansion joints.

13.6 Installation continues from corner to corner ensuring that courses remain level. The boards should be staggered on each course, relative to the course below, to maximise the rigidity of the system.

13.7 Vertical and horizontal movement joints should be provided where necessary. The required frequency of these will depend on the nature of the substrate to which the Fastclad is attached.

13.8 A minimum 15 mm drained and ventilated cavity must be maintained behind the cladding, with minimum 500 mm^2 ventilation slots per metre wall length, in accordance with BS 5250 : 2002. This will also satisfy the NHBC requirements (see *NHBC Standards*, Chapters 6.2 and 6.9) for a minimum 15 mm cavity behind cladding installed over timber and steel-framed backing walls.

14 Finishing

14.1 At all panel joints or where a panel or unit is to abut a window or door frame, or a trim, a strip of coloured sealant should be applied to seal the panels.

14.2 Sand/cement pointing mortar is applied in accordance with the manufacturer's instructions. This should not be carried out at temperatures below 5°C, in direct sunlight or at temperatures above 30°C.

Technical Investigations

15 Tests

15.1 Tests were carried out and the results assessed to determine:

- resistance to wind loading
- resistance to hard and soft body impact damage
- effect of heat/spray and freeze/thaw
- adhesion under various conditions.

15.2 An evaluation was conducted of data relating to:

- fire propagation to BS 476-6 : 1989
- surface spread of flame to BS 476-7 : 1997.

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 materials used.

16.2 Visits were made to sites in progress to assess the practicability of installation and effectiveness of detailing techniques.

Bibliography

BS 476-6 : 1989 *Fire tests on building materials and structures — Method of test for fire propagation for products*
BS 476-7 : 1997 *Fire tests on building materials and structures — Method of test to determine the classification of the surface spread of flame of products*

BS 5250 : 2002 *Code of practice for control of condensation in buildings*

BS 6399-2 : 1997 *Loading for buildings — Code of practice for wind loads*

BS 8200 : 1985 *Code of practice for design of non-loadbearing external vertical enclosures of buildings*

BS EN 351-1 : 2007 *Durability of wood and wood-based products — Preservative-treated solid wood — Classification of preservative penetration and retention*

BS EN 634-1 : 1995 *Cement bonded particleboards — Specification — General requirements*
BS EN 634-2 : 2007 *Cement bonded particleboards — Specification — Requirements for OPC bonded particleboards for use in dry, humid and exterior conditions*

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

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

BS EN 1993-1-3 : 2006 *Eurocode 3 : Design of steel structures — General rules — Supplementary rules for cold-formed members and sheeting*
NA to BS EN 1993-1-3 : 2006 *UK National Annex to Eurocode 3 : Design of steel structures — General rules — Supplementary rules for cold-formed members and sheeting*

BS EN 1995-1-1 : 2004 *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*
NA to BS EN 1995-1-1 : 2004 *UK National Annex to Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*

BS EN 1996-1-1 : 2005 *Eurocode 6 : Design of masonry structures — General rules for reinforced and unreinforced masonry structures*
NA to BS EN 1996-1-1 : 2005 *UK National Annex to Eurocode 6 : Design of masonry structures — General rules for reinforced and unreinforced masonry structures*
BS EN 1996-1-2 : 2005 *Eurocode 6 : Design of masonry structures — General rules — Structural fire design*
NA to BS EN 1996-1-2 : 2005 *UK National Annex to Eurocode 6 : Design of masonry structures — General rules — Structural fire design*
BS EN 1996-2 : 2006 *Eurocode 6 : Design of masonry structures — Design considerations, selection of materials and execution of masonry*
NA to BS EN 1996-2 : 2006 *UK National Annex to Eurocode 6 : Design of masonry structures — Design considerations, selection of materials and execution of masonry*
BS EN 1996-3 : 2006 *Eurocode 6 : Design of masonry structures : Simplified calculation methods for unreinforced masonry structures*
NA to BS EN 1996-3 : 2006 *UK National Annex to Eurocode 6 : Design of masonry structures : Simplified calculation methods for unreinforced masonry structures*

BS EN 10346 : 2009 *Continuously hot-dip coated steel flat products — Technical delivery conditions*

PD 6697 : 2010 *Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2*

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
- individual 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.

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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