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04/4165

Product Sheet 1

ADVANCED CONSTRUCTION SYSTEMS LTD CLADDING PRODUCTS

FASTCLAD

This Agrément Certificate Product Sheet⁽¹⁾ relates to Fastclad, a pre-bonded masonry panel secured to timber- or steel-framed buildings, or masonry or concrete buildings. It is for use as a non-structural, weatherproof cladding system externally on walls and soffits, and on internal walls.

(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

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 6).

Properties in relation to fire — the panels have a B-s1, d0 reaction to fire classification to BS EN 13501-1 : 2007 and their use is restricted in some cases (see section 7).

Weathertightness — the product has satisfactory resistance to the passage of moisture (see section 9).

Durability — the product will have a service life of at least 50 years (see section 11).

The BBA has awarded this 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

(ROOG)

John Albon – Head of Approvals Construction Products

Date of Second issue: 24 January 2019 Originally certificated on on 29 October 2004

Certificate amended on 10 October 2019 to include new regulatory guidance for fire in Scotland. Certificate amended on 13 January 2020 to include new regulatory guidance for fire in Wales.

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 MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly. Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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Chief Executive

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Regulations

In the opinion of the BBA, Fastclad, 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):

E State	The Bui	Iding Regulations 2010 (England and Wales) (as amended)
Requirement: Comment:	A1	Loading Buildings clad with the product can contribute to satisfying this Requirement. See sections 6.1 to 6.4 of this Certificate.
Requirement: Requirement: Comment:	B2(1) B3(4)	Internal fire spread (linings) Internal fire spread (structure) The product can contribute to satisfying these Requirements. See section 7.2 of this Certificate.
Requirement: Comment:	B4(1)	External fire spread The product is restricted under this Requirement unless specific conditions are met. See section 7.9 of this Certificate.
Requirement: Comment:	C2(b)	Resistance to moisture The product can contribute to satisfying this Requirement. See section 9 of this Certificate.
Regulation:	7(1)	Materials and workmanship
Regulation:	7(2)	Materials and workmanship
Comment		The product is restricted by this Regulation. See sections 7.1 to 7.4 and 7.7 to 7.10 of this Certificate.
E Star	The Bui	lding (Scotland) Regulations 2004 (as amended)
Regulation: Comment:	The Bui 8(1)(2)	Iding (Scotland) Regulations 2004 (as amended) Durability, workmanship and fitness of materials The product is an acceptable material. See sections 10 and 11 and the <i>Installation</i> part of this Certificate.
Regulation: Comment: Regulation:	The Bui 8(1)(2) 9	Iding (Scotland) Regulations 2004 (as amended) Durability, workmanship and fitness of materials The product is an acceptable material. See sections 10 and 11 and the <i>Installation</i> part of this Certificate. Building standards applicable to construction
Regulation: Comment: Regulation: Standard: Comment:	The Bui 8(1)(2) 9 1.1(a)(b)	 Iding (Scotland) Regulations 2004 (as amended) Durability, workmanship and fitness of materials The product is an acceptable material. See sections 10 and 11 and the <i>Installation</i> part of this Certificate. Building standards applicable to construction Structure The product can contribute to satisfying this Standard, with reference to clause 1.1.1⁽¹⁾⁽²⁾. See sections 6.1 to 6.4 of this Certificate.
Regulation: Comment: Regulation: Standard: Comment: Standard: Comment:	The Bui 8(1)(2) 9 1.1(a)(b) 2.4	 Iding (Scotland) Regulations 2004 (as amended) Durability, workmanship and fitness of materials The product is an acceptable material. See sections 10 and 11 and the <i>Installation</i> part of this Certificate. Building standards applicable to construction Structure The product can contribute to satisfying this Standard, with reference to clause 1.1.1⁽¹⁾⁽²⁾. See sections 6.1 to 6.4 of this Certificate. Cavities The use of the product is restricted under this Standard, with reference to clause 2.4.2⁽¹⁾⁽²⁾. See sections 7.1, 7.2 and 7.5 to 7.10 of this Certificate.
Regulation: Comment: Comment: Standard: Comment: Standard: Comment: Standard: Comment:	The Bui 8(1)(2) 9 1.1(a)(b) 2.4 2.5	 Iding (Scotland) Regulations 2004 (as amended) Durability, workmanship and fitness of materials The product is an acceptable material. See sections 10 and 11 and the <i>Installation</i> part of this Certificate. Building standards applicable to construction Structure The product can contribute to satisfying this Standard, with reference to clause 1.1.1⁽¹⁾⁽²⁾. See sections 6.1 to 6.4 of this Certificate. Cavities The use of the product is restricted under this Standard, with reference to clause 2.4.2⁽¹⁾⁽²⁾. See sections 7.1, 7.2 and 7.5 to 7.10 of this Certificate. Internal linings The use of the product is restricted under this Standard, with reference to clause 2.5.1⁽¹⁾⁽²⁾. See sections 7.1, 7.2 and 7.5 to 7.10 of this Certificate. Standards application of the product is restricted under this Standard, with reference to clause 2.5.1⁽¹⁾⁽²⁾. See sections 7.1, 7.2 and 7.5 to 7.10 of this Certificate. Internal linings The use of the product is restricted under this Standard, with reference to clause 2.5.1⁽¹⁾⁽²⁾. See sections 7.1, 7.2 and 7.5 to 7.10 of this Certificate.
Regulation: Comment: Comment: Standard: Comment: Standard: Comment: Standard: Comment: Standard: Comment:	The Bui 8(1)(2) 9 1.1(a)(b) 2.4 2.5 2.6	 Iding (Scotland) Regulations 2004 (as amended) Durability, workmanship and fitness of materials The product is an acceptable material. See sections 10 and 11 and the <i>Installation</i> part of this Certificate. Building standards applicable to construction Structure The product can contribute to satisfying this Standard, with reference to clause 1.1.1⁽¹⁾⁽²⁾. See sections 6.1 to 6.4 of this Certificate. Cavities The use of the product is restricted under this Standard, with reference to clause 2.4.2⁽¹⁾⁽²⁾. See sections 7.1, 7.2 and 7.5 to 7.10 of this Certificate. Internal linings The use of the product is restricted under this Standard, with reference to clause 2.5.1⁽¹⁾⁽²⁾. See sections 7.1, 7.2 and 7.5 to 7.10 of this Certificate. Spread to neighbouring buildings

Standard: Comment:	3.10	Precipitation 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 9 of this Certificate.
Standard: Comment:	7.1(a)(b)	Statement of sustainability 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: Comment:	12	Building standards applicable to conversions 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 $6^{(1)(2)}$.
		(2) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).
	The Bui	Iding Regulations (Northern Ireland) 2012 (as amended)
Regulation: Comment:	23	Fitness of materials and workmanship The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation: Comment:	28(b)	Resistance to moisture and weather The product can contribute to satisfying this Regulation when installed in accordance with section 9 of this Certificate.
Regulation: Comment:	30	Stability The product can contribute to satisfying this Regulation. See sections 6.1 to 6.4 of this Certificate.
Regulation: Regulation: Comment:	34(a)(b) 35(4)	Internal fire spread — Linings Internal fire spread — Structure The product is unrestricted under these Requirements. See sections 7.1 to 7.3 and 7.7 to 7.10 of this Certificate.
Regulation: Comment:	36(a)	External fire spread The product is unrestricted under this Regulation. See sections 7.1 to 7.3 and 7.7 to 7.10 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 section: 1 Description (1.3 and 1.4) of this Certificate.

Additional Information

NHBC Standards 2019

In the opinion of the BBA, Fastclad, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Part 6 *Superstructure (excluding roofs)*, Chapters 6.2 *External timber framed walls*, 6.9 *Curtain walling and cladding* and 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 to BS EN 771-1 : 2011 with F2 Frost Durability and S2 Active Soluble Salt Content, 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 18 m in height unless specific conditions are met (see section 7). They are screw fixed to either preservative-treated timber battens or to stainless steel or galvanized steel frames. The steel should have a minimum specification of S350+Z275 to BS EN 10346 : 2015, but the galvanizing thickness should be increased appropriately to reflect the end-use conditions. For coastal installations the use of stainless steel should be considered.

1.3 The nominal characteristics of the product 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
Standard return unit (header) (mm)	107.5 x 107.5
Thermal resistance (m ² ·KW ⁻¹)	0.09
Water vapour resistance (MN·s·g ⁻¹)	2.3.

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



1.5 Materials used during installation include 4 mm diameter x 50 mm long stainless steel, countersunk screws for fixing panels to 50 x 50 mm timber battens.

1.6 Other materials used during installation, but outside of the scope of this Certificate, include:

- 50 x 50 mm timber battens⁽¹⁾
- 0.8 to 1.2 mm stainless steel, or galvanized steel framework to BS EN 10346 : 2015⁽²⁾
- stainless steel screws for fixing panels to steel framework⁽³⁾
- lime-based pointing mortar.
- (1) Timber battens should be a minimum strength grade of C14 as defined in BS EN 338 : 2016, and should be preservative-treated in accordance with BS EN 351-1 : 2007. The fixing of battens to the substrate is outside the scope of this Certificate.

(2) The design and fixing of the sub-frame is outside the scope of this Certificate.

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

2 Manufacture

2.1 In a factory process, brick slips are adhesively bonded to cement-bonded particle boards, which are then cured in a temperature-controlled environment.

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 storage

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

3.2 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.

3.3 Panels should be carried vertically and handled with care to avoid damage. Fixings should be protected from damp.

3.4 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

4 Use

4.1 Fastclad is satisfactory for use as a weather-resistant, non-structural cladding system, screw fixed to timber-frame, steel-frame or concrete frame buildings or to masonry or concrete walls, via timber or stainless steel or galvanized steel battens⁽¹⁾ or sub-frames. The panels are restricted to use on walls of new or existing buildings up to and including 18 m in height, unless specific conditions are met (see section 7)

(1) At maximum 400 mm centres.

4.2 The product can also be used on horizontal (downward facing) surfaces, such as soffits, provided it can be demonstrated by calculation, by a suitably experienced and competent individual, that it is capable of sustaining the loads likely to be experienced in that specific installation. Ventilation slots should be provided at a rate of 1500 mm²·m² of surface area, and adequate drainage paths and insect exclusion measures should be provided when designing for downward-facing applications. The Certificate holder can provide further details.

4.3 The product can be used in a vertical orientation, ie with the support battens running horizontally. In this case the top of the battens must be chamfered backwards at an angle of 15 degrees in order to shed any water towards the ventilation cavity. The chamfering must be done before the battens are vacuum impregnated with preservative.

4.4 The design and fixing of the sub-frame to the substrate is outside the scope of this Certificate.

4.5 The designer must ensure that the strength and integrity of the intended substrate is commensurate with that required of the cladding system (see sections 4.6 to 4.8).

4.6 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 following 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 1996-2 : 2006, BS EN 1996-3 : 2006 and their UK National Annexes, and the relevant national Building Regulations.

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

4.8 Stainless steel or 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.

4.9 The product will improve the weather resistance of an existing wall and provide a decorative finish. However, it should be installed only where other routes for moisture penetration have been dealt with separately (see section 9).

4.10 Walls incorporating the product should be designed in accordance with the relevant requirements of BS 5250 : 2011, taking into account the hygrothermal properties noted in clause 1.2.

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

5 Practicability of installation

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

6 Strength and stability



6.1 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.

6.2 The wall and sub-frame to which the product is fixed should be structurally sound and constructed in accordance with sections 4.5 to 4.8. When designing the wall for strength, stability and racking forces, contribution from the cladding should not be assumed.

6.3 Wind loads should be calculated by a suitably experienced and competent individual in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. The higher-pressure coefficients applicable to corners of buildings should be used.

6.4 The panels are capable of transmitting their self-weight and wind load to the structure, but the adequacy of the 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 experienced and competent individual.

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

Table 1 Access c	ategories to MOAT 43 : 1987		
Category	Description	Examples	
A	Readily accessible to public and others with little incentive to exercise care. Prone to vandalism and abnormally rough use	External walls of housing and public buildings in vandal prone areas	
В	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
C	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	pedestrian or floor
D	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	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 f public areas	oor level in
F	Above zone of normal impacts from people and not liable to those impacts from thrown or kicked objects	Wall surfaces at higher positions th in E above	an defined

7 Properties in relation to fire



7.1 The product achieved a reaction to fire classification of B-s1, d0 in accordance with BS EN 13501-1 : 2007.

7.2 The reverse side of the product is a Class 0 surface. Cavity barriers should be provided in accordance with the requirements of the documents supporting the national Building Regulations.



7.3 In England, Wales and Northern Ireland, the product is not classified as non-combustible or of limited combustibility and may be used on buildings at any proximity to a boundary. For buildings with a storey more than 18 m above the ground, designers should consider the impact on the risk of fire spread over the wall. See also section 7.4.



7.4 The product should not be used on buildings in England and Wales that have a storey at least 18 m above ground level and contain; one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools.



7.5 In Scotland, the panels are not classified as non-combustible, and may be used on buildings more than 1 m from a boundary and, on houses, 1 m or less from a boundary. With minor exceptions, the panels should be included in calculations of unprotected area, except on houses where the external wall behind has the appropriate fire resistance.

7.6 In Scotland, the panels should not be used on any building with a storey more than 11 m above the ground, or on any entertainment or assembly building with a total storey area more than 500 m², or on any hospital or residential care building with a total storey area more than 200 m².



7.7 When tested to BS 8414-1 : 2015 and BS 8414-2 : 2015, the overall construction shown in Table 2 met the performance criteria in BRE Report BR 135 : 2013, Annex B. Designers should refer to the fire test report reference DLR1464 (April 2018), available from the Certificate holder.

7.8 The construction described in section 7.7 is not subject to any restriction on proximity to boundaries or height, except those described in sections 7.4, 7.5 and 7.6.

7.9 For resistance to fire, the performance of a wall incorporating the product can only be determined by tests or assessment from a suitably accredited laboratory for the specific complete wall construction under consideration, and is not covered by this Certificate.

7.10 To limit the risk of fire spread between floors in buildings subject to the national Building Regulations, fire barriers must be incorporated in the cavity behind the panels as required under these Regulations, but should not block essential ventilation pathways. Guidance on fire barriers can be found in BRE Report BR 135 : 2013.

7.11 Designers should refer to the relevant national Building Regulations and guidance for detailed conditions of use, particularly in respect of requirements for substrate fire performance, cavity barriers, service penetrations and combustibility limitations for other materials and components used in the overall wall construction, for example, thermal insulation.

Table 2 Construction summar	y .
Assessment report number	Wall construction
DLR1464 (April 2018)	Fastclad panels fixed to Helping Hand galvanized steel brackets with 10 mm thick
	calcium silicate thermal break, 91 mm clear cavity, 120 mm thick Xtratherm safe-R RS
	thermal insulation (one 70 mm and one 50 mm thick). 12 mm Versaliner board fixed
	to the SFS steel frame, 100 mm thick Rockwool RW45A insulation and 2 x 15 mm
	Knauf fire panel. Supporting galvanized steel top hat and Z-rails and vertical and
	horizontal intumescent cavity barriers.

Note: All materials described in Table 2 with the exception of Fastclad are outside the scope of this Certificate.

8 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.

9 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.

10 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 Certificate holder.

11 Durability



The product will have a service life of at least 50 years.

Installation

12 General

12.1 Installation of Fastclad must be carried out in accordance with this Certificate and the Certificate holder's instructions.

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

13 Preliminary work

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

13.2 Areas of unevenness in the supporting substrate 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.

14 Procedure

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

14.2 The first row of boards is fixed to the battens above damp-proof course (dpc) level, making sure that it is level from corner to corner.

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

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

14.5 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.

14.6 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.

14.7 Horizontal and vertical movement joints, to accommodate thermal and moisture movement of the Fastclad, are required at a maximum of 6m between vertical joints and maximum 9m between horizontal joints. In addition, subject to design advice from a qualified Structural Engineer, movement of the building may dictate closer spacing or additional joints.

14.8 A minimum 15 mm drained and ventilated cavity must be maintained behind the cladding, with a minimum 10 mm wide ventilation and drainage slot at the top and bottom of the vertical air layers, and minimum 1500 mm² ventilation slots per m² of surface area for horizontal air layers. The cavities are therefore defined as 'well ventilated' in accordance with BS 5250 : 2011. 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. Ventilation slots should be designed to avoid water ingress into the cavity.

15 Finishing

15.1 Where there is a vertical joint between Fastclad and other cladding materials (including traditional brickwork) or where Fasclad abuts a window or door frame, or a trim, a strip of coloured sealant should be applied to seal the panels, taking care to avoid oversealing any ventilation slots.

15.2 Lime-based 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

16 Tests

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

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

16.2 An evaluation was conducted of data relating to:

- reaction to fire classification to BS EN 13501-1 : 2007
- fire performance testing to BS 8414-2 : 2015.

17 Investigations

17.1 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.

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

Bibliography

BRE Report BR 135 : 2013 Fire performance of external thermal insulation for walls of multistorey buildings

BS 5250 : 2011 + A1 : 2016 Code of practice for control of condensation in buildings

BS 8414-1 : 2015 + A1 : 2017 Fire performance of external cladding systems. Test method for non-loadbearing external cladding systems applied to the masonry face of a building

BS 8414-2 : 2015 + A1 : 2017 Fire performance of external cladding systems. Test method for non-loadbearing external cladding systems fixed to and supported by a structural steel frame

BS EN 338 : 2016 Structural timber — Strength classes

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 771-1 : 2011 + A1 : 2015 Specification for masonry units — Clay masonry

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

BS EN 1992-1-1 : 2004 + A1 : 2014 Eurocode 2 : Design of concrete structures — General rules and rules for buildings NA + A2 : 14 to BS EN 1992-1-1 : 2004 + A1 : 2014 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 + A2 : 2014 Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings

NA to BS EN 1995-1-1 : 2004 + A1 : 2008 UK National Annex to *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*

BS EN 1996-1-1 : 2005 + A1 : 2012 Eurocode 6 : Design of masonry structures — General rules for reinforced and unreinforced masonry structures

NA to BS EN 1996-1-1 : 2005 + A1 : 2012 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 : 2015 Continuously hot-dip coated steel for cold forming — Technical delivery conditions

BS EN 13501-1 : 2007 + A1 : 2009 Fire classification of construction products and building elements — Classification using test data from reaction to fire tests

BS EN 13823 : 2010 + A1 : 2014 Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item

MOAT 43 : 1987 UEAtc directives for impact testing opaque vertical building components

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

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.

British Board of Agrément		
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