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Agrément Certificate
08/4516
Product Sheet 1

ARGETON CLADDING SYSTEMS

ARGETON TERRACOTTA RAINSCREEN CLADDING SYSTEM

This Agrément Certificate Product Sheet⁽¹⁾ relates to ArGeTon Terracotta Rainscreen Cladding System for use as a decorative/protective façade over the external walls of buildings.

(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 — the system can be designed to resist wind loads normally encountered in the UK (see section 6).

Behaviour in relation to fire — for reaction to fire, the system may be regarded as having a Class 0 surface or 'low risk' in the relevant national Building Regulations (see section 7).

Air and water penetration — the baffled vertical and horizontal joints between the tiles will minimise water entering the cavity. Any water collecting in the cavity will be removed by drainage and ventilation (see section 8).

Durability — in normal UK conditions, the system will have a service life in excess of 35 years (see section 10).

The BBA has awarded this Certificate to the company named above for the product described herein. The 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

Handwritten signature of Brian Chamberlain in black ink.

Brian Chamberlain
Head of Approvals — Engineering

Handwritten signature of Greg Cooper in black ink.

Greg Cooper
Chief Executive

Date of Second issue: 20 November 2012

Originally certificated on 21 January 2008

Certificate amended on 17 December 2013 to update strength and stability section 6.6 and 6.7.

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, ArGeTon Terracotta Rainscreen Cladding System, if installed, used and maintained in accordance with this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement: A1	Loading
Comment:	The system is acceptable for use as set out in sections 4.2 and 6.1 to 6.8 of this Certificate.
Requirement: B4(1)	External fire spread
Comment:	The system is judged to meet the Class 0 requirements. See sections 7.1 to 7.4 of this Certificate.
Requirement: C2(b)(c)	Resistance to moisture
Comment:	The system will meet the stated requirements. See sections 8.1 to 8.5 of this Certificate.
Requirement: Regulation 7	Materials and workmanship
Comment:	The system is acceptable. See section 10.1 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2)	Fitness and durability of materials and workmanship
Comment:	The system can contribute to a construction satisfying this Regulation. See section 9.1, 10.1 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards – construction
Standard: 1.1(a)(b)	Structure
Comment:	The system is acceptable, with reference to clause 1.1.1 ⁽¹⁾⁽²⁾ . See sections 4.2 and 6.1 to 6.8 of this Certificate.
Standard: 2.4	Cavities
Comment:	The system, when used in conjunction with fire-resistant materials, can meet this Standard, with reference to clauses 2.4.1 ⁽¹⁾⁽²⁾ , 2.4.2 ⁽¹⁾⁽²⁾ and 2.4.9 ⁽¹⁾⁽²⁾ . See section 7.4 of this Certificate.
Standard: 2.6	Spread to neighbouring buildings
Comment:	The system can contribute to satisfying this Standard, with reference to clauses 2.6.4 ⁽¹⁾⁽²⁾ , 2.6.5 ⁽¹⁾ and 2.6.6 ⁽²⁾ . See sections 7.1 to 7.4 of this Certificate.
Standard: 2.7	Spread on external walls
Comment:	The system can contribute to satisfying this Standard, with reference to clause 2.7.1 ⁽¹⁾⁽²⁾ . See sections 7.1 to 7.3 of this Certificate.
Standard: 3.10	Precipitation
Comment:	The system will contribute to meeting this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ to 3.10.3 ⁽¹⁾⁽²⁾ , 3.10.5 ⁽¹⁾⁽²⁾ and 3.10.6 ⁽¹⁾⁽²⁾ . See sections 8.1 to 8.5 of this Certificate.
Standard: 7.1(a)(b)	Statement of sustainability
Comment:	The system can contribute to meeting the relevant Requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard. (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012

Regulation: 23(a)(i)(iii)(b)	Fitness of materials and workmanship
Comment:	The system is acceptable. See section 10.1 and the <i>Installation</i> part of this Certificate.
Regulation: 28	Resistance to ground moisture and weather
Comment:	The system will contribute to meeting this Regulation. See sections 8.1 to 8.5 of this Certificate.
Regulation: 30	Stability
Comment:	The system is acceptable as set out in sections 4.2 and 6.1 to 6.8 of this Certificate.
Regulation: 36	External fire spread
Comment:	The system is judged to meet the Class 0 requirements. See sections 7.1 to 7.4 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 3 *Delivery and site handling* (3.5 and 3.6) of this Certificate.

Additional Information

NHBC Standards 2011

NHBC accepts the use of the ArGeTon Terracotta Rainscreen Cladding System, when installed and used in accordance with this Certificate, as meeting the requirements of the *NHBC Standards, Chapter 6.9 Curtain walling and cladding, Clause D8.*

Technical Specification

1 Description

1.1 The ArGeTon Terracotta Rainscreen Cladding System comprises ceramic tiles (see Figure 1) which are fixed onto the substrate via vertical or horizontal aluminium support rails and purpose-made metal clamps or clips.

1.2 The tiles are of one basic design in the dimensions and characteristics of:

Height (mm)	150, 175, 187.5, 200, 212.5, 225, 237.5, 250, 300, 350 and 400
length (mm)	150 to 1500
nominal thickness (mm)	30
maximum dry mass ($\text{kg}\cdot\text{m}^{-2}$)	50
maximum total installed mass of ($\text{kg}\cdot\text{m}^{-2}$)	55
tile lip thickness (mm)	8, 12.

1.3 The tiles are available in standard smooth, glazed, engobe, riven, brushed or wire dragged finishes in 13 natural mineral colours.

Figure 1 Tile cross-sections

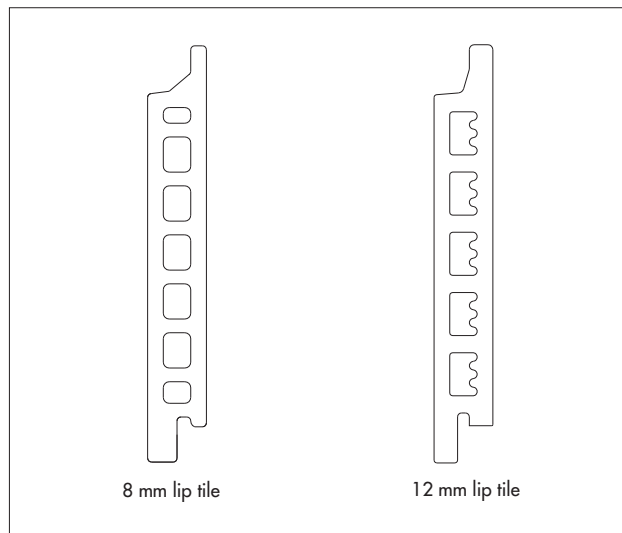
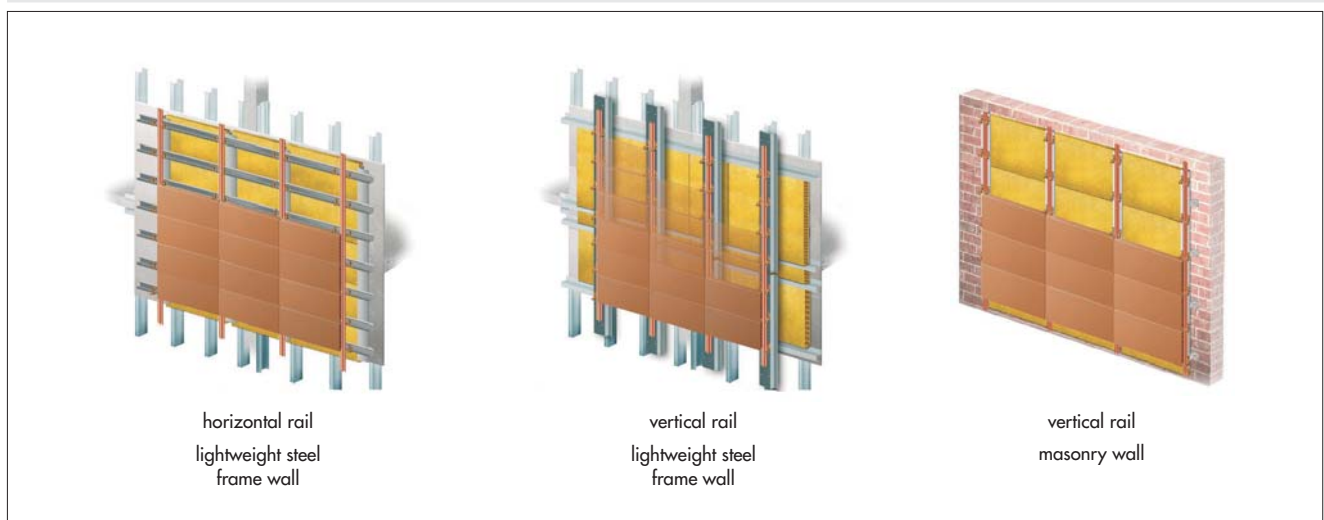


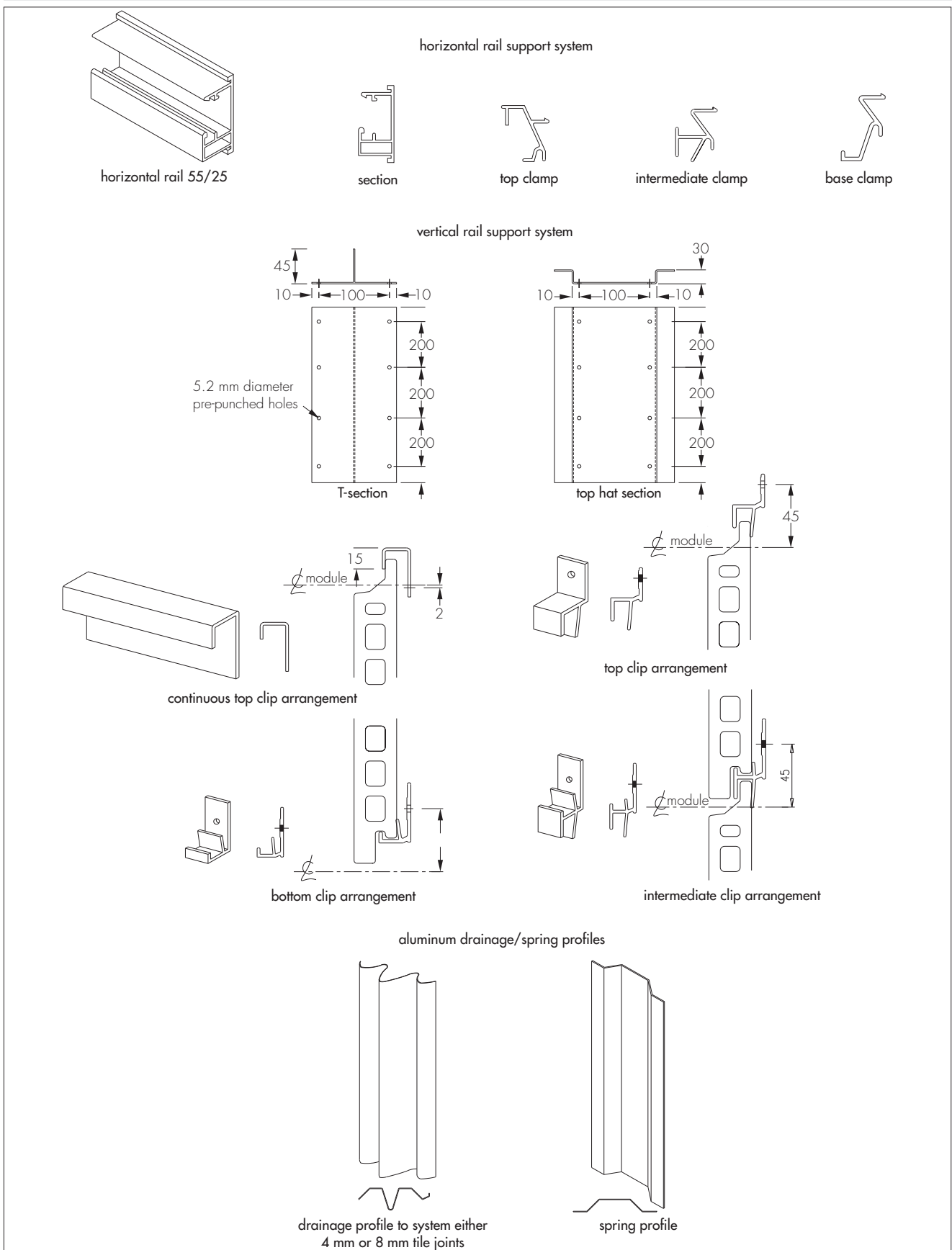
Figure 2 General arrangement of support systems



1.4 All components of the sub-frame (ie clamps, clips, rails and brackets)⁽¹⁾, designed and supplied by Telling Architectural Limited to support the tiles, are manufactured from aluminium grade 6063-T6 (see Figure 3). Slotted holes are provided in the brackets to allow correct alignment of sub-frame attachment systems.

(1) Outside the scope of this Certificate.

Figure 3 Ancillary components (dimensions in mm)



1.5 Other components used with the system but are outside the scope of this Certificate, include:

- insulation — non combustible rigid type, eg batts or boards
- breather membrane — permeable type

2 Manufacture

2.1 The tiles are produced from an extrusion process fired at high temperatures from clay materials and natural pigments and treated to a defined finish.

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 non-conformities
- 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 tiles are manufactured in Germany and marketed/distributed in the UK by the Certificate holder.

3 Delivery and site handling

3.1 The tiles are delivered to site in packs of five, with each pack separated by thin strips of oil-free non-adhesive resin beads and stacked, no more than five tile-widths high, onto pallets and shrink wrapped. The pallets bear product details such as type, size, quantity, identification code, manufacturing references and colour.

3.2 To prevent damage to the tiles, the pallets should not be stacked on top of each other.

3.3 The aluminium support rails are delivered to site banded onto a wooden pallet with ancillary items in separate cardboard boxes.

3.4 Packs of rails should be stacked horizontally on sufficient bearers to prevent distortion, to a maximum height of 1 m. Other components should be safely stored until ready for use.

3.5 The tiles should be handled with care to avoid damage or breakage. Care is required when handling long lengths of rail, particularly at height.

3.6 Protective clothing should be worn as required and all Health and Safety regulations should be observed.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the ArGeTon Terracotta Rainscreen Cladding System.

Design Considerations

4 Use

4.1 The ArGeTon Terracotta Rainscreen Cladding System provides a decorative/protective façade over the external walls of buildings and must be provided with back ventilation and drainage. The cavity behind the cladding should be as wide as possible, with a minimum ventilation area of 100 cm² per metre run of cladding. The ventilation openings, where wider than 10 mm, should be suitably protected, or baffled, to prevent the ingress of birds, vermin and rain.



4.2 The wall and the sub-frame to which the cladding is fixed should be structurally sound and constructed in accordance with the requirements of the relevant national Building Regulations and national Standards.

4.3 The wall to which the cladding is fixed should be watertight and resistant to the transmission of heat and sound.

4.4 As the rainscreen is open jointed, the insulation behind the cladding needs to be suitably fixed to the supporting wall, and protected, to resist the forces of wind suction. Insulation should be of a rigid type (eg boards or batts). The ventilation pathway behind the cladding must not be allowed to become blocked nor the insulation dislodged where it may be vulnerable to wetting.

4.5 To allow for thermal expansion, a gap of 2 mm gap per metre length of aluminium support rail between adjacent rails should be provided.

4.6 All design aspects of the installation should be checked by a suitably qualified engineer or other appropriately qualified person. For advice on specific construction details, eg flue pipe penetrations, the Certificate holder should be consulted.

5 Practicability of installation

The system is suitable for installation by cladding contractors provided they have undergone suitable training by the Certificate holder.

6 Strength and stability

Wind loading



6.1 A suitably qualified and experienced individual must check the design and installation of the cladding system.

6.2 Wind loads should be calculated in accordance with BS EN 1991-1-4 : 2005 or BS 6399-2 : 1997.

6.3 When calculating wind loads, higher pressure coefficients applicable to corners of the building should be used.

6.4 As the rainscreen is open-jointed, the supporting wall must be able to take the full wind, as well as any racking loads on its own. No contribution from the cladding may be assumed in this regard.

6.5 Fixing of the support rails to the substrate should ensure adequate tensile pull-out and corrosion resistance (not covered by this Certificate).

6.6 Based on full scale tests and calculations, the characteristic wind load resistance of the system may be taken as 2.4 kPa and the ultimate wind load resistance as 3.6 kPa provided the designer ensures that:

- For the horizontal rail system, the clamps do not exceed 600 mm apart along the rail and the rails are no more than 400 mm centres
- For the vertical rail system, the clips do not exceed 400 mm apart along the rail and the rails are no more than 600 mm centres
- Design of the horizontal and vertical rails should be such as to limit the mid-span deflections to $L/200$ and cantilever deflections to $L/150$
- Fixing of the support rails to the substrate has adequate pull-out resistance.

Impact

6.7 When tested for soft and hard body impacts in accordance with BS 8200 : 1985, the ArGeTon Terracotta Rainscreen Cladding System achieved adequate resistance. Therefore, provided the distance between the clamps (or clips) along the tile support rail does not exceed 600 mm (for horizontal rail arrangement at maximum 400 mm apart) or 400 mm (for vertical rail arrangement at maximum 600 mm apart), and the tile width does not exceed 400 mm; the tiles are considered suitable for use categories B to F as outlined in BS 8200 : 1985 Table 2.

7 Behaviour in relation to fire



7.1 For reaction to fire, the ceramic tiles, aluminium support rails and their fixings are non-combustible and may therefore be regarded as having a Class 0 surface or 'low risk' in relation to the national Building Regulations:

England and Wales — Approved Document B

Scotland — Annex 2C⁽¹⁾ and Annex 2E⁽²⁾

Northern Ireland — Technical Booklet E

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

7.2 For resistance to fire, the performance of a wall incorporating the rainscreen can only be determined by tests from a suitably accredited laboratory and is not covered by this Certificate.

7.3 The incorporation of combustible material behind the cladding should be avoided wherever possible; any insulation should be non-combustible.

7.4 Cavity barriers should be incorporated behind the cladding, as required under the national Building Regulations, but should not block essential ventilation and drainage pathways.

8 Air and water penetration



8.1 The system is not watertight, but intentionally open-jointed, back ventilated and drained.

8.2 The supporting wall must be watertight and reasonably airtight.

8.3 The 4 mm and 8 mm vertical joints, coinciding with the vertical sub-frame rail, and the 12 mm baffled horizontal joint should minimise water penetration into the cavity. Any water collecting in the cavity due to rain or condensation will be removed by ventilation and drainage.

8.4 To protect the supporting wall or insulation from wind-driven rain, a vapour permeable membrane, conforming to BS 4016 : 1997, should be applied (not covered by this Certificate).

8.5 The air space between the back of the tiles and supporting wall or insulation must be 38 mm and 50 mm minimum for baffled and open joints respectively as given in *NHBC Standards 2011*, Chapter 6.9, while allowing for conventional building tolerances.

9 Maintenance



9.1 Cleaning at regular intervals should be undertaken. For normal soiling, the surface may be cleaned using hot water/household detergent mixture, applied with a suitable cleaning pad or sponge. For more difficult chemical soiling, the manufacturer's specialist advice must be sought.

9.2 Annual maintenance inspections should be carried out to ensure that all drainage channels are in good order and that the tiles, flashings and seals are in place and are secure.

9.3 Damaged tiles should be replaced as soon as practicable following the manufacturer's instructions and observing all necessary health and safety regulations. The specially designed metal clips allow individual tiles to be replaced without disturbing adjacent tiles (see Figure 1).

10 Durability



10.1 The tiles will have a service life in excess of 35 years when used in normal exposure conditions in the United Kingdom.

10.2 After natural weathering, a slight change in colour shade may occur, particularly on the dark-coloured material. However, this process is not likely to be progressive.

10.3 The aluminium sub-frame components will have a service life at least commensurate with that of the tiles they are supporting.

Installation

11 General

11.1 It is important for the designers, planners, contractors and/or installers to ensure that the installation of ArGeTon Rainscreen Cladding System is in accordance with the Certificate holder's recommendations, the requirements of this Certificate and specifications laid down by the consulting engineer.

11.2 Installers must be trained and approved by the Certificate holder who can provide technical assistance at the design stage and at the start of the installation.

11.3 Reference should be made to Figures 1 and 2 when reading the procedural details given in section 12.

11.4 If significant colour variations between batches are likely, it may be necessary to mix the tiles from different pallets so as to obtain a uniform shade over the façade.

12 Procedure

12.1 Based on the architectural and design specifications, a grid layout is first prepared. Accurate grid positioning and installation of the sub-frame is essential.

12.2 Depending on the substrate wall and the support system adopted, the aluminium tile support rails or clips should be attached to the sub-frame and correctly aligned to receive the tiles.

12.3 Permeable membrane should be applied to protect the substrate wall, or insulation, as appropriate.

12.4 The tiles are then secured to the support rails via the clamps or clips.

Technical Investigations

13 Investigations

13.1 Using test data from accredited facilities, an assessment was made of the system's resistance to wind loading and impact.

13.2 An assessment was made of the system's durability, behaviour in relation to fire and practicability of installation.

13.3 An assessment was made of the tile production method, associated quality control procedures, and the system's history of use.

13.4 The Certificate holder's technical literature and detail drawings were examined for any inconsistencies and general content.

Bibliography

BS 4016 : 1997 *Specification for flexible building membranes (breather type)*

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 1991-1-4 : 2005 *Eurocode 1 : Actions on structures — General actions — Wind actions*

14 Conditions

14.1 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.

14.2 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.

14.3 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.

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

14.5 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.

14.6 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.