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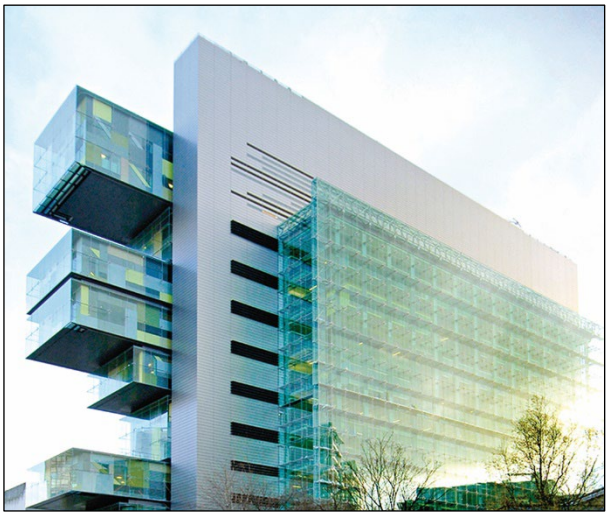
Agrément Certificate
19/5638
Product Sheet 2

ALPOLIC PANELS

ALPOLIC A1 CLADDING PANELS

This Agrément Certificate Product Sheet (1) relates to ALPOLIC (2) A1 Cladding Panels, aluminium composite panels used in open-jointed, back-ventilated, and drained rainscreen cladding systems, for use over the external walls of new and existing buildings.



(1) Hereinafter referred to as 'Certificate'.
(2) ALPOLIC is a registered trademark.

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 panels, when incorporated in a suitably designed cladding system, can safely resist the wind and impact actions normally encountered in the UK (see section 6).

Behaviour in relation to fire — constructions incorporating the panels have achieved an A1, reaction to fire classification to BS EN 13501-1 : 2018, and their use is restricted in some cases (see section 7).

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

Durability — under normal conditions, the products will perform effectively as an external cladding with a service life of at least 30 years. The FEVE coating and the real anodised oxide layer will retain a good appearance for at least 20 years in non-corrosive environments and at least 15 years in severe industrial environments (see section 10).

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 First issue: 6 May 2022

Hardy Giesler
Chief Executive Officer

Regulations

In the opinion of the BBA, ALPOLIC A1 Cladding Panels, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):

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

Requirement:	**A1**	**Loading**
Comment:		The panels are acceptable for use as set out in sections 6.4 to 6.9 of this Certificate.
Requirement:	**B3(4)**	**Internal fire spread (Structure)**
Comment:		The panels can contribute to meeting this Requirement. See section 7.2 of this Certificate.
Requirement:	**B4(1)**	**External fire spread**
Comment:		The panels can contribute to satisfying this Requirement. See sections 7.1 to 7.5 of this Certificate.
Requirement:	**C2(b)**	**Resistance to moisture**
Comment:		The panels can contribute to satisfy this Requirement. See section 8.1 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The panels are acceptable. See section 10 and the *Installation* part of this Certificate.
Regulation:	**7(2)**	**Materials and Workmanship**
Comment:		The panels may be restricted by this Regulation in some cases. See sections 7.1 and 7.3 to 7.5 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)(2)**	**Durability, workmanship and fitness of materials**
Comment:		The panels can contribute to a construction satisfying this Regulation. See sections 9.1, 9.3, 10 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	1.1(a)(b)	Structure
Comment:		The panels are acceptable, with reference to clauses 1.1.1$^{(1)(2)}$, 1.1.2$^{(1)(2)}$ and 1.1.3$^{(1)(2)}$ of this Standard. See sections 6.4 to 6.9 of this Certificate.
Standard:	2.4	Cavities
Comment:		The panels can contribute to meeting this Standard, with reference to clauses 2.4.1$^{(1)(2)}$, 2.4.2$^{(1)(2)}$, 2.4.5$^{(1)(2)}$ and 2.4.9$^{(1)(2)}$ of this Standard. See sections 7.2 and 7.3 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Comment:		The panels 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 7.5 of this Certificate.
Standard:	2.7	Spread on external walls
Comment:		The panels can contribute to satisfying this Standard, with reference to clause 2.7.1$^{(1)(2)}$. See sections 7.1 to 7.5 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The panels will contribute to satisfying 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 section 8.1 of this Certificate.

Standard:	7.1(a)	Statement of sustainability
Comment:		The panels can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	**12**	**Building standards applicable to conversions**
Comment:		Comments in relation to the products under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1[(1)(2)] and Schedule 6[(1)(2)].

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

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

Regulation:	**23(a)(i)(iii)**	**Fitness of materials and workmanship**
Comment:		The panels are acceptable. See section 10 and the *Installation* part of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The panels will contribute to a roof satisfying this Regulation. See section 8.1 of this Certificate.
Regulation:	**30**	**Stability**
Comment:		The panels are acceptable as set out in sections 6.4 to 6.9 of this Certificate.
Regulation:	**35(4)**	**Internal fire spread - Structure**
Comment:		The panels can contribute to meeting this Regulation. See section 7.2 of this Certificate.
Regulation:	**36(a)**	**External fire spread**
Comment:		The panels can contribute to satisfying this Regulation. See sections 7.1 to 7.5 of this Certificate.

Construction (Design and Management) Regulations 2015
Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 1 *Description* (1.2), 3 *Delivery and site handling* (3.4) and 9 *Maintenance* (9.3) of this Certificate.

Additional Information

NHBC Standards 2022

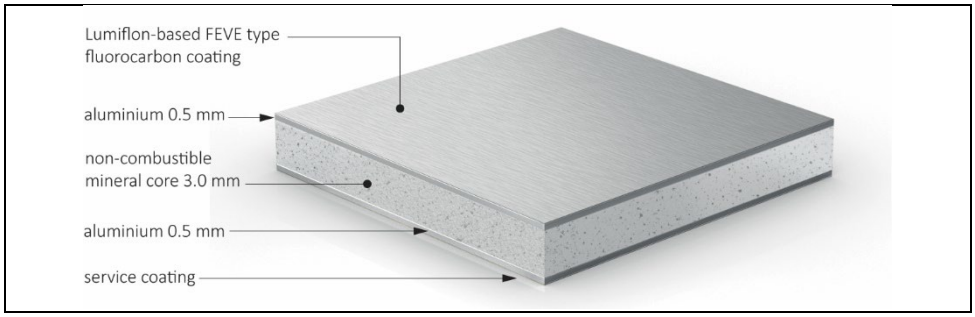
In the opinion of the BBA, ALPOLIC A1 Cladding Panels, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Part 6 *Superstructure (excluding roofs),* Chapter 6.9 *Curtain walling and cladding.*

Technical Specification

1 Description

1.1 ALPOLIC A1 Cladding Panels are flat aluminium composite panels comprising two 0.5 mm thick aluminium sheets (EN AW-3105-H44, 3005-H44, 5005-H14, 5005-H24 or 1085-H18 to BS EN 573-3 : 2019) bonded by an adhesive film to either side of a 3 mm thick ALPOLIC NC core (comprises inorganic filler). The exposed face is coated with either a minimum of 22 µm layer of FEVE (Lumiflon-based FEVE type fluorocarbon coating) paint or an 8 µm anodised oxide layer; a polyester-based wash coating protects the unexposed face (see Figure 1).

Figure 1 ALPOLIC A1 Cladding Panel build-up



1.2 The panels have the nominal characteristics given in Table 1.

Table 1 Panels dimensions and characteristics

Characteristic (unit)	ALPOLIC A1
Width (mm)	1000, 1250, 1500, 1750, 2015 ± (1.0 mm/m)
Length (mm)	1800 – 7200 ± (1.0 mm/m)
Thickness (mm)	4 ± 0.2
Mass per unit area ($kg \cdot m^{-2}$)	8.6 ± 0.80
Colours	Solid, Metallic, Sparkling, Prismatic and NaturArt Series, ReAL Anodized

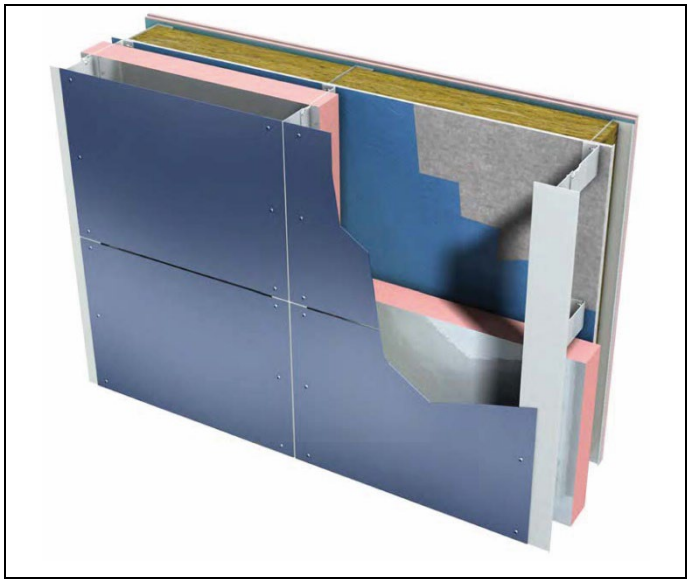
1.3 The panels are mechanically fastened to the aluminium rails(1) using aluminium rivets forming an open-jointed cladding system. The rivets, available in 5 mm diameter and in lengths depending on the specific application, are made of AlMg3 with a zinc-plated mandrel. The minimum edge distance is 16 mm. Details of panel mountings are shown in Figures 2 and 3.

(1) Outside the scope of this Certificate.

1.4 Ancillary Items used with the products, but outside the scope of this Certificate, include:

- aluminium sub-frame (rails, wall brackets and fixings)
- substrate anchors — used to fix wall brackets to the substrate wall (specification dependent on the strength of the substrate)
- substrate wall
- insulation — rigid or semi-rigid insulation boards
- UV resistant breather membrane
- cavity barriers
- protective cavity mesh
- Thermal pad.

Figure 2 ALPOLIC A1 Cladding Panels and typical fixing system



2 Manufacture

2.1 The panels are manufactured by bonding the two pre-coated aluminium sheets to both sides of the extruded core in a continuous lamination process.

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 being operated by the manufacturer are being maintained.

2.3 The quality management system of the Certificate holder have been assessed and registered as meeting the requirements of EN ISO 9001 : 2015 by TUV Rheinland (Certificate 011001600503).

3 Delivery and site handling

3.1 The panels, individually labelled with the batch number, are delivered to site in wooden crates and wrapped in protective sheets. The crates bear product details such as type, size, quantity, identification code, manufacturing references and colour.

3.2 The panels should be stored indoors in wooden crates using a flat or vertical rack system. In the vertical rack system, care should be taken in placing a rubber mat on the bottom, leaning panels closely against an inclined backing material within 10°. The protective film on the panels should be removed as soon after installation as possible.

3.3 The panels should be handled with care to avoid damage. They should be lifted off, rather than slid across, each other. For temporary support during installation, polystyrene or foam wedges may be used.

3.4 Care should be exercised when handling the panels to avoid injury from sharp edges. Protective clothing should be worn and all Health and Safety rules observed.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on ALPOLIC A1 Cladding Panels.

Design Considerations

4 Use

4.1 ALPOLIC A1 Cladding Panels are satisfactory for use in an open-jointed, back-ventilated and drained cladding system on the external walls of new and existing buildings. Height restrictions may apply (see section 7).

4.2 It is important for designers, planners, contractors and/or installers to ensure that the installation of the panels is in accordance with the Certificate holder's instructions and the information given in this Certificate. All design aspects should be checked by a suitably qualified and experienced individual in accordance with the requirements of the relevant national Building Regulations and Standards. For advice on specific construction details, eg flue pipe penetrations, the Certificate holder should be consulted.

4.3 The substrate wall and the sub-frame to which the panels are to be fixed must be structurally sound, and designed and constructed in accordance with the requirements of the relevant national Building Regulations and Standards. The contribution of the panels to the stability of the substrate wall and subframe is assumed to be negligible.

4.4 Ventilation and drainage must be provided behind the panels. As the panels are open-jointed, the clear cavity between the back of the panel and the substrate wall (or insulation if installed on the substrate wall) must be at least 40 mm wide and ensure that a minimum ventilation area of 5000 mm^2 per metre run is provided at the building base point and at the roof edge. Horizontal and vertical joint gaps between the panels must be between 10 and 15 mm wide. All ventilation openings around the periphery of a cladding system incorporating the panels should be suitably protected with a mesh or a perforated sheet or similar, to prevent the ingress of birds, vermin and insects. Also see section 7.2.

4.5 To allow for longitudinal expansion, a minimum gap of 2 mm per metre length between adjacent support rails should be provided. The panels must not be installed across this gap. To allow for expansion, the panels are installed on the sub-frame with one fixed fitted point in the middle of the panel and oversized holes for the edge fixings (see section 13.6).

4.6 As the panels are open-jointed, any insulation installed behind the cladding must be suitably fixed to the supporting wall to resist forces generated by wind actions and insulation self-weight. Insulation should be of a rigid or semi-rigid type (eg boards) and, where its performance could be diminished by moisture, a breather membrane should be provided over its outer face.

5 Practicability of installation

The products are suitable for installation by cladding contractors provided they have undergone suitable training. The Certificate holder can provide advice on installation if required.

6 Strength and stability

Wind loading

6.1 The wind loads on the wall should be calculated in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. Special consideration should be given to locations with high wind-load pressure coefficients, as additional fixings may be necessary. In accordance with BS EN 1990 : 2002 and its UK National Annex, it is recommended that a partial factor of 1.5 be applied to the characteristic wind loading to determine the ultimate wind load to be resisted by the cladding system.

6.2 The supporting wall must have sufficient strength to resist independently the loads imparted directly by the cladding system and wind actions normally experienced in the UK, as well as any in plane force effects. The supporting subframe must have sufficient stiffness, such that its deformation does not affect the performance of the panels. The panels do not enhance the structural performance of the wall.

6.3 The designer should ensure that:

- the design of the sub-frame and its fixings is in accordance with the relevant codes and Standards, such as to limit mid-span(1) deflections to span/200 and cantilever deflections to span(2)/150
- the panels are fixed to the sub-frame using the specified fixing mechanisms (see section 1.3)
- the specified fixings of the panels to the subframe vertical rail have adequate tensile and pull-out strength to resist the applied actions
- fixing of the support brackets to the supporting wall has adequate tensile pull-out strength and corrosion resistance. An appropriate number of site-specific pull-out tests must be conducted on the wall as appropriate to determine the minimum pull-out resistance to failure of the fixings, as well as their characteristic pull-out resistance in accordance with the guidance given in BS EN 1990 : 2002.

(1) Vertical distance between the fixing brackets.
(2) Vertical distance between the bracket and the end of the rail subframe.

6.4 For design purposes, the characteristic values given in Table 2, derived from test results in accordance with BS EN 1990, may be used to calculate design values.

Table 2 Characteristic Panel properties

Panel type	Panel thickness (mm)	bending stress $\sigma_{B,max}$ ($N \cdot mm^{-2}$)	Effective Bending Stiffness $(EJ)_{eff}$ ($N \cdot m^2 \cdot m^{-1}$)
ALPOLIC A1	4	182.1	214

6.5 Aluminium rivets should be used to attach the panels to the support frame (see section 1.3 and Figure 1). The design should ensure adequate capacity against wind pressure/suction. To allow for panel expansion, oversized holes as well as fitted holes are to be provided as described in section 13.6.

6.6 For sliding point holes (8.5mm diameter - see section 13.6), the panels have the characteristic pull-though resistance, in conjunction with the rivets defined in section 1.3, given in Table 3.

Table 3 Characteristic pull-through resistance(1)(2)

Panel type	Characteristic pull-through resistance (N)	
	Panel edge	Panel corner
ALPOLIC A1	956.7	937.6

(1) For design value calculations a partial factor of 2.4 must be applied.
(2) The characteristic pull-through values given in Table 3 may be adopted for fixed point holes on the panel holes (6.0 mm diameter - see section 13.6).

6.7 A cladding system consisting of the 4 mm thick panels (1500 mm wide and 2500 mm long) fixed to vertical rails spaced 600 mm apart with the rivets specified in section 1.3, spaced 300 mm vertically and 600 mm horizontally, was assessed to have a design wind load resistance of 2.6 kPa(1). A similar system, differentiated by a 500 mm vertical spacing between the rivets, has a design wind load resistance of 1.7 kPa(1).

(1) Obtained applying a safety factor of 2 to the test failure value.

6.8 For system arrangements other those stated in section 6.7, the wind load resistance should be taken as the lesser value between that obtained by considering the panels flexural rigidity (see Table 2) and the resistance to pull-through of the panels in conjunction with specified fixings (see Table 3), also taking into consideration the aspects specified in section 6.3.

Impact

6.9 A cladding system(1) comprising the 4 mm thick ALPOLIC A1 panels (1200 mm wide and 1800 mm long) supported by vertical aluminium rails spaced 600 mm apart, was assessed to have hard and soft body impact resistance suitable for use in Categories I to IV, as defined in Table G.2 of EAD 090062-00-0404 : 2018, (an extract of which is shown in Table 4 of this Certificate).

(1) The results apply only to the system configuration tested.

Table 4 Impact Use Categories (reproduced from EAD 090062-00-0404 : 2018, Table G.2*)*

Category	Use
I	A zone readily accessible at ground level to the public and vulnerable to hard body impacts but not subjected to abnormally rough use, eg façade bases in buildings sited in public locations, such as squares, schoolyards or parks. Cleaning gondolas may be used on the façade.
II	A zone liable to impacts from thrown or kicked objects, but in public locations where the height of the kit will limit the size of the impact; or at lower levels where access to the building is primarily to those with some incentive to exercise care, eg façade bases in buildings not sited in public locations (such as squares, schoolyards or parks) or upper façade levels in buildings sited in public locations that occasionally can be hit by a thrown object (eg ball, stone, etc). Cleaning gondolas may be used on the façade.
III	A zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects, eg upper façade levels in buildings (not including base) not sited in public locations, that occasionally can be hit by a thrown object (eg ball, stone, etc). Cleaning gondolas should not be used on the façade.
IV	A zone out of reach from ground level, eg high façade levels that cannot be hit by a thrown object. Cleaning gondolas should not be used on the façade.

7 Behaviour in relation to fire

7.1 Constructions incorporating the panels achieved the reaction to fire classifications shown in Table 5.

Table 5 Reaction to fire classifications

Classification	Product	Construction	Classification method/report reference(1)
A1	ALPOLIC A1 panels in any colour	Panel joint widths $\leq$ 15 mm, aluminium subframe with an air cavity $\geq$ 40 mm over any A1 or A2-s1, d0 substrate $\geq$ 9 mm thick and density $\geq$ 652.5 kg·m^{-3} or a mineral wool substrate $\geq$ 50 mm thick and density 30 - 70 kg·m^{-3}.	BS EN 13501-1 : 2018, EAD 090062-00-0404 : 2018, BS EN 15715 : 2010 and EN TS 15117 : 2005 / WF 505465 dated 7th July 2021
A1	core	Core in isolation (no aluminium sheets either side)	BS EN 13501-1 : 2018 / WF 438247 dated 15 March 2021

(1) Copies available from the Certificate holder.

7.2 The reverse side of the panels (facing into the cavity) have the reaction to fire classification in Table 5. Cavity barriers should be provided in accordance with the requirements of the documents supporting the national Building Regulations and should not impede drainage and ventilation pathways.

7.3 The aluminium rivets for securing the panels to the subframe, have an A1 reaction to fire classification in accordance with the relevant national regulatory guidance.

7.4 The classification in Table 5 may not be achieved by other constructions which should therefore be confirmed in accordance with the requirements of the documents supporting the national Building Regulations and any consequent restrictions imposed by those documents, on a case-by-case basis.

7.5 The constructions in Table 5 are not subject to any restriction on building height or proximity to a boundary. See also section 7.4 of this Certificate.

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

7.7 Where a wall incorporating the product is subject to fire-resistance requirements, an appropriate test or assessment must be carried out by a laboratory accredited for the test concerned by the United Kingdom Accreditation Service (UKAS), or equivalent accreditation body, or an assessment made by a suitably qualified and experienced individual.

8 Air and water penetration

8.1 The panels are suitable for use in back-ventilated and drained cladding systems.

8.2 The wall to which the cladding is fixed must satisfy the requirements of the relevant national Building Regulations and Standards.

8.3 The joints between panels are open (ie gaps between panels are minimum 10 mm) but any water entering the cavity behind the panels by wind-driven rain or condensation will be minimal and removed by drainage and ventilation.

8.4 The air space between the back of the panels and the supporting wall or insulation must be at least 50 mm wide and allow for conventional building tolerances. Guidance on recommended cavity widths and opening joint width between panels is given in *NHBC Standards* 2022, Chapters 6.2 and 6.9. The ventilation pathway behind the cladding must not be allowed to become blocked and openings should be suitably protected, or baffled, to prevent the ingress of birds, vermin and rain. Also see section 7.2 of this Certificate.

8.5 The designer should ensure the cladding system is designed with appropriate compartmentation of the cavity, and in accordance with the requirements of the *NHBC Standards* 2022, Chapter 6.9.

9 Maintenance and Repair

9.1 To maintain the products appearance, in most cases, annual maintenance (or as recommended by the Certificate holder depending on environmental conditions) is required. Maintenance should also ensure that protective cavity mesh, gutters and downpipes are clear and in a good state, and that ancillary features such as flashings and seals are in place and secure.

9.2 The painted panel surface may be cleaned using hot and cold water with a mild cleaning agent using a non-abrasive pad or sponge. General household cleaners should not be used. After cleaning, the surface should be rinsed with clean water. For more difficult chemical soiling, the Certificate holder's specialist advice must be sought.

9.3 Damaged panels should be replaced as soon as practicable. Work carried out should follow the Certificate holder's instructions and all necessary Health and Safety regulations should be observed.

10 Durability

10.1 Based on historical evidence and testing, the products, when incorporated in a wall cladding system, can be expected to have a service life of at least 30 years.

10.2 When coated with either a FEVE paint or an anodised oxide layer, and in a non-corrosive atmosphere, the products can be expected to retain a good appearance for at least 20 years. In coastal or severe industrial environments, this is reduced to at least 15 years.

10.3 The performance of the colour coating will depend upon the colour chosen, the building location, the façade aspect and the immediate environment. Colour change will be generally small and uniform on any one elevation.

11 Reuse and recyclability

The panels are partially composed of aluminium, which can be separated from the core and recycled.

Installation

12 General

12.1 ALPOLIC A1 Cladding Panels must be installed in accordance with the Certificate holder's recommendations, the requirements of this Certificate and the specifications laid down by a suitably qualified and experienced individual.

12.2 Installers must be suitably trained and experienced cladding contractors. The Certificate holder can provide advice on installation if required.

12.3 Installation should not be carried in extremes of temperature. It is recommended that it takes place at temperatures of between 5 and 25°C.

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

12.5 Suitable cavity barriers, as described in section 7.2, should be installed behind the cladding as necessary, to comply with the relevant national Building Regulations relating to fire safety.

13 Procedure

13.1 Based on a preliminary survey of the wall and the architectural/structural design, a grid layout for the sub-frame (wall brackets and vertical rails) is prepared.

13.2 Wall brackets are fixed to the substrate using appropriate fixings. Vertical spacing between wall brackets should be as specified.

13.3 If required, a rigid or semi-rigid insulation, protected by a suitable breather membrane, can be installed on the substrate wall. The thickness of the insulation should be such as to ensure a minimum of 50 mm ventilation cavity width at the back of the panel.

13.4 Vertical support rails are fixed to the brackets with the top fixing tight and the remainder of the fixings sufficiently free to allow for movement. In addition, an expansion gap between adjacent vertical rails must be provided (see section 4.5).

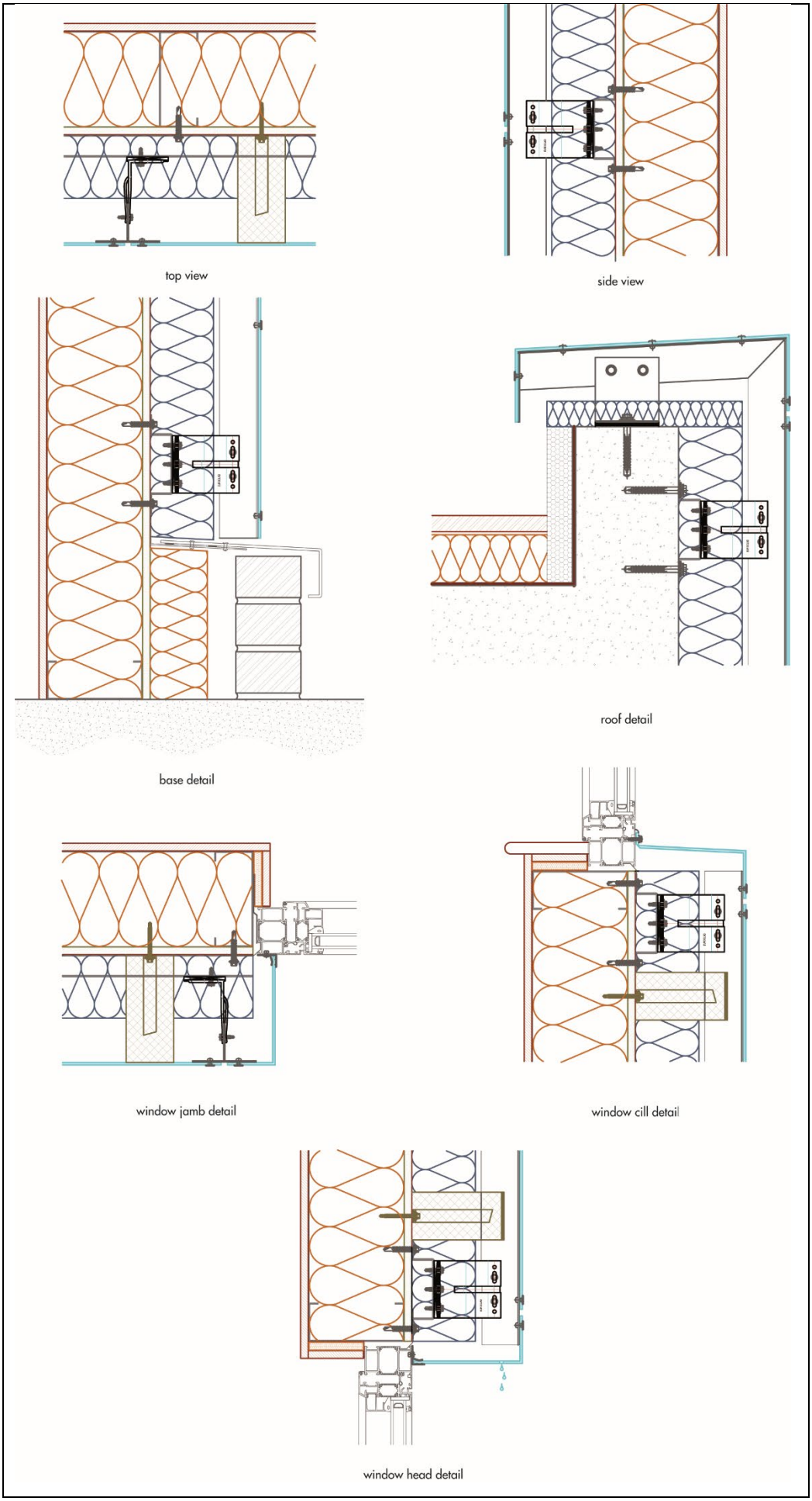
13.5 The panels are riveted to vertical rails with vertical and horizontal gaps between panels of between 10 and 15 mm. Rivets are fixed in the middle and then to the corners at spacings of a maximum 500 mm along the supporting rails ensuring a minimum edge distance of 16 mm.

13.6 To allow for thermal expansion, the panels must be provided with 6.0 mm and 8.5 mm drill holes for fixed and sliding point fixing, respectively. The fixed point should be arranged as close as possible to the centre of the panel. Rivets are centrally placed in the drill holes and tightened by using a distance gauge (distance ≥0.3 mm).

13.7 A mesh should be installed around the periphery of the cladding system, permitting adequate ventilation as specified in section 4.4 but preventing the intrusion of rodents. Refer to the manufacturer's guidance for the installation procedure of ancillary items.

13.8 Reference should be made to Figure 3 when reading the installation details given in this section.

Figure 3 Typical installation details for ALPOLIC A1 Cladding Panels



14 Investigations

14.1 Based on independent test data, an assessment was made of:

- bond strength
- pull-through resistance
- pull-through resistance under shear loads
- resistance to wind loading
- impact strength
- material characteristics
- durability
- behaviour in relation to fire.

14.2 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.

Bibliography

BS EN 573-3 : 2019 *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Chemical composition and form of products*

BS EN 1990 : 2002 + A1 : 2005 *Eurocode — Basis of structural design*
NA to BS EN 1990 : 2002 + A1 : 2005 *Eurocode — Basis of structural design*

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 13501-1 : 2018 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

EAD 090062-00-0404 : 2018 *Kits for external wall claddings mechanically fixed*

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

15 Conditions

15.1 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.

15.2 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.

15.3 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.

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

15.5 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.

15.6 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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