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Agrément Certificate

18/5600

Product Sheet 1

CEMBRIT DECORATIVE RAINSCREEN CLADDING PANEL

COVER, SOLID AND PATINA RANGE CLADDING PANELS

This Agrément Certificate Product Sheet⁽¹⁾ relates to Cover, Solid and Patina Range Cladding Panels, fibre-reinforced cement panels for use as exterior non-load bearing, decorative cladding panels on timber or metal vertical supports over timber frame, steel frame or masonry external walls of new and existing 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 — a system constructed using this product can be designed to resist the wind actions normally encountered in the UK (see section 6).

Behaviour in relation to fire — the products, when used with wood, aluminium or steel subframes, have an A2-s1, d0 reaction to fire classification in accordance with EN 13501-1 : 2018 (see section 7).

Weathertightness — the products, when installed, are not weathertight and, where necessary, must be used in conjunction with a suitable water vapour permeable membrane (see section 8).

Durability — under normal UK service conditions, the products will have a service life in excess of 30 years (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 Second issue: 13 July 2021

Hardy Giesler
Chief Executive Officer

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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Regulations

In the opinion of the BBA, Cover, Solid, Patina Original, Patina Rough, Patina Signature and Patina Inline 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 products can contribute to satisfying this Requirement. See section 6.4 of this Certificate.
Requirement:	B3(4)	Internal fire spread
		The product can contribute to satisfying this Requirement. See section 7.2 of this Certificate.
Requirement:	B4(1)	External fire spread
Comment:		The products can contribute to satisfying this Requirement. See sections 7.1 to 7.4 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The products can contribute to satisfying this Requirement. See section 8.1 of this Certificate.
Regulation:	7(1)	Materials and workmanship
Comment:		The products are acceptable. See sections 10.1 to 10.2 and the <i>Installation</i> part of this Certificate.
Regulation:	7(2)	Materials and workmanship
Comment:		The products are restricted by the Regulation in some cases. See sections 7.1 to 7.3 and 7.5 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Durability, workmanship and fitness of materials
Comment:		The products can contribute to a construction satisfying this Regulation. See sections 9.1 and 9.2, 10.1 and 10.2 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	1.1(a)(b)	Structure
Comment:		The products can contribute to satisfying this Standard, with reference to clause 1.1.1 ⁽¹⁾⁽²⁾ . See section 6.4 of this Certificate.
Standard:	2.4	Cavities
Standard:	2.6	Spread to neighbouring buildings
Standard:	2.7	Spread on external walls
Comment:		The products can contribute to satisfying these Standards with reference to clauses 2.4.2 ⁽¹⁾⁽²⁾ and 2.4.4 ⁽¹⁾ , 2.6.4 ⁽¹⁾⁽²⁾ , 2.6.5 ⁽¹⁾ and 2.6.6 ⁽²⁾ and 2.7.1 ⁽¹⁾⁽²⁾ . See section 7.1 to 7.4 and 7.6 to 7.7 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The products can contribute to satisfying the Standard, with reference to clause 3.10.5 ⁽¹⁾⁽²⁾ . See section 8.1 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The products can contribute to satisfying 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:	All comments given for 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)	Fitness of materials and workmanship
Comment:	(iii)(b)(i)	The products are acceptable. See sections 10.1 and 10.2 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The products can contribute to satisfying this Regulation. See section 8.1 of this Certificate.
Regulation:	30	Stability
Comment:		The products can contribute to satisfying this Regulation. See section 6.4 of this Certificate.
Regulation:	35(4)	Internal fire spread – Structure
Comment:		The panels are unrestricted by this Regulation. See section 7.2 of this Certificate.
Regulation:	36(a)	External fire spread
Comment:		The products can contribute to satisfying this Regulation. See sections 7.1 to 7.4 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* (3.3) and 12 *Precautions* of this Certificate.

Additional Information

NHBC Standards 2021

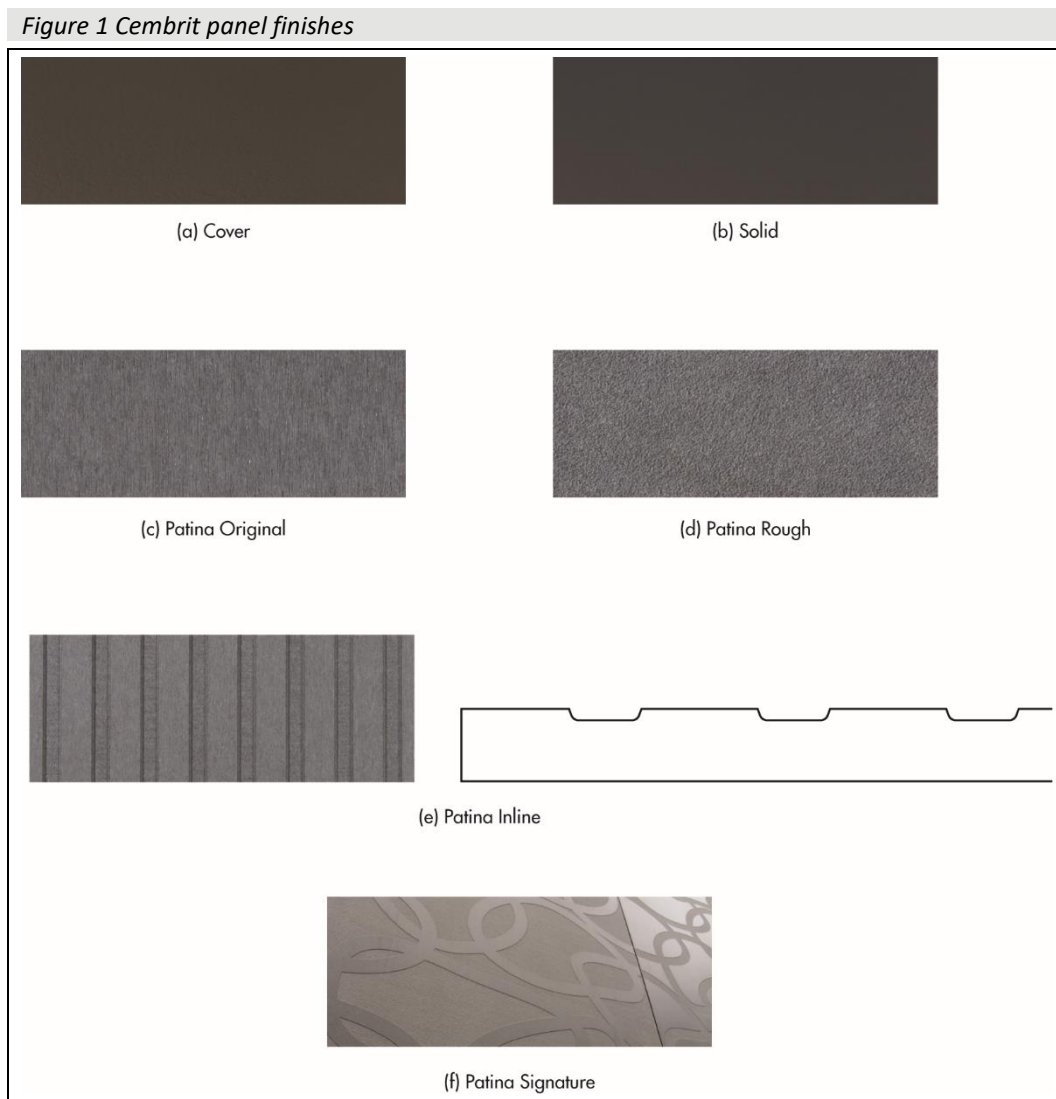
In the opinion of the BBA, Cover, Solid, Patina Original, Patina Rough, Patina Signature and Patina Inline Cladding Panels, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards, Part 6 Superstructure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

CE marking

The Certificate holder has taken the responsibility of CE marking the products, in accordance with harmonised European Standard BS EN 12467 : 2012.

1 Description

1.1 Cover, Solid, Patina Original, Patina Rough, Patina Signature and Patina Inline Cladding Panels are fibre-reinforced cement panels, satisfying the requirements of Category A, Class 4, to BS EN 12467 : 2012. Figure 1 illustrates the different panel finishes available.



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

Table 1 Panel characteristics

Characteristic (unit)	Panel types		
	Cover	Solid	Patina Range ⁽³⁾
Board colour	grey	through-coloured	through-coloured
Nominal thickness (mm)		8	
Width (mm)		1250	
Length (mm)		2500 / 3050	
Density (kg·m ⁻³)	1650	1650	1250-1650
Mechanical resistance		Category A, Class 4 ⁽¹⁾	
Colour range ⁽²⁾	26	18	11
Finish	coated, smooth	coated, smooth	matt (Patina Original) rough (Patina Rough, Patina Signature) grooved (Patina Inline)

(1) Category A — sheets intended for applications where they may be subjected to heat, high moisture and severe frost. Class 4 — minimum Modulus of Rupture (MOR) in the wet condition is 18 MPa.

(2) The colour range according to the type of panel is stated below:

- Cover: C010, C020, C040, C050, C060, C160, C190, C200, C210, C350, C360, C370, C390, C450, C530, C540, C550, C570, C610, C630, C640, C650, C670, C730, C760, C770
- Solid: S030, S071, S101, S131, S151, S191, S212, S282, S334, S353, S515, S525, S606, S616, S656, S676, S747, S757
- Patina Range: P020, P050, P070, P222, P313, P323, P333, P343, P545, P565, P626.

(3) Patina Range refers to the Patina Rough, Patina Signature and Patina Inline Cladding Panels.

1.3 An ancillary component for use with the panels is Cembrit Universal Edge Sealer — a solvent based clear edge sealer applied to protect cut edges (in accordance with section 13.5).

1.4 Ancillary components for use with the panels, but outside the scope of this Certificate, are:

- mechanical fixings for use with the panels to the following minimum specifications:
 - Stainless steel screws — corrosion category C4 – 4.5 mm or 4.9 mm diameter by 30 mm to 41 mm in length and 12 mm diameter head, with and without washer, for pre-drill and self-drilling, for use with timber sub-frames
 - Steel screws corrosion category C4 – 4.8 mm diameter by 29 mm in length and 12 mm diameter head, with and without washer, with drill point of hardened steel, for use with steel sub-frames
 - Stainless steel rivets — 4.8 mm diameter by 20 mm in length and 14.3 mm head diameter, with and without washer, for use with steel sub-frames
 - Aluminium rivets — 4 mm diameter by 20 mm in length and 14.3 mm head diameter, with an aluminium body and a stainless-steel mandrel, with and without washer, for use with aluminium sub-frames
- corner profiles — aluminium profiles for internal and external corners, protective mesh
- support rail/battens — timber battens, aluminium or steel rails, for use on timber frame, masonry or steel framework substrate walls fixed vertically and spaced at maximum 600 mm centres
- sheathing — of a suitable material used in conjunction with timber frame and steel frame substrate wall structures
- wall breather membrane — UV durable to BS EN 13859-2 : 2014 used in conjunction with sheathing on framed applications
- fixings and brackets — used to attach the sub-frame to the substrate wall
- horizontal joint profile — an aluminium joint profile inserted behind the panels, to provide baffle joints
- rubber underlay — EPDM flat or with profiled ribs applied according to the substrate and fixation type, as per the Certificate holder's instructions.

2 Manufacture

2.1 Raw materials are dosed into a mixer to form a slurry followed by the Hatschek process. The panels are formed by layers and then cut to length. The panels are cured for a minimum of 28 days or autoclaved.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken

- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by Bureau Veritas Certification (Certificate HU004338).

3 Delivery and site handling

3.1 The panels are delivered on plastic-protected pallets with interlayers for surface protection.

3.2 Each pallet bears a label showing the Certificate holder's name, product type/size and the BBA logo incorporating the number of this Certificate.

3.3 The panels should be stored flat on a level surface, preferably under cover in dry and ventilated conditions. Stacks of unwrapped pallets must not exceed five in height.

3.4 To avoid damaging and scratching, the panels must be lifted off the pallet and not dragged across adjacent panels. Unused panels must be protected with tarpaulin during storage.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Cover, Solid and Patina Cladding Panels.

Design Considerations

4 Use

4.1 Cover, Solid, Patina Original, Patina Rough, Patina Signature and Patina Inline Cladding Panels are satisfactory for use as exterior, non-loadbearing decorative cladding panels on timber frame, steel frame and masonry external walls of new and existing buildings. The panels are supported by vertical timber battens or metal rail sub-frame fixed to the substrate wall at maximum 600 mm centres. It is essential that walls are designed and constructed incorporating the normal precautions to prevent moisture penetration.

4.2 The substrate wall and the sub-frame to which the panels are fixed must be structurally sound and satisfy the requirements of the relevant national Building Regulations and Standards.

4.3 For new substrate walls, the designer must ensure that:

- brickwork or blockwork walls are designed and constructed in accordance with the relevant sections of 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 PD 6697 : 2019, or one of the technical specifications given in the relevant documents supporting the national Building Regulations
- timber frame walls are designed and constructed in accordance with the relevant sections of BS EN 1995-1-1 : 2004 and its UK National Annex, and preservative-treated where necessary, in accordance with BS 8417 : 2011. Guidance on recommended wood preservation is also given in *NHBC Standards 2021, Part 3 General, Chapter 3.3 Timber preservation (natural solid timber)*
- steel frame walls are designed and constructed in accordance with the relevant sections of BS EN 1993-1-1 : 2005 and its UK National Annex. The installation of vertical timber battens or metal support rails must be aligned and fixed directly through to the vertical structural steel framework.

4.4 Ventilation and drainage must be provided behind the cladding. All ventilation openings around the periphery of a cladding system incorporating the panels should be suitably protected with mesh to prevent the ingress of birds, vermin and insects. The horizontal and vertical joints between panels are open with a minimum spacing of 10 mm.

4.5 Care should be taken to ensure that sufficient time is allowed for complete fixing or drying of the timber preservative before the panels are fixed.

5 Practicability of installation

The products are designed to be installed by competent contractors experienced with these types of products.

6 Strength and stability

6.1 Design wind actions should be calculated by a suitably experienced and competent individual in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. Due consideration should be given to higher pressure coefficients applicable to corners of the building as recommended in this Standard. In accordance with BS EN 1990 : 2002, it is recommended that a partial load factor applied to wind of 1.5 is used to determine the design wind load to be resisted by the cladding system.

6.2 The supporting wall must be able to take the full wind loads and any racking loads on its own. No contribution from the cladding system may be assumed in this respect.

6.3 The designer should ensure that:

- the design of the vertical sub-frame and its fixings is in accordance with the relevant codes and Standards, such as to limit mid-span deflections to span/200 and cantilever deflections to span/150
- the panels are fixed to the vertical support sub-frame using the specified fixings (see section 1.3)
- the specified panel fixings have adequate tensile and pull-out strength to resist the applied actions
- fixing of the vertical support subframe to the substrate wall has adequate tensile pull-out strength and corrosion resistance (not covered by this Certificate). An appropriate number of site-specific pull-out tests must be conducted on the substrate wall to determine the minimum pull-out resistance to failure of the fixings. The characteristic pull-out resistance should be determined in accordance with the guidance given in EOTA TR055 : 2016, using 50% of the mean value of the five smallest measured values at the ultimate load.



6.4 The design pull-through resistance of Cembrit panels using the specified fixings is given in Table 2.

Table 2 Design pull-through resistance of panels

Dimensions of panel (mm) (W x H x T)	Pull-through resistance	
	1250 x 2500 x 8	1250 x 3050 x 8
Fixing type ⁽⁴⁾	Aluminium Rivet	
Characteristic pull-through resistance ⁽¹⁾ per fixing (kN)	Panel centre	0.72
	Corner/edge	0.33
Partial factor ⁽²⁾	3	
Design pull-through resistance per fixing (kN)	Panel centre	0.24
	Corner/edge	0.11
Design pull-through resistance per panel (kN) ⁽³⁾	2.98	3.44
Design pull-through resistance per area (kN·m ⁻²)	1.00	0.90

(1) Characteristic pull-through resistance of the panel over the head of the fixing, in accordance with BS EN 1990 : 2002, Annex D Clause 7.2 and its UK National Annex.

(2) A partial factor on material strength of 3.0 was applied to the characteristic value calculated from test data determined to ETAG 034 : 2012.

(3) The design pull through resistance per panel is based on a vertically oriented Patina Original panel with vertical supports at 600 mm centres and fixings at 400 mm. The fixing pattern should be considered when calculating the design resistance per panel.

(4) The pull-through values were obtained from the fixing which obtained the lowest pull-through values, using corner pull-through values and fixings secured through pre-drilled holes, therefore the above values may be adopted for the other fixing types listed in section 1.4 of this Certificate.

Resistance to impact

6.5 When tested for hard and soft body impacts, the panels, installed with vertical supports at 600 mm and 625 mm centres and fixings at 400 mm, were found to be suitable for use in the areas defined under Use Categories III to IV in Table G.2 of EAD 090062-00-0404, which is reproduced (in part) in Table 3 of this Certificate.

Table 3 Definition of Use Categories

Use Category	Description
I	A zone readily accessible at ground level to the public and vulnerable to hard body impacts but not subjected to abnormally rough use
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
III	A zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects
IV	A zone out of reach from ground level

Note: Use Categories I and II are shown for reference purposes only.

7 Behaviour in relation to fire



7.1 The panels have a reaction to fire classification of A2-s1⁽¹⁾, d0 in accordance with BS EN 13501-1 : 2018, when used with a wood, aluminium or steel subframe. This classification is valid when installed with an airgap of 40 mm thickness, and for substrates with a reaction to fire classification of A1 or A2,s1-d0 in accordance with BS EN 13501-1 : 2018.

(1) Details of the classification can be found in test reports 163686 issued by MPA BAU (Cembrit Cover), 163976 issued by MPA BAU (Cembrit Solid), 3234T1 7-2 R2 and 3233T1 7-2 R2 issued by AFITI LICOF Spain (Cembrit Patina Original / Rough / Inline) available from the Certificate holder.

7.2 The reverse side of the panel (facing into the cavity) has a reaction to fire classification of A2-s1, d0 in accordance with BS EN 13501-1 : 2018.

7.3 The fixings and aluminium or steel support system are classified as non-combustible in accordance with the relevant national regulatory guidance. The timber battens are not classified as non-combustible or limited combustibility in accordance with the relevant national regulatory guidance.

7.4 The panels are not subject to any restriction on building height or proximity to boundaries, but restrictions may apply when used in conjunction with combustible components, such as timber support battens. See section 7.8 of this Certificate.



7.5 In England and Wales where timber battens are used as a support system, the panels should not be used on buildings 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.



7.6 In Scotland the panels when used with timber battens as a support system 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 when using a timber batten support system should be included in calculations of unprotected area, except on houses where the external wall behind has the appropriate fire resistance.

7.7 In Scotland, the panels when used with timber battens as a support system should not be used on buildings with a storey more than 11 m above the ground or on any entertainment and 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.

7.8 Designers should refer to the relevant national Building Regulation 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, timber battens or thermal insulation, but are outside the scope of this Certificate.

8 Weathertightness



8.1 The panels are suitable for use in back-ventilated and drained cladding systems. They do not provide a watertight or airtight facing, but will contribute to resisting the passage of rainwater to the supporting structure.

8.2 The cavity gap behind the cladding should have a minimum width of 50 mm and must be drained and ventilated⁽¹⁾. The cavity drainage and ventilation gap should provide openings with a minimum ventilation area of 500 mm² per metre run along the base and head of any rainscreen wall.

(1) Guidance on recommended cavity widths is given in NHBC Standards 2020, Chapters 6.2, 6.9 and 6.10.18.

8.3 The panels are not weathertight and when used on timber stud or on metal frame substrate walls must be backed by a breather membrane (see section 1.4) acting as a vapour-permeable water barrier, incorporated behind the cladding under the supporting battens. Where insulation is used in the cavity, the breather membrane should be provided over the outer face of the insulation.

8.4 Where the panels are used as a decorative facing attached to weathertight masonry walls, a breather membrane is not necessary as the amount of water that will penetrate the cladding will be small and will not have an adverse effect on the wall.

8.5 If the panels are used in the renovation of a masonry wall which is structurally sound but not fully weathertight, the use of a breather membrane is advisable.

8.6 Provision must always be made to allow water that has penetrated behind the cladding to drain away.

9 Maintenance



9.1 Annual maintenance inspections of the panel surface, ventilation gaps, joints and fixings are recommended to ensure they are clear and in good state. The inspection should also detect the need for repair of damage that will prolong the life of the cladding.

9.2 For normal soiling, the surface of the panels can be cleaned with cold or lukewarm water mixed with a water-based detergent applied with a suitable cleaning pad or sponge. For more difficult soiling, the Certificate holder's advice should be sought.

9.3 Any damaged panels must be replaced as soon as possible.

10 Durability



10.1 The durability and service life of the panels will depend upon the building location, immediate environment and intended use of the building.

10.2 Under normal service conditions, and provided regular maintenance is carried out as described in section 9 and in accordance with the Certificate holder's instructions, the panels will have a service life in excess of 30 years.

10.3 In general, any colour change will be slight and uniform on any one elevation and the panels will have a decorative life of at least 15 years.

10.4 When tested for UV aging in accordance with BS EN SO 4892-3 and for resistance to algal growth, the coating on the Solid and Cover panels was found to be durable and adheres to the panel surface.

11 General

11.1 The products must be installed in accordance with the Certificate holder's installation instructions, the requirements of this Certificate and the specifications laid by the design engineer.

11.2 The panels can be cut with hand tools and slow- or fast-running stationary power equipment. Circular saws or jigsaws must be equipped with a diamond tipped blade. Cut edges should be bevelled with sand paper. Where necessary, the panels are drilled using a carbide tipped twist drill bit.

11.3 The panels can be mounted both horizontally and vertically, allowing for lateral movement in accordance with the Certificate holder's instructions.

12 Precautions

12.1 Dust from fibre-cement panels is characterised as mineral dust. Where excessive concentrations of dust are generated, the dust levels must be controlled by the use of dust extraction equipment. The measures defined in Health and Safety Executive Guidance Note EH44 should be followed.

12.2 The panels are not loadbearing and heavy items must not be leaned against them during and after installation of the system.

13 Procedure

13.1 The vertical sub-frame must be installed ensuring correct spacings with appropriate wall brackets and vertical spacings, as specified in Figure 2.

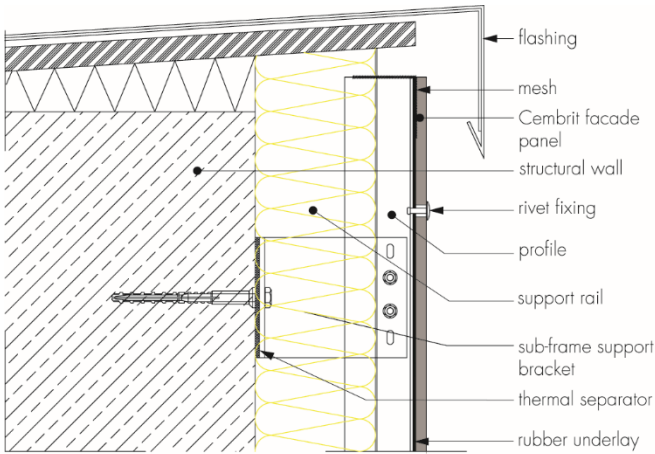
13.2 Where metal sub-frames are used, the panels are installed with one fixed point at the centre of the panel and all other fixings with sliding points. Fastener holes are drilled with a slightly larger diameter than the fixing to allow for movement due to moisture and temperature changes. For fixed points, a sleeve is used to prevent movement of the board.

13.3 Fixing spacings and pre-drill hole size specifications for the panel types and sub-frames are given in Table 4 and Figure 2(i).

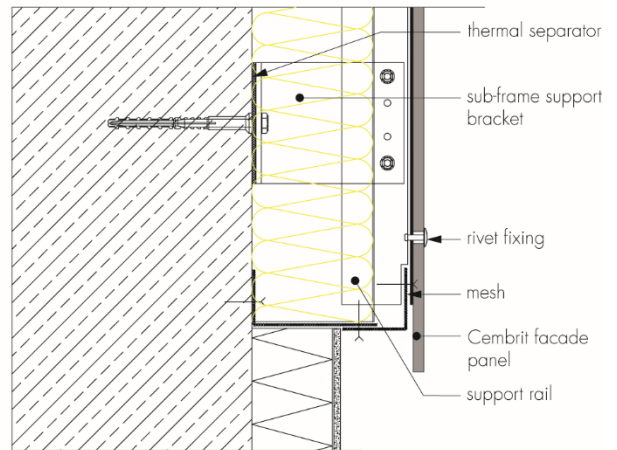
13.4 Subsequent panels are installed ensuring a minimum gap between panels of 10 mm or as permitted in NHBC *Technical Standards* (see also section 8.2).

13.5 Cut edges of Cover and Solid panels require the application of Cembrit Universal Edge Sealer to avoid moisture ingress. After boards are cut on site, the edges must be immediately treated with the sealer. The boards must be dry and the edges should be bevelled with fine grade sandpaper and should be cleaned from dust and dirt before the edge sealer is applied. Further advice regarding this application should be sought from the Certificate holder.

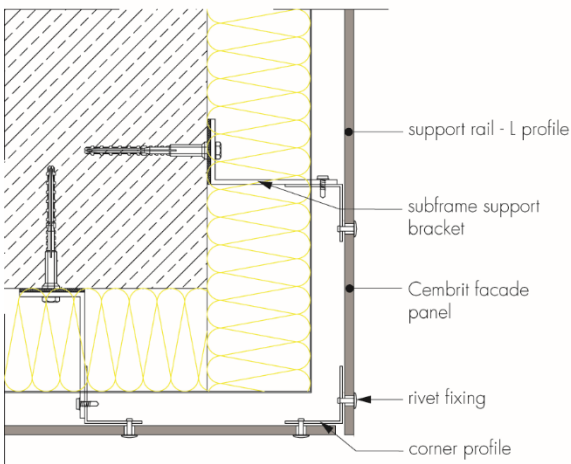
Figure 2 Typical installation



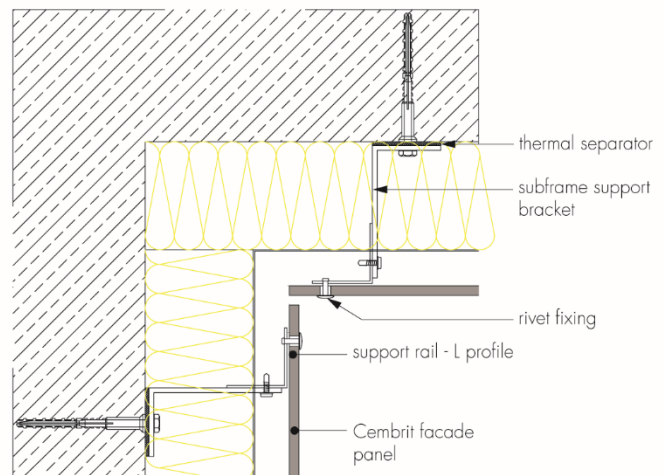
(a) vertical cross section roof edge



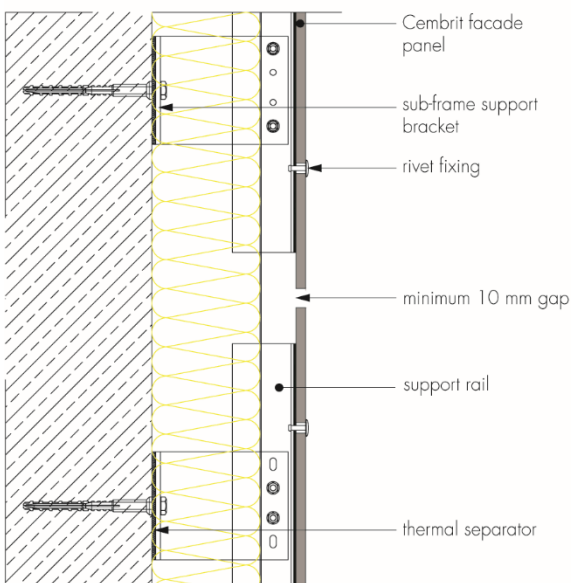
(b) base detail



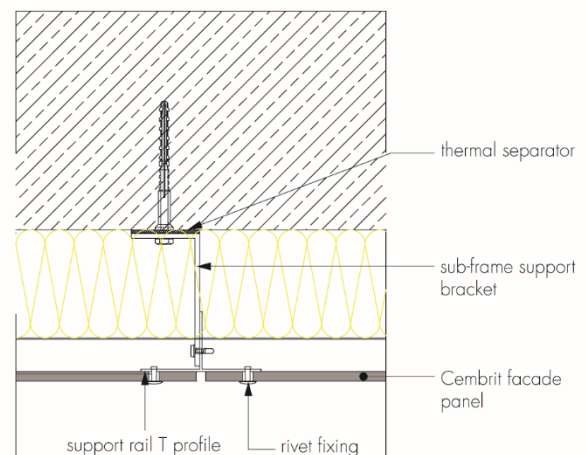
(c) external corner detail



(d) internal corner detail



(e) horizontal joint detail



(f) vertical joint detail

Figure 2 Typical installation (continued)

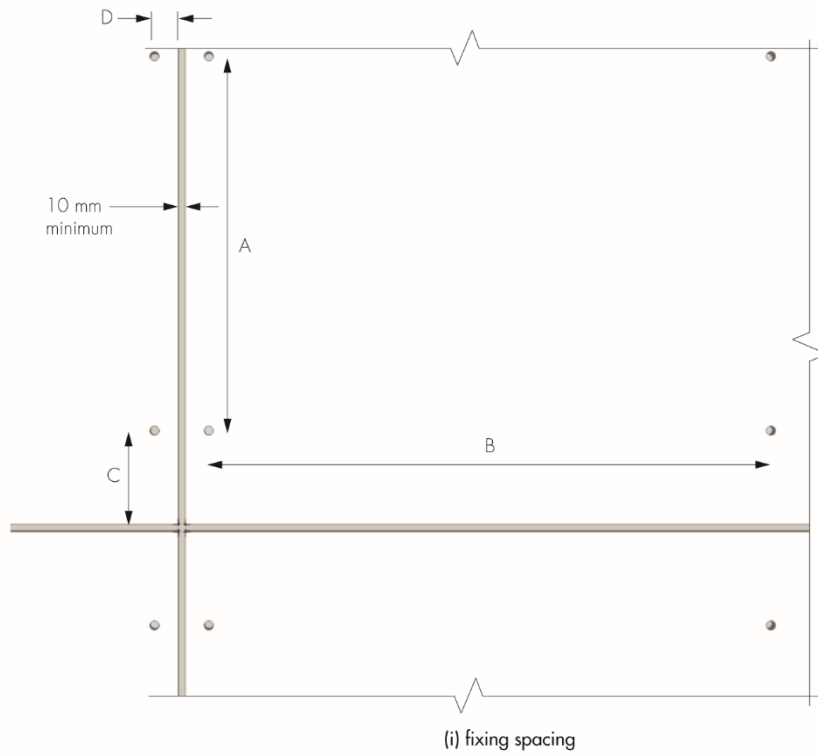
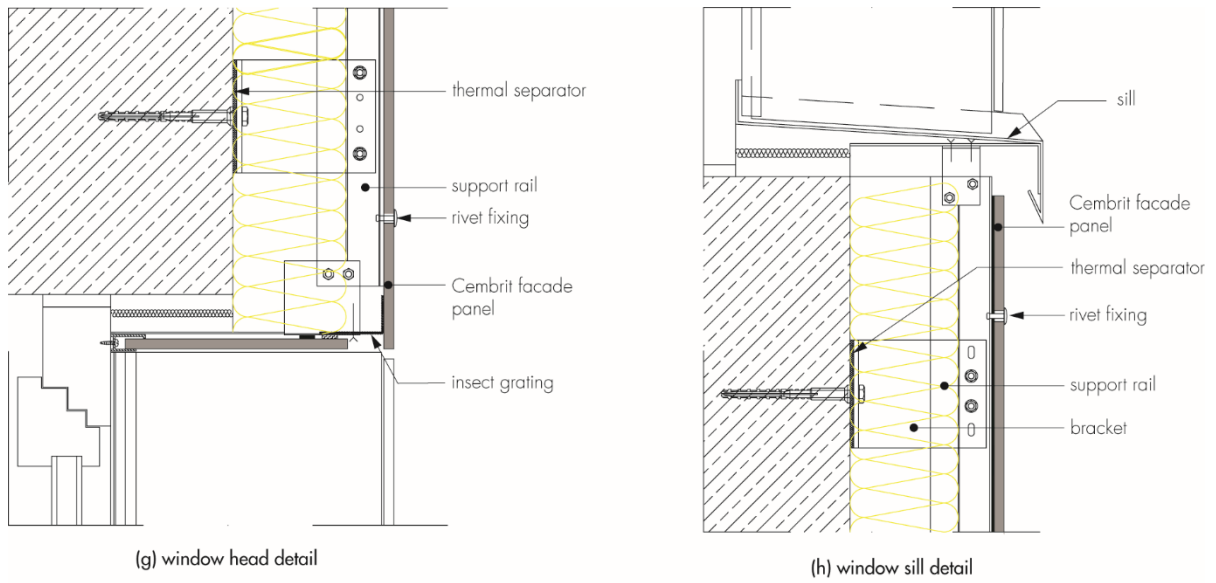


Table 4 Panel fixing location

	Fixing centres (mm)		
	Screw fixing (steel subframe)	Screw fixing (wood sub-frame)	Rivet fixing (steel/aluminium sub-frame)
Patina (all versions)			
Vertical centres (A)	400	400	400
Horizontal centres (B)	600	600	600
Corner (C)	70-150	70-150	70-150
Side edge (D)	30	25	30
Pre-drilled hole diameter	8	8	9
Solid/Cover			
Vertical centres (A)	600	600	600
Horizontal centres (B)	600	600	600
Corner (C)	100-150	100-150	100-150
Side edge (D)	30	25	30
Pre-drilled hole diameter	8	8	9

Note: Specifications for fixings are given in section 1.4 of this Certificate.

Technical Investigations

14 Tests

14.1 An assessment was made on data to BS EN 12467 : 2012 in relation to:

- dimensional accuracy
- water absorption
- water impermeability
- resistance to freeze/thaw
- resistance to water soak
- resistance to soak/dry cycling
- resistance to heat/rain cycling.

14.2 Tests were carried out to determine:

- dimensional accuracy
- bending strength
- apparent density
- pull-through of fixings
- resistance to hard-body impact
- resistance to soft-body impact
- resistance to algal growth
- effect of accelerated weathering (colour stability).

15 Investigations

15.1 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and compositions of the materials used.

15.2 An evaluation was made of existing data in relation to reaction to fire tests and classification to EN 13501-1 : 2018.

Bibliography

- BRE Report BR 135 : 2013 *Fire performance of external thermal insulation for walls of multistorey buildings*
- BS 8417 : 2011 + A1 : 2014 *Preservation of wood — Code of practice*
- 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*
- BS EN 1993-1-1 : 2005 + A1 : 2014 *Eurocode 3 — Design of steel structures — General rules and rules for buildings*
NA to BS EN 1993-1-1 : 2005 + A1 : 2014 *UK National Annex to Eurocode 3 — Design of steel structures — General rules and rules for buildings*
- BS EN 1995-1-1 : 2004 + A1 : 2014 *Eurocode 5 — Design of timber structures — General — Common rules and rules for buildings*
NA to BS EN 1995-1-1 : 2004 + A2 : 2014 *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 + A1 : 2014 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 12467 : 2012 + A2 : 2018 *Fibre-cement flat sheets — Product specification and test methods*
- EN 13501-1 : 2018 + A1 : 2009 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*
- BS EN 13859-2 : 2014 *Flexible sheets for waterproofing — Definitions and characteristics of underlays — Underlays for walls*
- BS EN ISO 4892-3 : 2016 *Plastics — Methods of exposure to laboratory light sources — Part 3 Fluorescent lamps*
- BS EN ISO 9001 : 2015 *Quality management systems — Requirements*
- EOTA TR055 : 2016 *Design of fastenings based on EAD 330232-00-0601*
- ETAG 034 : 2012 *Guideline for European Technical Approval of Kits for External Wall Claddings, Part 1 Ventilated Cladding Kits Comprising Cladding Components and Associated Fixings*
- PD 6697 : 2019 *Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2*

16 Conditions

16.1 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
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16.2 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.

16.3 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.

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

16.5 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:

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- 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.

16.6 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.