

Fermacell GmbH

7 The Priory
London Road
Canwell
West Midlands B75 5SH
Tel: 0121 311 3480 Fax: 0121 311 1882
e-mail: fermacell-uk@xella.com
website: www.fermacell.co.uk



Agrément Certificate
13/5044
Product Sheet 2

FERMACELL BOARDS

FERMACELL POWERPANEL H₂O CEMENT-BASED BOARD FOR EXTERNAL USE

This Agrément Certificate Product Sheet ⁽¹⁾ relates to Fermacell Powerpanel H₂O Cement-Based Board for External Use, a fibre-glass reinforced cement backing board for use as part of the outer layer of an exterior wall façade in conjunction with a specified finishing render system on masonry, timber-frame or steel-frame buildings up to 18 m high.

(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 board can accept surface loadings likely to be met in the UK (see section 6).

Performance in relation to fire — the board has a reaction-to-fire classification of A1* as defined in the national Building Regulations and it may be regarded as non-combustible ('low risk' in Scotland) in accordance with the national Building Regulations (see section 7).

Condensation risk — for calculation purposes, the value of the vapour resistance of the board given in section 12 may be used.

Durability — the board has acceptable durability and can be expected to have a service life in excess of 30-years (see section 15).

The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Brian Chamberlain
Head of Approvals — Engineering

Claire Curtis-Thomas
Chief Executive

Date of Second issue: 21 October 2014

Certificate amended on 4 March 2019 to include Regulation 7(2) for England and associated text.

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.
Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.*

British Board of Agrément

Bucknalls Lane
Watford
Herts WD25 9BA

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tel: 01923 665300
e-mail: clientservices@bbacerts.co.uk
website: www.bbacerts.co.uk

Regulations

In the opinion of the BBA, Fermacell Powerpanel H₂O Cement-Based Board for External Use, if installed, used and maintained in accordance with the provisions of 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 board is acceptable for use as set out in sections 6.2 to 6.4 of this Certificate.
Requirement:	B4(1)	External fire spread
Comment:		The board is unrestricted by this Requirement. See section 7 of this Certificate.
Requirement:	C2	Resistance to moisture
Comment:		The board can contribute to satisfying this Requirement. See sections 9 and 12 of this Certificate.
Regulation:	7	Materials and workmanship (applicable to Wales only)
Regulation:	7(1)	Materials and workmanship (applicable to England only)
Comment:		The board is an acceptable. See section 15 and the <i>Installation</i> part of this Certificate.
Regulation:	7(2)	Materials and workmanship (applicable to England only)
Comment:		The board is unrestricted by this Regulation. See section 7.3 of this Certificate



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The board can contribute to a construction satisfying this Regulation. See sections 14.1 and 15 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	1.1	Structure
Comment:		The board is acceptable, with reference to clause 1.1.1 ⁽¹⁾⁽²⁾ . See sections 6.2 to 6.4 of this Certificate.
Standard:	2.4	Cavities
Comment:		The board is unrestricted by this Standard. See sections 7.1 to 7.3 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Comment:		The board is unrestricted by this Standard with respect to clauses 2.6.4 ⁽¹⁾⁽²⁾ , 2.6.5 ⁽¹⁾ and 2.6.6 ⁽²⁾ . See sections 7.1 to 7.3 of this Certificate.
Standard:	2.7	Spread on external walls
Comment:		The boards are unrestricted by this Standard with respect to clause 2.7.1 ⁽¹⁾⁽²⁾ . See sections 7.1 to 7.3 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The board 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 9 of this Certificate.
Standard:	3.15	Condensation
Comment:		The board can contribute to satisfying this Standard, with reference to clauses 3.15.1 ⁽¹⁾ , 3.15.4 ⁽¹⁾ and 3.15.5 ⁽¹⁾ . See section 12 of this Certificate.
Standard:	7.1	Statement of sustainability
Comment:		The product 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 this product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012

Regulation:	23	Fitness of materials and workmanship
Comment:		The board is an acceptable material. See section 15 and the <i>Installation</i> part of this Certificate.
Regulation:	28	Resistance to moisture and weather
Comment:		The board can contribute to satisfying this Regulation. See section 9 of this Certificate.
Regulation:	29	Condensation
Comment:		The board can contribute to satisfying this Regulation. See section 12 of this Certificate.
Regulation:	30	Stability
Comment:		The board is acceptable as set out in sections 6.2 to 6.4 of this Certificate.
Regulation:	36(a)	External fire spread
Comment:		The boards are unrestricted by this Regulation. See sections 7.1 to 7.3 of this Certificate.

Construction (Design and Management) Regulations 2007

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

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

See sections: 1 Description (1.2), 3 Delivery and site handling (3.2 and 3.4) and 17 General (17.2) of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of Fermacell Powerpanel H₂O Cement-Based Board for External Use, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapters 6.2 *External timber framed walls*, clause D3 *Loadbearing walls* and D4 *Moisture control and insulation* and 6.10 *Light steel framed walls and floors*, clause D4 *Loadbearing walls* and D6 *Moisture control and insulation*.

CE marking

The Certificate holder has taken the responsibility of CE marking the Powerpanel H₂O Cement-Based Board for External Use, in accordance with harmonised European Standard BS EN 12467 : 2004 and in addition in all fields which are defined by the service classes 1,2 or 3 according to EN 1995-1-1 : 2004. An asterisk (*) appearing in this Certificate indicates that data shown is given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 The Fermacell Powerpanel H₂O Cement-Based Board for External Use comprises a cement-bonded core, reinforced on each face by an alkali-resistant, 0.2 to 0.5 mm thick glassfibre mesh (of 5 mm by 5 mm) embedded in the face layers. The board is light grey in colour with square edges and is marked on the front face with the product name and identification.

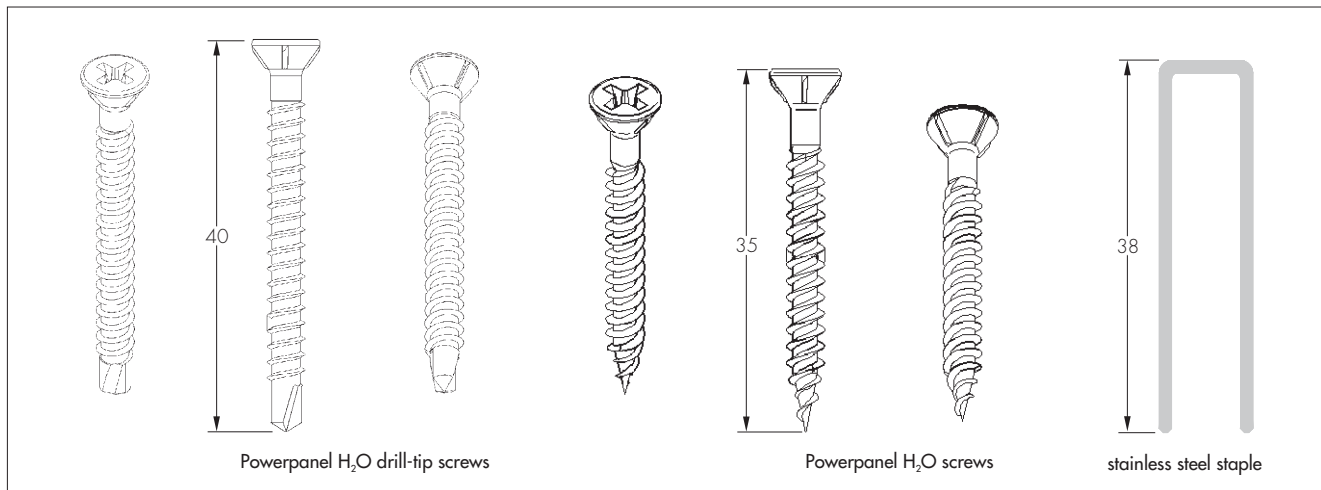
1.2 Characteristics of the standard boards are shown in Table 1.

Characteristic (unit)	Value (tolerance)
Length (mm)	1000, 2000, 2600 and 3000 (±3)
Width (mm)	1200 (±2)
Thickness (mm)	12.5 (±1)
Approximate weight (kg·m ⁻²)	13
Density (kg·m ⁻³)	900–1100

1.3 The fixing of the board depends on the substrate and must be in accordance with the Certificate holder's relevant specification. Fixings (see Figure 1) used with the boards are:

- Powerpanel H₂O drill-tip screws — manufactured from stainless steel coated with 10 µm of polymere zinc, 3.9 mm diameter by 40 mm length, for fixing the boards to the supporting metal sub-frame (of more than 0.7 mm gauge)
- Powerpanel H₂O screws — manufactured from stainless steel coated with 10 µm of polymere zinc, 3.9 mm diameter by 35 mm for fixing the boards to supporting timber sub-frame or light metal subframe (of up to 0.7 mm gauge)
- Stainless steel staples (normal points) — minimum 38 mm long, 1.5 mm gauge and 10 mm head width for fixing the boards to a supporting timber sub-frame.

Figure 1 Fixings



1.4 Ancillary items used but outside of the scope of this Certificate include:

- Fermacell HD Light mortar⁽¹⁾ — dry, ready-mixed, plastic reinforced cement based compound for applying a full surface covering to the Powerpanel H₂O boards up to a total thickness of 8 mm.
- Fermacell HD Reinforcement mesh — 4 mm by 4 mm mesh of alkali-resistant 0.2 to 0.5 mm thick glassfibre for full surface covering application within the Fermacell HD Light mortar
- Fermacell HD Light Reinforcement tape — 120 mm wide tape to be placed over the joints and window returns
- Fermacell HD Adhesive — polyurethane based adhesive, roller applied, for covering the Fermacell HD Light Reinforcement tape and exposed fixing heads
- Beads, sealant, joint reinforcement
- Timber battens/metal rails creating a cavity
- Substrate
- Breather membrane
- Insulation.

(1) The use of the boards with other render systems is outside of the scope of this certificate.

2 Manufacture

2.1 The boards are manufactured in a fully automated process. A face layer is sprayed into the steel mould and embedded with a glassfibre mesh. The core mix is then applied and the second face layer of glassfibre mesh rolled onto the top of the core layer. The composite board is compressed at high pressure and then cured.

2.2 As part of the assessment and continuing 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 product is manufactured in Germany and marketed in the UK by the Certificate holder.

2.4 The management system of Fermacell GmbH has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by TÜV NORD CERT GmbH (Certificate: 08 100 959271).

3 Delivery and site handling

3.1 Boards are delivered to site in stacks of up to 30 on wooden pallets braced by three straps. The board edges are protected by cardboard. The stacks are wrapped in polythene and each carries a label bearing the product name, date of manufacture, size and quality control stamp.

3.2 Pallets can only be moved by forklift truck and must not be stacked more than four high.

3.3 When removed from pallets, boards should be stored flat, off the ground, on a dry, level surface in a well-ventilated area protected from rain and snow. Sufficient supports should be provided to prevent bowing.

3.4 To protect the surface, individual boards should be lifted (not slid) from the stack by two people and carried in the vertical position.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Fermacell Powerpanel H₂O Cement-Based Board for External Use.

Design Considerations

4 General

4.1 Fermacell Powerpanel H₂O Cement-based Board for External Use can be installed as part of the outer layer of an insulated single-leaf construction onto timber battens incorporating a cavity. The board is suitable for masonry, timber-framed or steel-framed walls of domestic and non-domestic buildings up to 18 m high. The system is designed to transmit self-weight and wind load into the structural frame.

4.2 The board is satisfactory for use as part of an exterior wall cladding render system using Fermacell HD Light mortar⁽¹⁾ and Fermacell HD Reinforcement mesh⁽¹⁾ with a minimum 25 mm width drained and ventilated cavity.

(1) Outside of the scope of this certificate.

4.3 The design of the exterior wall façade should include:

- a ventilated and drained cavity system incorporating an insect guard to all ventilation openings
- effective detailing around window openings (see section 1.8) including appropriate flashing to ensure that wind-driven rain is excluded from hidden members in the surround and from the cavity
- an effective vapour control layer (vcl) on the inside, to ensure the frame structure is protected.
- horizontal movement joints in accordance with BS EN 13914-1 : 2005 at every floor to accommodate vertical shrinkage of up to 6 mm in the timber frame and to follow movement joints in the substructure. For steel-frame structures, reference to the Structural Engineer's details for deflection at floor level and movement joints in the substructure should be made
- vertical movement joints in accordance with BS EN 13914-1 : 2005 at a maximum of 15 m intervals. The actual spacing and position of the joints will be determined by the shape of the area to be rendered and should coincide with movement joints in the structure and allow for the same degree of movement.

4.4 The maximum batten/rail spacing must be 600 mm.

4.5 The boards must be always mechanically-fixed with the appropriate fixing types specified in section 1.3 and installed with:

- screws at a maximum distance of 250 mm centres (vertically along the studs) and 200 mm centres (horizontally along top and bottom rails)
- staples at a maximum distance of 150 mm centres (vertically and horizontally along the studs).

4.6 Screws and staples must be fixed at a minimum of 15 mm from board edges.

4.7 The installation should be kept above damp-proof course (dpc) level and a minimum of 150 mm above the ground level.


4.8 The detailing at doors and windows must accommodate any increased depth. In addition, every attempt should be made to avoid thermal bridging at the reveals of openings and at separating wall junctions.

5 Practicability of installation

The boards are designed to be installed by a competent general builder, or a contractor, experienced with this type of product.

6 Strength and stability

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

 6.2 Design values of wind actions should be calculated in accordance with BS EN 1991-1-4 : 2005 (Eurocode 1). Due consideration should be given to the higher pressure coefficients applicable to corners of the building as recommended in this Standard.

6.3 Timber studs and timber battens must be structurally sound, designed and constructed in accordance with BS 5268-2 : 2002 or BS EN 1995-1-1 : 2004 (Eurocode 5), and preservative treated in accordance with BS 5268-5 : 1989, BS 5589 : 1989 and BS EN 351-1 : 2007.

6.4 Galvanized steel studs and framework must be structurally sound, designed and constructed in accordance with BS 5950-5 : 1998 or BS EN 1993-1-1 : 2005 (Eurocode 3).

6.5 The timber/steel studs should be designed to limit mid-span deflections to L/250 and cantilever deflections to L/180.

6.6 The adequacy of the structural frame/substrate must be verified by a suitably qualified and experienced individual. The board does not provide any racking resistance to the wind loads imparted on the building. The substrate must, therefore, be able to take the full wind loadings and racking loads and the fixing of the timber/steel studs to the substrate should have adequate pull-out resistance.

6.7 When tested with appropriate fixings at the specified spacings given in sections 4.5 and 4.6, the panels have an ultimate resistance to wind of up to 1800 Pa. Therefore, if a factor of 1.5 is applied, the design resistance is 1200 Pa.

6.8 The mechanical characteristics of the boards obtained by testing are shown in Table 2.

Characteristic (units)	Value	Standard
Bending strength (N·mm ⁻²)	$f_{m,90} = 6.0$	EN 12467
Modulus of elasticity (N·mm ⁻²)	$E_{m,mean} = 5500$	EN 12467
Modulus of rupture (MPa)	8.32	EN 12467
Cross tension strength (N·mm ⁻²)	$f_{t,90} = 0.20$	EN 319

6.9 The characteristic pull-through resistance values of the H₂O screws and the stainless steel staples on the board, were determined by tests according to EN 1383 : 1999, and are given in Table 3.

Position	Pullthrough value (kN)	
	Fermacell Powerpanel screws	Stainless steel staples with $d = 1.5$ mm
Centre	$f_{2,k} = 0.5$	$f_{2,k} = 0.35$

6.10 The characteristic pull-out resistance values of the H₂O screws and the stainless steel staples on the board were determined by tests according to EN 1382 : 1999, and are given in Table 4.

Sub-frame	Standard	Pull-out resistance value ($f_{1,k}$) Fermacell Powerpanel screws ⁽¹⁾
Softwood of strength class C24 (N·mm ²)	EN 1382	10.4
Metallic profiles $t = 0.6$ mm (N)	EN 14566	607
Metallic profiles $t = 1.5$ mm (N)		1661

(1) Powerpanel H₂O screws or Powerpanel H₂O drill-tip screws as described in section 1.3.

6.11 The designer should ensure that:


- the structural adequacy of the board is checked by a suitably qualified and experienced individual.
- the system is capable of transmitting its self-weight and wind load to the structure. Particular care is required around window and door openings to ensure that the structure is capable of sustaining the additional weight of the system.

Impact

6.12 A 12.5 mm thick Fermacell Powerpanel H₂O board, with Fermacell Powerpanel HD Light Mortar and Fermacell HD Reinforcement mesh embedded, supported on battens at 600 mm centres, when tested for 'soft body' impact to MOAT 43 : 1987, was found to adequately resist 'soft body' impact energy of 100 N·m and when tested to 'hard body' impact to ETAG 004 : 2000 was found to adequately resist 'hard body' impact energy of 10 N·m. Therefore, the system may be considered suitable for use in Categories I to III as defined in ETAG 004 : 2000 (reproduced in Table 5).

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.

7 Performance in relation to fire

 7.1 The boards were tested and shown to have a reaction to fire Class A1* in accordance with BS EN 13501-1 : 2007 and a fire resistance class of K₁10 in accordance with BS EN 13501-2 : 2007.

7.2 The system may be regarded as non-combustible ('low risk' in Scotland) in accordance with the following national Building Regulations:

England and Wales — Approved Document B

Scotland — Technical Handbooks⁽¹⁾⁽²⁾, Section 2

Northern Ireland — Technical Booklet E.

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

7.3 Cavity barriers should be incorporated as required under the national Building Regulations, but should not block essential ventilation and drainage pathways. Guidance on fire barriers can be found in BRE Report 135 : 2003.

7.4 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 and combustibility limitations for other materials and components used in the overall wall construction, for example, thermal insulation.

8 Proximity of flues and appliances

When installing the product in close proximity to certain flue pipes and/or heat-producing appliances in buildings subject to national Building Regulations, the relevant provisions and following guidance given should be met:

England and Wales — Approved Document J

Scotland — Mandatory Standard 3.19, clauses 3.19.1⁽¹⁾⁽²⁾ to 3.19.9⁽¹⁾⁽²⁾

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland — Technical Booklet L.

9 Weathertightness



9.1 The board, when used in conjunction with the Fermacell HD render system, will resist the passage of moisture from the ground and the weather. Any water collecting in the cavity due to rain or condensation will be removed by drainage and ventilation.

9.2 The air space between the back of the boards and supporting wall or insulation should be a minimum of 25 mm wide and should allow for conventional building tolerances⁽¹⁾.

(1) Guidance on recommended cavity widths is given in NHBC Standards, Chapter 6.10 *Light steel framed walls and floors*.

10 Water absorption

10.1 For the water absorption, tested according to EN 520 : 2004, the following values apply:

- water absorption at the surface: $650 \text{ g}\cdot\text{m}^{-2}$
- total water absorption of the boards: 8.5%.

10.2 The moisture content of the boards, tested according to EN 322 : 1993 is $\leq 5\%$ under 20°C and 65% of humidity (Class 1).

11 Thermal conductivity

When considering the U values of elements or minimum internal surface temperatures of heat loss paths such as repeating bridges, junctions and openings, the thermal conductivity of the boards may be taken as $0.173 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ *

12 Condensation risk



To minimise the risk of interstitial condensation, walls and ceilings should be designed and constructed in accordance with BS 5250 : 2011. For the purposes of calculations, water vapour resistance factor (μ) of the boards should be taken as $56 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}\cdot\text{m}^{-1}$ *

13 Infestation

The use of the board does not in itself promote infestation, but the creation of voids within the wall structure may provide habitation for insects or vermin in areas already infested. Care should be taken to ensure that, wherever possible, all voids are sealed as any infestation may be difficult to eradicate.

14 Maintenance and repair



14.1 Periodic inspections of the external façade should be carried out to assess the need for cleaning, maintenance painting, maintenance of localised repairs and replacement, such as joints seals and fixings, to ensure that ingress of water does not occur. All necessary repairs should be effected immediately.

14.2 The boards are not exposed and are suitably durable (see section 10), therefore, maintenance will not be required. However, it must be ensured that damage occurring before enclosure is repaired beforehand.

15 Durability



Provided the board is used and installed in accordance with this Certificate, fixed to satisfactory, stable and durable backgrounds using the appropriate fixings, and regularly maintained, it should have a life in excess of 30-years.

16 Reuse and recyclability

The boards can be reprocessed for use in the manufacture of other products. The fixings can be readily recycled.

Installation

17 General

17.1 Installation of the Fermacell Powerpanel H₂O Cement-Based Board for External Use should be in accordance with the requirements given in the Certificate holder's literature.

17.2 Typical installation of the boards are shown in Figure 2.

17.3 The level of supervision during installation of the system and the associated structure must be sufficient to ensure the quality of workmanship.

17.4 When a breather membrane is required, it must be installed and properly overlapped in accordance with the instructions of the membrane manufacturer and the building designer.

17.5 All window and door openings must be sealed strictly in accordance with the Certificate holder's installation instructions to ensure that they are weathertight.

17.6 Boards can be cut using power tools⁽¹⁾. For best results, tungsten tipped blades should be used. To minimise the amount of dust, vacuum extraction should be applied. Without power tools, cutting can be carried out using a stout sharp knife or hand saw by scoring along a straight edge through the glassfibre mesh, breaking the board over a supported edge and cutting through the underside mesh. Adequate PPE should be worn.

17.7 The Certificate holder's advice should be sought regarding the preparation and application of the render system, including application details relating to starter tracks, around apertures, control joints including fire breaks and expansion joints and ventilation.

(1) Rail-guided circular saws are used for straight edges and jigsaws and core drills for details.

18 Procedure

18.1 The boards are screwed/stapled to rails/battens in accordance with sections 4.5 and 4.6 using the appropriate fixings given in section 1.3. Screws must be sunk 1 mm and should not be over-tightened (details are given in the Certificate holder's installation guide).

18.2 Cross joints (when a horizontal joint crosses a vertical joint) should be avoided and instead staggered with joints at least 400 mm apart and at a maximum of 200 mm from support rails/battens.

18.3 Vertical joints must allow for a maximum gap of 1 mm between boards and horizontal board joints must have Fermacell HD Adhesive applied between the joints prior to installation.

18.4 Fermacell HD Adhesive is also roller applied to embed the joint reinforcement tape, which is then placed over the joints and window returns. Fixing heads are also covered with the HD adhesive.

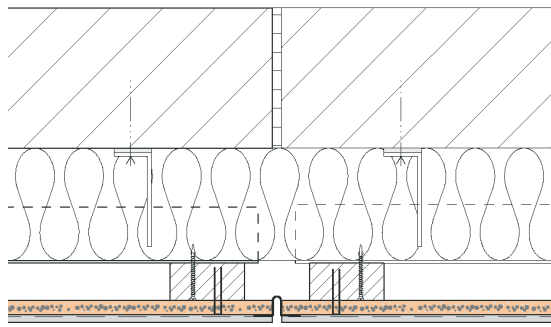
18.5 The Fermacell HD Adhesive requires approximately 24 hours to cure.

18.6 Beads and sealant are applied around the window frame.

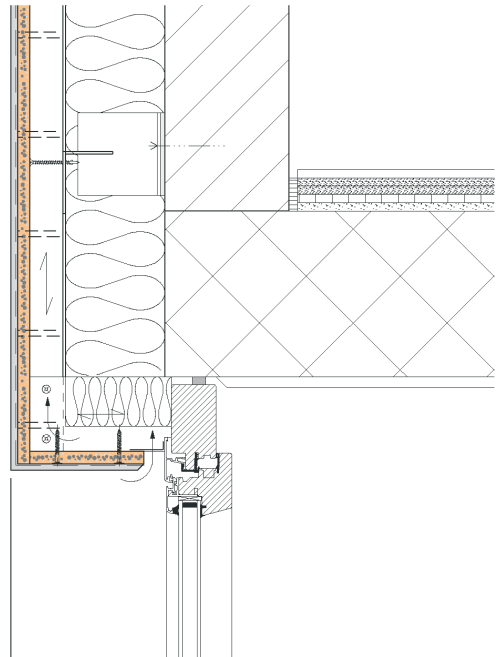
18.7 The surface of the board must be protected from extreme weather conditions prior to application of subsequent layers of Fermacell Powerpanel HD Light mortar. The system should not be applied in rain or mist, at temperatures below 5°C, or if temperatures are expected to drop below 5°C within 24 hours (ie if exposure to frost is likely to occur during curing). In common with traditional sand/cement renders, the system must not be applied to frost-bound walls. In hot weather conditions, manufacture's advice should be sought.

18.8 Prior to render application, the boards must be free from dust, loose particles, damp and other pollution which can interfere with the fixing to substrate.

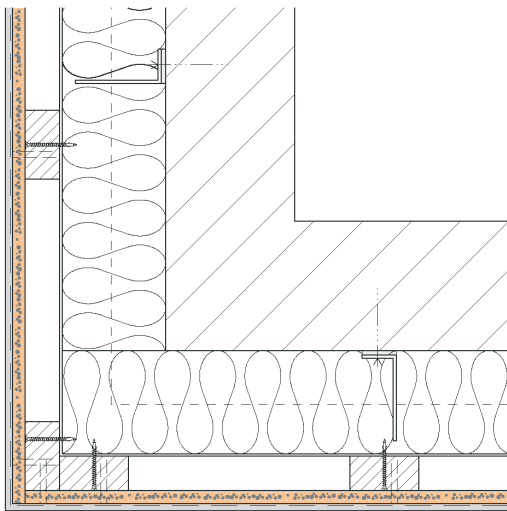
Figure 2 Typical installation details



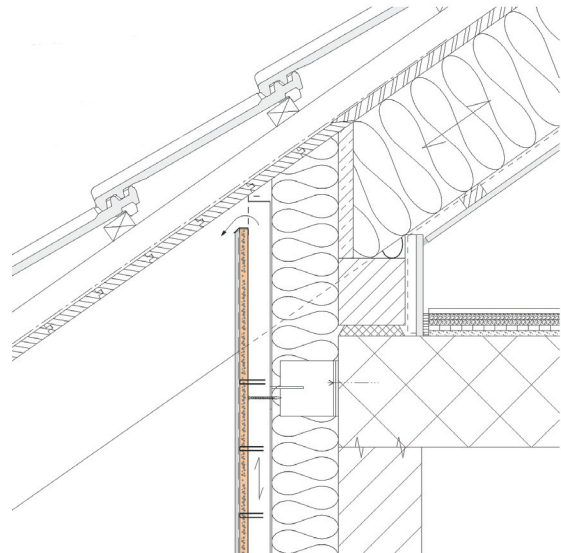
movement joint



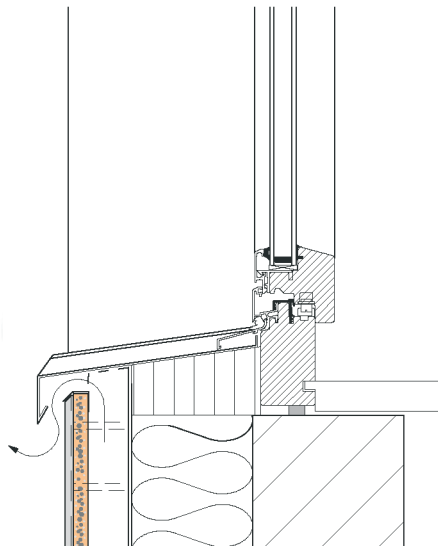
opening detail



corner detail



eaves detail



sill detail

19 Tests

Tests were carried out to determine:

- resistance to hard body impact to ETAG 004 : 2000
- resistance to soft body impact to MOAT 43 : 1987
- resistance to thermal cycling to MOAT 22 : 1988
- resistance to freeze thaw to MOAT 22 : 1988
- bond strength to ETAG 004 : 2000
- resistance to wind load to EN 12179 : 2001
- water penetration generally in accordance with BS EN 12865 : 2001 Procedure A (except spray pattern to BS 5368-2 Method 2)
- reaction to fire to BS EN 13501-1 : 2007
- water absorption to EN 520 : 2004
- density to EN 323 : 1993
- thermal conductivity to EN 12664 : 2001
- water vapour permeability to EN ISO 12572 : 2001
- dimensional tolerance and stability to EN 325 : 1993
- bending strength and flexural modulus to EN 310 : 1993.

20 Investigations

20.1 An examination was made of the Evaluation Report prepared by DIBt for the assessment regarding the ETA 07/0087.

20.2 The manufacturing process was examined, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

20.3 The installation of a test specimen was observed to assess the practicability of installation.

Bibliography

- BRE Report (BR 135 : 2003) *Fire Performance of External Insulation For Walls of Multi-Storey Buildings*
- BS 5250 : 2011 *Code of practice for control of condensation in buildings*
- BS 5268-2 : 2002 *Structural use of timber — Code of practice for permissible stress design, materials and workmanship*
- BS 5268-5 : 1989 *Structural use of timber — Code of practice for the preservative treatment of structural timber*
- BS 5368-2 : 1980 *Methods of testing windows — Watertightness test under static pressure*
- BS 5589 : 1989 *Code of practice for preservation of timber*
- BS 5950-5 : 1998 *Structural use of steelwork in building — Code of practice for design of cold formed thin gauge sections*
- BS EN 351-1 : 2007 *Durability of wood and wood-based products — Preservative-treated solid wood — Classification of preservative penetration and retention*
- BS EN 1991-1-4 : 2005 *Eurocode 1 : Actions on structures — General actions — Wind actions*
- BS EN 1993-1-1 : 2005 *Eurocode 3 : Design of steel structures — General rules and rules for buildings*
- BS EN 1995-1-1 : 2004 *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*
- BS EN 12467 : 2004 *Fibre-cement flat sheets — Product specification and test methods*
- BS EN 12865 : 2001 *Hygrothermal performance of building components and building elements — Determination of the resistance of external wall systems to driving rain under pulsating air pressure*
- BS EN 13501-1 : 2007 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*
- BS EN 13501-2 : 2007 *Fire classification of construction products and building elements — Classification using data from fire resistance tests, excluding ventilation services*
- BS EN 13914-1 : 2005 *Design, preparation and application of external rendering and internal plastering — External rendering*
- BS EN ISO 9001 : 2008 *Quality management systems — Requirements*
- EN 310 : 1993 *Wood-based panels — Determination of modulus of elasticity in bending and of bending strength*
- EN 319 : 1993 *Particleboards and fibreboards — Determination of tensile strength perpendicular to the plane of the board*
- EN 322 : 1993 *Wood-based panels — Determination of moisture content*
- EN 323 : 1993 *Wood-based panels — Determination of density*
- EN 325 : 1993 *Wood-based panels — Determination of dimensions of test pieces*
- EN 520 : 2004 *Gypsum plasterboards — Definitions, requirements and test methods*
- EN 1382 : 1999 *Timber structures — Test methods — Withdrawal capacity of timber fasteners*
- EN 1383 : 1999 *Timber structures — Test methods — Pull-through resistance of timber fasteners*
- EN 12179 : 2001 *Geometrical product specifications (GPS) — Surface texture — Profile method — Calibration of contact (stylus) instruments*
- EN 12467 : 2004 *Fibre-cement flat sheets — Product specification and test methods*
- EN 12664 : 2001 *Thermal performance of building materials and products — Determination of thermal resistance by means of guarded hot plate and heat flow meter methods — Dry and moist products of medium and low thermal resistance*
- EN 14566 : 2008 *Mechanical fasteners for gypsum plasterboard systems — Definitions, requirements and test methods*
- EN ISO 12572 : 2001 *Hygrothermal performance of building materials and products — Determination of water vapour transmission properties*
- ETAG 004 : 2000 *Guideline for European Technical Approval of External Thermal Insulation Composite Systems with Rendering*
- MOAT No 22 : 1988 *UEAtc Directives for the Assessment of External Insulation Systems for Walls (Expanded Polystyrene Insulation Faced with a Thin Rendering)*
- MOAT No 43 : 1987 *UEAtc Directives for Impact Testing Opaque Vertical Building Components*

21 Conditions

21.1 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.

21.2 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.

21.3 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.

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

21.5 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.

21.6 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.