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Agrément Certificate
19/5708
Product Sheet 3

FIBRE-CEMENT WALL BOARDS

SUPERTECH PLANK

This Agrément Certificate Product Sheet(1) relates to Supertech Plank, a fibre-cement plank for use as an exterior non-loadbearing cladding on vertical timber or metal supports over masonry or brickwork of new and existing domestic and non-domestic buildings, subject to height limitations.

(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 product can accept the wind actions likely to be met in service in the UK (see section 6).

Behaviour in relation to fire — the product has a reaction to fire classification of A2-s1,d0 in accordance with BS EN 13501-1 : 2007. The use of the product over timber supports is restricted in some cases (see section 7).

Weathertightness — the product, when installed, is not weathertight, and in sheathed framework applications must be used in conjunction with a suitable breather membrane (see section 8).

Durability — the cladding product is expected to have a service life in excess of 30 years (see section 11).

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

On behalf of the British Board of Agrement

Date of First issue: 9 December 2019

Brian Moore
Director

Regulations

In the opinion of the BBA, Supertech Plank, 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 product is acceptable for use as set out in section 6.4 of this Certificate.
Requirement:	**B3(4)**	**Internal fire spread (structure)**
Comment:		The product can contribute to satisfying this Requirement. See section 7.2 of this Certificate.
Requirement:	**B4(1)**	**External fire spread**
Comment:		The product is unrestricted by this Requirement, however the timber supports may be restricted in some cases. See sections 7.1 and 7.4 of this Certificate.
Requirement:	**C2(b)**	**Resistance to moisture**
Comment:		The product does not provide a watertight or airtight facing but will resist the passage of rainwater to the supporting structure. See section 8.1 of this Certificate.
Regulation:	**7**	**Materials and workmanship (applicable to Wales only)**
Regulation:	**7(1)**	**Materials and workmanship (applicable to England only)**
Comment:		The product is acceptable. See section 11 and the *Installation* part of this Certificate.
Regulation:	**7(2)**	**Materials and workmanship (applicable to England only)**
Comment:		The use of the product is unrestricted by this Regulation, however use of the product over timber supports may be restricted in some cases under this Regulation. See sections 7.1 and 7.3 to 7.6 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)(2)**	**Durability, workmanship and fitness of materials**
Comment:		The product can contribute to a construction satisfying this Regulation. See sections 10 and 11 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	1.1(a)(b)	Structure
Comment:		The product is acceptable for use, with reference to clause 1.1.1$^{(1)(2)}$ of this Standard. See section 6.4 of this Certificate.
Standard:	2.4	Cavities
Comment:		The product can contribute to satisfying this Standard with reference to clause 2.4.2$^{(1)(2)}$. See section 7.2 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Standard:	2.7	Spread on external walls
Comment:		The product is unrestricted by these Standards, however the timber supports are restricted in some cases by these Standards with reference to clauses, 2.6.4$^{(1)(2)}$, 2.6.5$^{(1)}$, 2.6.6$^{(1)(2)}$ and 2.7.1$^{(1)(2)}$. See sections 7.1, 7.3 to 7.5, 7.8 and 7.9 of this Certificate.

Standard:	3.10	Precipitation
Comment:		The product does not form a watertight or airtight facing but will resist the passage of rainwater to the supporting structure, with reference to clauses 3.10.1[(1)(2)] and 3.10.5[(1)(2)] of this Standard. See section 8.1 of this Certificate.
Standard:	7.1(a)	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:		Comments in relation to the product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1[(1)(2)] and Schedule 6[(1)(2)].

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

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

Regulation:	**23(a)(i) (iii)(b)(i)**	**Fitness of materials and workmanship**
Comment:		The product is acceptable. See section 11 and the *Installation* part of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The product does not form a watertight or airtight facing but will resist the passage of rainwater to the supporting structure. See section 8.1 of this Certificate.
Regulation:	**30**	**Stability**
Comment:		The product is acceptable for use as set out in section 6.4 of this Certificate.
Regulation:	**35(4)**	**Internal fire spread (structure)**
Comment:		The product is unrestricted by this Regulation, however use of the product over timber supports is restricted in some cases. See section 7.2 of this Certificate.
Regulation:	**36(a)**	**External fire spread**
Comment:		The use of the product is restricted in some cases under this Regulation. See sections 7.1 7.3 to 7.5 and 7.7 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* (3.1, 3.4 and 3.5) and 13 *General* of this Certificate.

Additional Information

NHBC Standards 2019

In the opinion of the BBA, Supertech Plank, 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 product in accordance with harmonised European Standard BS EN 12467 : 2012. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Supertech Plank is a cellulose fibre-cement plank comprising ordinary Portland cement, crystalline silica (quartz) and cellulose, which satisfies the requirements of Category A, Class 2 boards to BS EN 12467 : 2012.

1.2 The product is available in a woodgrain textured or smooth finish with the characteristics given in Table 1.

Table 1 Board characteristics

Characteristic (units)	Value
Thickness (mm)	7.5, 9 and 12
Width (mm)	190 or 230(1)
Length (mm)	3000 or 3660
Mass ($kg \cdot m^{-2}$)	10.3, 12.4 and 16.5(2)
Mean density ($kg \cdot m^{-3}$)	1375*
Water vapour resistance factor (μ)	35
Colour	light grey
Modulus of Rupture (MPa)	10.3*

(1) 7.5 mm thick plank only is also available in 190 mm width.
(2) The mass of the plank depends on the size.

1.3 The specifications of the fixings are as follows:

- decorative wing tip screws — 4.8 mm shank diameter, 38 mm length with a 10 mm diameter countersunk head screw, with minimum 500 hours salt-spray corrosion resistance, used to attach the planks to steel support (for exposed fixings)
- countersunk head screw — 4.2 mm shank diameter, 42 mm length with a 10 mm diameter, with minimum 500 hours salt-spray corrosion resistance, used to attach the planks to steel support
- nail fixings — 2.65 by 40 mm with a 7 mm head diameter annular ring shank, to BS 1202-1 : 2002 for attaching the planks to the timber batten support.

Note: Consult the Certificate holder for advice concerning the specification of fixings in marine environments.

1.4 Components specified for use with the product, but outside the scope of this Certificate, include:

- vertical profiles(1) — used at corner, end, joint, internal and external corners (fixed for protection and aesthetics of the cladding system)
- starter profile(1) — metal track to angle the base plank and provide a level plane
- ventilation grille(1) — perforated profile available in various widths to prevent insects and pests entering through the cavity ventilation gap used at base, top and window openings of cladding
- wall breather membrane — UV durable to BS EN 13859-2 : 2014, used in conjunction with sheathing on framed applications
- timber battens — minimum 47 by 38 mm preservative-treated battens used as vertical supports for the planks at maximum 600 mm centres, ensuring the specified fixings are fully embedded into the wall substrate
- steel sub-frame —vertical supports at 600 mm maximum centres, fixed to the substrate wall, ensuring the specified fixings are fully embedded into the wall substrate
- sheathing — of a suitable material, used in conjunction with timber framework substrate walls

- coatings — stain and paint finishes, to provide protective or decorative finishes used with the product
- fixings — used for fixing the sub-frame to the substrate wall and connecting the sub-frame rails to studs
- EPDM joint tape — available in various widths, used between the planks and the sub-frame to provide additional weather protection.

(1) Available from the Certificate holder in colour and sizes to suit the product.

2 Manufacture

2.1 The raw materials of ordinary Portland cement, crystalline silica and cellulose are mixed in a controlled process and poured out to form the planks prior to the autoclaving. Once hardened, the product is finished by cutting and drying before storage. The manufacturing process and quality controls are in accordance with BS EN 12467 : 2012.

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 product is manufactured in Malaysia and is marketed in the UK by the Certificate holder.

3 Delivery and site handling

3.1 The product is supplied covered with polythene on timber pallets and can be offloaded either by mechanical handling equipment or by manually removing individual planks. Each pallet bears a label including the load number, product name, product size, quantity and the BBA logo incorporating the number of the Certificate.

3.2 Each plank is marked with a unique manufacturing and reference code.

3.3 The planks must be stored on a firm, flat and level surface with sufficient support to prevent bowing. To prevent efflorescence, the planks should be stored under cover and kept ventilated and dry prior to fixing. If the planks become wet, they must be sufficiently dried prior to use.

3.4 Manual off-loading of the planks should be carried out with care to avoid unnecessary strain and injury.

3.5 The product includes crystalline silica and reference should be made to the current version of EH40/2005. In particular, when cutting, drilling or sanding in confined areas, dust levels should be controlled using suitable extraction equipment.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Supertech Plank.

Design Considerations

4 Use

4.1 Supertech Plank is suitable for use as a decorative and protective exterior non-loadbearing cladding on vertical timber or metal supports over masonry, brickwork or sheathed timber-frame walls of new and existing buildings. The planks are supported at 600 mm maximum centres between timber/steel supports. It is essential that walls are

designed and constructed in accordance with this Certificate, the Certificate holder's instructions and the relevant regulatory guidance. The use of the plank is restricted in some cases (see section 7).

4.2 The plank satisfies Category A(1) requirements in accordance with BS EN 12467 : 2012.

(1) Sheets which are intended for applications where they may be subjected to heat, high moisture and severe frost.

4.3 The supports to which the plank is fixed must be structurally sound, and designed and constructed in accordance with the requirements of the relevant national Building Regulations and Standards, namely:

- timber sub-frame — in accordance with BS EN 1995-1-1 : 2004 and preservative-treated in accordance with BS EN 351-1 : 2007, with timber batten in accordance with BS 5534 : 2014. Guidance on recommended wood preservation is also given in *NHBC Standards* 2019, Chapter 3.3 *Timber preservation (natural solid timber)*
- steel support — in accordance with BS EN 1993-1-1 : 2005 and BS EN 1993-1-3 : 2006.

4.4 Masonry substrate walls of new buildings should be designed and constructed in accordance with BS EN 1996-1-1 : 2005, BS EN 1996-1-2 : 2005, BS EN 1996-2 : 2006, BS EN 1996-3 : 2006 and PD 6697 : 2010, and with the relevant recommendations of BS 8000-0 : 2014 and BS 8000-3 : 2001.

4.5 Care should be taken to ensure sufficient time is allowed for complete fixation or drying of the timber preservative before the plank is fixed.

4.6 The fixings of the battens/metal supports to the timber/steel frame substrate wall must go through the sheathing board into the structural frame.

5 Practicability of installation

The product is designed to be installed by a competent builder, or contractor, trained and experienced with this type of product.

6 Strength and stability

Wind loading

6.1 The wind actions 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 coefficients as additional fixings may be necessary. In accordance with BS EN 1990 : 2002, it is recommended that a partial load factor of 1.5 is used to determine the design wind load to be resisted by the product.

6.2 The substrate 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 sub-frame must have sufficient stiffness, such that its deformation does not affect the performance of the plank. No contribution to the structural resistance of the wall should be attributed to the plank.

6.3 A suitably qualified and experienced individual must check the design and installation of the cladding and must 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 deflections to span/200 and cantilever deflections to span/150
- the planks are fixed to the sub-frame using the specified fixings (see section 1.3)
- fixing of the timber/steel sub-frame to the supporting 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, using 50% of the mean value of the five smallest measured values at the ultimate load.

6.4 When tested for dynamic wind loading in accordance with ETAG 034 : 2012, Part 1, wall cladding consisting of the 7.5 mm Supertech Plank was found to have the design wind load resistances shown in Table 2 of this Certificate. The design wind load resistance was evaluated by applying a partial material factor of 2.0 to the failure values. The mode of failure was by pull-through of the fixing (screws and nails) through the board. The 9 and 12 mm planks may be taken to have the same performance.

Table 2 Design wind load resistance

Construction type	Design wind load resistance[3] (kPa)	Distance between vertical support rails/battens (mm)
7.5 mm Supertech Plank using nails on timber batten[1] sub-frame	1.2	600
7.5 mm Supertech Plank using screws on metal rail[2] sub-frame	1.8	600

(1) Timber sub-frame; 38 mm depth x 47 mm width timber battens at 600 mm centres.
(2) Steel sub-frame; 1.2 mm thick x 100 mm base x 50 mm flange x 12 mm return metal studs at 600 mm centres.
(3) With a partial material factor of 2.0.

Impact

6.5 When tested for resistance to hard and soft body impacts, Supertech Plank, when installed with vertical supports at no more than 600 mm spacing, was found to be suitable for use in the areas defined under Use Categories III and IV as defined in ETAG 034 : 2012, Part 1, Table 4, an extract of which is reproduced in Table 3 of this Certificate.

Table 3 Definition of Use Categories (reproduced from ETAG 034, Part I, Table 4)

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: Categories I and II are shown for information only and are not suitable for this product.

7 Behaviour in relation to fire

7.1 The uncoated external surface of Supertech Plank achieved an A2-s1, d0 reaction to fire classification[1] in accordance with BS EN 13501-1 : 2007. This relates to the full thickness range and mounting methods referred to in section 1 of this Certificate.

(1) Designers should refer to BRE Global Fire Test Report No. 302674-3, available from the Certificate holder.

7.2 The uncoated reverse side of Supertech Plank (facing into the cavity) has a reaction to fire classification not less than that stated in section 7.1.

7.3 The fixings for securing the plank to the sub-frame, are classified as non-combustible in accordance with the relevant national regulatory guidance.

7.4 Use of the product with non-combustible sub-frames and sub-frame fixings is not subject to any restriction on building height or proximity to a boundary.

7.5 The plank and fixings are not subject to any restriction on building height or proximity to boundaries. Other wall components may be restricted (see sections 7.6 to 7.9 of this Certificate).

7.6 In England, the product should not be used with timber battens on buildings which have a storey more than 18 m above ground level and which 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.

7.7 In Northern Ireland, the product should not be used with timber battens on buildings which have a storey more than 18 m above the ground.

7.8 In Scotland, the product should not be used with timber battens on domestic buildings which have a storey more than 18 m above the ground or on any buildings that are 1 m or less from a boundary, except on houses where the walls have appropriate fire resistance.

7.9 If used with timber battens, the plank should not be used on any building with a storey more than 11 m above the ground, or on any entertainment or assembly building with a total storey area more than 500 m^2, or on any hospital or residential care building with a total storey area more than 200 m^2.

7.10 The metal frame support system is classified as non-combustible in accordance with the relevant national regulatory guidance. When Supertech Plank is installed on metal frame supports, it is not subject to any height or boundary restriction when used in a wall specification where the components satisfy the non-combustibility requirement of materials in the relevant national Building Regulations.

7.11 For resistance to fire, the performance of a wall incorporating the product must be determined by tests or assessment from a suitably accredited laboratory, and is outside the scope of this Certificate.

7.12 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, sub-frames and thermal insulation.

8 Weathertightness

8.1 The product is not weathertight and when used on timber-frame walls must be backed by a suitable breather membrane (see section 1.4) acting as a vapour-permeable barrier, incorporated behind the cladding under the supporting battens.

8.2 The substrate wall must be weathertight and reasonably airtight.

8.3 All ventilation openings around the periphery of a cladding system should be suitably protected with a ventilation protection mesh or a perforated sheet or similar, to prevent the ingress of birds, vermin and insects.

8.4 The horizontal lapped joints between planks are not sealed but the amount of water entering the cavity by wind-driven rain will be minimal. Any water collecting in the cavity owing to rain or condensation will be removed by drainage and ventilation.

8.5 Ventilation and drainage must be provided behind the planks. To satisfy the NHBC requirements, a minimum 38 mm cavity behind cladding installed over walls (see *NHBC Standards* 2019, Chapters 6.2 and 6.9), with a minimum ventilation area of 5000 mm^2 per metre run of cladding at the building base point and at the roof edge, is required.

9 Proximity of flues and appliances

When installing the product in close proximity to certain flue pipes or heat-producing appliances, the following provisions of the national Building Regulations must be satisfied:

England and Wales — Approved Document J

Scotland **—** Mandatory Standard 3.19, clauses 3.19.1[(1)(2)] to 3.19.4[(1)(2)] and 3.19.8[(1)(2)]

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

Northern Ireland **—** Technical Booklet L.

10 Maintenance

10.1 Annual inspections should be carried out to assess the need for cleaning, localised repairs and replacement of elements (such as fixings), and to check the integrity of joints and ventilation gaps. Advice regarding maintenance procedures can be obtained from the Certificate holder.

10.2 The product can be hand cleaned with cold or tepid water with a mild cleaning agent (not solvents or bleach) and a soft cloth.

11 Durability

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

11.2 When installed and maintained in accordance with this Certificate and the Certificate holder's instructions, and subjected to normal exposure conditions in the UK, the product will have a service life in excess of 30 years.

12 Reuse and recyclability

The plank can be readily recycled.

Installation

13 General

13.1 Supertech Plank must be installed in accordance with this Certificate and the Certificate holder's instructions.

13.2 Reasonable precautions must be taken to ensure the product is not damaged during installation.

13.3 When cutting the plank, power and hand tools should be used with care and in accordance with the Certificate holder's recommendations. Power tools should only be used by individuals who have been instructed and trained to use them safely. Appropriate personal protective equipment should be used and monitoring of exposure levels during this activity should be considered.

13.4 Cutting and drilling should be carried out in a dry and well-ventilated area, with all cuts being wiped to remove dust with a clean, dry cloth. Drill holes in metal studs should be cleared of any swarf to ensure a clear hole.

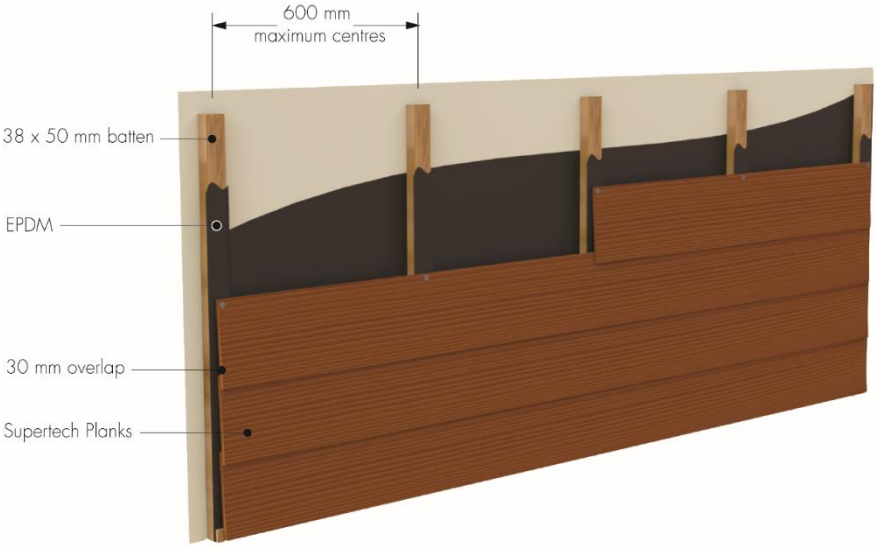
13.5 The plank may be cut using a hardened-point handsaw, electric jigsaw or hand-held circular saw, working with the outward face down, and the planks supported as the cut progresses. It is recommended that power sawing is carried out using a polycrystalline diamond blade.

13.6 It is important to observe appropriate health and safety legislation when working on site, ie personal protective clothing and equipment. The Certificate holder should be consulted for material safety data sheets and advice. When working in enclosed areas, precautions should be taken to ensure dust levels are controlled in accordance with the current issue of EH40/2005.

14 Procedure

14.1 Typical installation details are shown in Figure 1.

Figure 1 Typical Installation detail[1]



(1) For details of EPDM on timber battens, refer to Figure 2.

14.2 Where required, a wall breather membrane is laid parallel to the direction of the product along the wall, with minimum laps of 150 mm to ensure water can drain away from the building.

14.3 The timber battens or metal rail supports are vertically fixed over the breather membrane at maximum 600 mm centres.

14.4 For timber battens, an EPDM strip is attached to each batten starting from the top and stapling at intervals to ensure a flush fit.

14.5 A minimum ventilation gap of 38 mm must be provided between Supertech Plank and the substrate wall, and a perforated closure is installed at the base, top, and above and below window frame openings on the top and bottom of the sub-frame.

14.6 Prior to the product being installed, vertical corner, end and joint profiles are positioned, and nail- or screw-fixed to the sub-frame if required.

14.7 The starter profile is screw- or nail-fixed to the metal rail or timber batten respectively, at 150 mm above ground level on a level plane. The first plank is rested onto the starter profile and screw- or nail-fixed into the vertical rail or batten sub-frame. Each plank section must be supported by at least three vertical supports (at no more than 600 mm centres), with all ends supported.

14.8 Fixings are located at the top of the product and must be attached at each support and at a minimum distance of 20 mm from the edge. Adjacent products are loose butted against each other coinciding with a metal rail/timber batten support. Fixing heads should be flush with the product outer surface and spaced at a different vertical gauge to the sub-frame fixings to avoid a fixing clash.

14.9 Subsequent planks are installed upwards by overlapping the previous plank by 30 mm. Where fixings are exposed (ie top planks and reveals), the use of decorative wing tip screws to blend the fixing with the rest of the cladding is recommended.

14.10 Caution should be taken to avoid straddling of the planks and supports across movement joints in the substrate wall.

14.11 The completed wall must allow a 10 mm gap under window sills and at the soffit liner to ensure a complete ventilation pathway. To prevent gap closure, consideration should also be given to cross-grain shrinkage of new timber frame buildings.

14.12 As an alternative to vertical profiles, detailed finishing (such as corners) can also be achieved by overlapped or mitred plank edges. For triangular gable end abutments, a timber batten running parallel to the roof slope can be used with the plank ends affixed.

14.13 External fixtures, such as guttering and down pipes, must be fixed through to the substrate structure. Clearance holes through the planks must be provided when fixing items.

Figure 2 Typical Installation details (on timber battens)

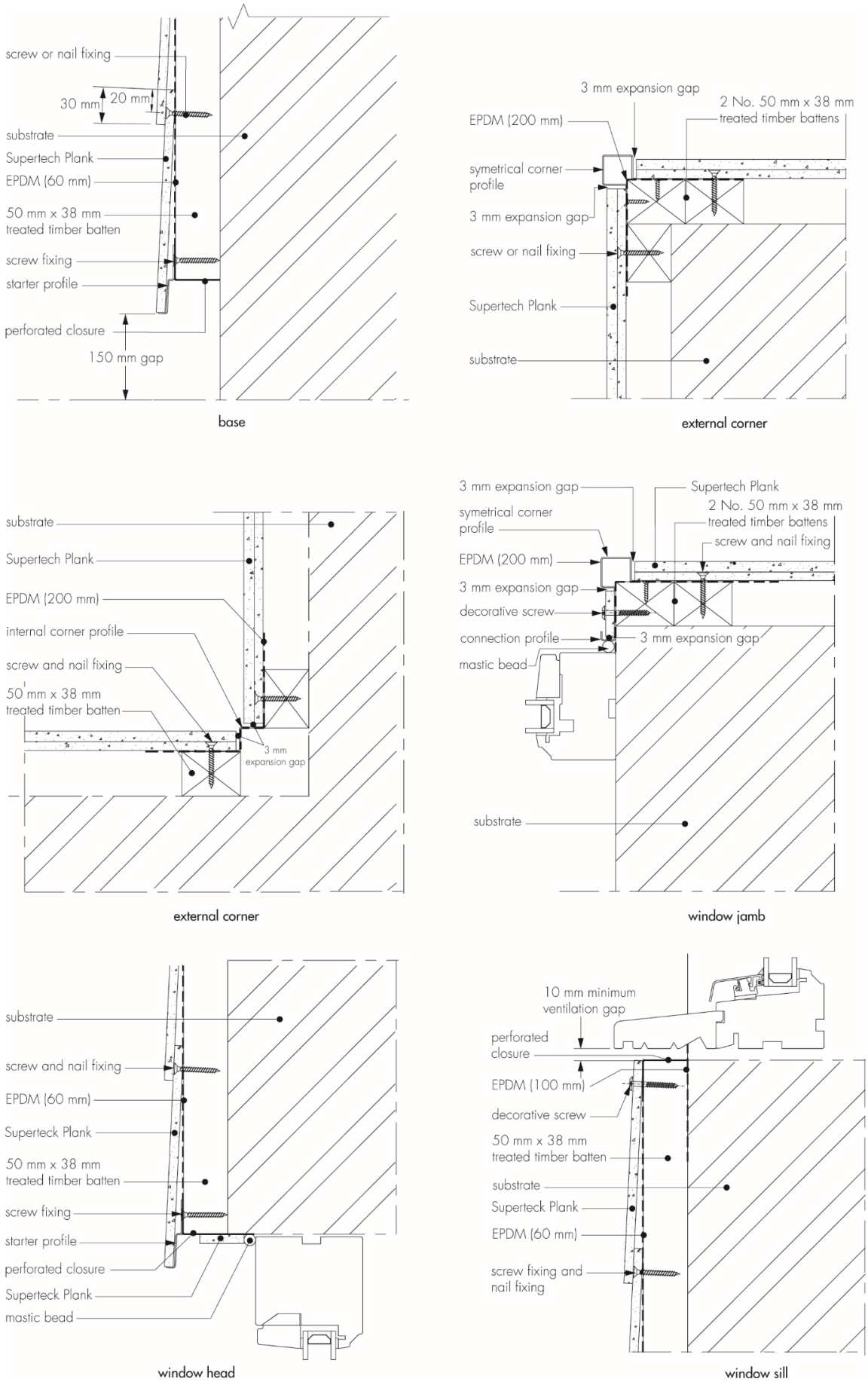
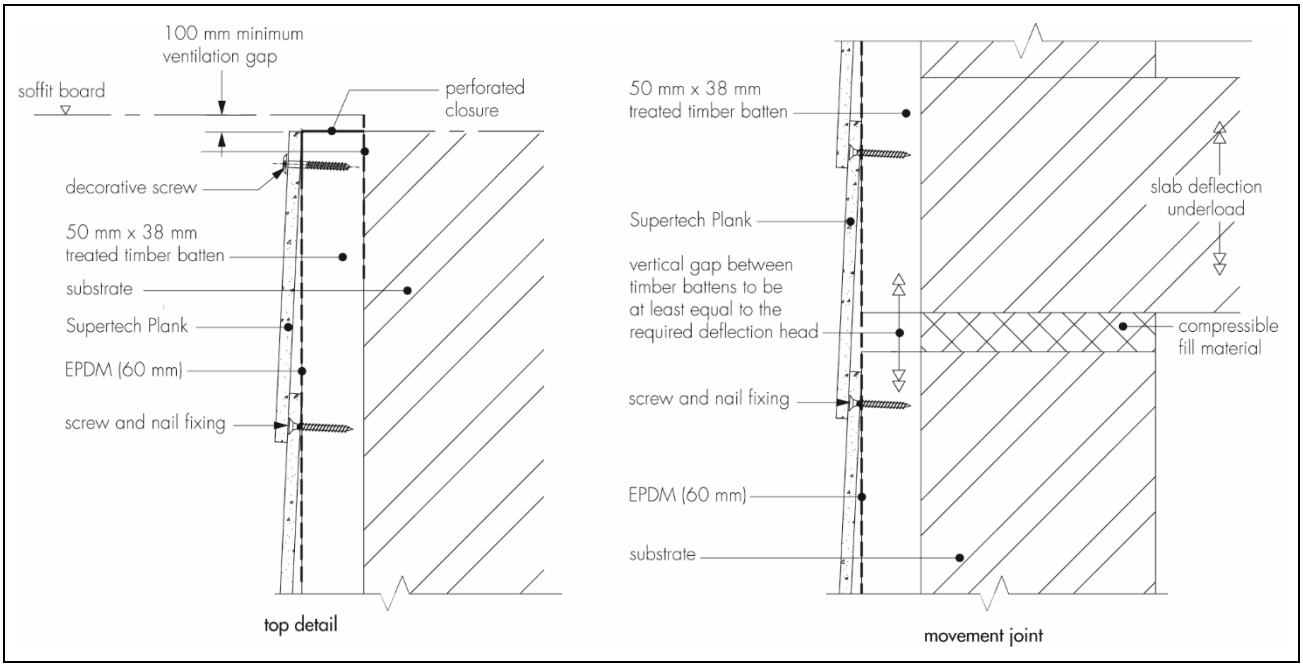


Figure 2 Typical Installation details (on timber battens)(continued)



15 Repair

As is good practice, any damaged planks must be replaced. Minor surface damage may be repaired using an appropriate paint; the Certificate holder may be contacted for advice.

Technical Investigations

16 Tests

Tests were carried out and the results assessed to determine:

- dimensional stability
- density
- resistance to impact
- water absorption
- flexural strength
- water impermeability
- resistance to freeze/thaw cycling
- resistance to heat/rain cycling
- resistance to water soak
- resistance to soak/dry cycling
- resistance to wind loading
- water vapour permeability.

17 Investigations

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

17.2 An assessment was made of test reports relating to the reaction to fire classification of the product to BS EN 13501-1 : 2007.

Bibliography

BS 1202-1 : 2002 *Specification for nails — Steel nails*

BS 5534 : 2014 + A2 : 2018 *Slating and tiling for pitched roofs and vertical cladding — Code of practice*

BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*
BS 8000-3 : 2001 *Workmanship on building sites — Code of practice for masonry*

BS EN 351-1 : 2007 *Durability of wood and wood-based products — Preservative-treated solid wood — Classification of preservative penetration and retention*

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*
NA to BS EN 1991-1-4 + A1 : 2010 UK National Annex to *Eurocode 1 — Actions on structures — General actions*

BS EN 1993-1-1 : 2005 + A1 : 2014 *Eurocode 3 — Design of steel structures — General rules and rules for buildings*
BS EN 1993-1-3 : 2006 *Eurocode 3 — Design of steel structures — General rules — Supplementary rules for cold-formed members and sheeting*

BS EN 1995-1-1 : 2004 + A2 : 2014 *Eurocode 5 — Design of timber structures — General — Common rules and rules for buildings*
NA to BS EN 1995-1-1 : 2004 + 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 + A1 : 2016 *Fibre-cement flat sheets — Product specification and test methods*

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

BS EN 13859-2 : 2014 *Flexible sheets for waterproofing — Definitions and characteristics of underlays — Underlays for walls*

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

EH40/2005 *Workplace exposure limits* (Second edition)

EOTA TR055 *Design of fastenings based on EAD 330232-00-0601, EAD 330499-00-0601 and EAD 330747-00-06-01. 2018.*

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*

18 Conditions

18.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

18.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

18.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

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

18.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

18.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.