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Agrément Certificate
14/5109
Product Sheet 1

CALCIUM SILICATE SHEATHING BOARD

Y-WALL

This Agrément Certificate Product Sheet(1) relates to Y-wall(2), for use externally as a structural and non-structural sheathing board behind facade/rainscreen cladding applied to lightweight steel and timber frames, and also as an internal lining in domestic and non-domestic buildings.

(1) Hereinafter referred to as 'Certificate'.
(2) Y-wall is a registered trademark.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Strength and stability — the board has sufficient strength to resist the loads likely to be encountered in service and can contribute to the racking resistance of the structure (see section 6).

Behaviour in relation to fire — the board has a reaction to fire classification of A1 in accordance with BS EN 13501-1 : 2007 (see section 7).

Resistance to moisture — the board has adequate resistance to moisture (see section 9).

Durability — the board will have a life equal to that of the building in which it is installed (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 Agrément

Date of Second issue: 5 March 2021

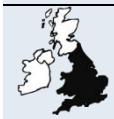
Originally certificated on 10 April 2014

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.

Regulations

In the opinion of the BBA, Y-wall, 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 board is acceptable. See section 6 of this Certificate.
Requirement:	**B2(1)(2)**	**Internal fire spread (linings)**
Requirement:	**B3(2)(3)(4)**	**External fire spread (structure)**
Comment:		The board can contribute to satisfying these Requirements. See sections 7.1 to 7.3 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The board is acceptable. See section 11 and the *Installation* part of this Certificate.
Regulation:	**7(2)**	**Materials and workmanship**
Comment:		The board is unrestricted by this Regulation; however, its use is restricted on timber-framed walls. See sections 7.1 to 7.3 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)**	**Durability, workmanship and fitness of materials**
Comment:		The use of the board satisfies the requirements of this Regulation. See section 11 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards – Construction**
Standard	1.1(a)(b)	Structure The board is acceptable, with reference to clause 1.1.1(1)(2). See section 6 of this Certificate.
Standard:	2.4	**Cavities**
Comment:		The board can contribute to satisfying this Standard with reference to clauses 2.4.2(1)(2) and 2.4.4(1). See sections 7.1 to 7.3 of this Certificate.
Standard:	2.5	Internal linings
Comment:		The board will contribute to an external wall satisfying the requirements of this Standard, with reference to clauses 2.2.1(1)(2), 2.2.2(1), 2.2.3(1), 2.2.4(1), 2.2.6(1), 2.2.8(1), 2.3.2(1) and 2.5.1(1). See sections 7.1 to 7.3 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The board 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 (as amended)

Regulation:	**23(a)(i)(iii)(b)(i)**	**Fitness of materials and workmanship**
Comment:		The board is acceptable. See section 11 and the *Installation* part of this Certificate.
Regulation:	**30**	**Stability**
Comment:		The board is acceptable. See section 6 of this Certificate.
Regulation:	**34**	**Internal fire spread – linings**
Regulation:	**35(4)**	**Internal fire spread – structure**
Comment:		The board can contribute to satisfying these Regulations. See sections 7.1 to 7.3 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: 3 *Delivery and site handling* (3.1) and 12 *General* (12.1) of this Certificate.

Additional Information

NHBC Standards 2021

In the opinion of the BBA, Y-wall, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapters 6.2 *External timber-framed walls*, 6.3 *Internal walls*, 6.9 *Curtain walling and cladding*, 6.10 *Light steel framed walls and floors* and 8.2 *Wall and ceiling finishes.*

CE marking

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

Technical Specification

1 Description

1.1 Y-wall is a calcium silicate sheathing board manufactured from a mixture of Portland cements, lime, calcium silicate, mica and cellulose, which satisfies the requirement of Category A, Class 2 boards to BS EN 12467 : 2012.

1.2 The board is available with the following nominal dimensions:

Thickness (±0.5 mm)	9, 12, 15
Length (±3 mm)	2400, 2800, 3050
Width (±2 mm)	1200
Weight ($kg \cdot m^{-2}$)	11.1, 14.6, 18.2.

1.3 Ancillary items used in conjunction with the board but outside the scope of this Certificate:

- Zinc coated wing tip screws with minimum 500 hours salt-spray resistance, 4.80 mm shank diameter, 38 mm in length, with a 10 mm diameter countersunk head screw, used to attach the board to steel frame substrate at 300 mm centres to board edges and intermediate support

- Ceramic coating screws with minimum 500 hours salt-spray resistance, 4.20 mm shank diameter, 42 mm in length, with a 10 mm diameter countersunk head screw, used to attach the board to timber frame substrate at 300 mm centres on board edges and intermediate support
- Fasteners (for use with timber frame) — 50 mm long nails with 2.8 mm diameter smooth shaft
- For marine environments consult Certificate holder.

2 Manufacture

2.1 The Y-wall board is manufactured from wet sheet, prior to a process of autoclave and surface finishing.

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.

3 Delivery and site handling

3.1 Y-wall boards are stacked on timber pallets. Each pack contains a label incorporating the manufacturer's name, product name, thickness, width, length, batch number, number of boards per pallet, pallet weight, recommended storage and handling method.

3.2 The boards must be stored in a ventilated and dry environment on a flat, level surface protected from contamination. To avoid excessive flexing of the boards, long edges must be supported when lifting and handling. The Certificate holder's instructions on site handling and storage must be followed.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Y-wall.

Design Considerations

4 General

4.1 Y-wall is suitable for use as an external structural or non-structural sheathing board or as an internal lining board applied to timber frame and lightweight steel frame walls with stud centres at maximum 600 mm.

4.2 The board satisfies Category A(1), Class 2 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 frame to which the board 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-frame — in accordance with BS EN 1995-1-1 : 2004 and its UK National Annex, and preservative treated in accordance with BS EN 351-1 : 2007
- steel-frame — in accordance with BS EN 1993-1-1 : 2005 and BS EN 1993-1-3 : 2006 and their UK National Annexes.

4.4 Any external finishes/cladding must be such that the cavity behind satisfies the minimum cavity width required by *NHBC Standards* 2021, Chapter 6.9.

5 Practicability of installation

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

6 Strength and stability

6.1 The frame to which the board is fixed must be structurally sound and constructed in accordance with the requirements of the relevant national Building Regulations and Standards.

6.2 For non-structural sheathing applications, the designer must ensure that the steel frame/timber frame has adequate strength to resists all lateral, and any other, loads on their own. No contribution may be assumed from the boards in this regard. The structure, with or without Y-wall board, must be able to take the full wind actions and racking loads and be capable of sustaining the weight of the boards. The adequacy of the structural frame is outside the scope of this Certificate and must be verified by a suitably qualified and experienced individual.

6.3 For structural sheathing applications, the performance characteristics of the Y-wall boards as specified in sections 6.5 and 6.6 may be used for design, where the board is contributing to the wind resistance of the structure. The adequacy of the supporting structural frame is outside the scope of this Certificate and must be verified by a suitably qualified and experienced individual. Wind actions should be calculated in accordance with BS EN 1991-1-4 : 2005. The higher pressure coefficients applicable to corners of the building must be used.

6.4 A suitably qualified and experienced individual must check the design and method of installation of the boards.

6.5 The design pull-through value of Y-wall board, calculated by applying a safety factor of 3.0 to the mean failure pull-through values (determined by tests in accordance with BS EN 1383 : 2016) for the 4.2 mm diameter shaft, 10.4 mm diameter head, length 32 mm self-driving screws(1), is given in Table 1.

Table 1 Pull-through values(1) – timber frame

Mean failure value (N)	Design value (N)
976	325

(1) For fasteners other than those specified, the Certificate holder's advice must be sought.

6.6 When evaluated for racking resistance in accordance with BS EN 1995-1-1 : 2004 (following the racking strength and stiffness test(1) in accordance with BS EN 594 : 2011), a timber-frame wall panel(2) with a 9 mm thick Y-wall board fixed with nails(3) to the face of the timber frame at 150 mm centres to the perimeter and at 300 mm centres to the internal studs, was found to have a characteristic racking resistance of 1.0 $kN \cdot m^{-1}$ with no vertical load applied, and 2.17 $kN \cdot m^{-1}$ with 5 kN vertical load applied, to each stud.

(1) Racking test carried out on panel with timber-frame of overall dimensions 2400 by 2400 mm.
(2) Studs: timber grade C16, minimum size 38 by 89 mm and spaced at a maximum of 600 mm.
(3) Nails: shaft diameter 2.8 mm, and 50 mm length.

7 Behaviour in relation to fire

7.1 The reaction to fire classification for the boards is A1 in accordance with BS EN 13501-1 : 2007.

7.2 This classification may not be achieved by a system utilising the board in other constructions in combination with other materials, such as insulation, and the performance of such constructions should be confirmed in accordance with the requirements of the documents supporting the national Building Regulations.

7.3 The board is classified as non-combustible and is not subject to any restriction on building height or proximity to boundaries. See also sections 7.1 and 7.2, above.

7.4 Designers should refer to the relevant national Building Regulations and guidance for detailed conditions of use, particularly in respect of requirements for fire resistance, cavity barriers, service penetrations and combustibility limitations for other materials and components used in the overall wall construction (for example, thermal insulation and cladding).

7.5 Where the product is incorporated in a wall construction where fire resistance is required by the documents supporting the national Building Regulations, the fire resistance should be confirmed by tests or assessments by a suitably accredited laboratory.

8 Thermal insulation

The design thermal conductivity (λ value) of Y-wall board given in BS EN 12524 : 2000 is 0.23 $W \cdot m^{-1} \cdot K^{-1}$, and as such will not have a significant effect on the thermal transmittance (U value) of the wall construction.

9 Resistance to moisture

9.1 The design water vapour resistivity of Y-wall board can be taken as 164 MN $s \cdot g^{-1} \cdot m^{-1}$.

9.2 Walls must have suitable weather protection on the outside, and a vented cavity. The product should be treated as conventional sheathing board with regard to detailing and damp-proofing at openings, eaves and sole plate, and the fixing of wall ties. Where required by design, the addition of a breather membrane must be in accordance with BS 5250 : 2011.

9.3 The outer weatherproofing should have adequate resistance to wind-driven rain, particularly in regions classified as severe exposure.

10 Maintenance and repair

10.1 As the boards have suitable durability, will normally be confined within the building structure and, in most cases, will be covered with finishes, maintenance is not required.

10.2 Under normal conditions of use, the boards are unlikely to suffer damage but, if damage does occur, repairs can be carried out in accordance with the Certificate holder's instructions.

11 Durability

11.1 The durability of the board is satisfactory. Provided the board is used in accordance with this Certificate and the Certificate holder's instructions, and is fixed to satisfactory, stable and durable structures by fully trained operatives, it should have a service life equal to that of the structure in which it is installed.

11.2 Care should be taken when designing, detailing and constructing buildings to ensure that moisture does not accumulate within the board.

Installation

12 General

12.1 Y-Wall board can be cut with a fine-tooth hand saw or power saw, ensuring suitable dust-control measures are taken (eg protective safety glasses, gloves and respiratory masks) and observing all necessary health and safety regulations. Damaged boards must not be used.

12.2 The level of supervision during installation of the board and the associated structure, must be sufficient to ensure the quality of workmanship.

12.3 Framing grade timber studs or galvanized steel framework should be provided at a maximum 600 mm centres for single-layer partitions.

12.4 The frame to which the board is fixed must be structurally sound and constructed in accordance with the requirements of the relevant national Building Regulations and Standards (see sections 4.3 and 4.4).

12.5 Fasteners should be a minimum of 12 mm from board edges, and spaced at a maximum of 300 mm. The screws must not be over-tightened.

Technical Investigations

13 Tests

13.1 Tests were carried out and the results assessed to determine:

- modulus of rapture
- apparent density
- dimensional tolerance
- mechanical characteristics – bending strength (mor)
- water impermeability
- resistance to freeze/thaw cycling
- resistance to heat/rain cycling
- resistance to warm water soak
- resistance to soak/dry cycling
- racking strength on timber
- reaction to fire classification
- pull through strength of fixings.

13.2 A test for water vapour transmission was carried out in accordance with BS EN ISO 12572 : 2001.

13.3 A fire test for non combustibility was carried out to BS EN ISO 1182 : 2010, and heat of combustion to BS EN ISO 1716 : 2010.

13.4 A racking test for board installed onto timber frame panels was carried out to BS EN 594 : 2011.

14 Investigations

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

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

14.3 An assessment was made on durability requirements for Category A boards according to BS EN 12467 : 2012, for:

- density
- dimensional variation
- resistance to freeze/thaw
- resistance to warm water soak
- resistance to soak/dry cycling
- resistance to heat/rain cycling
- water impermeability
- mechanical characteristics – bending strength (MOR).

14.4 An assessment was made of data relating to:

- structural racking resistance.

14.5 An assessment was made of the practicability of installation.

Bibliography

BS 5250 : 2011 + A1 : 2016 *Code of practice for control of condensation in buildings*

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

BS EN 594 : 2011 *Timber structures — Test methods — Racking strength and stiffness of timber frame wall panels*

BS EN 1383 : 2016 *Timber structures — Test methods — Pull-through resistance of timber fasteners*

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 + A1 : 2014 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 1993-1-3 : 2006 + A1 : 2014 *Eurocode 3 — Design of steel structures — General rules — Supplementary rules for cold-formed members and sheeting*
NA + A1 : 2014 to BS EN 1993-1-3 : 2006 + A1 : 2014 UK National Annex to *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*
NA to BS EN 1995-1-1 : 2004 + A1 : 2014 UK National Annex to *Eurocode 5 — Design of timber structures — General — Common rules and rules for buildings*

BS EN 12467 : 2012 + A2 : 2018 *Fibre-cement flat sheets — Product specification and test methods*

BS EN 12524 : 2000 *Building materials and products — Hygrothermal properties — Tabulated design values*

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

BS EN ISO 1182 : 2010 *Reaction to fire tests for products — Non-combustibility test*

BS EN ISO 1716 : 2010 *Reaction to fire tests for building products — Determination of the gross heat of combustion (calorific value)*

BS EN ISO 12572 : 2001 *Hygrothermal performance of building materials and products — Determination of water vapour transmission properties*

15 Conditions

15.1 This Certificate:

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

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

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

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

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

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

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

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

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