**Marley Eternit Ltd**
Lichfield Road
Branston
Burton-on-Trent
DE14 3HD
Tel: 01283 722588 Fax: 01283 722219
e-mail: info@marleyeternit.co.uk
website: www.marleyeternit.co.uk

BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

Agrément Certificate
**06/4299**
**Product Sheet 1**

# MARLEY ETERNIT CLADDING PANELS

## CEDRAL WEATHERBOARD

This Agrément Certificate Product Sheet[1] relates to Cedral Weatherboard, a fibre-reinforced cement siding for use as exterior non-loadbearing cladding over timber stud or masonry walls.

(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 loading and impacts likely to be met in service in the UK (see section 6).

**Performance in relation to fire** — the product has a 'reaction to fire' classification of A2, in accordance with EN 13501-1 : 2002 (see section 7).

**Weathertightness** — the product, when installed, is not weathertight and must be used in conjunction with a suitable vapour permeable membrane (see section 8).

**Durability** — the product is durable and can be expected to have a service life in excess of 30 years (see section 10).

The BBA has awarded this Certificate to the company named above for the 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: 17 May 2016

Originally certificated on 13 March 2006.

John Albon — Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

*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*

# Regulations

In the opinion of the BBA, Cedral Weatherboard, 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 sections 4.2 to 4.4 and 6 of this Certificate. |
| **Requirement:** | B4(1) | External fire spread |
| Comment: | | The product is unrestricted by this Requirement. See section 7 of this Certificate. |
| **Requirement:** | C2(b) | Resistance to moisture |
| Comment: | | The product does not provide a watertight or airtight facing. To achieve a weatherproof barrier, a breather membrane must be provided. See sections 8.1 and 8.2 of this Certificate. |
| **Regulation:** | 7 | Materials and workmanship |
| Comment: | | The product is acceptable. See section 10 and the *Installation* part 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 section 10 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, with reference to clause 1.1.1[(1)(2)]. See sections 4.2 to 4.4 and 6 of this Certificate. |
| Standard: | 2.4 | Cavities |
| Comment: | | The product is a 'low risk' material. Cavity barriers should be provided, as required by clause 2.4.2[(1)(2)] of this Standard. See section 7 of this Certificate. |
| Standard: | 2.6 | Spread to neighbouring buildings |
| Comment: | | The product is classified as 'non-combustible' and is therefore unrestricted under clauses 2.6.5[(1)] and 2.6.6[(2)] of this Standard. See section 7 of this Certificate. |
| Standard: | 2.7 | Spread on external walls |
| Comment: | | The product is classified as 'non-combustible' and is therefore unrestricted under clause 2.7.1[(1)(2).] of this Standard. See section 7 of this Certificate. |
| Standard: | 3.10 | Precipitation |
| Comment: | | The product does not form a watertight or airtight facing. A breather membrane must be provided to meet this Standard, with reference to clause 3.10.5[(1)(2).] See sections 8.1 and 8.2 of this Certificate. |
| Standard: | 7.1(a) | Statement of sustainability |
| Comment: | | The product can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard. |
| **Regulation:** | 12 | Building standards applicable to conversions |
| Comment: | | All comments given for 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 10 of this Certificate. |
| **Regulation:** | 28(b) | Resistance to moisture and weather |
| Comment: | | The product does not form a watertight or airtight facing. To achieve a weatherproof barrier, a breather membrane must be provided. See sections 8.1 and 8.2 of this Certificate. |
| **Regulation:** | 30 | Stability |
| Comment: | | The product is acceptable for use as set out in sections 4.2 to 4.4 and 6 of this Certificate. |
| **Regulation:** | 36(a) | External fire spread |
| Comment: | | The product is unrestricted by this Regulation. See section 7 of this Certificate. |

**Construction (Design and Management) Regulations 2015**

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

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

See sections: 1 *Description* (1.1) and 3 *Delivery and site handling* (3.1) of this Certificate.

# Additional Information

## NHBC Standards 2016

NHBC accepts the use of Cedral Weatherboard, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Part 6 *Superstructures (excluding roofs)*, Chapters 6.1 *External masonry walls* and 6.2 *External timber framed walls*.

## 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 Cedral Weatherboard comprises semi-compressed, autoclaved fibre-reinforced Portland cement planks, for use as exterior cladding over timber stud or masonry walls. The product is available in a smooth or textured finish, and has the following nominal characteristics:

| | |
|---|---|
| Thickness* (mm) | 10 |
| Width* (mm) | 191 |
| Length* (mm) | 3600 |
| Installed weight (kg·m$^{-2}$) | 19.3 |
| Weight per plank (kg) | 11.2 |
| Range of colours including | White, black, natural, ivory, grey-brown, grey and blue-grey |
| Mechanical resistance* | Category A, class 2[1] |
| Density* (kg·m$^{-3}$) | 1300 |
| Water permeability* | Pass |
| Dimensional variations* | Pass |
| Durability against warm water* | Pass |
| Durability against soak/dry* | Pass |
| Durability against freeze/thaw* | Pass |
| Durability against heat-rain* | Pass. |

(1) Category A – sheets intended for applications where they may be subjected to heat, high moisture and severe frost; class 2 — minimum Modulus of Rupture (MOR) in the wet condition is 7MPa.

1.2 The product is supplied factory-painted or unpainted, for coating on site. The performance of the site-applied coatings is outside the scope of this Certificate.

1.3 Ancillary items necessary for the installation of the product, and included in the assessment, are:

- stainless steel ring shank nails 50 mm long by 3.4 mm diameter, with a 10 mm diameter head
- zinc-plated or stainless-steel screw fixings 35 mm by 4.8 mm diameter, with a 10 mm diameter head.

1.4 Other items which may be used with the product but which are outside the scope of this Certificate include:

- two-piece corner trims (metal or wood), suitable for use as decorative trims around openings
- breather membrane
- touch-up paint in 0.5 litre quantities.

## 2 Manufacture

2.1 The product is manufactured by a batch blending operation by the Hatschek process and high-pressure steam autoclaving. In a separate process, the cured, sanded boards are sprayed with an acrylic-based paint finish prior to packaging and storing.

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

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

2.3 The management system of the manufacturer, Eternit N.V, has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by SGS (Certificate BE 92/021057.00).

## 3 Delivery and site handling

3.1 The product is delivered on wrapped pallets weighing approximately 1612 kg (144 planks). The boards are interleaved to protect the decorative face. They can be offloaded by mechanical handling equipment or by manually removing individual boards.

3.2 To avoid surface damage during handling, one board must not be dragged over the surface of the other. In addition, boards must be carried on their edges.

3.3 The product must be stored on edge or flat, under cover, and on a dry, level surface. Stacks of loose planks must not exceed 1 m in height.

3.4 Every plank in each pallet is marked with a unique manufacturing code.

# Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Cedral Weatherboard.

## Design Considerations

## 4 General

4.1 Cedral Weatherboard is satisfactory for use as a decorative and protective exterior cladding fixed horizontally, vertically or diagonally over timber stud or masonry walls.

4.2 The designer must ensure that the strength and integrity of the intended substrate is commensurate with that required of the cladding system (see sections 4.3 and 4.4).

4.3 Brickwork or blockwork walls must be constructed in accordance with the relevant sections of BS EN 1996-1-1 2005, BS EN 1996-1-2 : 2005, BS EN 1996-2 : 2006, BS EN 1996-3 : 2006 and their respective UK National Annexes, and either PD 6697 : 2010 or one of the technical specifications given in the national Building Regulations:

*England and Wales* — Approved Document A1/2, Section 2C

*Scotland* — Mandatory Standards 1.1 and 1.2, clauses 1.1.1 and 1.2.1 respectively

*Northern Ireland* — Technical Booklet D, *Structure*.

4.4 Timber stud walls must be constructed in accordance with the relevant sections of BS EN 1995-1-1 : 2004 and the UK National Annex, and preservative treated in accordance with BS 8417 : 2011. Guidance on recommended wood preservation is also given in *NHBC Standards* 2016, Part 3 *General*, Chapter 3.3 *Timber preservation (natural solid timber)*.

4.5 Studding and framing should be adequately supported by noggings to ensure rigidity.

4.6 The product is to be fixed to aqueous copper quarternary ammonium compound (ACQ) preservative-treated, good-quality timber battens, aligned vertically at 400 mm or 600 mm centres. The minimum batten thickness over timber studs is 30 mm; over masonry substrates, this should be increased to accommodate the 50 mm length of the fixings.

4.7 Additional guidance on recommended cavity widths is given in *NHBC Standards* 2016, Part 6 *Superstructure (excluding roofs)*, Chapter 6.2 *External timber framed walls*.

## 5 Practicability of installation

The product is designed to be installed by competent contractors experienced with this type of product.

## 6 Strength and stability

### Wind loading

6.1 Under wind loading, the most likely failure of the cladding will be at the fixings.

6.2 When installed in accordance with the requirements of this Certificate, onto battens at 600 mm spacings, the product can withstand dynamic wind pressures up to 1.7 kPa.

6.3 The permissible dynamic wind pressure may be increased by reducing batten spacing. This is particularly recommended at the corners of buildings and in exposed locations. In common with all cladding, the adequacy of a proposed installation must always be checked by a qualified engineer, who should include a check that the battens and their fixings to the substrate are adequate.

6.4 The support battens must be designed to limit mid-span deflections to L/200, and cantilever deflections to L/150.

6.5 A suitably-qualified engineer must check the design and installation of the cladding.

6.6 The supporting wall must be able to take the full wind as well as any racking loads. No contribution from the cladding system should be assumed in this respect.

6.7 Wind loads should be calculated in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. The higher pressure coefficients applicable to corners of the building are used.

### Resistance to impact

6.8 The product is suitable for use in areas where there is little possibility of impact or abrasion damage, ie at low levels in areas of restricted access or at higher levels in public areas (the areas described in Categories B to F of Table 2, BS 8200 : 1985, reproduced in part in Table 1 of this Certificate).

*Table 1 Location categories*

| Category | Description | Examples | |
|---|---|---|---|
| B | Readily accessible to public and others with little incentive to exercise care. Chances of accidents occurring and of misuse | Walls adjacent to pedestrian thoroughfares or playing fields when not in category A[1] | Zone of wall up to 1.5 m above pedestrian or floor level |
| C | Accessible mainly to those with some incentive to exercise care. Some chance of accident occurring and of misuse | Walls adjacent to private open gardens. Back walls of balconies | |
| D | Only accessible, but not near a common route, to those with high incentive to exercise care. Small chance of accident occurring or of misuse | Walls adjacent to small fenced decorative gardens with no through paths | |
| E | Above zone of normal impacts from people but liable to impacts from thrown or kicked objects | 1.5 m to 6 m above pedestrian or floor level in public areas | |
| F | Above zone of normal impacts from people but not liable to impacts from thrown or kicked objects | Wall surfaces of high positions other than those defined in E above | |

(1) Category A example; external walls of housing and public buildings in vandal-prone areas.

## 7 Performance in relation to fire

7.1 The coated product has an A2-s1, d0* classification in accordance with EN 13501-1 : 2002.

7.2 The uncoated product is classified as Class 0 or 'low risk', as defined in the various national Building Regulations.

7.3 Care must be taken when selecting a coating system to ensure that performance in fire for the installation in question is not compromised.

## 8 Weathertightness

8.1 The product is not weathertight and when used on timber stud walls must be backed by a breather membrane in conjunction with sheathing boards acting as a vapour-permeable water barrier, incorporated behind the cladding under the supporting battens. This barrier must meet the requirements of BS 5250 : 2011 and have a vapour resistance less than 0.6 $MN \cdot s \cdot g^{-1}$.

8.2 Where the product is used as a decorative facing attached to weathertight masonry walls, an additional waterproofing layer is not necessary as the amount of water that will penetrate the cladding will be small and will not have an adverse effect on the wall.

8.3 If the product is used in the renovation of an existing masonry wall which is structurally sound but not fully weathertight, a vapour-permeable membrane should be installed.

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

## 9 Maintenance

Periodic inspections should be carried out to assess the need for cleaning, maintenance painting, localised repairs and replacement of elements, such as joint seals and fixings. Advice regarding re-coating and maintenance procedures can be sought from the Certificate holder.

## 10 Durability

10.1 When installed in accordance with this Certificate and the Certificate holder's instructions, the product will have an estimated service life in excess of 30 years when subjected to normal conditions of exposure and use.

10.2 In common with other cementitious materials (eg masonry blocks), the matrix material can become brittle with time. This can be minimised by the selection of an appropriate coating and by regular maintenance painting.

10.3 The factory-applied coating is tough and durable and adheres well to the substrate. The natural and coated finishes, however, are not resistant to continual abrasion. Care must be taken to ensure that objects such as ladders are not repeatedly leant or rubbed against the boards.

10.4 The factory-applied paint finish has good colour stability. Extensive exposure to sunlight will cause some fading of the surface colour. The extent of the fading will depend upon the colour chosen, environment, location and aspect.

# Installation

## 11 General

11.1 Cedral Weatherboard should be installed in accordance with the provisions of this Certificate and the Certificate holder's instructions.

11.2 Boards can be cut using a fine-tooth tungsten carbide or diamond dusted handsaw, power saw or guillotine.

## 12 Procedure

12.1 Where required, a breather membrane is laid along the wall, with minimum laps of 150 mm.

12.2 Timber wall battens are fixed over the breather membrane in accordance with sections 4.6 and 4.7.

12.3 A Starter Profile is fixed along the front face of the battens, allowing at least 150 mm between the bottom edge and ground level.

12.4 The first course of the product is installed, using the fixings described in section 1.3, in accordance with the Certificate holder's instructions, overlapping the bottom edge of the tilting fillet by at least 3 mm.

12.5 Subsequent courses are installed in the same way, allowing a 30 mm overlap of the lower edge over the previous row (see Figure 1).

12.6 Where joints are required, the planks are butted with moderate contact to form a joint. A 50 mm polyurethane weather strip is installed directly behind the joint.

12.7 At corners, the product should be close-mitred for neat finishing. Alternatively, corners can be finished using colour-matched aluminium profile (see Figure 2).

12.8 If the unpainted product is used, the completed installation should preferably be painted with an acrylic coating system. The Certificate holder can advise on suitable products for this purpose. The performance of such coatings has not been assessed and is outside of the scope of this Certificate.

*Figure 1 Installation details*

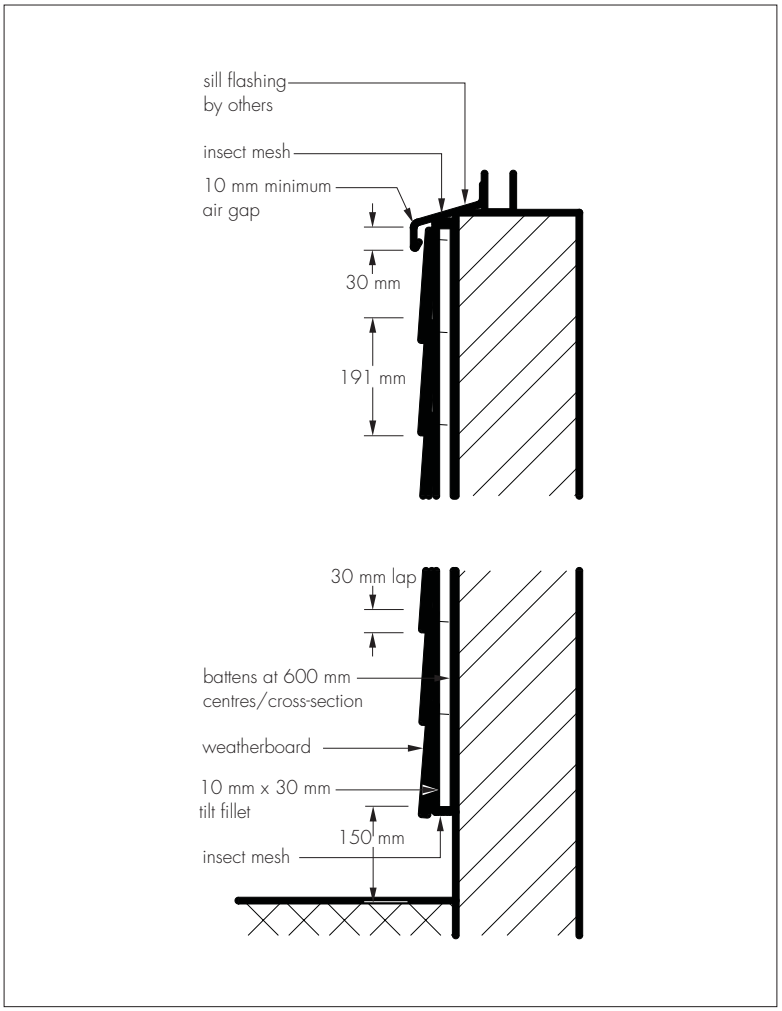
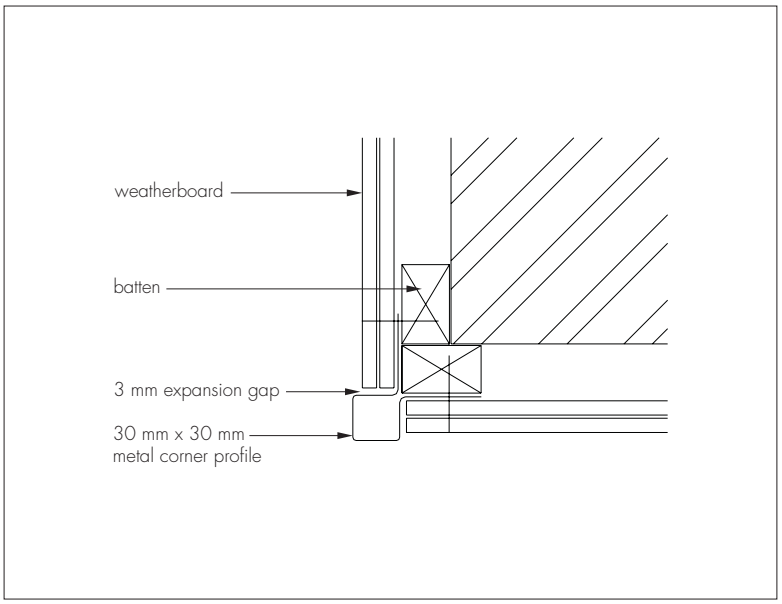



*Figure 2 Corner details*




## 13 Repair

Under normal conditions of use, the product is unlikely to suffer damage, but repairs can be carried out by replacement of damaged planks. This may require the temporary removal of undamaged planks above the damaged area.

## 14 Tests

14.1 An assessment was made of data to BS EN 12467 : 2000 in relation to:

- dimensions*
- bending strength*
- apparent density*
- resistance to freeze/thaw*
- resistance to water soak*
- resistance to soak/dry cycling*
- resistance to heat/rain cycling*
- water impermeability*.

14.2 Tests were carried out to determine:

- water absorption
- resistance to hard body impact
- resistance to soft body impact
- pull-through of fixings
- adhesion to substrate
- resistance to water penetration
- resistance to algal growth
- abrasion resistance

in order to assess:

- safety and performance when installed
- durability of coated products.

## 15 Investigations

An evaluation was made of existing data in relation to:

- reaction to fire tests and classification to EN 13501-1 : 2002
- resistance to wind loading
- accelerated weathering and colour stability
- salt spray test
- exposure to sulfur dioxide.

# Bibliography

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

BS 8200 : 1985 *Code of practice for design of non-loadbearing external vertical enclosures of buildings*

BS 8417 : 2011 *Preservation of wood — Code of practice*

BS EN 1991-1-4 : 2005 *Eurocode 1: Actions on structures — General actions — Wind actions*
NA to BS EN 1991-1-4 : 2005 UK National Annex to *Eurocode 1: Actions on structures — General actions — Wind actions*

BS EN 1995-1-1 : 2004 *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*
NA to BS EN 1995-1-1 : 2004 + A1 : 2008 UK National Annex to *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*

BS EN 1996-1-1 2005 *Eurocode 6 : Design of masonry structures — General rules for reinforced and unreinforced masonry structures*
NA to BS EN 1996-1-1 : 2005 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 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 *Fibre-cement flat sheets — Product specification and test methods*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

EN 13501-1 : 2002 *Fire classification of construction products and building elements — Classification using data from reaction to fire tests*

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

# Conditions of Certification

## 16 Conditions

16.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- 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.

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

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

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

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

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

- 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.

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

**British Board of Agrément**
Bucknalls Lane
Watford
Herts WD25 9BA
tel: 01923 665300
fax: 01923 665301
clientservices@bba.star.co.uk
www.bbacerts.co.uk