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Agrément Certificate
04/4100
Product Sheet 1

JAMES HARDIE BUILDING PRODUCTS

HARDIEBACKER CEMENT BACKER BOARD

This Agrément Certificate Product Sheet⁽¹⁾ relates to HardieBacker⁽²⁾ Cement Backer Board, for internal use as an intermediate substrate for ceramic and natural stone tiling.

- (1) Hereinafter referred to as 'Certificate'.
(2) HardieBacker is a registered trademark of James Hardie International Finance B.V.

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

Properties in relation to fire — the product has a reaction to fire classification of A1 and is 'non-combustible' as defined in the national Building Regulations (see section 6).

Resistance to mechanical damage — the product will accept the normal impacts likely to occur in service (see section 7).

Durability — the product has acceptable durability and will have a life equal to that of the structure onto which it is fixed (see section 9).

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



Simon Wroe
Head of Approvals — Materials



Greg Cooper
Chief Executive

Date of Third issue: 13 December 2012

Originally certificated on 6 May 2004

The BBA is a UKAS accredited certification body — Number 1113. 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.

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Regulations

In the opinion of the BBA, HardieBacker Cement Backer Board, if installed, used and maintained in accordance with 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:	B2	Internal fire spread (linings)
Comment:		The product is unrestricted by this Requirement. See sections 6.1 and 6.2 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The product is acceptable. See section 9 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The use of the product satisfies the requirements of this Regulation. See section 9 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.5	Internal linings
Comment:		The product is classified as 'non-combustible' and therefore satisfies the requirements of this Standard, with reference to clause 2.5.1 ⁽¹⁾⁽²⁾ . See sections 6.1 and 6.2 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:		Comments made in relation to 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(a)(i)(ii)(b)(i)	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 9 and the <i>Installation</i> part of this Certificate.
Regulation:	34(a)(b)	Internal fire spread – Linings
Comment:		The product is unrestricted by this Regulation. See sections 6.1 and 6.2 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* (1.3) and 3 *Delivery and site handling* (3.1 and 3.4) of this Certificate.

Additional Information

NHBC Standards 2011

NHBC accepts the use of HardieBacker Cement Backer Board, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 8.2 *Wall and ceiling finishes*, Clauses D4 *Plasterboard and dry lining* and D5 *Ceramic wall tiling*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in association with BS EN 12467 : 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 HardieBacker 250 (plain and profiled face) and 500 Cement Board (plain only) are fibre-reinforced cement tile cement boards for internal use.

1.2 The products are made from fibre-reinforced sheets which satisfy the requirements for Category C material to BS EN 12467 : 2004.

1.3 The product characteristics are given in Table 1.

	HardieBacker 250	HardieBacker 500
Thickness (mm)*	6	12
Width (m)*	0.8	0.8
Length (m)*	1.2	1.2
Board weight (kg)	9.0	13.8

1.4 Ancillary components comprise:

- glassfibre mesh reinforcing tape — 50 mm wide, alkali-resistant
- ceramic tiles — to BS EN 14411 : 2006
- ceramic tile adhesive — to BS EN 12004 : 2001
- grout to BS EN 13888 : 2009
- HardieBacker screws for timber (M5 x 32 mm)
- HardieBacker screws for steel (M4.8 x 30 mm).

2 Manufacture

2.1 The product is manufactured by batch blending, followed by the Hatschek process and high-pressure steam autoclaving. Quality control is maintained over raw materials, during processing and on the final product.

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 The product is delivered on wrapped pallets, each pallet weighing approximately 800 kg. It can be offloaded by either mechanical handling equipment or by manually removing individual boards.

3.2 Each board is marked with the product name, unique manufacturing code, the appropriate classification to ISO 8336 : 2009 and CE marking in accordance with BS EN 12467 : 2004.

3.3 The boards should be stored flat, undercover, and on a dry, level surface. Stacks of loose boards should not exceed one metre in height.

3.4 The product includes crystalline silica and reference should be made to EH40/2005 *Occupational Exposure Limits*, 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 HardieBacker Cement Backer Board.

Design Considerations

4 Use

4.1 HardieBacker Cement Backer Board is suitable for use on internal walls and floors as an intermediary substrate to ceramic and natural stone tiling.

4.2 The boards are suitable as part of a system comprising tiles, cement-based tile adhesive and grout, to install a stable, water-resistant tile substrate in showers, bathrooms and wet areas (excluding shower floors).

4.3 Walls and sub-floors to be tiled should comply with the requirements of BS 5385-1 : 2009 and BS 5385-3 : 2007 respectively, including the provision of movement joints as appropriate. Where necessary, reference should also be made to BS 5385-4 : 2009.

5 Practicability of installation

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

6 Properties in relation to fire



6.1 The boards will not adversely affect the fire resistance of the wall on which they are installed.

6.2 When tested to BS EN ISO 1182 : 2002 and BS EN ISO 1716 : 2002, samples of HardieBacker 250 and 500 Cement Backer Board achieved a reaction to fire classification of A1* in accordance with BS EN 13501-1 : 2007 and are therefore classified as 'non-combustible' as defined in the various national Building Regulations.

7 Resistance to mechanical damage

7.1 When tested in accordance with BBA methods, the boards satisfied the requirements for a Category I₂ opaque vertical movement as defined in Table 3.2 of MOAT 43 : 1987.

7.2 Test results indicate that the boards can accept, without damage, the normal impacts likely to occur in service.

7.3 Wall-mounted fittings should be fixed through the board into the wall behind, using suitable fixings. The recommendations of the manufacturers should be followed.

8 Maintenance

As the boards are inaccessible and have suitable durability (see section 9), maintenance is not required. However, it must be ensured that damage occurring before enclosure is repaired (see section 13).

9 Durability



Provided the boards are used and installed in accordance with this Certificate and the manufacturer's instructions, and are fixed to suitable, stable and durable backgrounds, they should have a life equal to that of the structure onto which they are fixed.

Installation

10 General

10.1 HardieBacker Cement Backer Board is for installation on internal walls and floors of new and existing buildings, in accordance with the provisions of this Certificate and the Certificate holder's instructions.

10.2 Cutting of boards can be performed by scoring a straight edge using a carbide-tipped knife, and snapping upwards along the score line.

10.3 Large cut-outs can be made using a circular saw with a diamond-tipped HardiBlade saw blade. Small holes may be drilled using a carbide-tipped masonry bit, or scored out as above and broken out with a hammer. Reference should be made to section 3.4.

10.4 The fixings (see section 1.4) to be used must be of sufficient length to penetrate:

- wooden sub-floors and wall framing — 19 mm into the substrate, or the full thickness of the substrate (whichever is less)
- metal wall framing — the metal framing by at least three full threads.

11 Procedure

Floor installations

11.1 A minimum 15.8 mm thick plywood sub-floor⁽¹⁾ is laid over the floor joists, at a maximum of 400 mm centres.

(1) Or equivalent thickness of alternative sub-floor.

11.2 Deflection must not exceed 1/360 of the span under the live and dead design loads.

11.3 On sound existing structures, all existing floor coverings must be removed and any damaged sections of the sub-floor replaced to give a clean, flat surface.

11.4 Boards must be cut so that they fit the floor area, with joints staggered in a stretcher-bond brick pattern. Four board corners should not meet at one point.

11.5 Board joints should not align with the underlying sub-floor joints.

11.6 A 3 mm wide gap should be allowed between the edges of the boards and walls or cabinet bases.

11.7 A levelling bed of tile adhesive is applied to the clean and dry sub-floor, using a 6 mm square notched trowel.

11.8 The board is firmly and evenly embedded in the adhesive, with the board edges in moderate contact.

11.9 The fixings specified in section 1.4 are set flush with the board surface, at 200 mm centres. The fixings should be set back 15 mm from the board edges and 50 mm back from board corners.

Wall installations

11.10 Masonry walls of new buildings must be designed and constructed in accordance with BS EN 1996-1-2 : 2005, BS EN 1996-2 : 2006 and their respective UK National Annexes. Walls of existing buildings must be sound and watertight.

11.11 Framing grade timber studs or galvanized steel framework must be provided at 400 mm centres. Timber studs should be nominally 75 mm by 50 mm or 100 mm by 50 mm; steel framework should be a minimum of 0.59 mm thickness.

11.12 Care must be taken to ensure that studs are straight and properly aligned.

11.13 Corners should be either solid blocked or otherwise reinforced, for example using a 35 mm by 35 mm by 0.8 mm galvanized steel angle.

11.14 In wet areas, a corner flashing is to be used to provide additional protection to the framing members.

11.15 Boards may be installed horizontally or vertically, using the fixings specified in section 1.4. The fixings are set flush with the surface, at 200 mm centres, and set-back between 12 mm and 15 mm from the board edges and 50 mm back from corners.

11.16 Board perimeters and joints must be directly supported by frame members.

11.17 A wet-area sealant complying with the requirements of BS 6213 : 2000 and BS EN ISO 11600 : 2003 must be applied at corner junctions of boards and tiles.

12 Tiling

12.1 The surface of the boards is wiped with a damp sponge to remove residual dirt and dust.

12.2 Joints between boards are filled with the tile adhesive to be used and taped using 50 mm wide, alkali-resistant, glassfibre mesh tape.

12.3 Tiles are installed and grouted in accordance with the tile manufacturer's instructions, BS 5385-1 : 2009, BS 5385-3 : 2007 and BS 5385-4 : 2009, and conventional good practice.

13 Repair

Under normal conditions of occupancy, the boards are unlikely to suffer damage, but should it occur, repairs are carried out by replacing damaged boards and re-tiling.

Technical Investigations

14 Tests

Tests were carried out to determine:

- resistance to hard body impact
- resistance to soft body impact
- water absorption
- tensile bond strength to ceramic tiles
- effect of humidity and exposure to water
- pull-through strength of fixings.

15 Investigations

15.1 Classifications were made to BS EN 12467 : 2004 on the basis of test data supplied on:

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

15.2 Evaluation was made of existing data relating to:

- fire propagation to BS 476-6 : 1989 + Amendment 1 : 2009
- reaction to fire to BS EN 13501-1 : 2007.
- surface spread of flame to BS 476-7 : 1997

15.3 The manufacturing process was evaluated, including the methods adopted for quality control.

Bibliography

BS 476-6 : 1989 + Amendment 1 : 2009 *Fire tests on building materials and structures — Method of test for fire propagation for products*

BS 476-7 : 1997 *Fire tests on building materials and structures — Method of test to determine the classification of the surface spread of flame of products*

BS 5385-1 : 2009 *Wall and floor tiling — Code of practice for the design and installation of internal ceramic and natural stone wall tiling and mosaics in normal conditions*

BS 5385-3 : 2007 *Wall and floor tiling — Design and installation of internal and external ceramic and mosaic floor tiling in normal conditions — Code of practice*

BS 5385-4 : 2009 *Wall and floor tiling — Code of practice of tiling and mosaics in specific conditions*

BS 6213 : 2000 *Selection of construction sealants — Guide*

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 12004 : 2007 Adhesives for tiles — Definitions and specifications
BS EN 12467 : 2004 Fibre-cement flats sheets — Product specifications and test methods
BS EN 13888 : 2009 Grouts for tiles — Definitions and specifications
BS EN 13501-1 : 2007 Fire classification of construction products and building elements — Classification using test data from reaction to fire tests
BS EN 14411 : 2006 Ceramic tiles — Definitions, classifications, characteristics and marking
BS EN ISO 1182 : 2002 Reaction to fire tests for building products — Non-combustibility test
BS EN ISO 1716 : 2002 Reaction to fire tests for building products — Determination of the heat of combustion
BS EN ISO 11600 : 2003 Building construction — Jointing products — Classifications and requirements of sealants
ISO 8336 : 2009 Fibre-cement flat sheets
MOAT No 43 : 1987 UEAtc Directives for Impact Testing Opaque Vertical Building Components

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.