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Agrément Certificate
10/4791
Product Sheet 1

HUNTON BITUMEN IMPREGNATED BOARDS

HUNTON BITROC SHEATHING BOARD

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Hunton Bitroc Sheathing Board, for use as structural sheathing in timber-frame dwellings.

AGRÉMENT 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

Structural performance — the product, when incorporated into a structure, can sustain the design loads (see section 5).

Behaviour in relation to fire — the product may be regarded as having a Class 4 surface spread of flame rating (see section 6).

Resistance to moisture — providing adequate precautions are taken, the product, when incorporated into a construction, should perform satisfactorily (see section 7).

Physiological properties — the product will not emit gases at levels in excess of those detrimental to habitability (see section 8).

Thermal insulation — the product has a thermal conductivity (λ value) of $0.05 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ (see section 9).

Durability — providing it is not subjected to prolonged high humidity or wetting, the product will not suffer significant degradation (see section 11).



The BBA has awarded this Agrément 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 First issue: 11 November 2010

Brian Chamberlain

Head of Approvals — Engineering

Greg Cooper

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

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, Hunton Bitroc Sheathing Board, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



The Building Regulations 2010 (England and Wales)

Requirement: A1	Loading
Comment:	The product has sufficient strength and stiffness to sustain and transmit the design load, without excessive deflection, to the primary structure. See sections 3.1, 5.1 and 5.2 of this Certificate.
Requirement: B3(1)(2)(3)(4)	Internal fire spread (structure)
Comment:	The product may be incorporated into a construction meeting regulatory requirements. The product has a Class 4 surface. See section 6.1 of this Certificate.
Requirement: L1	Conservation of fuel and power
Comment:	When incorporated into a construction, the product can contribute to satisfying the requirement of limiting the heat loss through the fabric of the building. See sections 9.1 and 9.2 of this Certificate.
Requirement: Regulation 7	Materials and workmanship
Comment:	The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2)	Fitness and durability of materials and workmanship
Comment:	The use of the product satisfies the requirements of this Regulation. See sections 10.1, 10.2 and 11 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards – construction
Standard: 1.1(a)(b)	Structure
Comment:	The product has sufficient strength and stiffness to sustain the design loads and transmit them without excessive deflection to the primary structure, with reference to clause 1.1.1 ⁽¹⁾⁽²⁾ . See sections 3.1, 5.1 and 5.2 of this Certificate.
Standard: 2.1	Compartmentation
Standard: 2.2	Separation
Standard: 2.3	Structural protection
Standard: 2.4	Cavities
Standard: 2.9	Escape
Comment:	The product is combustible and may be used where such materials, in conjunction with fire-resistant materials, meet regulatory requirements, with reference to clauses 2.1.12 ⁽²⁾ , 2.2.1 ⁽²⁾ , 2.2.3 ⁽¹⁾ , 2.2.4 ⁽²⁾ , 2.3.2 ⁽¹⁾⁽²⁾ , 2.4.1 ⁽¹⁾⁽²⁾ and 2.9.29 ⁽¹⁾⁽²⁾ . See section 6.1 of this Certificate.
Standard: 3.15	Condensation
Comment:	The product can be incorporated into a construction designed to prevent excessive condensation, with reference to clauses 3.15.1 ⁽¹⁾ , 3.15.2 ⁽¹⁾ , 3.15.4 ⁽¹⁾ and 3.15.5 ⁽¹⁾ . See section 7.6 of this Certificate.
Standard: 6.2	Building insulation envelope
Comment:	When incorporated into a construction, the product can contribute to satisfying the requirement of limiting the heat loss through the fabric of the building, with reference to clauses 6.2.1 ⁽¹⁾⁽²⁾ , 6.2.4 ⁽¹⁾ and 6.2.6 ⁽²⁾ . See sections 9.1 and 9.2 of this Certificate. (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation: B2	Fitness of materials and workmanship
Comment:	The product is a durable material. See section 11 and <i>Installation</i> part of this Certificate.
Regulation: C5	Condensation
Comment:	A vapour control layer must be provided on the internal side of the construction to prevent damage to the structure as a result of the passage of moisture in the form of vapour from the interior of the building. See section 7.6 of this Certificate.
Regulation: D1	Stability
Comment:	The product has sufficient strength and stiffness to sustain and transmit the design load, without excessive deflection, to the primary structure subject to the requirements of sections 3.1, 5.1 and 5.2 of this Certificate.
Regulation: E4(1)(2)(3)(4)	Internal fire spread – Structure
Comment:	The product may be incorporated into a construction meeting regulatory requirements. The product has a Class 4 surface. See section 6.1 of this Certificate.
Regulation: F2(b)	Conservation measures
Comment:	When incorporated into a construction, the product can contribute to satisfying the requirement of limiting the heat loss through the fabric of the building. See sections 9.1 and 9.2 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: 2 *Delivery and site handling* (2.4), 4 *Practicability of installation* (4.2 and 4.3) and 10 *Maintenance* (10.2) of this Certificate.

Non-regulatory Information

NHBC Standards 2010

NHBC accepts the use of Bitroc Sheathing Board, installed and used in accordance with this Certificate, as meeting the requirements of the *NHBC Standards*, Chapter 6.2 *External timber framed walls*.

General

This Certificate relates to Hunton Bitroc Sheathing Board for use as structural sheathing in timber-frame dwellings.

The product is distributed and marketed in the UK by Grafton Boards Ltd, 35 Grafton Underwood, Kettering, Northamptonshire NN14 3AA. Tel: 01536 330835; Fax: 01536 738415 ; e-mail: jeremy@huntonfiber.co.uk; website: www.hunton.no

Technical Specification

1 Description

1.1 Hunton Bitroc Sheathing Board comprises softwood fibres coated with bitumen and phenol/urea for increased durability and temporary weather protection, and has an additional dense bitumen-impregnated layer on one face to render the boards airtight and watertight.

1.2 The boards have characteristics of:

- nominal thickness (mm) 15, 22
- length x width (mm) 2400⁽¹⁾ x 1200
- nominal density (kg·m⁻³) 280
- edge square cut.

(1) Other lengths are available to special order.

1.3 The product is manufactured from softwood fibres. The fibres are refined and blended with bitumen and phenol/urea and formed into a mat. After removing excess water, the mat is kiln dried and cut to size.

1.4 Quality control includes checks on raw materials and on the finished product, in accordance with the requirements of BS EN 300 : 2006, for:

- appearance
- dimensions
- density
- bitumen content
- moisture resistance and content
- swelling
- strength and elasticity
- air permeability.

1.5 Each board is marked with the manufacturer's name and product type.

1.6 Each pallet carries a label bearing the product name, thickness, length, width, number of sheets and date of production.

2 Delivery and site handling

2.1 Handling, storage and delivery of the boards should be carried out in accordance with the requirements of DD CEN/TS 12872 : 2007.

2.2 To prevent distortion, the boards should be stacked flat, clear of the floor, on level bearers, at centres not exceeding 600 mm. The top boards should be covered to prevent warping.

2.3 The boards should be stored in a dry building.

2.4 For delivery, the boards are banded together in pallets up to 0.95 tonne in weight and 1300 mm in height. The boards are covered in transit to minimise changes in moisture content. Particular care should be taken to protect the edges and corners. Banding should be cut on arrival at site but protective covering should not be removed until the boards are ready for conditioning.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Hunton Bitroc Sheathing Board.

3 General



3.1 The board is suitable for use as structural sheathing in timber-frame buildings.

3.2 The board is suitable for use in environmental conditions covered by biological hazard class 2 for wood and wood-based products, as defined in BS EN 335-3 : 1996. In such environments, the boards are under cover, fully protected from the weather, but may occasionally attain or exceed a moisture content resulting from exposure to an air temperature of 20°C and relative humidity of 90%. As a general rule, it is recommended that the moisture content of the boards should not exceed 12% for any significant period and 16% at any time.

3.3 The moisture content of sheathing material is affected by the humidity conditions existing in the cavity of which it forms one face. The cavity should be of conventional construction for timber frame, freely drained and ventilated. The outer masonry leaf should have adequate resistance to wind-driven rain, particularly in regions classified as severe exposure. Raked mortar joints or high porosity masonry should be avoided, particularly in these latter areas.

3.4 Fabrication and installation of sheathing panels, including the provision of moisture movement gaps, must be in accordance with DD CEN/TS 12872 : 2007, clause 14, and BS EN 1995-1-1 : 2004. Although temporary exposure to the elements is permissible during installation, this must be for the shortest possible period.

3.5 In accordance with normal good practice for wood-based sheathing materials used in cold-frame construction, external walls in which the boards are incorporated must include an effective vapour control layer on the room side, suitable weather protection on the outside surface, a ventilated cavity and damp-proof courses.

3.6 The product should be treated as conventional sheathing with regard to detailing at openings, eaves and sole plate, the fixing of wall ties, and the effect of openings on racking strength.

3.7 Joints between the panels should be made over a frame stud to prevent direct passage of moisture into the structure. Panel-to-panel joints should be protected by use of a strip of breather membrane fixed to one edge of the panel and lapped over the face of the adjacent panel.

3.8 The timber structures in which the board is incorporated must be designed and constructed in accordance with BS EN 1995-1-1 : 2004.

3.9 Guidance is given in *NHBC Standards, Part 6 Superstructure (excluding roofs), Chapter 6.2 External timber-framed walls*.

4 Practicability of installation

4.1 The product is designed to be installed by a competent general builder or contractor, and installation must be in accordance with the manufacturer's instructions.

4.2 The board is easily cut and fixed using conventional woodworking tools. Normal precautions should be exercised to avoid inhalation of wood dust when cutting, drilling and sanding.

4.3 The board can withstand normal site handling and fixing; if damaged it must not be used. Normal precautions should be observed when handling large panels.

5 Structural performance



5.1 The design racking resistance of a timber-frame wall incorporating the board nailed to studding should be calculated in accordance with the guidance given in BS EN 1995-1-1 : 2004, by a chartered structural engineer or similarly experienced and qualified person.

5.2 From tests carried out to BS EN 594 : 2010 and the characteristic values derived in accordance with BS EN 14358 : 2006, the characteristic racking resistance of a timber-frame wall⁽¹⁾⁽²⁾⁽³⁾ with 15 mm thick sheathing fixed with nails⁽⁴⁾, is 3.16 kN·m⁻¹ and 0.86 kN·m⁻¹ for ultimate limit state and serviceability limit state⁽⁵⁾ respectively.

(1) Studs: timber grade C24, minimum size 48 mm by 98 mm and spaced at a maximum of 600 mm.

(2) Panel: 15 mm thick by 2400 mm wide by 2400 mm high.

(3) Vertical loading: 1 kN vertical loading on each stud.

(4) Galvanized nails (Skiferspiker): minimum diameter 2.8 mm, minimum length 45 mm, at 100 mm spacing on outer edges and 250 mm spacing in the middle.

(5) The maximum deflection is considered to be 0.003 of the panel height.

6 Behaviour in relation to fire



6.1 When assessed in accordance with BS 476-7 : 1997, the board can achieve a Class 4 surface spread of flame rating. The board is combustible.

6.2 Where the board is incorporated in a wall construction subject to fire resistance requirements, an appropriate assessment or test must be carried out by a United Kingdom Accreditation Service (UKAS) accredited laboratory for the test concerned.

7 Resistance to moisture

7.1 In common with all timber products, the product is subject to moisture movement. As a guide, an increase in moisture content of 1% increases the length and width of a board by 0.4 mm per metre run.

7.2 Under the same environmental conditions, the product will take longer to equilibrate and will attain an equilibrium moisture content approximately 2% to 8% lower than solid timber.

7.3 To avoid distortion and damage to finishes, movement gaps, in accordance with the recommendations of DD CEN/TS 12872 : 2007, clause 14.3.3, should be provided when installing the boards.

7.4 To minimise subsequent movement, before installation, the boards should be conditioned as close as is practicable to the environmental conditions likely to occur in service. To achieve this, the moisture content of the board prior to installation, determined with a properly calibrated moisture meter, should be close to the service class equilibrium moisture content (emc) values given in DD CEN/TS 12872 : 2007, Table 1:

- service class 1 $4\% \leq emc \leq 11\%$
- service class 2 $11\% \leq emc \leq 17\%$
- service class 3 $emc > 17\%$

7.5 If the board maintains high moisture levels for prolonged periods, it is likely to lose strength and be subject to fungal attack (see section 11).



7.6 For design purposes, the water vapour resistance factor (μ) should be taken as 10. Such values may be used in any surface or interstitial condensation calculations to BS 5250 : 2002.

8 Physiological properties

The adhesive and bitumen used do not include formaldehyde-generating chemicals as a component. However, in common with other wood-based panels, the board may emit small amounts of formaldehyde gas. The quantity of gas emitted from the board alone, in the context of use given in this Certificate, will not increase the level of gas within the building to an extent which will affect habitability.

9 Thermal insulation



9.1 For design purposes, the thermal conductivity (λ value) of the board should be taken as $0.05 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$.

9.2 When incorporated as a sheathing, the board can contribute to the prevention of cold bridging through the timber frame.

10 Maintenance



10.1 The sheathing board itself does not require any special maintenance. However, the cladding system incorporating the board should be inspected annually to ensure that rainware is complete and in good order and the cladding material is in place and secure.

10.2 Damaged cladding should be repaired or replaced as soon as is practicable, following the manufacturer's instructions and observing all necessary health and safety regulations.

11 Durability



In common with other wood-based panels, the board is likely to lose strength and stiffness, and be susceptible to fungal attack, when subjected to prolonged high humidity or wetting. When maintained under the conditions detailed in section 3, this type of degradation will not arise. Care should be taken in designing, detailing and constructing buildings to ensure that moisture does not accumulate within the board.

Installation

12 General

Installation should be in accordance with the requirements given in DD CEN/TS 12872 : 2007 and the manufacturer's recommendations.

13 Tests

Tests were carried out by independent laboratories to determine:

- shear capacities of fixings using the specified fasteners
- material characteristics in accordance with the requirements of BS EN 323 : 1993 and BS EN 322 : 1993
- water vapour transmission resistance in accordance with BS 7374 : 1990.

14 Investigations

14.1 Based on other test data and evidence, an assessment was made of the product's:

- behaviour in relation to fire
- behaviour in relation to moisture
- racking resistance
- thermal properties
- durability.

14.2 The manufacturer's installation instructions were evaluated and the installation procedures reviewed and found to be practicable.

14.3 Independent examination of the manufacturing process was made on behalf of NBI, including methods adopted for quality control.

Bibliography

- 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 5250 : 2002 *Code of practice for control of condensation in buildings*
- BS 7374 : 1990 *Methods of test for water vapour transmission resistance of board materials used in buildings*
- BS EN 300 : 2006 *Oriented Strand Boards (OSB) — Definitions, classification and specifications*
- BS EN 322 : 1993 *Wood-based panels — Determination of moisture content*
- BS EN 323 : 1993 *Wood-based panels — Determination of density*
- BS EN 335-3 : 1996 *Durability of wood and wood-based products — Definition of hazard classes of biological attack — Application to wood-based panels*
- BS EN 594 : 1996 *Timber structures — Test methods — Racking strength and stiffness of timber frame wall panels*
- BS EN 1995-1-1 : 2004 *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*
- BS EN 14358 : 2006 *Timber structures — Calculation of characteristic 5-percentile values and acceptance criteria for a sample*
- DD CEN/TS 12872 : 2007 *Wood-based panels — Guidance on the use of load-bearing boards in floors, walls and roofs*

15 Conditions

15.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- 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 and documents referred to in this Certificate are those that the BBA deems to be relevant at the date of issue or re-issue of this Certificate and include any: Act of Parliament; Statutory Instrument; Directive; Regulation; British, European or International Standard; Code of Practice; manufacturers' instructions; or any other publication or document similar or related to the aforementioned.

15.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant 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 In granting this Certificate, the BBA is not responsible for:

- 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
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

15.5 Any information relating to the manufacture, supply, installation, use and maintenance 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 and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date 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. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.