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BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

Agrément Certificate
97/3351
Product Sheet 2

SANDTOFT ROOF TILES

BRITLOCK INTERLOCKING SLATES

This Agrément Certificate Product Sheet(1) relates to BritLock Interlocking Slates, resin-based reconstituted slates for use as a roof covering on conventional pitched timber roofs with a rafter pitch of 20° and over, or hung vertically as a cladding on the outer face of external 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 — the product will resist the impact loads associated with the installation of the roof and wind loads experienced in service (see section 6).

Performance in relation to fire — the product will enable a roof to be unrestricted under the Building Regulations (see section 7).

Weathertightness — the product resists the passage of moisture into the building (see section 8).

Durability — the product will 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: 9 February 2015

Originally certificated on 20 March 1997

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

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, BritLock Interlocking Slates, if installed, used and maintained in accordance with the provisions of 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)

Requirement:	B3(2)	Internal fire spread (structure)
Requirement:	B4(1)(2)	External fire spread
Comment:		The product has a Class 3 surface and can be used in situations set out in section 7.4 of this Certificate. A roof incorporating the product has an AA rating and meets the Requirements, provided the installation complies with the conditions set out in section 4.2. See section 7 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		A roof or wall cladding incorporating the product meets this Requirement. See sections 8.1 and 8.2 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The product is acceptable. See section 10.1 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 sections 9.1, 9.2 and 10.1 and the *Installation* part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.1	Compartmentation
Standard:	2.2	Separation
Comment:		The product can contribute to satisfying these Standards, with reference to Clauses 2.1.15[2], 2.2.7[2] and 2.2.10[1]. See section 7 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Standard:	2.8	Spread from neighbouring buildings
Comment:		A roof incorporating the product is unrestricted under these Standards, with reference to Clauses 2.6.4[1][2] and 2.8.1[1][2], provided the installation complies with the conditions set out in section 4.2. See section 7 of this Certificate.
Standard:	2.7	Spread on external walls
Comment:		Walls incorporating the product have a 'high risk' reaction to fire, with reference to Clause 2.7.1[1][2] of this Standard. See section 7.4 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The product will contribute to a roof satisfying this Standard, with reference to Clauses 3.10.1[1][2] and 3.10.8[1][2], provided the installation complies with the conditions set out in section 4.2. 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:		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].

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

The Building Regulations (Northern Ireland) 2012

Regulation:	23(a)(i)(iii)(b)(i)	Fitness of materials and workmanship
Comment:		The product is an acceptable material. See section 10.1 and the *Installation* part of this Certificate.
Regulation:	28	Resistance to moisture and weather
Comment:		A roof incorporating the product can satisfy this Regulation, provided the installation complies with the conditions set out in section 4.2. See sections 8.1 and 8.2 of this Certificate.
Regulation:	35(3)	Internal fire spread — Structure
Regulation:	36	External fire spread
Comment:		The product has a Class 3 surface and can be used in situations set out in section 7.4 of this Certificate. A roof incorporating the product is unrestricted under these Regulations, provided the installation complies with the conditions set out in section 4.2. See section 7 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* (1.1), 3 *Delivery and site handling* (3.1), 9 *Maintenance* (9.2 and 9.3) and 14 *Health and safety* (14.1) of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of BritLock Interlocking Slates, provided they are installed, used and maintained in accordance with this Certificate, and in relation to *NHBC Standards*, Chapter 6.2 *External timber framed walls* and Chapter 7.2 *Pitched roofs*.

Technical Specification

1 Description

1.1 BritLock Interlocking Slates are resin-based reconstituted slates with a riven appearance and are available with the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Characteristic	BritLock
Size (mm)	360 x 340
Cover width (mm)	300
Thickness (mm)	5
Weight per slate (kg)	1.4
Installed weight ($kg \cdot m^{-2}$)	16.4–19.5
Colours	Graphite, Heather Blue and Lakeland Green

1.2 Slight colour variations may exist between batches. Slates should be randomised on site to achieve a consistent appearance when installed.

1.3 Slate-and-a-half slates with a covering width of 450 mm, left-hand verge slates and left-hand verge slate-and-a-half are also available (see Figures 1 and 2).

1.4 Ventilation, dry verge and dry ridge components and a range of ridge and hip tiles are available from the Certificate holder but are outside the scope of this Certificate.

Figure 1 BritLock Interlocking slate roof

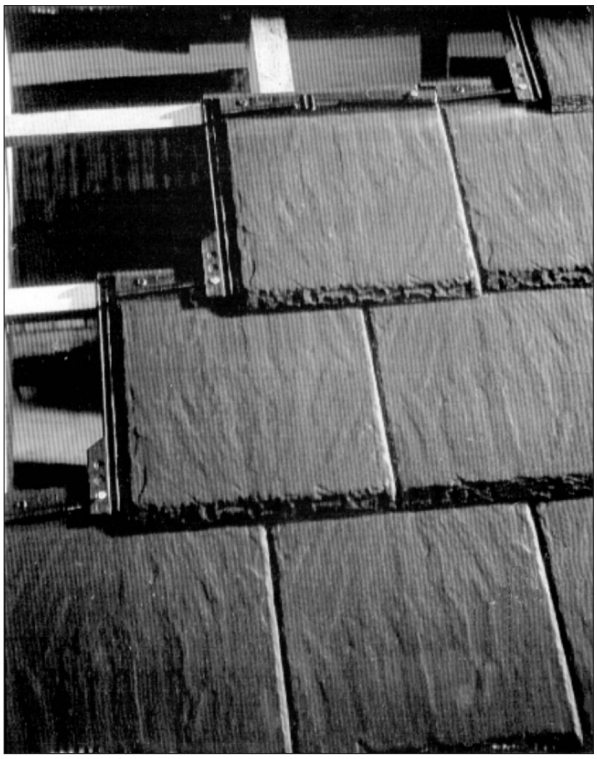
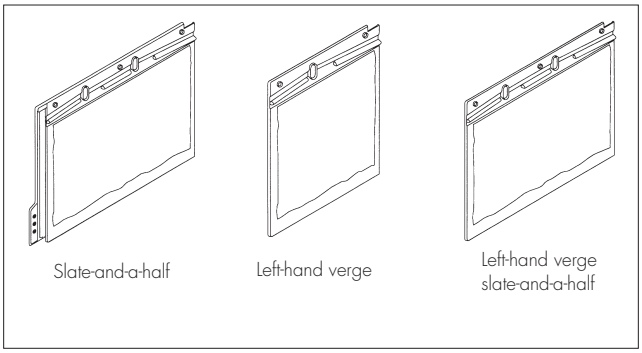


Figure 2 Slate fittings



2 Manufacture

2.1 BritLock Interlocking Slates are manufactured from a thermosetting resin, slate particles and other constituents. Together, these are mixed to a dough, which is extruded, cut to weight and moulded under pressure and heat to give the appearance of natural riven slate.

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 Sandtoft Roof Tiles Limited has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by Complete Integrated Certification Services (CICS) (Certificate 24486).

3 Delivery and site handling

3.1 The slates are packed in wooden crates of 500, or on a pallet and are protected by polythene wrapping. Storage must be on a level base in dry conditions, under cover and away from the possibility of damage.

3.2 The container bears the manufacturer's legend and the BBA logo incorporating the number of this Certificate.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on BritLock Interlocking Slates.

Design Considerations

4 Use

4.1 BritLock Interlocking Slates are satisfactory for use as a roof covering on conventional pitched timber roofs with a rafter pitch of 20° and over, or as a cladding on the outer face of external walls. It is essential that such roofs and walls are designed and constructed to incorporate the normal precautions to prevent moisture penetration and the formation of condensation.

4.2 Roofs and wall cladding incorporating the slate is and subject to the UK Building Regulations must be designed and constructed in accordance with the relevant recommendations of BS 5534 : 2014 and BS 8000-6 : 2013. In particular, the designer must follow the recommendations of Clauses 5.1, 5.2, 5.3, 5.4, 5.5, 5.6 and 5.9 of BS 5534 : 2014, on rain and snow resistance, roof pitch, head-laps and side-laps, and structural stability and condensation and select a construction appropriate to its location, paying due attention to design detailing, workmanship and materials to be used.

5 Practicability of installation

The slates are designed to be installed by a competent roofing contractor, experienced with this type of product.

6 Strength

6.1 The product has adequate impact resistance to damage during site handling and installation.

6.2 The product, when tested after 24 hours immersion in water, had a mean bending strength of 27 $N \cdot mm^{-2}$ (average of both directions).

6.3 The product has adequate resistance to the wind and snow loads likely to be encountered. In situations where high local loads may occur, the designer must seek the advice of the manufacturer. Consideration must also be given to the guidance contained in BRE Digest : 439 *Roof loads due to local drifting of snow*.

6.4 When fixed in accordance with the Certificate holder's instructions, the slates are resistant to the effects of wind uplift likely to be encountered in the UK. Where conditions of exposure may be severe, consideration must be given to the recommendations outlined in BS 5534 : 2014.

7 Performance in relation to fire

7.1 When tested in accordance with BS 476 -3 : 1958, the slates achieved an EXT S.AA designation.

7.2 A roof incorporating the slates is designated AA and is consequently unrestricted by the relevant requirements of the national Building Regulations.

7.3 When tested in accordance with BS 476-6 : 1989 and BS 476-7 : 1987, the slates had a fire propagation index (I) of ≤8.6, a sub-index (i_1) of ≤0.0 and a Class 3 surface.

7.4 The slates have a Class 3 surface or a 'high risk' surface as defined in the national Building Regulations, and are suitable for use as an external cladding to walls less than 18 metres above the ground and at a distance of one metre or more from any point on the boundary as described/referred to in the national Building Regulations.

8 Weathertightness

8.1 Wind-driven rain penetration tests indicate that the slates have adequate resistance to the ingress of wind-driven rain when installed on a roof with a rafter pitch of 20°.

8.2 When used at pitches of 20° or greater on roofs, or 75° or greater on walls in conjunction with a suitable underlay or sarking, the slates will provide a roof or wall cladding with satisfactory resistance to the passage of rain or snow.

9 Maintenance

9.1 Roofs and walls covered with the product must be visually inspected twice a year to ensure continued performance, as is good practice with all roofs and walls. Any damaged slates must be replaced in accordance with section 15.

9.2 Care is required when carrying out maintenance work on slate roofs and the recommendations contained in BS 5534 : 2014, Clause 6.14 *Workmanship, Repairs and Maintenance*, and BS 8000-6 : 2013, Section 11 *Safety and general precautions* must be followed.

9.3 Precautions must be taken to prevent danger to the public from falling broken or displaced slates.

10 Durability

10.1 Tests after exposure to prolonged water immersion at elevated temperatures, cyclic wetting and drying, and cyclic freezing and thawing indicate a life in excess of 30 years when used in normal atmospheric conditions encountered in the UK.

10.2 After natural weathering, some slight change in colour may occur. However, this process is not likely to be progressive.

11 Reuse and recyclability

The product contains recycled natural slate, which can be recycled.

Installation

12 General

12.1 BritLock Interlocking Slates are installed on pitched roofs or hung vertically as a cladding on the outer face of external walls strictly in accordance with the manufacturer's instructions, BS 5534 : 2014 and BS 8000-6 : 2013.

12.2 When used on large roof areas, slates should be randomly selected from different batches to ensure consistent appearance. Damaged slates must not be installed.

12.3 BritLock Interlocking Slates are not recommended for use with sprocketed eaves (bellcast).

13 Cutting

13.1 BritLock Interlocking Slates are supplied with blind holes, and may be cut, eg at eaves, hips and valleys, by marking with a series of holes (as for natural slate) and snapping over a straight edge, or using a carborundum disc cutter. Additional holes must be drilled using a rotary masonry drill and positioned at least 20 mm from the edges of the slates.

13.2 When cutting slates using a machine that may generate excessive concentrations of dust, the recommended actions contained in section 14.1 must be followed.

13.3 After cutting and/or drilling, slates must be cleaned to avoid possible staining.

14 Health and safety

14.1 If it is necessary to cut slates using a dust-generating technique, and on such a scale as to generate excessive concentrations of dust, the measures defined in Health and Safety Executive Guidance Note EH44 *Dust in the workplace : general principles of protection* must be followed.

14.2 Any roof or wall clad with slates must be treated as fragile, and the recommendations in sections 9.2 and 9.3 must be followed.

14.3 When stripping paint from timber such as at eaves or window frames, care must be taken to avoid discolouration or damage to the slates from heat/chemical sources, such as blowlamps, heat guns and chemical strippers.

15 Procedure

15.1 BritLock Interlocking Slates are installed on pitched roofs or hung vertically as a cladding on the outer face of external walls strictly in accordance with the manufacturer's instructions, BS 5534 : 2014 and BS 8000-6 : 2013.

15.2 At verges, either side of hips or valleys, and where the roof meets an abutment, the last slate in each course must be twice nailed at the head and, in addition, once at the tail (except left-hand verge slates). At verges, and where the tails of slates are unsecured at valleys, verge clips must also be used. At eaves and top edges, the last course of slates must be twice nailed at the head and, in addition, once at the tail. Slates in the remaining area must be nailed at the head (through the right-hand fixing holes) and, in addition, once at the tail. The nails and verge clips are supplied by the Certificate holder: other types or makes must not be used.

15.3 It is essential that fixing clips are correctly installed and the interlocks seat neatly in position.

15.4 Care is required to ensure that nails are not overdriven. They must be tapped rather than driven home.

15.5 Where the slates are to be used on an existing roof structure, the recommendations contained in BS 5534 : 2014, Section 6.14, *Workmanship, Repairs and Maintenance* and BS 8000-6 : 2013, Section 11, Clause 11.1.3 on re-covering must be followed. Consideration must also be given to the advice contained in BRE Defect Action Sheets DAS 124 : 1988 Pitched roofs: Renovation of older type timber roofs — re-tiling or re-slating and DAS 125 : 1988 Pitched roofs: Re-tiling or re-slating older type timber roofs.

15.6 Ridge and hip details may be completed using standard concrete or clay products and verge details may be completed using traditional mortar bedding techniques. Alternatively, dry-fix systems may be used but are outside the scope of this Certificate.

16 Repair

Damaged slates can be replaced by following the manufacturer's instructions and the relevant sections of BS 5534 : 2014 and BS 8000-6 : 2013.

Technical Investigations

The following is a summary of the technical investigations carried out on BritLock Interlocking Slates.

17 Tests

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

- general appearance and dimensional accuracy
- bending strength
- flexural strength
- quality requirements
- Charpy impact strength
- density
- water absorption
- heat distortion temperature.

17.2 Tests were also carried out to determine the effects of:

- heat/rain cycling
- cyclic wetting and drying
- resistance to sulfuric acid immersion
- resistance to accelerated weather and colour stability.

17.3 Test data from independent laboratories were evaluated in relation to:

- resistance to windlift
- resistance to wind-driven rain penetration.

18 Investigations

18.1 An assessment was made of existing data from independent laboratories, relating to BS 476-3 : 1958, BS 476-6 : 1989 and BS 476-7 : 1997.

18.2 A visit was made to a site in progress to assess the practicability of installation and the effectiveness of detailing techniques.

Bibliography

BS 476-3 : 1958 *Fire tests on building materials and structures — External fire exposure roof test*
BS 476-6 : 1989 *Fire tests on building materials and structure — Method of test for fire propagation for products*
BS 476-7 : 1987 *Fire tests on building materials and structures — Method for classification of the surface spread of flame of products*

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

BS 8000-6 : 2013 *Workmanship on building sites — Code of practice for slating and tiling of roofs and walls*

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

Conditions of Certification

19 Conditions

19.1 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.

19.2 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.

19.3 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.

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

19.5 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.

19.6 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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