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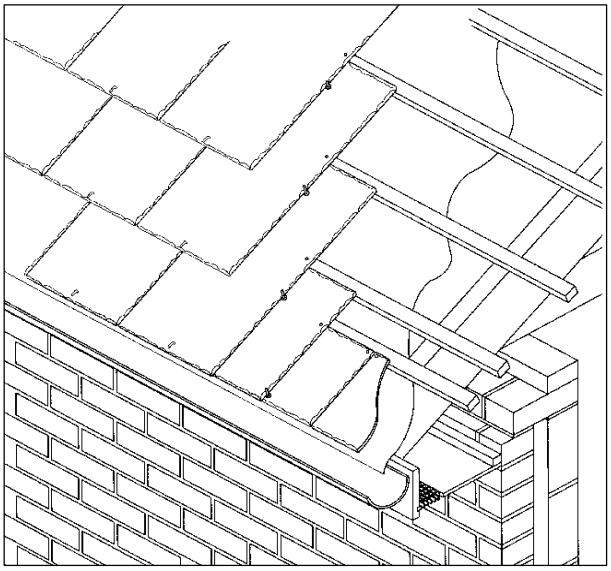
Agrément Certificate
03/4041
Product Sheet 4

CEMBRIT SLATES

MOORLAND SLATES

This Agrément Certificate Product Sheet(1) relates to Moorland Slates, acrylic-coated, fibre-reinforced cement slates for use on conventional pitched timber roofs with a rafter pitch of 20° and over, or hung vertically as cladding on 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 has adequate strength to resist the loads associated with installation of a roof or an external wall cladding (see section 6).

Properties in relation to fire — the product will enable a roof or an external wall cladding to be unrestricted under the Building Regulations (see section 7).

Weather resistance — the product will resist the passage of moisture into a 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 Third issue: 28 October 2015

Originally certificated on 22 August 2003

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

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Regulations

In the opinion of the BBA, Moorland Slates, 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:	**B3(2)**	**Internal fire spread (structure)**
Requirement:	**B4(1)(2)**	**External fire spread**
Comment:		The product has an A2-s1, d0 classification and its use as cladding is unrestricted by these Requirements. A roof incorporating the product is also unrestricted provided the installation complies with the conditions set out in section 4.2 of this Certificate. See also section 7 of this Certificate.
Requirement:	**C2(b)**	**Resistance to moisture**
Comment:		A roof or wall cladding incorporating the product can meet this Requirement provided the installation complies with the conditions set out in section 4.2 of this Certificate. See section 8 of this Certificate.
Regulation:	**7**	**Materials and workmanship**
Comment:		The product is acceptable. See sections 10.1 and 10.2 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 use of the product satisfies the requirements of this Regulation. See sections 9, 10.1 and 10.2 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). See section 7 of this Certificate.
Standard:	2.7	Spread on external walls
Comment:		Walls incorporating the product have a 'low risk' reaction to fire, with reference to clause 2.7.1(1)(2). See sections 4.2 and 7 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The product will contribute to a roof or external wall satisfying this Standard, provided the installation complies with the conditions set out in section 4.2 of this Certificate, with reference to clauses 3.10.1(1)(2) and 3.10.8(1)(2). See also section 8 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 in relation to 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 sections 10.1 and 10.2 and the *Installation* part of this Certificate.
Regulation:	**28(a)(b)**	**Resistance to moisture and weather**
Comment:		A roof or wall cladding incorporating the product will fulfil this Regulation provided the installation complies with the conditions set out in section 4.2 of this Certificate. See also section 8 of this Certificate.
Regulation:	**35(4)**	**Internal fire spread - structure**
Regulation:	**36(a)(b)**	**External fire spread**
Comment:		The product has an A2-s1, d0 classification and its use as cladding is unrestricted by these Regulations. A roof incorporating the product is also unrestricted provided the installation complies with the conditions set out in section 4.2 of this Certificate. See also 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), 12 *Cutting* (12.2) and 13 *Health and safety* of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of Moorland Slates, provided they are installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapters 6.1 *External masonry walls*, 6.2 *External timber framed walls* and 7.2 *Pitched roofs.*

CE marking

The Certificate holder has taken the responsibility of CE marking the product, in accordance with harmonised European Standard EN 492 : 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 Moorland Slates are acrylic-coated, fibre-reinforced cement slates with the following nominal characteristics:

Thickness (mm)	4.0
Width (mm)	300
Length (mm)	600
Weight (kg)	1.5
Mechanical resistance ($Nm \cdot m^{-1}$)(1)*	45
Density ($kg \cdot m^{-3}$)	≥ 1600
Water impermeability*	pass
Dimension variations*	±3 mm on length and width; +25%/–10% nominal value for thickness
Resistance to warm water*	$R_L \geq 0.75$
Resistance to soak/dry*	$R_L \geq 0.75$
Resistance to freeze/thaw*	$R_L \geq 0.75$
Resistance to heat/rain	pass
Colour	blue/black
Finish	smooth surface and dressed edges.

(1) When tested to BS EN 492 : 2012.

1.2 The minimum rafter pitch for both severe (rainfall ≥ 56.5 litres per m^2 per spell) and moderate (rainfall < 56.5 litres per m^2 per spell) exposure conditions is 20°. Other factors may indicate steeper minimum pitches and consideration should be given to the relevant section contained in BS 5534 : 2014 + A1 : 2015.

1.3 Double-width slates (600 mm by 600 mm or 500 mm by 500 mm) are available for use in details such as hips, valleys and abutments.

1.4 The slates contain holes for fixing in accordance with BS 5534 : 2014 + A1 : 2015.

1.5 The slates are denoted Type NT in accordance with BS EN 492 : 2012 and comply with the requirements of that Standard.

2 Manufacture

2.1 Moorland Slates are manufactured from cellulose and polymeric fibre, Portland cement, pigments and other constituents, in the Hatschek process. Slates are punched, pressed and heat-cured and, in a separate process, the cured slates are sprayed with an acrylic paint on both surfaces and edges, stoved, cooled and stacked.

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 being operated by the manufacturer are being maintained.

2.3 The management systems of Cembrit a.s. have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by 3EC International, s.r.o Czech Republic (Certificate E-0394c/14).

2.4 The slates are manufactured by Cembrit a.s. and marketed in the UK by Cembrit Ltd, 57 Kellner Road, London SE28 0AX, tel: 020 8301 8901, email: sales@cembrit.co.uk, website: www.cembrit.co.uk

3 Delivery and site handling

3.1 The slates are delivered to site on pallets and are protected by a polyester-strapped cardboard hood and a shrink-wrapped polythene cover. The wrapping bears the manufacturer's legend, the BBA logo incorporating the number of this Certificate and handling recommendations. The underside of a minimum of 15% of the quantity of slates in each pallet bears the manufacturer's date mark.

3.2 The slates should be stored on a dry, level base in dry conditions under cover, away from the possibility of damage.

3.3 If stacked outside for short periods, the slates should be placed on a dry, level base and covered with a tarpaulin, while allowing air to freely circulate around and through the packs of slates. The maximum stack height is four pallets.

3.4 Care must be taken to avoid efflorescence staining, caused when stacks are allowed to become wet or damp.

Assessment and Technical Investigations

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

Design Considerations

4 Use

4.1 Moorland slates are satisfactory for use on conventional, pitched, timber roofs with a rafter pitch of 20° and over, and 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 (eg by adequate ventilation).

4.2 Roofs and wall cladding incorporating the slates should be designed and constructed in accordance with the relevant recommendations of BS 5534 : 2014 + A1 : 2015 and BS 8000-6 : 2013. In particular, the designer should follow the recommendations of BS 5534 : 2014 + A1 : 2015, clause 5.2 for structural stability, clause 5.4 for rain and snow resistance, clause 5.4.2 for roof pitch, head-laps and side-laps, and clause 5.9.2 for control of condensation, and select a construction appropriate to the location, paying due attention to design detailing, workmanship and materials to be used.

5 Practicability of installation

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

6 Strength

6.1 The slates have adequate resistance to damage during site handling and installation on conventional roofs and walls.

6.2 When tested after water immersion in accordance with BS EN 492 : 2012, Section 7.3.2, the minimum bending moment was 50 $N \cdot mm^{-1}$ (the average value when tested in the longitudinal and transverse directions) and therefore the material has a Class B rating.

6.3 The slates, when installed in accordance with BS 5534 : 2014 + A1 : 2015, have adequate resistance to the uniformly-distributed loads (wind or snow) likely to be encountered. Where high local snow loads may occur, the manufacturer's advice should be sought and followed in relation to the guidance contained in BRE digest 439 *Roof loads due to local drifting snow.*

7 Properties in relation to fire

7.1 A roof incorporating the slates deemed to satisfy national requirements under Commission Decision 2000/553/EC and will be unrestricted.

7.2 The slates have an A2-s1, d0 classification in accordance with EN 13501-1 : 2002 and therefore their use as cladding is unrestricted by the national Building Regulations.

7.3 Cavity barriers should be used to satisfy the requirements of the national Building Regulations.

8 Weather resistance

8.1 After 24 hours' immersion in water, the nominal water absorption of the slates was 18% of its dry weight.

8.2 When tested in accordance with BS EN 492 : 2012, the slates had adequate resistance to water penetration.

9 Maintenance

9.1 Roofs and walls covered with the product should be subjected to twice-yearly visual inspections to ensure continued performance, as is good practice with all applications. Any damaged slates should be replaced in accordance with section 15.

9.2 Care should be taken to ensure that growth of algae, lichen and moss does not compromise the performance of the slates.

9.3 Care is required when carrying out maintenance work on any roof or wall clad in slate, and the recommendations contained in BS 5534 : 2014 + A1 : 2015, Clauses 6.14 *Workmanship, Repairs and Maintenance*, and BS 8000-6 : 2013, Section 11, *Safety and general precautions*, should be followed.

10 Durability

10.1 In common with other cementitious materials, the product will carbonate and embrittle with time. Differential carbonation may cause slight bowing of the slates. The coating on the reverse side of the slates will help reduce this risk.

10.2 The product will have a service life in excess of 30 years.

10.3 The acrylic paint used on the slates has good colour stability. Extensive exposure to sunlight will cause some fading of the surface colour. This will depend upon the colour chosen, and the slates' environment, location, aspect face and use (ie roofing or cladding).

10.4 The acrylic paint will delay weathering of the pigmented substrate and prevent organic growth on the surface. As the paint erodes, the product will weather by retaining dirt and organic growth in the same way as traditional roofing materials.

Installation

11 General

11.1 Moorland Slates are installed in accordance with the Certificate holder's recommendations, BS 5534 : 2014 + A1 : 2015, and BS 8000-6 : 2013 using conventional slating techniques.

11.2 The Certificate holder's advice should be sought when considering use of the product in situations not covered by this Certificate, such as sprocketed eaves (bellcast) or special roof constructions.

11.3 When used on large roof areas, slates should be selected from the same batch to ensure consistent appearance. The colour of individual slates can vary or may develop on weathering, and therefore a perfect colour match cannot be assumed. This should be considered during installation, repair or replacement of the product.

12 Cutting

12.1 Slates may be cut (for use at eaves, hips or valleys) either by scoring and breaking over a straight edge or by using a handsaw. Additional fixing holes must be drilled and not punched. Holes must be positioned at least 20 mm from the edge of the slate.

12.2 When cutting slates using a machine that may generate excessive concentrations of dust, the recommended actions contained in section 13.1 should be followed.

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

13 Health and safety

13.1 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,* should be followed.

13.2 Any roof or wall clad in slate should be treated as fragile, and the recommendations in section 9 should be followed. Precautions should be taken to prevent danger to the public from falling broken or displaced slates.

14 Procedure

14.1 Slates must be laid weather-face up.

14.2 Slates should be fixed by centre-nailing each one with two copper nails and securing the tail of the slate with a copper disc rivet.

14.3 Double-width slates are available and can be cut to facilitate coursing or the formation of details such as hips and valleys. Cut slates should be fixed with at least two nails to prevent dislodgement. Slate-and-a-half or double slates should be fixed with three copper nails and two copper disc rivets.

14.4 Care is required to ensure that nails are not overdriven. Nails should be tapped rather than driven home.

14.5 It is essential that butt joints between slates are left open; the gap should be approximately 3 mm wide.

14.6 Slates must seat down properly, one with another and with the course below. Butt joints between slates must be properly constructed to provide the required degree of weathertightness and dimensional accuracy.

14.7 Where the product is to be used on an existing roof structure, the recommendations contained in BS 5534 : 2014 + A1 : 2015, Section 6.14, *Workmanship, Repairs and Maintenance* and BS 8000-6 : 2013, Section 11, Clause 11.1.3 on re-covering, should be followed. Consideration should 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.*

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

15 Repair

Damaged slates can be replaced by following the manufacturer's instructions and the relevant sections of BS 5534 : 2014 + A1 : 2015 and BS 8000-6 : 2013.

Technical Investigations

16 Tests

16.1 Tests were carried out by the BBA in accordance with BS EN 492 : 1994[(1)] in relation to the following, and the results assessed:

- dimensions
- apparent density
- bending moment.

- (1) Tests were carried out in accordance with BS EN 492 : 1994; the results were reassessed for compliance with BS EN 492 : 2004 and found to be satisfactory.

16.2 Tests were also carried out to determine:

- water absorption
- coating film thickness.

17 Investigations

17.1 An assessment was made of existing data from the independent laboratories relating to:

- fire tests
- water absorption
- warm and alkali immersion
- coefficient of linear thermal expansion
- moisture movement
- resistance to bowing and curling
- coating film thickness
- water vapour permeability
- resistance to algal growth
- resistance to humidity (cyclic condensation).

17.2 An examination was made of test data from the Certificate holder's laboratory or independent laboratories on a material of similar composition, in relation to:

- coefficient of linear thermal expansion
- moisture movement
- resistance to bowing and curling
- water absorption
- freeze/thaw cycling
- heat/rain cycling
- resistance to algal growth
- resistance to humidity (cyclic condensation).

17.3 An assessment was made of existing data to BS EN 492 : 1994(1) relating to a material of similar composition on:

- dimensions
- apparent density
- mechanical characteristics
- water impermeability
- warm water immersion
- soak/dry
- freeze/thaw
- heat-rain.

(1) Tests were carried out in accordance with BS EN 492 : 1994; the results were reassessed for compliance with BS EN 492 : 2004 and were found to be satisfactory.

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

Bibliography

BS 5534 : 2014 + A1 : 2015 *Code of practice for slating and tiling (including shingles)*
BS 8000-6 : 2013 *Workmanship on building sites — Code of practice for slating and tiling of roofs and claddings*
BS EN 492 : 1994 *Fibre-cement slates and their fittings for roofing — Product specification and tests methods*
BS EN 492 : 2004 *Fibre-cement slates and their fittings for roofing — Product specification and tests methods*
BS EN 492 : 2012 *Fibre-cement sales and fittings — Product specification and test methods*

Conditions of Certification

18 Conditions

18.1 This Certificate:

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

18.2 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.

18.3 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.

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

18.5 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.

18.6 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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