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BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

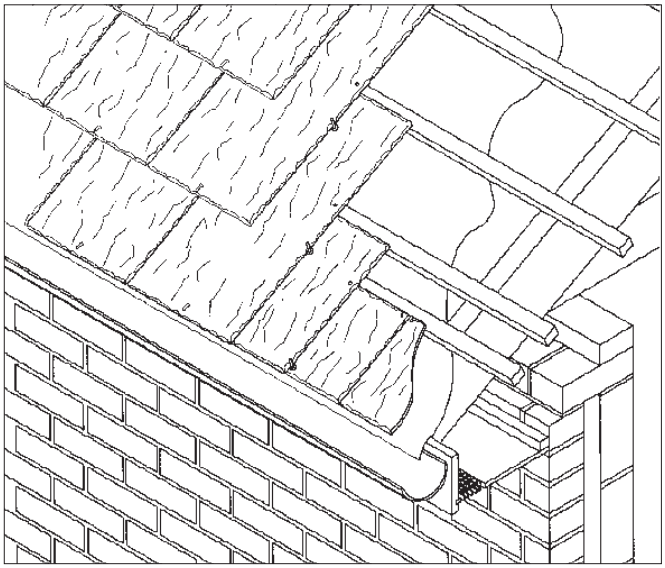
Agrément Certificate
03/4041
Product Sheet 3

CEMBRIT SLATES

WESTERLAND SLATES

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Westerland 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.



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

Strength — the product has adequate strength to resist the loads associated with the installation of the roof or an external wall cladding (see section 5).

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 6).

Liquid water penetration — the product will resist the passage of moisture into the building (see section 7).

Durability — the product will have a service life of in excess of 30 years (see section 10).

The BBA has awarded this Agrément Certificate to the company named above for the product described herein. The 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: 6 April 2011
Originally certificated on 22 August 2003

Stuart Sadler
Head of Approvals — Materials

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

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Regulations

In the opinion of the BBA, Westerland Slates, 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:	B3(2)	Internal fire spread (structure)
Requirement:	B4(1)(2)	External fire spread
Comment:		The slates are Class 0 and meet these Requirements. See section 6.3 of this Certificate. A roof incorporating the slates has an AA classification and meets these Requirements. See sections 6.1 and 6.2 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		A roof or wall cladding incorporating the slates can meet this Requirement. See section 7 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The slates are acceptable materials. See section 10.1 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness of durability of materials and workmanship
Comment:		The slates can contribute to a construction satisfying this Regulation. See sections 9.1 to 9.3, 10.1 and the *Installation* part of this Certificate.
Regulation:	9	Building standards — construction
Standard:	2.1	Compartmentation
Standard:	2.2	Separation
Comment:		The slates can contribute to satisfying these Standards, with reference to clauses 2.1.15[2], 2.2.7[2] and 2.2.10[1] respectively. See sections 6.1 and 6.2 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Standard:	2.8	Spread from neighbouring buildings
Comment:		A roof incorporating the slates is unrestricted under these Standards, with reference to clauses 2.6.4[1][2] and 2.8.1[1][2] respectively. See sections 6.1 and 6.2 of this Certificate.
Standard:	2.7	Spread on external walls.
Comment:		Walls incorporating the slates have a 'low risk' reaction to fire, with reference to clause 2.7.1[1][2] of this Standard. See section 6.3 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The slates will contribute to a roof or external wall satisfying this Standard, with reference to clauses 3.10.1[1][2] and 3.10.8[1][2]. See section 7 of this Certificate.
Regulation:	12	Building standards — conversions
Comment:		All comments given for the slates under Regulation 9, 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) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The slates are acceptable materials. See section 10.1 and the *Installation* part of this Certificate.
Regulation:	B3(2)	Suitability of certain materials
Comment:		The slates are acceptable materials. See sections 9.1 to 9.3 of this Certificate.
Regulation:	C4(a)(b)	Resistance to ground moisture and weather
Comment:		A roof or wall cladding incorporating the slates can satisfy this Regulation. See section 7 of this Certificate.
Regulation:	E4(4)	Internal fire spread — Structure
Regulation:	E5(a)(b)	External fire spread
Comment:		The slates are Class 0 and meet these Regulations. See section 6.3 of this Certificate. A roof incorporating the slates is unrestricted under 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 section: 1 *Description* (1.3) of this Certificate.

Non-regulatory Information

NHBC Standards 2011

NHBC accepts the use of Westerland Slates, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.2 *Pitched roofs*.

General

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 8900, Fax: 020 8301 8901, e-mail: sales@cembrit.co.uk website: www.cembrit.co.uk

Technical Specification

1 Description

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

1.2 Quality control checks are carried out on the incoming materials, during production and on the finished product.

1.3 The slates have an average density of 1850 kg·m^{-3}, a nominal thickness of 4 mm and a weight of 1.5 kg (standard slate 600 mm by 300 mm).

1.4 Slates are available coloured blue/black, graphite and Welsh blue with a riven natural surface and dressed edges.

1.5 Rectangular slates are available sized 600 mm by 300 mm (see Table 1).

Table 1 Slate sizes and minimum rafter pitch

Length (mm)	Width (mm)	Minimum rafter pitch[1]	
		Severe exposure	Moderate exposure
600	300	20°	20°

(1) Other factors may dictate steeper minimum pitches and consideration should be given to the relevant section contained in BS 5534 : 2003.

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

1.7 The slates contain holes for fixing in accordance with BS 5534 : 2003.

1.8 The slates are denoted Type NT in accordance with BS EN 492 : 2004 and comply with the requirements of that standard.

2 Delivery and site handling

2.1 The slates are delivered to site on pallets and are protected by a polyester strapped cardboard hood shrink-wrapped polythene cover. The underside of a minimum of 25% of the quantity of slates in each pallet bears the manufacturer's date mark.

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

2.3 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.

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

2.5 The wrapping bears the manufacturer's legend, the BBA identification mark incorporating the number of this Certificate and handling recommendations.

Assessment and Technical Investigations

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

3 Use

3.1 Westerland Slates are satisfactory for use 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 (eg by adequate ventilation).

3.2 Roofs and wall cladding incorporating the slates should be designed and constructed in accordance with the relevant recommendations of BS 5534 : 2003 and BS 8000-6 : 1990. In particular, the designer should follow the recommendations of Clauses 5.1, 5.2, 5.5 and 5.8 of BS 5534 : 2003 on rain and snow resistance, roof pitch, head-laps and side-laps, structural stability and control of condensation, respectively; and select a construction appropriate to its location paying due attention to design detailing, workmanship and materials to be used.

4 Practicability of installation

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

5 Strength

5.1 The slates have adequate resistance to damage during site handling and installation using conventional roofing methods.

5.2 When tested after water immersion in accordance with BS EN 492 : 2004, Section 7.3.2, the minimum bending moment of Westerland Slate material was 50 $N{\cdot}mm^{-1}$ (the average value when tested in the longitudinal and transverse directions). Therefore, the material has a Class B rating.

5.3 The slates when installed in accordance with BS 5534 : 2003 have adequate resistance to the uniformly distributed loads (wind, 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 of snow*.

6 Properties in relation to fire

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

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

6.3 When tested in accordance with BS 476-6 : 1989 and BS 476-7 : 1997, the slates had a fire propagation index I of 1.4, a sub-index (i_1) of 0.3 and a Class 1 surface. The slates therefore have a Class 0 or 'low risk' surface as defined by the national Building Regulations.

7 Liquid water penetration

When tested in accordance with BS EN 492 : 2004, Section 7.3.3, no water droplets formed on the underside of the slates.

8 Water absorption

The maximum water absorption of Westerland Slates is 18% of its dry weight.

9 Maintenance

9.1 Roofs covered with the product should be subject of twice yearly visual inspections to ensure continued performance, as is good practice with all roofs. Any damaged slates should be replaced in accordance with section 15.

9.2 Care should be taken to ensure 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 : 2003, Clauses 6.13 *Installation, Repairs and maintenance*, and BS 8000-6 : 1990, Section 5, Clause 5.2, *Safety*, should be followed.

10 Durability

10.1 The product will have a service life in excess of 30 years. 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 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, its environment, location, aspect face and use (ie roofing and cladding).

10.3 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 Westerland Slates are installed in accordance with the Certificate holder's recommendations, BS 5534 : 2003, and BS 8000-6 : 1990 using conventional slating techniques.

11.2 The slates are suitable for use at the minimum rafter pitches given in Table 1.

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

11.4 When used on large roof areas, slates should be selected from the same batches to ensure consistent appearance. The colour of individual slates can vary or may develop on weathering 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, valleys) by either scoring and breaking over a straight edge or 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 : 2003, Section 6, Clause 6.13 *Installation, Repairs and Maintenance* and BS 8000-6 : 1990, Section 5, Clause 5.1.3 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 : 2003 and BS 8000-6 : 1990.

Technical Investigations

16 Tests

16.1 Tests were carried out by the BBA in accordance with BS EN 492 : 1994[1] relating to:

- dimension
- bending moment.

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

16.2 Tests were also carried out to determine the effect of artificial weathering (colour stability).

17 Investigations

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

- BS 476-3 : 1958
- BS 476-6 : 1989
- BS 476-7 : 1997
- water absorption
- water and alkali immersion
- resistance to bowling and curling
- coating film thickness
- coefficient of linear thermal expansion
- resistance to algal growth
- water vapour permeability
- moisture movement
- resistance to humidity (cyclic condensation).

17.2 An examination was made of test data from the manufacturer'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 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 version and results reassessed for compliance with BS EN 492 : 2004 were found to be satisfactory.

17.4 The manufacturing process was examined, including the methods adopted for quality control.

17.5 A user survey was conducted to evaluate performance in use.

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 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 5534 : 2003 *Code of practice for slating and tiling (including shingles)*

BS 8000-6 : 1990 *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 test methods*
BS EN 492 : 2004 *Fibre-cement sales and fittings — Product specification and test methods*

18 Conditions

18.1 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.

18.2 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.

18.3 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.

18.4 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.

18.5 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.

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