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Agrément Certificate

87/1907

Product Sheet 1

MONIER REDLAND SLATES

REDLAND CAMBRIAN INTERLOCKING SLATES

This Agrément Certificate Product Sheet⁽¹⁾ relates to Redland Cambrian Interlocking Slates, resin-based reconstituted slates for use on conventional pitched timber roofs with a rafter pitch of 15° or greater, 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 has adequate strength to resist the loads associated with the installation of the roof or an external wall cladding (see section 6).

Behaviour in relation to fire — the use of the product as a roof is unrestricted; however its use as an external wall cladding is restricted under the national Building Regulations (see section 7).

Weather resistance — the product will resist the passage of moisture into the building (see section 8).

Durability — under normal service conditions, the product will have a service life in excess of 60 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: 17 March 2020

Originally certificated on 4 September 1987

Hardy Giesler
Chief Executive Officer

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 MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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Regulations

In the opinion of the BBA, Redland Cambrian Interlocking 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(4)	Internal fire spread (structure)
Comment:		The product is restricted by this Requirement. See sections 7.2 and 7.3 of this Certificate.
Requirement:	B4(1)	External fire spread
Comment:		The product is restricted by this Requirements. See sections 7.1 to 7.3 of this Certificate.
Requirement:	B4(2)	External fire spread
Comment:		The product is unrestricted by this Requirement. See sections 7.2 and 7.3 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		A roof or wall incorporating the product can satisfy this Requirement. See section 8 of this Certificate.
Regulation:	7(1)	Materials and workmanship
Comment:		The product is acceptable. See sections 10.1 and 10.2 and the <i>Installation</i> part of this Certificate.
Regulation:	7(2)	Materials and workmanship
Comment:		The product is restricted by this Regulation. See section 7.3 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 <i>Installation</i> 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 7.1 to 7.4 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Comment:		The product is restricted by this Standard, with regard to Sections 2.6.4 ⁽¹⁾⁽²⁾ , 2.6.5 ⁽¹⁾ and 2.6.6 ⁽²⁾ . See Sections 7.1 and 7.4 of this Certificate.
Standard:	2.7	Spread on external walls
Comment:		The product is restricted by this Regulation. See section 7.4 of this Certificate.
Standard:	2.8	Spread from neighbouring buildings
Comment:		A roof incorporating the product can be considered unrestricted under these Standards, with reference to clause 2.8.1 ⁽¹⁾⁽²⁾ . See sections 7.1 and 7.4 of this Certificate.

Standard:	3.10	Precipitation
Comment:		The product will contribute to a roof or wall satisfying this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.8 ⁽¹⁾⁽²⁾ . See 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)	Fitness of materials and workmanship
Comment:	(iii)(b)(i)	The product is an acceptable material. See sections 10.1 and 10.2 and the <i>Installation</i> part of this Certificate.
Regulation:	28(a)(b)	Resistance to ground moisture and weather
Comment:		A roof or wall cladding incorporating the product will satisfy this Regulation. See section 8 of this Certificate.
Regulation:	35(4)	Internal fire spread — Structure
Comment:		The product is restricted by this Requirement. See sections 7.2 and 7.3 of this Certificate.
Regulation:	36(a)	External fire spread
Comment:		The product is restricted in use under this Regulation. See sections 7.2 and 7.3 of this Certificate.
Regulation:	36(b)	
Comment:		The product is unrestricted in use under this Regulation. See section 7.1 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Designer) to address their obligations under these Regulations.

See sections: 1 *Description* (1.2), , 12 *Cutting* (12.2) and 13 *Health and safety* of this Certificate.

Additional Information

NHBC Standards 2020

In the opinion of the BBA, Redland Cambrian Interlocking Slates, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapters 6.1 *External masonry walls*, 6.2 *External timber framed walls* and 7.2 *Pitched roofs*.

1 Description

1.1 Redland Cambrian Interlocking Slates are glass fibre reinforced polyester resin, crushed slate and fillers, roofing and cladding slates. When installed the product gives the appearance of natural riven slate (see Figure 1).

Table 1 Redland Cambrian Interlocking Slates



1.2 The slates are available in the natural colours of grey, green and heather. Slight colour variations may exist between batches; therefore, slates should be randomised on site to achieve a consistent appearance when installed.

1.3 The covering dimensions of each slate are:

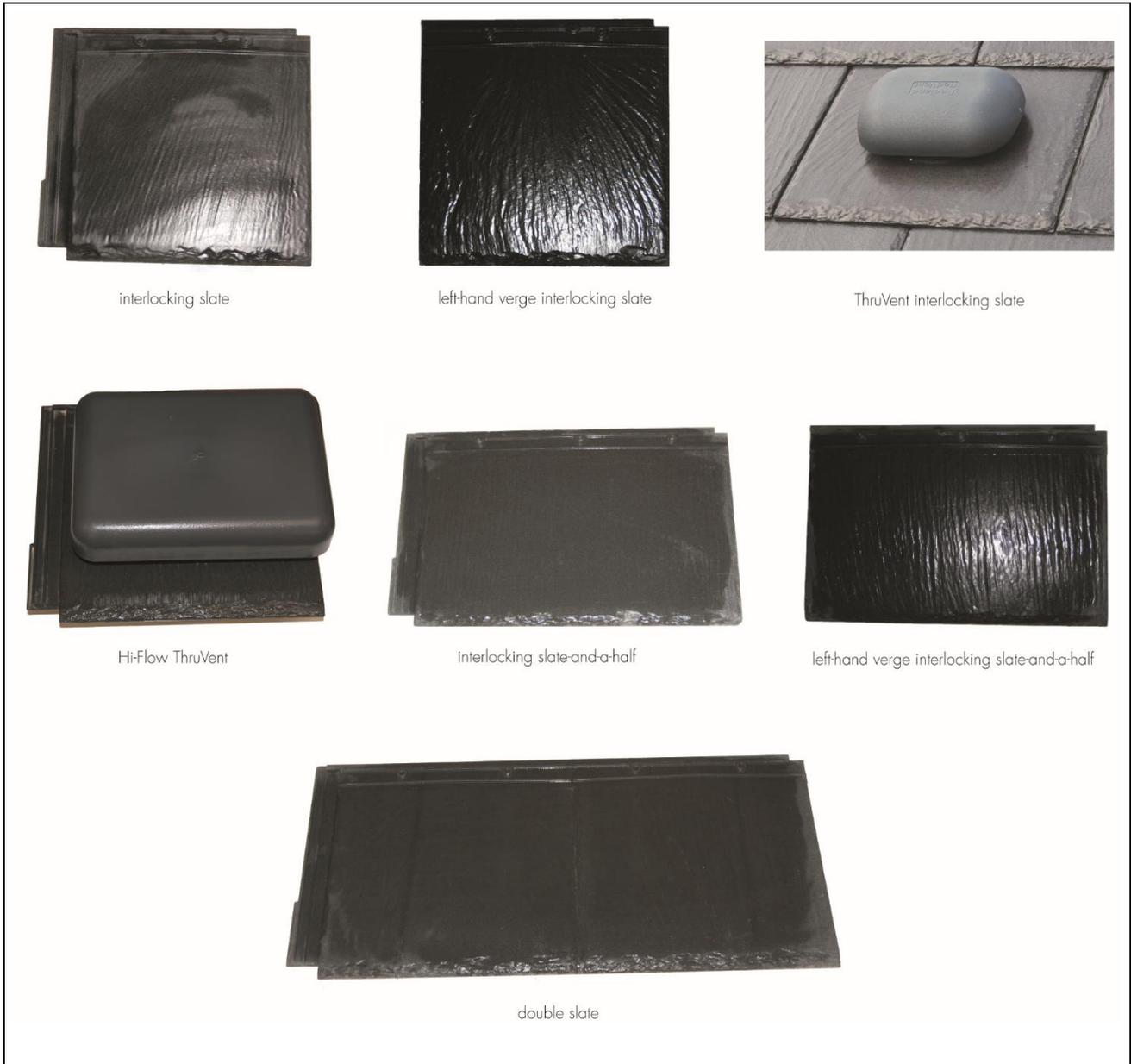
width (mm)	
standard slate	300
slate-and-a-half	450
double slate	600
max gauge (mm)	
pitches between 15 and 24°	225
pitches greater than 25°	250
weight (kg·m ⁻²)	17 to 20 (depending on gauge).

1.4 The slates are supplied with blind nail holes for fixing in accordance with BS 5534 : 2014.

1.5 A left-hand verge slate and slate-and-a-half are available for use at left-hand verges. Double width slates are also available to facilitate coursing. Hi-Flow ThruVent and 4.5k ThruVent slates are available for soil, mechanical and roof space ventilation where required (see Figure 2).

1.6 Each slate is fixed at the head by two stainless steel ring-shank nails and fastened at the tail with a stainless steel slate clip, eaves clip or verge clip, depending on its location. The nails and fixing clips are supplied by the Certificate holder. No other nails or fixing clips should be used.

Figure 2 Types of slate



2 Manufacture

2.1 The product is manufactured by mixing the chopped glass fibre strands, polyester resin, crushed stone and fillers into a dough, extruded, cut to weight and moulded under pressure and heat. The exposed face is finished by shot-blasting to give the required riven slate finish.

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 Monier Redland Ltd have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BSI (Certificate FM 11309).

3 Delivery and site handling

3.1 The slates are banded in packs of 10 and delivered to site on pallets of 600, protected by a polythene wrapping. Hi-Flow ThruVent and 4.5k ThruVent slates are available individually. Other fittings are available banded in packs of 10, except Double width slates which are banded in packs of 5.

3.2 The wrapping bears the product name, manufacturing date, colour and shape and the BBA logo incorporating the number of this Certificate.

3.3 The product should be stored on a dry, level base in a dry, protected area away from direct sunlight and the possibility of damage. If incorrectly stored it will become twisted or curled; the original flatness can be restored by laying it on a flat surface in a warm place.

Assessment and Technical Investigations

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

Design Considerations

4 Use

4.1 Redland Cambrian Interlocking Slates are satisfactory for use on conventional, pitched timber roofs with a rafter pitch of 15° and above, or as cladding on the outer face of external walls. It is essential that roofs are designed and constructed to incorporate precautions to prevent moisture penetration and the formation of condensation (eg 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, BS 8000-0 : 2014 and BS 8000-6 : 2013. In particular, the designer should follow the recommendations of BS 5534 : 2014, 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 product has adequate resistance to damage during site handling and installation on conventional roofs and walls.

6.2 The product, when tested after 24 hours water immersion, had a mean bending strength of 42 Nmm⁻².

6.3 The product has adequate resistance to the uniformly distributed loads (wind or snow) likely to be encountered in service. Where high local snow loads may occur, the manufacturer's advice should be sought. Consideration should also be given to the guidance contained in BRE Digest 439.

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

7 Behaviour in relation to fire



7.1 When tested in accordance with BS 476-3 : 2004, the product achieved an EXT.S.AA designation⁽¹⁾ and so is unrestricted by the national Building Regulations.



7.2 When tested in accordance with BS 476-6 : 1968 and BS 476-7 : 1971, Redland Cambrian Interlocking Slates achieved a fire propagation index (I) of 12.3, a sub-index (i_1) of 0.1 and a Class 2 surface⁽²⁾.

7.3 In England, Wales and Northern Ireland, the product therefore has a Class 2 surface and is suitable for use as an external cladding to walls less than 18 m above the ground and at a distance of 1 m or more from any point on the relevant boundary as defined in the national Building Regulations.

(1) Report reference P108176-1000, Issue 1, issued by BRE Global Ltd available from the Certificate holder upon request.

(2) Report reference Certificate C74128/1, issued by Yarsley Technical Centre, and Test Report number 271737 issued by Bre Global Ltd available from the Certificate holder upon request.



7.4 The Certificate holder has not declared a reaction to fire classification to BS EN 13501-1:2018 and in Scotland the use of the product is restricted in buildings with no storey height more than 11m from the ground and more than 1m from the boundary.

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

8 Weather resistance



8.1 Wind-driven rain penetration tests confirm that the slates have adequate resistant to the ingress of wind-driven rain when installed on a roof with a pitch of 15°.

8.2 When used at pitches of 15° 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 should be the subject of six monthly visual inspections to ensure continued performance, as is good practice with all roofs and walls. Any damaged slates should be replaced in accordance with sections 14 and 15 of this Certificate.

9.2 Care is required when carrying out maintenance work on slate roofs and the relevant recommendations contained in BS 5534 : 2014, BS 8000-0 : 2013, and BS 8000-6 : 2013, should be followed.

10 Durability



10.1 Cambrian Interlocking Slates will have a life expectancy of in excess of 60 years when used in the normal exposure conditions encountered in the United Kingdom.

10.2 The expected life may be reduced if the product is used in environments which subject the roof to abnormally high alkali levels (eg in the vicinity, and downwind, of cement works or chemical plants producing alkali pollution).

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

11 General

11.1 Redland Cambrian 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 Certificate holder's recommendations, BS 5534 : 2014, BS 8000-0 : 2013 and BS 8000-6 : 2013. Consideration should also be given to the advice contained in BRE Defect Action Sheets DAS 124 : 1998 and DAS 125 : 1988.

11.2 Where the product is to be used on an existing boarded roof structure, the relevant recommendations contained in BS 5534 : 2014, Section 6, Clause 6.14, BS 8000-0 : 2013 and BS 8000-6 : 2013 Section 11 on re-covering, must be followed. Consideration should also be given to the advice contained in BRE Defect Action Sheets DAS 124 : 1988 and DAS 125 : 1988.

12 Cutting

12.1 The slates may be cut (eg at abutments, verges, hips and valleys), using a carborundum disc cutter. Additional holes may be drilled using a rotary masonry drill.

12.2 Where excessive concentrations of dust may be generated due to cutting of slates, the recommendations contained in section 13.1 should be followed.

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 must be followed.

13.2 Any roof or wall clad in slate should be treated as fragile, and the recommendations contained 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 The slates are laid interlocking and each fixed using two 30 mm ring-shank, stainless steel nails and one stainless steel slate clip. Special clips are available for use at eaves and verges (see Figures 3 to 5).

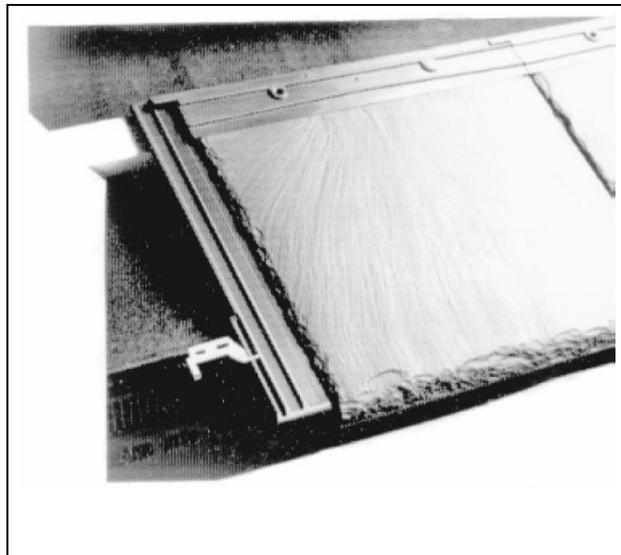
Figure 3 Cambrian verge and slate clips



Figure 4 Cambrian slate clips



Figure 5 Cambrian eaves clip



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

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

14.4 Ridge details may be completed using Dry Ridge Systems, however these are outside the scope of this Certificate. Alternatively, traditional mortar-bedded methods may be used, with the condition that all ridge tiles are mechanically fixed.

14.5 Hip details may be completed using the Dry Hip Systems, however these are outside the scope of this Certificate. Alternatively, traditional mortar bedded methods may be used, with the condition that all hip tiles are mechanically fixed.

14.6 Verge details are completed using the Dry Verge Systems, however, these are outside the scope of the Certificate. Alternatively, traditional mortar bedded methods can be used, with the condition that all verge slates are mechanically fixed.

15 Repair

15.1 Damaged slates should be replaced in accordance with the Certificate holder's instructions and the relevant sections of BS 5534 : 2014, BS 8000-0 : 2014 and BS 8000-6 : 2013. Any difference in appearance between new and existing slates may mellow with age.

15.2 The Certificate holder's advice should be sought regarding the replacement of isolated slates.

Technical Investigations

16 Tests

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

- performance when tested in accordance with MOAT No 9 : 1973
- thermal cycling and thermal shock resistance
- bending strength
- integrity.

16.2 Test data from independent laboratories, in relation to the following, were examined:

- reaction to fire tests
- resistance to rain penetration
- resistance to wind uplift
- freeze/thaw resistance
- colour stability.

17 Investigations

17.1 An assessment of data on the durability of a material of similar composition were examined and related to Redland Cambrian Interlocking Slates.

17.2 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.

17.3 As part of the assessment resulting in the issue of this Certificate, a re-examination was made of the original data and investigations on which the original issue of this Certificate was based. The conclusions drawn from the original data remain valid.

17.4 Calculations and/or test data were examined in relation to:

- mechanical characteristics
- resistance to wind uplift
- weathertightness at 15° pitch
- resistance to sulphuric acid immersion
- resistance to accelerated weathering and colour stability.

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

Bibliography

BRE Digest 439 *Roof loads due to local drifting snow*

BS 476-3 : 2004 *Fire tests on building materials and structures — Classification and method of test for the external fire exposure to roofs*

BS 476-6 : 1968 + A1 : 2009 *Fire tests on building materials and structures — Method of test for fire propagation for products*

BS 476-7 : 1971 *Fire tests on building materials and structures — Method of test to determine the classification of the surface spread of flame of products*

BS 5534 : 2014 + A2 : 2018 *Slating and tiling for pitched roofs and vertical cladding — Code of practice*

BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*

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

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

DAS 124 : 1998 *Pitched roofs : Renovation of older type timber roofs — re-tiling and re-slating*

DAS 125 : 1988 *Pitched roofs : Re-tiling or re-slating older type timber roofs*

Health and Safety Executive Guidance Note EH44 *Dust in the workplace : general principles of protection*

MOAT No 9 : 1973 *Directive for the Assessment of Products in Glass-Reinforced Polyester for use in Building*

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 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.

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.