Westlake DaVinci Roofscapes, LLC
13890 W 101 St
Lenexa
Kansas 66215
USA

Tel: 001 913 599 0766
e-mail: salessupport@davinciroofscapes.com
website: www.davinciroofscapes.com

Agrément Certificate
20/5765
Product Sheet 1

DAVINCI ROOFING SLATES

DAVINCI SLATES, DAVINCI SHAKES AND SELECT SHAKES

This Agrément Certificate Product Sheet(1) relates to DaVinci Slates, DaVinci Shakes and Select Shakes, polymer composite roof slates used to provide a weatherproof finish to pitched boarded timber roofs with a minimum rafter pitch of 15°.

(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

Weathertightness — the products will resist the passage of moisture into the interior of a building (see section 6).

Strength and stability — the products have adequate resistance to the effects of wind loading likely to be met in service (see section 7).

Properties in relation to fire — the products, used in isolation, are unrestricted in terms of proximity to a boundary; however, restrictions may apply to completed roof assemblies, depending on the other components used and the overall construction (see section 8).

Durability — under normal service conditions, the products will have a service life in excess of 20 years (see section 10).

The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Second issue: 19 April 2022

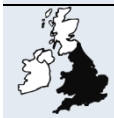
Originally certificated on 12 June 2020

Hardy Giesler
Chief Executive Officer

British Board of Agrément
Bucknalls Lane
Watford
Herts WD25 9BA
©2022
tel: 01923 665300
clientservices@bbacerts.co.uk
www.bbacerts.co.uk

Regulations

In the opinion of the BBA, DaVinci Slates, DaVinci Shakes and Select Shakes, 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:	**B4(1)**	**External fire spread**
Comment:		The products are restricted by this Requirement. See section 8.4 of this Certificate.
Requirement:	**B4(2)**	**External fire spread**
Comment:		A roof incorporating the products may be restricted by this Requirement. See sections 8.1, 8.2 and 8.3 of this Certificate.
Requirement:	**C2(b)**	**Resistance to moisture**
Comment:		A roof incorporating the products will satisfy this Requirement. See section 6 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The products are acceptable. See section 10.1 and the *Installation* part of this Certificate.
Regulation:	**7(2)**	**Materials and workmanship**
Comment:		The products are restricted by this Regulation. See section 8.4 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 products can contribute to a roof satisfying this Regulation. See sections 9 and 10.1 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	2.6	Spread to neighbouring buildings
Comment:		The products are restricted by this Standard, with reference to clauses 2.6.4$^{(1)(2)}$, 2.6.5$^{(1)}$ and 2.6.6$^{(2)}$. See sections 8.3 and 8.5 of this Certificate.
Standard:	2.7	Spread on external walls
Comment:		A roof incorporating the products is restricted by this Standard, with reference to clause 2.7.1$^{(1)(2)}$. See sections 8.3 and 8.5 of this Certificate.
Standard:	2.8	Spread from neighbouring buildings
Comment:		A roof incorporating the products may be restricted under this Standard, with reference to clause 2.8.1$^{(1)(2)}$. See sections 8.1 and 8.2 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The products will contribute to a roof satisfying this Standard, with reference to clauses 3.10.1$^{(1)(2)}$ and 3.10.8$^{(1)(2)}$. See section 6 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The products can contribute to satisfying 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 products 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 products are acceptable. See section 10.1 and the *Installation* part of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The products can contribute to satisfying this Regulation. See section 6 of this Certificate.
Regulation:	**36(a)**	**External fire spread**
Comment:		The products are restricted by this Regulation. See sections 8.3 and 8.4 of this Certificate.
Regulation:	**36(b)**	**External fire spread**
Comment:		The products may be restricted by this Regulation. See sections 8.1 and 8.2 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 Contractor) to address their obligations under these Regulations.

See sections: 1 *Description* (1.1), 3 *Delivery and site handling* (3.1) and 9 *Maintenance* of this Certificate.

Additional Information

NHBC Standards 2022

In the opinion of the BBA, DaVinci Slates, DaVinci Shakes and Select Shakes, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 7.2 *Pitched roofs*.

Technical Specification

1 Description

1.1 DaVinci Slates (Figure 1) and DaVinci Shakes (Figure 2) are polymer composite roof slates. The products are available in single and multi-widths. Select Shakes (Figure 2) are the same product as DaVinic Shakes but are available if different dimensions. The products have the following nominal characteristics:

Table 1 Nominal characteristics

	DaVinci Slates Multi width	DaVinci Slates Single width	DaVinci Shakes Multi width	Select Shake Multi width
Length (mm)	457	457	559	559
	457	-	559	559
	457	-	559	559
	457	-	559	559
	457	-	559	559
Width (mm)	152	305	102	203
	178	-	152	254
	228	-	178	-
	254	-	203	-
	305	-	228	-
Thickness (mm)				
Top end	3.0	3.0	3.0	3.0
Bottom end	12.7	12.7	12.7	16
Weight per slate (average) (g)	399	836	408	745
	459	-	586	940
	618	-	711	-
	666	-	785	-
	836	-	862	-
Colours	Brownstone and Evergreen			

1.2 Slight colour variations may exist between batches and, therefore, the products should be randomised on site to achieve a consistent appearance when installed.

1.3 The products are marked for fixing, in accordance with BS 5534 : 2014.

Figure 1 Davinci Slate

Figure 2 Davinci Shake and Select Shake

2 Manufacture

2.1 The products are manufactured by extrusion/injection-moulding compound pellets made from plastic compound, fillers and pigments.

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.

3 Delivery and site handling

3.1 The products are delivered to site in bundles of 12 stacked on pallets which are shipped with or without shrink wrapping. The products are delivered pre-collated with the correct widths and colour variations.

3.2 The products should be stored on a dry level base in a dry protected area, away from the possibility of damage.

3.3 The labels bear the product name, date of manufacture 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 DaVinci Slates, DaVinci Shakes and Select Shakes.

Design Considerations

4 General

4.1 DaVinci Slates, DaVinci Shakes and Select Shakes are satisfactory for use as a roof covering on conventional, pitched boarded timber roofs with a rafter pitch of 15° and over. It is essential that such roofs 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 incorporating the products and subject to the national Building Regulations must be designed and constructed in accordance with the relevant recommendations of BS 5250 : 2021, BS 5534 : 2014, BS 8000-0 : 2014 and BS 8000-6 : 2013. The designer must select a construction appropriate to its location, paying due attention to design detailing, workmanship and materials to be used.

4.3 Care should be taken when designing and installing features such as hips, valleys, rooflights and skew roofs, particularly on low pitch roofs.

5 Practicability of installation

The products can be readily installed by competent roofers/tilers experienced with these types of products.

6 Weathertightness

6.1 The products, when used in conjunction with a suitable tile underlay or sarking have adequate resistance to the ingress of wind-driven rain or snow when installed on a roof with a minimum rafter pitch of 15°.

6.2 Temporary curling of the products may occur during sudden rain showers and following periods of high temperatures. This observed effect is not permanent and should not affect the weathertightness of the roof.

7 Strength and stability

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

7.2 The products have a mean bending moment of 44 $Nm \cdot m^{-1}$ width.

7.3 The products have satisfactory resistance to the wind and snow loads likely to be encountered in service. In situations where high local loads may occur, the designer must seek the advice of the Certificate holder. Consideration must also be given to the guidance contained in BRE Digest 439 : 1999.

7.4 The products weigh considerably less than conventional roofing materials, and must be securely attached to the structure to prevent wind uplift under adverse conditions.

8 Properties in relation to fire

Roof pitches 10 - 70 °

8.1 The products, when tested on a boarded system, achieved a $B_{ROOF}(t4)^{(1)}$ classification in accordance with BS EN 13501-5 : 2016.

(1) Test report references, Q100903-1001, Q100903-1002, Q100903-1007 and Q100903-1008, issued by BRE Global Ltd. The test reports are available from the Certificate holder.

8.2 This classification may not be achieved by other constructions and can also be affected by other components of the roof, eg insulation materials, substrates/decking and membranes. These constructions should therefore be evaluated by reference to the requirements of the documents supporting the national Building Regulations and any consequent restrictions imposed by those documents, on a case-by-case basis. In the absence of a classification, a construction should not be used within 20 metres of a boundary in England, Wales and Northern Ireland, and within 24 metres in Scotland.

Roof pitches > 70 degrees

8.3 The Certificate holder has not declared a reaction to fire classification in accordance with BS EN 13501-1 : 2018.

8.4 In England, Wales and Northern Ireland the products may be used on buildings with a roof pitch in excess of 70° with no storey 18 m or more above the ground and 1 metre or more from a boundary. With minor exceptions, the products should be included in calculations of unprotected area.

8.5 In Scotland, the product should not be used on a building with a roof pitch in excess of 70° when more than 1 m from a boundary, with a storey more than 11 m above the ground, or on any entertainment or assembly building with a total storey area more than500 m^2, or on any hospital or residential care building with a total storey area more than 200 m^2.

All roofs

8.6 Where the product is to be carried over compartment walls, designers must ensure that the roof/wall junction detail provides sufficient resistance to fire penetrating into the neighbouring compartment.

8.7 Designers should refer to the relevant national Building Regulations and guidance for detailed conditions of use, particularly in respect of requirements for substrate fire performance, cavity barriers, service penetrations and combustibility limitations for other materials and components used in the overall construction.

9 Maintenance

9.1 Roofs covered with the products must be visually inspected twice a year to ensure continued performance, as is good practice with all roofs. Any damaged products must be replaced in accordance with section 16.

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

10 Durability

10.1 Under normal service conditions, the products will have a service life in excess of 20 years.

10.2 There may be some fading of colour over long exposure periods, but such fading will be consistent across any one elevation.

11 Reuse and recyclability

The products contain polyethylene, which can be recycled.

Installation

12 General

12.1 The products should be installed on fully boarded roof decks in accordance with the Certificate holder's instructions and the relevant recommendations of BS 5534 : 2014, BS 8000-0 : 2014 and BS 8000-6 : 2013 and this Certificate, using conventional tiling techniques.

12.2 The roof construction must be adequate to resist the loadings detailed in BS EN 1991-1-1 : 2002 and BS EN 1991-1-4 : 2005, and their UK National Annexes. The roof construction should be in accordance with the relevant requirements of BS 5534 : 2014.

12.3 When used on large roof areas, the products should be randomly selected from different batches to ensure a consistent appearance.

12.4 The products should not be installed in temperatures below -20°C.

12.5 The roof space and batten space must be adequately ventilated in accordance with BS 5250 : 2021.

13 Cutting

The products may be cut (for use at eaves and valleys) with a sharp knife and a straight edge or a circular saw. The use of a chalk line to determine a straight edge for cutting is recommended for use with valley and hip details. Nails can be driven through the slate without the need for pre-drilling or punching.

14 Procedure

14.1 The products should be laid weather-face up with the first row of slates/shakes (eaves course) fixed using two hot-dipped galvanized steel, stainless steel or copper nails. The eaves course should overhang a maximum of 50 mm at the eaves.

14.2 Each product should be fastened with two galvanized steel, stainless steel or copper nails. Care is required to ensure that nails are not overdriven. Nails should be tapped rather than driven home.

14.3 Each course should be laid broken bonded with slates/shakes aligned. The butt joints are left slightly open with a gap of approximately 9.5 mm.

14.4 Each slate/shake must be seated down correctly, adjacent to the previous one and with the course below. Butt joints between products must be properly constructed to provide the required degree of weathertightness and dimensional accuracy.

14.5 Where the products are to be used on an existing roof structure, the recommendations contained in BS 5534 : 2014, BS 8000- 0 : 2014 and BS 8000-6 : 2013 on re-covering must be followed. Consideration must also be given to the advice contained in BRE Defect Action Sheets DAS 124 : 1988 and DAS 125 : 1988.

14.6 Ridge and hip details should be completed using preformed slates by following the Certificate holder's instructions.

14.7 Valleys, verges and hips should be completed in accordance with the Certificate holder's instructions.

15 Repair

Damaged products can be replaced by following the Certificate holder's instructions and the relevant sections of BS 5534 : 2014, BS 8000-0 : 2014 and BS 8000-6 : 2013.

Technical Investigations

16 Tests

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

- appearance and dimensions
- product weight
- mechanical characteristics
- ash content
- dimensional stability.

16.2 Tests were carried out on the products to determine the effects of:

- artificial weathering and colour stability
- prolonged water immersion and heating
- freeze/thaw cycling
- warm water immersion
- heat ageing at elevated temperatures
- heat/rain cycling.

17 Investigations

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

- behaviour in relation to fire
- driving rain performance at 15° roof pitch
- impact resistance
- density, water absorption, hardness flexural strength, tensile strength and nail pull-through
- effect of accelerated weathering on tensile properties.

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.

Bibliography

BRE Defect Action Sheet DAS 124 : 1988 *Pitched roofs: Renovation of older type timber roofs — re-tiling or re-slating*
BRE Defect Action Sheet DAS 125 : 1988 *Pitched roofs: Re-tiling or re-slating older type timber roofs*

BRE Digest 439 : 1999 *Roof loads due to local drifting snow*
BS 5250 : 2021 *Code of practice for control of condensation in buildings*

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 13501-1 : 2018 *Fire classification of construction products and building elements — Classification using data from external fire exposure to roofs tests*

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.