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Agrément Certificate
09/4682
Product Sheet 1

DYNASLATES

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Dynaslates, roofing slates moulded from a polypropylene and recycled rubber compound.

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 products have adequate strength to resist the loads associated with the installation of the roof (see section 5).

Properties in relation to fire — the products will enable a roof to be unrestricted under the Building Regulations (see section 6).

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

Durability — under normal service conditions the products will provide a durable roof covering with a service life in excess of 20 years (see section 9).

The BBA has awarded this Agrément 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 First issue: 21 September 2009

Simon Wroe
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

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, Dynaslates 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 2000 (as amended) (England and Wales)

Requirement: B3(2)	Internal fire spread (structure)
Requirement: B4(2)	External fire spread
Comment:	A roof incorporating the products has an AC classification and meets these Requirements provided the installation complies with the conditions set out in section 3.2 of this Certificate. See also sections 6.1 and 6.2 of this Certificate.
Requirement: C2(b)	Resistance to moisture
Comment:	A roof incorporating the products meets this Requirement provided the installation complies with the conditions set out in section 3.2 of this Certificate. See also sections 7.1 to 7.3 of this Certificate.
Requirement: Regulation 7	Materials and workmanship
Comment:	The products are acceptable. See sections 9.1 to 9.3 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2)	Fitness of durability of materials and workmanship
Comment:	The products can contribute to a construction satisfying this Regulation. See sections 8, 9.1 to 9.3 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards — construction
Standard: 2.1	Compartmentation
Standard: 2.2	Separation
Comment:	The products can contribute to satisfying these Standards provided the installation complies with the conditions set out in section 3.2 of this Certificate, 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 products is unrestricted under these Standards provided the installation complies with the conditions set out in section 3.2 of this Certificate, 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: 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 sections 7.1 to 7.3 of this Certificate.
Regulation: 12	Building standards — conversions
Comment:	All comments given for these products 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 products are acceptable. See sections 9.1 to 9.3 and the <i>Installation</i> part of this Certificate.
Regulation: B3(2)	Suitability of certain materials
Comment:	The products are acceptable. See section 8 of this Certificate.
Regulation: C4(b)	Resistance to ground moisture and weather
Comment:	A roof incorporating the products can satisfy this Regulation provided the installation complies with the conditions set out in sections 7.1 to 7.3 of this Certificate.
Regulation: E4(3)	Internal fire spread — Structure
Regulation: E5(b)	External fire spread
Comment:	A roof incorporating the products is unrestricted under these Regulations provided the installation complies with the conditions set out in section 3.2 of this Certificate. See also 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 obligation under these Regulations.

See sections: 1 *Description* (1.3) and 2 *Delivery and site handling* (2.1).

Non-regulatory Information

NHBC Standards 2008

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

Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA, Dynaslates, when installed and used in accordance with this Certificate, satisfy the requirements of the *Zurich Building Guarantee Technical Manual*, Section 4 *Superstructure*, Sub-section *Pitched roofs*.

Technical Specification

1 Description

1.1 Dynaslates are manufactured by injection moulding polypropylene and recycled rubber compound, fillers and pigments.

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

1.3 The slates have the nominal characteristics of:

Dimensions (mm)	495 x 245
Nominal thickness (mm)	5.2
Average density (kgm ⁻³)	1100
Nominal weight of single slate (g)	650
Installed weight (kgm ⁻²)	13.1

1.4 The products are available in slate grey colour and slight colour variations may exist between batches. Slates from different batches should be randomised on site to achieve a consistent appearance when installed.

1.5 The slates are marked for fixing in accordance with BS 5534 : 2003.

2 Delivery and site handling

2.1 The slates are delivered to site on pallets, protected by a shrink-wrapped polythene cover.

2.2 The slates should be stored on a dry level base in a dry protected area away from the possibility of damage.

2.3 The wrapping bears the product name. The BBA identification mark incorporating the number of this Certificate is printed in the technical literature.


Assessment and Technical Investigations

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

Design Considerations

3 Use

3.1 Dynaslates are satisfactory for use on conventional, pitched, timber roofs with a minimum rafter pitch of 25°. 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).

 3.2 Roofs 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 slates can be installed by roofers/slaters with experience of installing traditional roofing slates.

5 Strength

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

5.2 When installed in accordance with BS 5534 : 2003 the slates have adequate resistance to the uniformly distributed loads (wind, snow) likely to be encountered. In areas where high local snow loads occur, the Certificate holder'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 : 2004, the slates, when installed on a batten and rafter system incorporating a breather membrane and foil-faced insulation achieved an EXT.S.AC designation.

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

England and Wales — Regulation B4(2)

Scotland — Mandatory Standard 2.8, clause 2.8.1

Northern Ireland — Regulation E5(b)

7 Liquid water penetration



7.1 When tested in accordance with MOAT No 48 : 1991, the water absorption of the slates was 0.25%.

7.2 When used in conjunction with suitable underlay as sarking, the slates will provide a roof covering with satisfactory resistance to the passage of rain or snow.

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

8 Maintenance



Great care is required when carrying out maintenance work on any roof or wall clad in slates and the recommendations contained in BS 5534 : 2003, Clause 6.13 *Installation, Repairs and maintenance*, and BS 8000-6 : 1990, Section 5, Clause 5.2, *Safety*, should be followed.

9 Durability



9.1 Results of tests on the slates, after prolonged water immersion and heating, cyclic freezing and thawing, and heat-rain cycling, show no evidence of significant deterioration.

9.2 All available evidence indicates that the products will have a life in excess of 20 years.

9.3 In common with all building materials used externally, extensive exposure to sunlight over the years will cause fading of the surface colouring.

Installation

10 General

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

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

Table 1 Rafter pitch

Slate dimension		Minimum rafter pitch (°)	
Length (mm)	Width (mm)	Severe exposure	Moderate exposure
495	245	30 ⁽¹⁾	25

(1) The advice of the Certificate holder should be sought in situations of very severe exposure.

10.3 When used on large roof areas, slates should be randomly selected from the different batches available (if applicable) to ensure consistent appearance.

11 Cutting

Slates may be shaped (for use at eaves, hips, valleys) with a sharp knife by score and snap method. Nail holes should preferably be pre-drilled prior to fixing.

12 Health and safety

12.1 All slated roofs should be treated as fragile, and the recommendations in section 8 should be followed. Precautions should be taken to prevent danger to the public from falling broken or displaced slates.

12.2 When stripping paint from timber at eaves, care should be taken to avoid damage to the product from heat/chemical sources, such as blowtorches and heat guns or chemical strippers.

13 Procedure

13.1 Slates should be laid weather-face up with the first row fixed using two 40 mm copper (or similarly corrosion resistant) nails, at the eaves course.

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

13.3 Each course should be laid broken bonded with tails aligned. Courses are nailed with a gap of 2 mm between slates. In all cases, the slates should be hooked to restrain the lower edges.

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

13.5 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*.

13.6 Ridge and hip details should be completed using traditional ridge slates installed in accordance with the manufacturer's instructions.

14 Repair

Damaged slates can be replaced by following the Certificate holder's instructions and the relevant sections of BS 5534 : 2003 and BS 8000-6 : 1990.

Technical Investigations

15 Tests

15.1 Tests were carried out to determine:

- dimensions
- impact strength
- apparent density
- dimensional stability
- mechanical characteristics
- ash content
- water absorption.

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

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

16 Investigations

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

- BS 476-3 : 2004.

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

Bibliography

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

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*

MOAT No 48 : 1991 *UEAtc Technical Guide for the Assessment of the Durability of Thin Fibre Reinforced Cement Products (without Asbestos) for External Use*

17 Conditions

17.1 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.

17.2 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.

17.3 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.

17.4 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.

17.5 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.