Tapco Europe Ltd
Unit 32 Tokenspire Business Park
Hull Road
Woodmansey
East Yorkshire HU17 0TB

Tel: 01482 880478 Fax: 01482 880678
e-mail: international@tapcoint.com
website: www.tapcoroofingproducts.com

BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

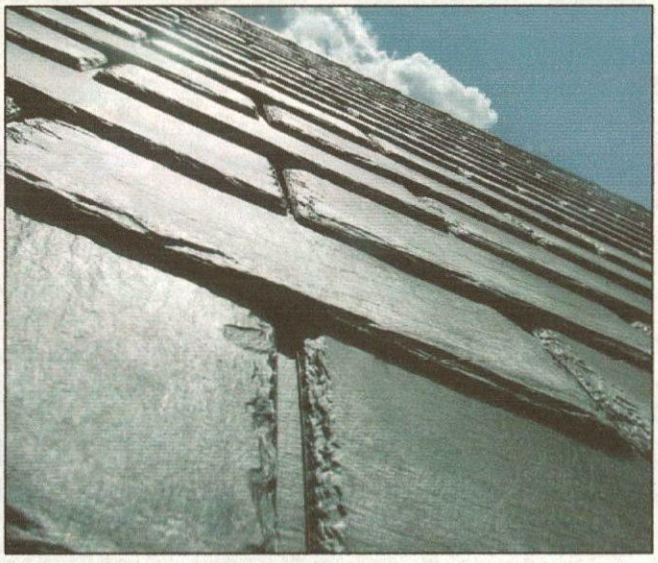
Agrément Certificate
08/4603
Product Sheet 1

TAPCOSLATE ROOFING TILES

TAPCOSLATE

This Agrément Certificate Product Sheet[1] relates to TapcoSlate, a range of polypropylene compound-moulded roof tiles used to provide a weatherproof finish to pitched roofs in accordance with BS 5534 : 2014.

(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 (see section 6).

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

Weathertightness – the product resists the passage of moisture into the roof (see section 8).

Durability – under normal service conditions the product will provide a durable covering with a service life in excess of 20 years (see section 12).

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 Agrement

Date of Second issue: 3 June 2015

John Albon – Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

Originally certificated on 22 December 2008

Certificate amended on 5 August 2015 to incorporate revisions to sections 4 and 15

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

British Board of Agrément
Bucknalls Lane
Watford
Herts WD25 9BA

tel: 01923 665300
fax: 01923 665301
clientservices@bba.star.co.uk
www.bbacerts.co.uk

©2015

Regulations

In the opinion of the BBA, TapcoSlate, 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(2)**	**External fire spread**
Comment:		A roof incorporating the product has either an AA or AC classification and meets these Requirements provided the installation complies with the conditions set out in section 4.2 of this Certificate. See section 7 of this Certificate.
Requirement:	**C2(b)**	**Resistance to moisture**
Comment:		A roof incorporating the product meets 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 section 10 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 can contribute to a roof satisfying this Regulation. See sections 9 and 10 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, provided the installation complies with the conditions set out in section 4.2 of this Certificate, 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, provided the installation complies with the conditions set out in section 4.2 of this Certificate, with reference to clauses 2.6.4(1)(2) and 2.8.1(1)(2) respectively. See section 7 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The product 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 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 this 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 acceptable. See section 10 and the *Installation* part of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The product can contribute to satisfying this Regulation. See section 6 of this Certificate.
Regulation:	**35(3)**	**Internal fire spread – Structure**
Regulation:	**36(b)**	**External fire spread**
Comment		A roof incorporating the product has either an AA or AC classification and meets these Regulations provided the installation complies with the conditions set out in section 4.2 of this Certificate. See 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) and 14 *Health and Safety* of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of TapcoSlate, provided it is installed, used and maintained in accordance with this Certificate, in relation to NHBC Standards, Chapter 7.2 *Pitched roofs*.

Technical Specification

1 Description

1.1 TapcoSlate comprises polypropylene compound, fillers and pigments. The product has the following nominal characteristics:

Dimensions (mm)	445 x 305
Nominal thickness (mm)	top edge 7, bottom edge 3.5
Average density ($kg \cdot m^{-3}$)	1323
Installed weight ($kg \cdot m^{-2}$)	13.5
Finishes	Six embossed pattern finishes
Colours	Stone Black, Pewter Grey, Plum, Brick Red, Chestnut Brown, Mist Grey, Brandywine, Red Rock, Olive, Sage Green, Grey/Black blend, Evergreen, Ash Grey, Granite, Graphite.

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

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

2 Manufacture

2.1 The product is manufactured by compression-moulding compound pellets made from polypropylene 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 being operated by the manufacturer are being maintained.

2.3 The management system of Tapco International has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by NSF (Certificate C0178773-IS1).

2.4 The product is manufactured in the USA and marketed in the UK by the Certificate holder.

3 Delivery and site handling

3.1 The tiles are delivered to site on pallets in bundles of 25, with 64 bundles comprising a completed pallet. They are protected by a polyester strapped cardboard hood and shrink-wrapped polythene cover.

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

3.3 The wrapping bears the product name. The BBA logo 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 TapcoSlate.

Design Considerations

4 General

4.1 TapcoSlate is satisfactory for use as a roof covering on conventional pitched timber roofs (felt-batten or fully boarded applications) with a rafter pitch of 14.5° 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 tile and subject to the UK Building Regulations must be designed and constructed in accordance with the relevant recommendations of BS 5534 : 2014 and BS 8000-6 : 2013. In particular, the designer must 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 condensation, and must select a construction appropriate to its location, paying due attention to design detailing, workmanship and materials to be used.

5 Practicability of installation

The tiles can be readily installed by roofers/tilers experienced with this type of product.

6 Strength

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

6.2 The product has a mean bending moment of 96 $Nm \cdot m^{-1}$ width and a wet bending strength of 36 $N \cdot mm^{-2}$ (average of both directions).

6.3 The product has adequate 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 manufacturer. Consideration must also be given to the guidance contained in BRE Digest 439 *Roof loads due to local drifting of snow*.

7 Properties in relation to fire



When tested in accordance with BS 476 -3 : 2004, the tiles, when mechanically fixed to an oriented strand board deck, achieved an EXT.S.AA designation. When installed on a batten and rafter system, the tiles achieved an EXT.S.AC designation. A roof incorporating the tiles is designated either AA or AC and is consequently unrestricted by the relevant requirements of the national Building Regulations.

8 Weathertightness



8.1 After 24 hours' immersion in water, the product has a water absorption of 0.02%.

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

8.3 Temporary curling of the tiles 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.

9 Maintenance



9.1 Roofs covered with the product must be visually inspected twice a year to ensure continued performance, as is good practice with all roofs. Any damaged tiles must be replaced in accordance with section 15.

9.2 Care is required when carrying out maintenance work on tile roofs, and the recommendations contained in BS 5534 : 2014, Clause 6.14 *Workmanship, repairs and maintenance*, and BS 8000-6 : 2013, Section 11, *Safety and general precautions* must be followed.

10 Durability



10.1 The tiles have an expected service life in excess of 20 years.

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

11 Reuse and recyclability

The product contains polypropylene, which can be recycled.

Installation

12 General

12.1 The product is installed in accordance with the Certificate holder's instructions and relevant recommendations of BS 5534 : 2014 and BS 8000-6 : 2013, using conventional tiling techniques.

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

12.3 The roof space and batten space must be adequately ventilated in accordance with BS 5250 : 2011.

13 Cutting

The tiles may be cut (for use at eaves and valleys) with a sharp knife. 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 Health and safety

Any roof clad in tiles must 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 tiles.

15 Procedure

15.1 Tiles should be laid weather-face up with the first row of tiles fixed using two stainless steel nails, as the eaves course.

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

15.3 Each course should be laid broken bonded with tails aligned. Spacer tabs on the product ensure that the butt joints are left slightly open with a gap of approximately 9 mm.

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

15.5 Where the tiles are to be used on an existing roof structure, the recommendations contained in BS 5534 : 2014, Section 6.14 *Workmanship, Repairs and Maintenance* and BS 8000-6 : 2013, Section 11, Clause 11.1.3 on re-covering must be followed. Consideration must 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*.

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

16 Repair

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

Technical Investigations

17 Tests

17.1 Tests were carried out on the product, and the results assessed to determine:

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

17.2 Tests were carried out on the product 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.

18 Investigations

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

- behaviour in relation to fire, to BS 476-3 : 2004
- wind uplift resistance
- driving rain performance.

18.2 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.

18.3 A visit to an existing site was conducted to assess the performance in use of the product installed at a roof pitch of 14.5° in a fully-boarded application.

Bibliography

BS 476-3 : 2004 *Fire tests on building materials and structures — Classification and method of test for external fire exposure to roofs*
BS 5250 : 2011 *Code of practice for control of condensation in buildings*
BS 5534 : 2014 *Slating and tiling for pitched roofs and vertical cladding — Code of practice*
BS 8000-6 : 2013 *Workmanship on building sites — Code of practice for slating and tiling of roofs and walls*
BS EN 13859-1 : 2014 *Flexible sheets for waterproofing — Definitions and characteristics of underlays — Underlays for discontinuous roofing*
BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

19 Conditions

19.1 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.

19.2 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.

19.3 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.

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

19.5 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.

19.6 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.

British Board of Agrément
Bucknalls Lane
Watford
Herts WD25 9BA
©2015
tel: 01923 665300
fax: 01923 665301
clientservices@bba.star.co.uk
www.bbacerts.co.uk