

## Britmet Tileform Ltd

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Agrément Certificate  
**02/3917**  
Product Sheet 1

## TILEFORM ROOFING SHEETS

### SLATE 2000

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Slate 2000, preformed aggregate-coated galvanized steel tiles for use on conventional timber or steel pitched roof structures with a minimum pitch of 12°.

(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 product, used with a suitable underlay, has satisfactory resistance to the passage of rain and snow (see section 6).

**Strength and stability** — the product has satisfactory resistance to the effects of wind loading likely to be met in service (see section 7).

**Properties in relation to fire** — the product is unrestricted under the national Building Regulations (see section 9).

**Durability** — under normal conditions the product will have a service life in excess of 30 years (see section 11).

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

A handwritten signature in black ink, appearing to read 'Simon Wroe'.

Simon Wroe  
Head of Approvals — Materials

A handwritten signature in black ink, appearing to read 'Claire Curtis-Thomas'.

Claire Curtis-Thomas  
Chief Executive

Date of First issue: 6 March 2014

Originally certificated on 2 August 2002

*The BBA is a UKAS accredited certification body — Number 1113. 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](http://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, Slate 2000, if installed, used and maintained in accordance with this Certificate, will meet or contribute to meeting 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:	A1	Loading
Comment:		The product can contribute to satisfying this Requirement. See section 7 of this Certificate.
Requirement:	B3(2)	Internal fire spread (structure)
Requirement:	B4(2)	External fire spread
Comment:		The product is unrestricted under these Requirements. See section 9 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The product can contribute to meeting this Requirement. See section 6 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.



## The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		The product is acceptable. See sections 10.2, 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	1.1(a)(b)	Structure
Comment:		The product can contribute to a construction satisfying this Standard. See section 7 of this Certificate.
Standard:	2.1	Compartmentation
Standard:	2.2	Separation
Comment:		The product can contribute to satisfying these Standards, with reference to clauses 2.1.5 <sup>(2)</sup> , 2.2.7 <sup>(2)</sup> and 2.2.10 <sup>(1)</sup> . See section 9 of this Certificate.
Standard:	2.8	Spread from neighbouring buildings
Comment:		The product is unrestricted by this Standard, with reference to clause 2.8.1 <sup>(1)(2)</sup> . See section 9 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 3.10.1 <sup>(1)(2)</sup> and 3.10.8 <sup>(1)(2)</sup> . See section 6 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 made in relation to the product under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 <sup>(1)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



## The Building Regulations (Northern Ireland) 2012

Regulation:	23(a)(i)(iii)(b)(i)	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The product can contribute to meeting the requirements of this Regulation. See section 6 of this Certificate.
Regulation:	D1	Stability
Comment:		The product can contribute to satisfying this Regulation. See section 7 of this Certificate.
Regulation:	35(2)	Internal fire spread – structure
Regulation:	36(b)	External fire spread
Comment:		The product is unrestricted under these Regulations. See section 9 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 sections: 1 *Description* (1.2) and 3 *Delivery and site handling* (3.1) of this Certificate.

## NHBC Standards 2014

NHBC accepts the use of Slate 2000, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards, Part 7 Roofs, Chapter 7.2 Pitched roofs*.

## CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 14782 : 2006. An asterisk (\*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

# Technical Specification

## 1 Description

1.1 Slate 2000 roofing tiles are pressed from epoxy-primed 0.45 mm or 0.9 mm thick galvanized steel sheet to a shape simulating the appearance of conventional tiles or slates (see Figure 1). The tiles are coated with a mineral-filled acrylic followed by stone granules and a clear acrylic glaze (see Figure 2).

Figure 1 Slate 2000 tiles and nailing points

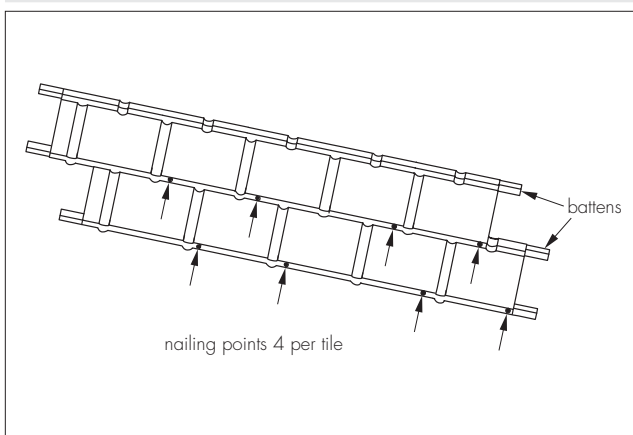
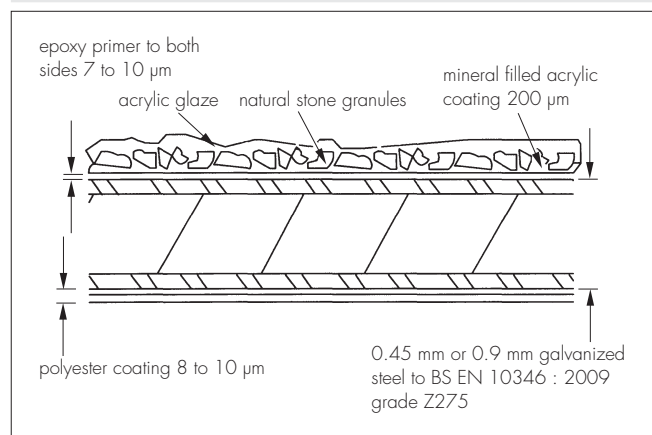


Figure 2 Section through Slate 2000 tile (not to scale)



1.2 The tiles have the dimensions given in Table 1.

Table 1 Dimensions

	Tile thickness (mm)	
	0.45	0.90
Length of sheet (mm)	1310	1310
Cover length (mm)	1250	1250
Width of sheet (mm)	394	394
Cover width	369	367
Module width (mm)	250	250
Upstand (mm)	22 (15 at ribs)	22 (15 at ribs)
Side lap (mm)	60	60
Weight of tile (kg)	3.2	5.2
Weight of tiled roof (kg·m <sup>-2</sup> )	7.0	11.3
Coverage per tile (m <sup>2</sup> )	0.46	0.46

1.3 The product is supplied in the following colours:

- Titanium Grey
- Rustic Terracotta
- Bramble Brown
- Tartan Green.

1.4 Ancillary items available in standard 1.25 m lengths to the same coating specification as the main product and which are included in this Certificate are:

- ridge caps

- eaves soffits and fascia flashings
- parapet flashings
- standard eaves flashings
- apron flashings
- verge flashings
- soffit and fascia flashings
- standard bargeboards
- valleys.

1.5 Guillotines and tile-bending machines are available from the Certificate holder.

1.6 Other accessories include:

- flat-headed fixing nails — 50 mm long by 3.3 mm diameter, galvanized, annular grooved with an acrylic/bitumen coating
- touch-up kit — acrylic base coat and coloured granules for surface repairs.

1.7 Other accessories available but outside the scope of this Certificate include:

- special flashings (to order)
- roof ventilation
- gas vent ridge terminals.

## 2 Manufacture

2.1 The product is manufactured from galvanized steel sheet grade DX51D + Z275 to BS EN 10346 : 2009. The sheet is coated on both sides with an epoxy primer and the underside is finished with a polyester top coat of 7 to 10 µm thickness. The steel coils are slit, guillotined and pressed. The pressed blanks are coated on the weather side with a pigmented acrylic base incorporating a non-toxic fungicide followed by coloured stone granules and a clear acrylic glaze coat. After coating the tiles are oven-cured.

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 Tiles are packed in bundles of 20 with cardboard separators, then shrink-wrapped onto pallets with 300 tiles per pallet, giving a total weight of approximately 1 tonne.

3.2 On site the pallets should be stored on a firm, dry base away from the possibility of damage, covered to prevent water ingress, and as close as possible to the building where they are to be installed. Pallets of tiles may not be stacked more than two units high.

# Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Slate 2000.

## Design Considerations

### 4 Use

4.1 Slate 2000 tiles are satisfactory for use, in conjunction with a suitable roof tile underlay material, as a weatherproof and decorative covering on a conventional timber or steel pitched structure with a minimum pitch of 12°.

4.2 The 0.9 mm thick product has a greater resistance to impact damage than the 0.45 mm version and is especially suitable for areas where exposure to vandalism is possible.

4.3 To prevent electro-chemical corrosion, direct contact with copper or its alloys should be avoided and copper roofs should not drain onto the installation.

### 5 Practicability of installation

The product is designed to be installed by a competent roofing contractor.

## 6 Weathertightness



The product, used with a suitable roof tile underlay, has satisfactory resistance to the passage of rain and snow.

## 7 Strength and stability



7.1 The product has satisfactory resistance to the effects of wind loads likely to be met in service.

7.2 The product weighs considerably less than conventional roofing tiles or slates and the roof substructure must be securely attached to the structure of the building to prevent wind uplift under adverse conditions.

## 8 Resistance to damage

8.1 The product will not be deformed by normal maintenance traffic.

8.2 The 0.9 mm thick tile is unlikely to be deformed by heavy impacts or maintenance traffic but some damage is possible on the 0.45 mm thick tile. Damaged products can be replaced but care must be taken to avoid damage to adjacent tile sheets.

## 9 Properties in relation to fire



When tested in accordance with BS EN 13501-5 : 2005, the product achieved a B<sub>ROOF</sub>(t4) fire rating\*.

## 10 Maintenance

10.1 For maintenance work, roof ladders or crawling boards should be used, but care is still required to prevent damage. It is recommended that soft-soled shoes are worn.



10.2 Small areas where the coating has been damaged should be re-coated using the touch-up kit.

## 11 Durability



11.1 The epoxy, polyester, mineral-filled acrylic and galvanizing will protect the steel substrate against corrosion and will give the product a life in excess of 30 years.

11.2 Localised maintenance treatment may be necessary within 30 years to restore the appearance where chippings may have been lost or the coating eroded.

## 12 Re-use and recyclability

The product contains steel, which can be recycled.

# Installation

## 13 General

13.1 The standard of installation of Slate 2000 roofing tiles should comply with the requirements of BS 8000-6 : 1990.

13.2 The tiles can be installed at all temperatures likely to be encountered in roofing works. However at temperatures below -10°C extra care is required, particularly when driving nails and cutting and bending tiles.

13.3 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 National Annexes, or BS 6399-1 : 1996 and BS 6399-2 : 1997. The roof construction should be in accordance with the relevant requirements of BS 5534-1 : 2003.

13.4 The minimum batten sizes permitted depend on the rafter spacing, as detailed in Table 2.

Table 2 Minimum permitted batten size for selected rafter or truss spacing

Rafter/truss spacing (mm)	Minimum batten size (mm)
450	50 x 38
600	50 x 38
900	50 x 50
1200	50 x 50
1500	75 x 50

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

13.6 Where timber boarding is laid on the rafters, a timber counter batten should be installed in accordance with BS 5534-1 : 2003.

13.7 Underlay must be to BS 8747 : 2007 Annex B, Type 1F or 5U, or be covered by an Agrément Certificate and installed in accordance with that Certificate.

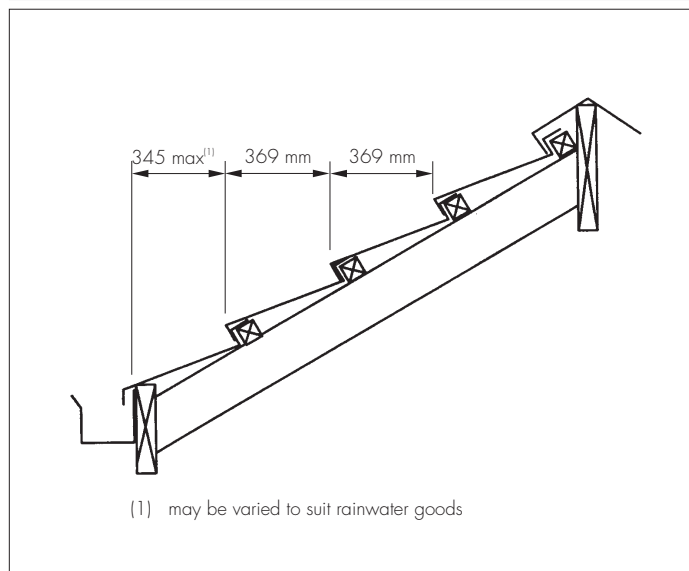
## 14 Procedure

14.1 Rafters must be securely tied to the building structure with, for example, galvanized steel straps complying with BS EN 1996-1-1 : 2005, BS EN 1991-2 : 2006 or PD 6697 : 2010.

14.2 Where the rafters/trusses are spaced at 900 mm, 1200 mm or 1500 mm centres, polypropylene or nylon tape is nailed to the rafters to support the underlay.

14.3 Battens are secured over the underlay and roof trusses and fixed at the spacings given in Figure 3. The fixings used to secure the battens to the rafters must be adequate to resist predicted wind loads.

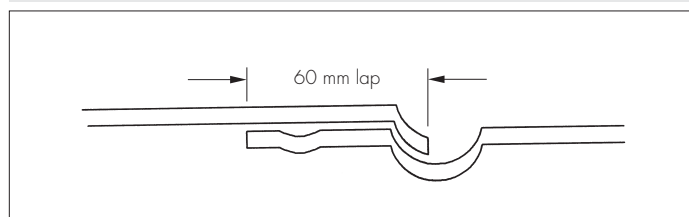
Figure 3 Spacing details



14.4 The tiles have a downturned lower edge and an upturned upper edge for interlocking purposes (see Figure 3).

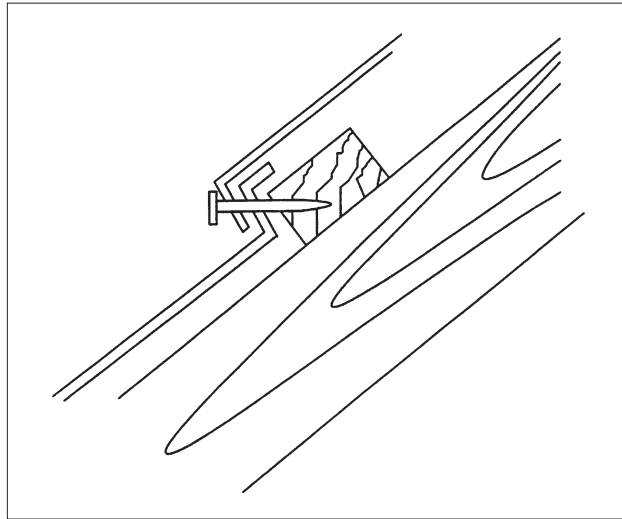
14.5 Adjacent tiles are overlapped with side laps of 60 mm (see Figure 4). The tiles must be laid from right to left. The grooves in the overlapping sheet fit into the depressions in the upstand of the overlapped sheet and ensure a broken bond pattern (see Figure 1).

Figure 4 Overlap details



14.6 Tiles are laid onto the battens with the upper and lower edges interlocking. Fixing is by nailing through the nosing adjacent to the battens on the upper and lower interlocking edges using four 50 mm long by 3.3 mm diameter Tileform nails per tile into the battens (see Figures 1 and 5).

Figure 5 Fixing details



14.7 Tiles are preferably cut and formed with a guillotine and a tile-bending machine, but small quantities may be cut with tin snips or sheet metal cutters, and bent by hand.

14.8 The accessories are cut, formed and installed as necessary to complete the installation.

## Technical Investigations

### 15 Tests

Tests were conducted and the results assessed to determine:

- resistance to bending
- resistance to impact
- resistance to chipping
- resistance to rain penetration
- resistance to water
- resistance to salt spray
- resistance to artificial weathering
- life of fixings.

### 16 Investigations

16.1 The manufacturing process was evaluated and details were obtained of the quality controls conducted on the raw materials and finished product, the raw material specifications and the method of manufacture.

16.2 An assessment was made of a fire test to BS EN 13501-5 : 2005.

16.3 A visit was made to a site in progress to assess the practicability of installation and ease of repair.

## Bibliography

BS 476-3 : 1958 *Fire tests on building materials and structures — External fire exposure roof test*

BS 5250 : 2011 *Code of practice for control of condensation in buildings*

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

BS 6399-1 : 1996 *Loading for buildings — Code of practice for dead and imposed loads*

BS 6399-2 : 1997 *Loading for buildings — Code of practice for wind loads*

BS 8000-6 : 1990 *Workmanship on building sites — Code of practice for slating and tiling of roofs and claddings*

BS 8747 : 2007 *Reinforced bitumen membranes (RBMs) for roofing — Guide to selection and specification*

BS EN 1991-1-1 : 2002 *Eurocode 1 — Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*

NA to BS EN 1991-1-1 : 2002 *UK National Annex to Eurocode 1 — Actions on structures — General actions — Densities, self-weight, imposed loads on buildings*

BS EN 1991-1-4 : 2005 *Eurocode 1 — Actions on structures — General actions — Wind actions*

NA to BS EN 1991-1-4 : 2005 *UK National Annex to Eurocode 1 — Actions on structures — General actions — Wind actions*

## Conditions of Certification

### 17 Conditions

17.1 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.

17.2 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.

17.3 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.

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

17.5 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.

17.6 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.