



Britmet Tileform Limited

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**Agrément
Certificate
No 02/3917**

Designated by Government
to issue
European Technical
Approvals

TILEFORM ROOFING SYSTEM

Système d'étanchéité léger pour toitures
Dachabdichtungen

Product



• THIS CERTIFICATE RELATES TO THE BRITMET TILEFORM ROOFING SYSTEM, A RANGE OF PREFORMED TILES MADE FROM GALVANIZED STEEL, COATED WITH AN EPOXY PRIMER. THESE ARE FINISHED WITH MINERAL-FILLED ACRYLIC FOLLOWED BY STONE GRANULES AND A CLEAR ACRYLIC GLAZE. FLASHINGS AND FITTINGS ARE AVAILABLE IN THE SAME FINISH.

• The tiles are installed with a sarking felt or underlay, on timber or steel trusses at minimum pitch angles given in the relevant Detail Sheet. The trusses must be properly secured to the structure.

continued

Regulations — Detail Sheet 1

1 The Building Regulations 2000 (as amended) (England and Wales)



The Secretary of State has agreed with the British Board of Agrément the aspects of performance to be used by the BBA in assessing the compliance of roof tiling and profiled sheets with the Building Regulations. In the opinion of the BBA, the Tileform Roofing System, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement:	B3(2)	Internal fire spread (structure)
Comment:		The system meets this Requirement. See section 12 of these Front Sheets.
Requirement:	B4(2)	External fire spread
Comment:		The system meets this Requirement. See section 12 of these Front Sheets.
Requirement:	C4	Resistance to weather and ground moisture
Comment:		The system meets this Requirement. See section 9 of these Front Sheets.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The system is acceptable. See section 13 of these Front Sheets.

continued

- The system is installed by competent roofing contractors.

These Front Sheets must be read in conjunction with the accompanying Detail Sheets, which provide information on specific roof tiles.

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2 The Building Standards (Scotland) Regulations 1990 (as amended)



In the opinion of the BBA, the Tileform Roofing System, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Technical Standards as listed below.

Regulation:	10	Fitness of materials and workmanship
Standard:	B2	Selection and use of materials, fittings, and components, and workmanship
Comment:		The system is acceptable. See section 13 of these Front Sheets.
Regulation:	12	Structural fire precautions
Standard:	D3.16	Junctions
Comment:		The system can satisfy this Standard. See section 12 of these Front Sheets.
Standard:	D9.1	Fire spread from an adjoining building
Comment:		The products are unrestricted by this Standard. See section 12 of these Front Sheets
Regulation:	17	Resistance to moisture
Standard:	G3.1	Resistance to precipitation
Comment:		The system satisfies this Standard. See section 9 of these Front Sheets.

3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, the Tileform Roofing System, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The system is acceptable. See section 13 of these Front Sheets.
Regulation:	C4	Resistance to ground moisture and weather
Comment:		The system meets the requirements of this Regulation. See section 9 of these Front Sheets.
Regulation:	E4	Internal fire spread — Structure
Comment:		The system meets the requirements of this Regulation. See section 12 of these Front Sheets.
Regulation:	E5	External fire spread
Comment:		The system meets the requirements of this Regulation. See section 12 of these Front Sheets.

4 Construction (Design and Management) Regulations 1994 (as amended) Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See sections: 7 *Delivery and site handling*, 11 *Resistance to damage* (11.3), 14 *General* (14.2, 14.3), and 15 *Procedure* (15.4) of these Front Sheets and 1 *Description* (1.2) of the relevant Detail Sheet.

5 Description

5.1 Britmet Tileform roof tiles are pressed from coated steel sheet of thickness 0.45 mm or 0.9 mm, to a shape having the appearance of conventional tiles or slates. The tiles have a mineral-filled acrylic coating followed by stone granules and a clear acrylic glaze.

5.2 The galvanized steel sheet is grade DX51D +Z275 to BS EN 10142 : 2000. 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.

5.3 The roof tiles are described in the accompanying Detail Sheets.

5.4 Accessories⁽¹⁾ with the same coating specification are:

ridge cap
eaves soffit and fascia flashing
parapet flashing
standard eaves flashing
apron flashing
verge flashing
soffit and fascia flashing
standard bargeboard
valley.

(1) Accessories are available in standard 1.25 m lengths.

5.5 The Certificate holder can supply a guillotine and a tile-bending machine

5.6 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.

5.7 Accessories available, but not covered by this Certificate, include:

special flashings — by order
roof ventilation
gas vent ridge terminals.

6 Manufacture

6.1 Epoxy-primed, galvanized steel coils are slit, guillotined and pressed. The pressed blanks are coated on the weather side with a pigmented acrylic base coat incorporating a non-toxic fungicide followed by coloured stone granules and a clear acrylic glaze coat. After coating the tiles are oven cured.

6.2 Quality control tests are conducted on the finished product for adhesion and flexibility.

6.3 Accessories with the granulated finish are produced by pressing, and coated to the same specification as described in section 5.1.

7 Delivery and site handling

7.1 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.

7.2 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 be stacked two pallets high.

Design Data

8 General

8.1 The Tileform Roofing System is suitable for use, in conjunction with a suitable underlay material, as a weatherproof and decorative covering on a conventional timber or steel pitched structure. The minimum angle of pitch is given in each Detail Sheet.

8.2 On roof constructions with pitches from 10° to 12°, Tileform roof tiles should only be installed on simple structure (ie without features such as hips, valleys, rooflights or skew roofs).

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

9 Weathertightness



The system, with a proper underlay, has a satisfactory resistance to the passage of rain and snow.

10 Strength and stability

10.1 The system has good resistance to the effects of wind suction likely to be met in service.

10.2 The system weighs considerably less than conventional roofing materials, and should be securely attached to the structure to prevent wind uplift under adverse conditions.

11 Resistance to damage

11.1 The system will not be deformed by normal maintenance traffic.

11.2 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 tiles can be replaced relatively easily but care should be taken to prevent damage to adjacent tiles.

11.3 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.

11.4 Damage to the coating by impacts or maintenance traffic may affect the appearance of the tiles. Small damaged areas may be re-coated using the touch-up kit, comprising pigmented acrylic-based emulsion and matching granules.

12 Properties in relation to fire



When tested to BS 476-3 : 1958, with a non-woven, high-density polyethylene underlay Britmet Tileform roof tiles achieved an EXT.S.AAX fire rating.

13 Durability



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

Installation

14 General

14.1 The standard of installation of the Britmet Tileform Roofing System should comply with the requirements of BS 8000-6 : 1990.

14.2 Installation must be conducted by competent roofing contractors.

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

14.4 The roof construction must be adequate to resist the loadings detailed in BS 6399-1 : 1996 and BS 6399-2 : 1997. The minimum permitted batten size for each rafter or truss spacing is given in the relevant Detail Sheet. The roof construction should be in accordance with the relevant requirements of BS 5534-1 : 1997.

14.5 Rafters are securely tied to the building structure with, for example, galvanized steel straps complying with BS 5628-3 : 2001.

14.6 Where timber boarding is laid on the rafters, a timber counter batten should be installed in accordance with BS 5534-1 : 1997.

14.7 The roof space must be adequately ventilated in accordance with BS 5250 : 1989.

14.8 The underlay must be to BS 747 : 2000, Type 1F or 5U, or be covered by an Agrément Certificate and installed in accordance with that Certificate.

15 Procedure

15.1 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.

15.2 Battens are laid over the underlay and roof trusses.

15.3 Tiles are laid onto the battens with the upper and lower edges interlocking and with side laps as specified in the relevant Detail Sheet. Fixing is by nailing through the nosing adjacent to the battens on the upper and lower interlocking edges using 50 mm long by 3.3 mm diameter Tileform nails into the battens⁽¹⁾.

(1) The number of fixing nails required is given in the appropriate Detail Sheet.

15.4 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.

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

Technical Investigations

The following is a summary of the technical investigations carried out on the Tileform Roofing System.

16 Tests

16.1 Assessments were made of tests carried out by independent laboratories to determine: resistance to wind-driven rain.

16.2 Tests were carried out by the BBA to determine:

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

17 Other investigations

17.1 The manufacturing process was examined and details were obtained of the quality controls conducted on the raw materials and finished products, the raw material specifications and method of manufacture.

17.2 An assessment was made of independent investigations to BS 476-3 : 1958.

17.3 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 747 : 2000 *Reinforced bitumen sheets for roofing — Specification*

BS 5250 : 1989 *Code of practice for control of condensation in buildings*

BS 5534-1 : 1997 *Code of practice for slating and tiling (including shingles) — Design*

BS 5628-3 : 2001 *Code of practice for use of masonry — Materials and components, design and workmanship*

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 EN 10142 : 2000 *Continuously hot-dip zinc coated low carbon steels strip and sheet for cold forming — Technical delivery conditions*

Conditions of Certification

18 Conditions

18.1 This Certificate:

- (a) relates only to the product that is described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (d) is copyright of the BBA.

18.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, shall be construed as references to such publication in the form in which it was current at the date of this Certificate.

18.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabricating process(es) thereof:

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;

(b) continue to be checked by the BBA or its agents; and

(c) are reviewed by the BBA as and when it considers appropriate.

18.4 In granting this Certificate, the BBA makes no representation as to:

- (a) the presence or absence of any patent or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the nature of individual installations of the product, including methods and workmanship.

18.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do 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 or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future 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 installation and use of this product.



In the opinion of the British Board of Agrément, the Tileform Roofing System is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 02/3917 is accordingly awarded to Britmet Tileform Limited.

On behalf of the British Board of Agrément

Date of issue: 2nd August 2002

Chief Executive

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Hotline: 01923 665400



Britmet Tileform Limited

Certificate No 02/3917

DETAIL SHEET 2

SLATE 2000

Product



- THIS DETAIL SHEET RELATES TO SLATE 2000, PREFORMED EPOXY PRIMED, GALVANIZED STEEL TILES WHICH HAVE THE APPEARANCE OF CONVENTIONAL ROOFING SLATES.
- Slate 2000 tiles have a mineral-filled acrylic coating followed by stone granules and a clear acrylic glaze, and are available in charcoal colour with steel thicknesses of 0.45 mm and 0.9 mm.
- The tiles may be installed on conventional steel or timber structures with a minimum pitch of 12°.

This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding the Building Regulations and general information relating to the products, and the Conditions of Certification, respectively.

Technical Specification

1 Description

1.1 Slate 2000 tiles are pressed from epoxy-primed, galvanized steel sheet to give the appearance of conventional tiles (see Figure 1). The tiles have a mineral-filled acrylic coating followed by stone granules and a clear acrylic glaze (see Figure 2).

Figure 1 Slate 2000 tiles and nailing points

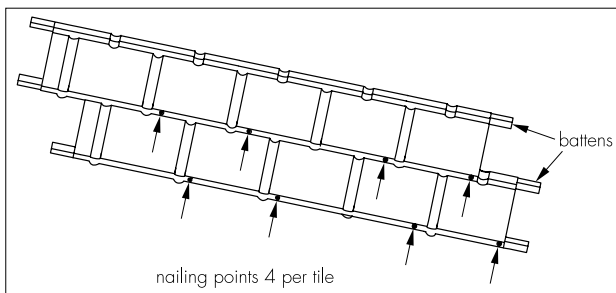
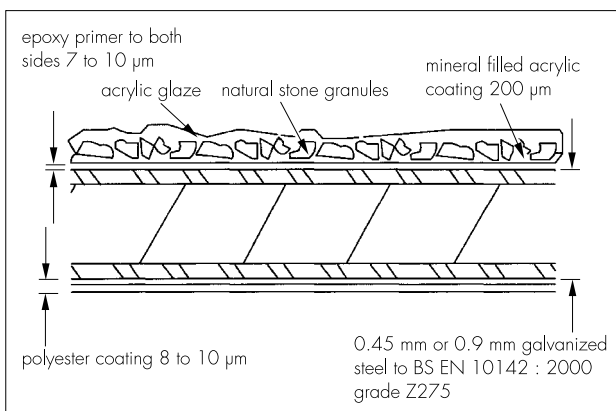


Figure 2 Section through Slate 2000 tile (not to scale)



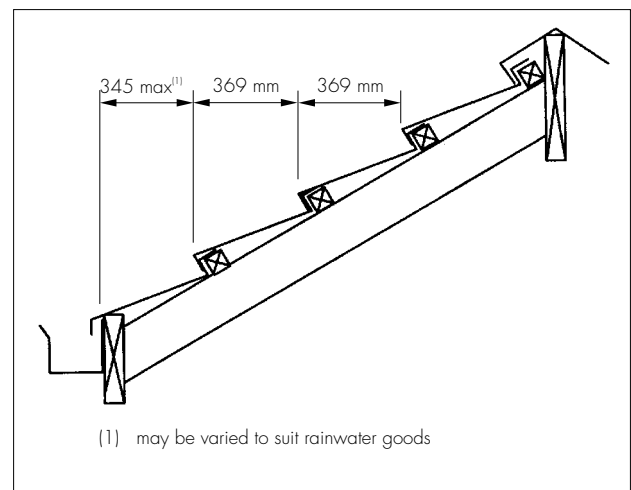
1.2 The tiles have the dimensions given in Table 1:

Table 1 Dimensions

	Thickness (mm)	
	0.45	0.9
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)	
side lap (mm)	60	60
weight of tile (kg)	3.2	5.2
weight of tiled roof (kgm ⁻²)	7.0	11.3
coverage per tile (m ²)	0.46	0.46

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

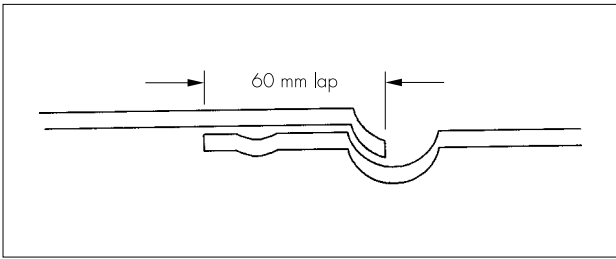
Figure 3 Spacing details



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1.4 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



1.5 Fixing is by nailing through the upper and lower edges using four 50 mm long by 3.3 mm diameter Tileform nails per tile into each batten (see Figures 1 and 5). Batten sizes for use with the tiles are given in Table 2.

Figure 5 Fixing details

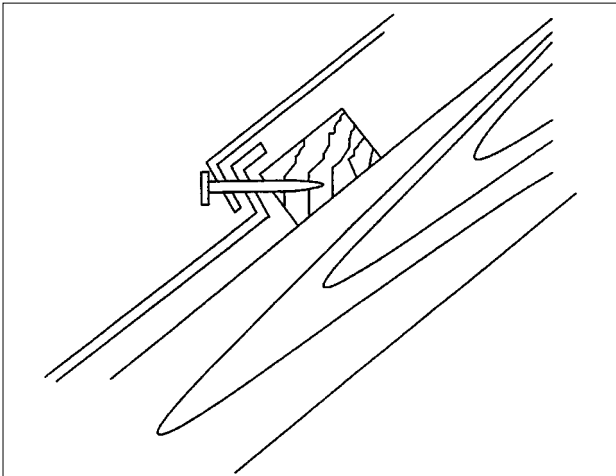


Table 2 Minimum permitted batten size for selected rafter or truss spacing

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

1.6 Slate 2000 is available in thicknesses of 0.45 mm and 0.9 mm and in charcoal colour.

Bibliography

BS EN 10142 : 2000 *Continuously hot-dip zinc coated low carbon steels strip and sheet for cold forming — Technical delivery conditions*



On behalf of the British Board of Agrément

Date of issue: 2nd August 2002


Chief Executive



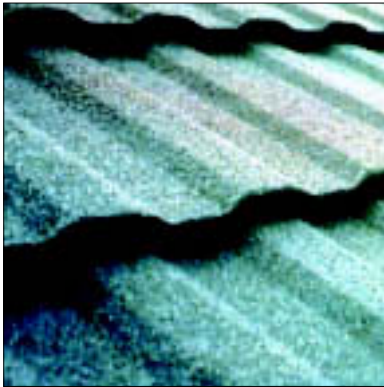
Britmet Tileform Limited

Certificate No 02/3917

DETAIL SHEET 3

PROFILE 49

Product



- THIS DETAIL SHEET RELATES TO PROFILE 49, PREFORMED EPOXY PRIMED, GALVANIZED STEEL TILES WHICH HAVE THE APPEARANCE OF CONVENTIONAL ROOFING TILES.
- Profile 49 tiles have a mineral-filled acrylic coating followed by stone granules and a clear acrylic glaze, and are available in four colours with steel thicknesses of 0.45 mm and 0.9 mm.
- The tiles may be installed on conventional steel or timber structures with a minimum pitch of 10°.

This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding the Building Regulations and general information relating to the products, and the Conditions of Certification, respectively.

Technical Specification

1 Description

1.1 Profile 49 tiles are pressed from epoxy-primed, galvanized steel sheet to give the appearance of conventional tiles (see Figure 1). The tiles have a mineral-filled acrylic coating followed by stone granules and a clear acrylic glaze (see Figure 2).

Figure 1 Profile 49 tiles and nailing points

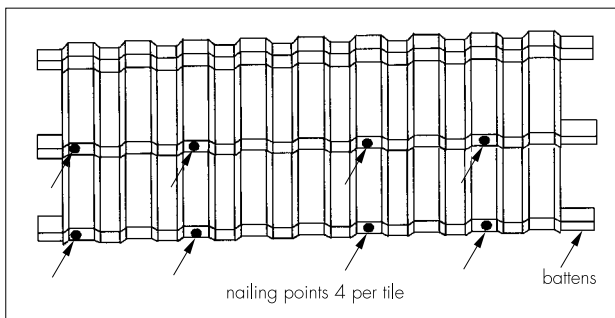
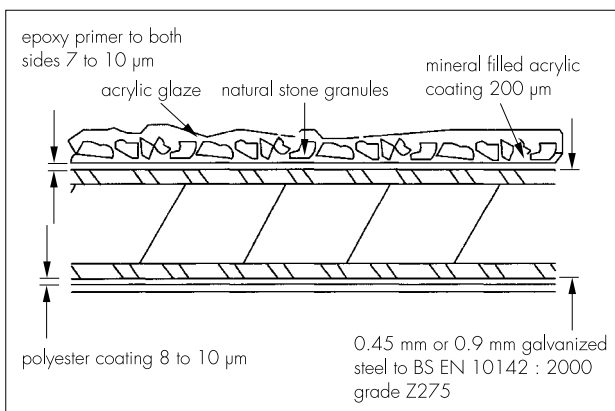


Figure 2 Section through Profile 49 tile (not to scale)



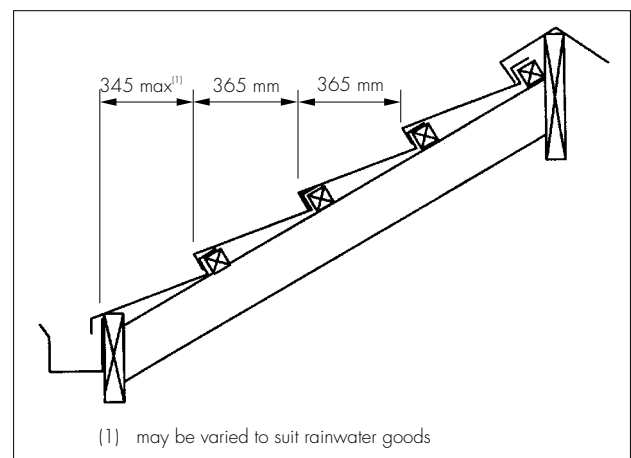
1.2 The tiles have the dimensions given in Table 1:

Table 1 Dimensions

	Thickness (mm)	
	0.45	0.9
length of sheet (mm)	1420	1420
cover length (mm)	1315	1315
width of sheet (mm)	400	400
cover width	365	363
upstand (mm)	19	19
side lap (mm)	105	105
weight of tile (kg)	3.4	5.4
weight of tiled roof (kgm^{-2})	7.1	11.3
coverage per tile (m^2)	0.48	0.48

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

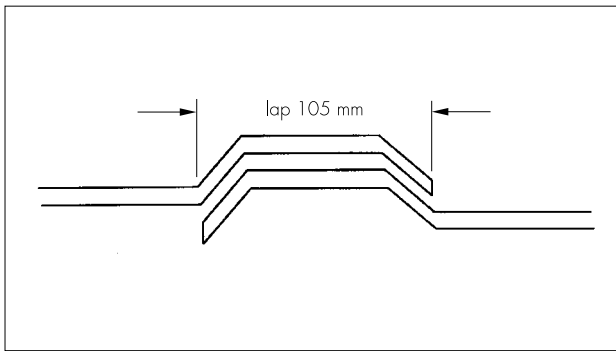
Figure 3 Spacing details



1.4 Adjacent tiles are overlapped with side laps of 105 mm (see Figure 4). Tiles should always be laid broken bond.

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Figure 4 Overlap details



1.5 Fixing is by nailing through the upper and lower edges using four 50 mm long by 3.3 mm diameter Tileform nails per tile into each batten (see Figures 1 and 5). Batten sizes for use with the tiles are given in Table 2.

Figure 5 Fixing details

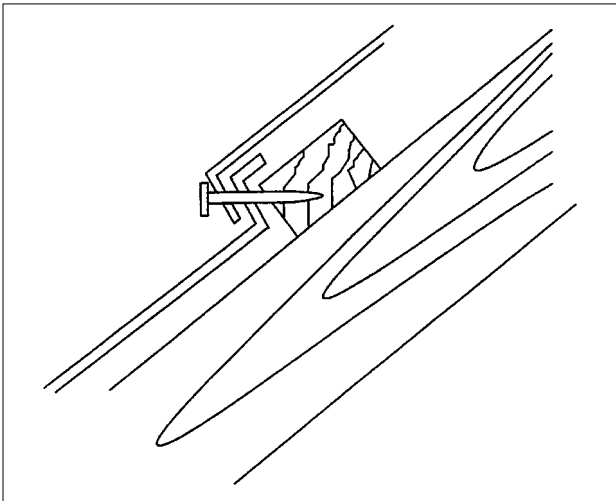


Table 2 Minimum permitted batten size for selected rafter or truss spacing

Rafter/truss maximum spacing (mm)	Batten size (mm)
450	38 x 25
600	50 x 25
900	50 x 50
1200	50 x 50
1500	75 x 50

1.6 Profile 49 is available in thicknesses of 0.45 mm and 0.9 mm in colours of:

charcoal
terracotta
brown
green.

Bibliography

BS EN 10142 : 2000 *Continuously hot-dip zinc coated low carbon steels strip and sheet for cold forming — Technical delivery conditions*



On behalf of the British Board of Agrément

Date of issue: 2nd August 2002

Chief Executive



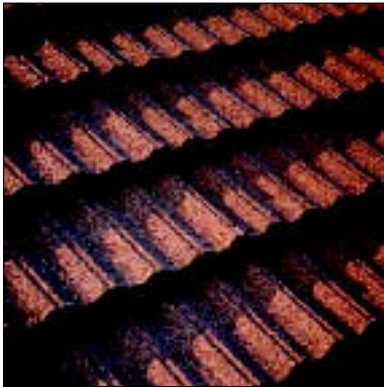
Britmet Tileform Limited

Certificate No 02/3917

DETAIL SHEET 4

ULTRATILE

Product



- THIS DETAIL SHEET RELATES TO ULTRATILE, PREFORMED EPOXY PRIMED, GALVANIZED STEEL TILES WHICH HAVE THE APPEARANCE OF CONVENTIONAL ROOFING TILES.
- Ultratile tiles have a mineral-filled acrylic coating followed by stone granules and a clear acrylic glaze, and are available in four colours with steel thicknesses of 0.45 mm and 0.9 mm.
- The tiles may be installed on conventional steel or timber structures with a minimum pitch of 10°.

This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding the Building Regulations and general information relating to the products, and the Conditions of Certification, respectively.

Technical Specification

1 Description

1.1 Ultratile tiles are pressed from epoxy-primed, galvanized steel sheet to give the appearance of conventional tiles (see Figure 1). The tiles have a mineral-filled acrylic coating followed by stone granules and a clear acrylic glaze (see Figure 2).

Figure 1 Ultratile tiles and nailing joints

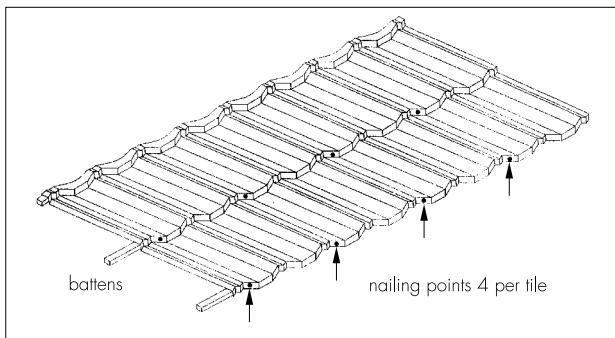
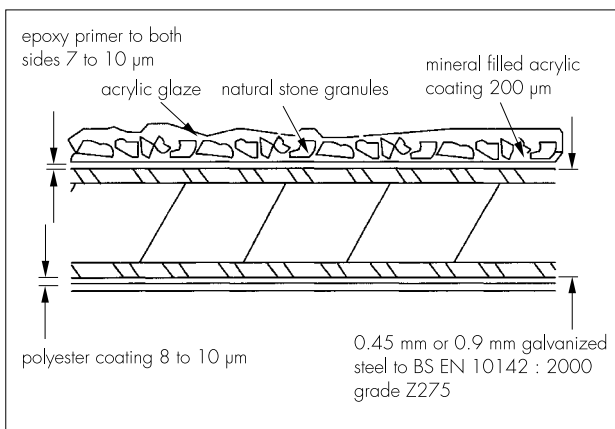


Figure 2 Section through Ultratile tile (not to scale)



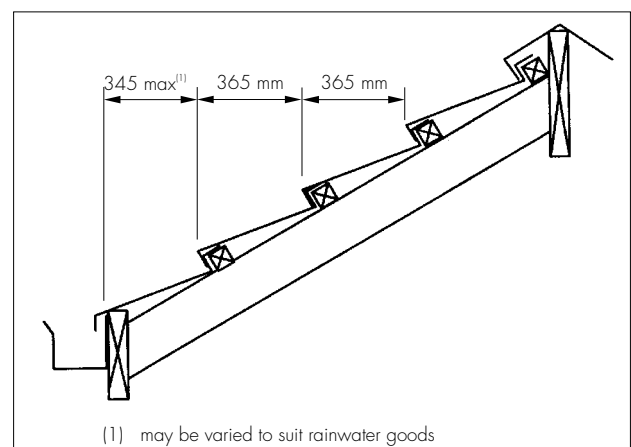
1.2 The tiles have the dimensions given in Table 1:

Table 1 Dimensions

	Thickness (mm)	
	0.45	0.9
length of sheet (mm)	1308	1308
cover length (mm)	1248	1248
width of sheet (mm)	410	410
cover width	365	363
module width (mm)	156	156
upstand (mm)	22	22
side lap (mm)	60	60
weight of tile (kg)	3.3	5.2
weight of tiled roof (kgm^{-2})	7.2	11.3
coverage per tile (m^2)	0.46	0.46

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

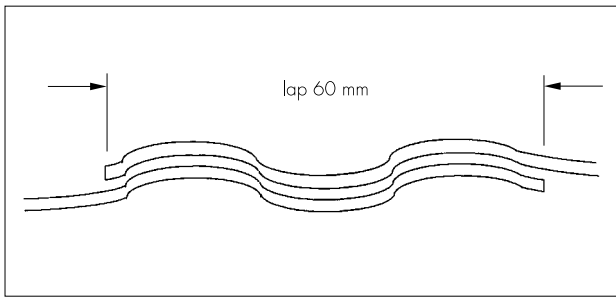
Figure 3 Spacing details



1.4 Adjacent tiles are overlapped with side laps of 60 mm (see Figure 4). The tiles should always be laid broken bond.

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Figure 4 Overlap details



1.5 Fixing is by nailing through the upper and lower edges using four 50 mm long by 3.3 mm diameter Tileform nails per tile into each batten (see Figures 1 and 5). Batten sizes for use with the tiles are given in Table 2.

Figure 5 Fixing details

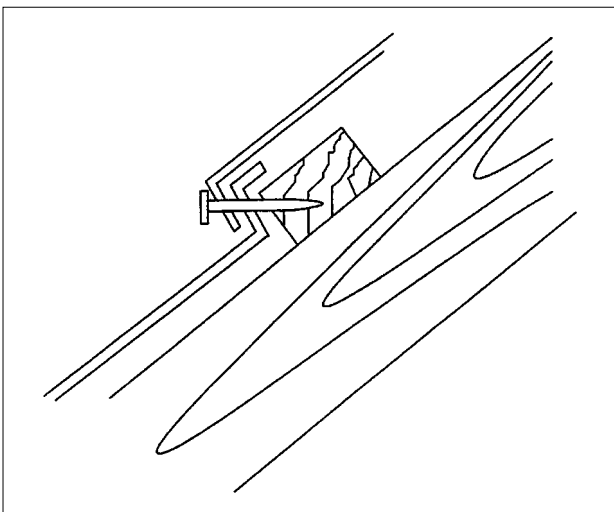


Table 2 Minimum permitted batten size for selected rafter or truss spacing

Rafter/truss maximum spacing (mm)	Batten size (mm)
450	38 x 25
600	50 x 25
900	50 x 50
1200	50 x 50
1500	75 x 50

1.6 Ultratile is available in thicknesses of 0.45 mm and 0.9 mm in colours of:

charcoal
terracotta
brown
green.

Bibliography

BS EN 10142 : 2000 *Continuously hot-dip zinc coated low carbon steels strip and sheet for cold forming — Technical delivery conditions*



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