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BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

Designated by Government to issue European Technical Approvals

Agrément Certificate No 00/3695
*Second issue**

METROTILE ROOFING SYSTEM

Système d'étanchéité léger pour toitures
Dachabdichtungen

Product

- *THIS CERTIFICATE RELATES TO THE METROTILE ROOFING SYSTEM, A RANGE OF PREFORMED TILES MADE FROM STEEL COATED WITH ALUMINIUM-ZINC ALLOY AND EPOXY OR ACRYLIC PRIMER. THESE ARE FINISHED WITH A MINERAL-FILLED ACRYLIC FOLLOWED BY STONE GRANULES AND A CLEAR ACRYLIC GLAZE COAT.*
- *Accessories 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 Metrotile 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 13.1 of these Front Sheets.

continued

• *Installation is conducted by operatives trained and approved by Metrotile UK Limited.*

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

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

In the opinion of the BBA, the Metrotile 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
Standards:	B2.1 and B2.2	Selection and use of materials, fittings, and components, and workmanship
Comment:		The system is acceptable. See section 13.1 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 Metrotile 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 13.1 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:	13 *Durability*, *7 Delivery and site handling*, 11 *Resistance to damage* (11.4), 14 *General* (14.2, 14.4), 15 *Procedure* (15.6) of these Front Sheets and 1 *Description* (1.2) of the appropriate Detail Sheet.

Technical Specification

5 Description

5.1 Metrotile roof tiles are pressed from coated steel sheet to a shape simulating conventional tiles or shakes. The tiles are finished with a mineral-filled acrylic coating followed by stone granules and a clear acrylic glaze coat.

5.2 The 0.45 mm or 0.9 mm thick steel sheet has a hot-dip AZ (aluminium-zinc at 55:45) coating of 185 gm^{-2} to BS EN 10215 : 1995. The sheet is subsequently coated on both sides with an epoxy or acrylic primer.

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

5.4 Accessories with matching decorative surfaces are[1]:

ridge/hip cap — to cover 1150 mm
standard barge cover — to cover 1150 mm
side flashing — to cover 1150 mm
barrel cap/vee ridge — to cover 370 mm

(1) Additional flashings with matching decorative surfaces are available to order.

5.5 Metrotile UK Limited can supply a guillotine and a tile-bending machine. Other accessories include:

Cordless power fastening system
Flat-headed tile-fixing nails 50 mm long by 2.8 mm diameter, serrated or annular grooved and painted. Galvanized steel is normally used, except in coastal areas where stainless steel should be used
Finishing kit of pigmented acrylic-based emulsion and matching granules for use on vertically driven nail heads and to restore damaged areas.

5.6 Other accessories available, but not covered by this Certificate, include:

complete roof ventilation systems
clear polycarbonate vision tiles
gas flue ridge terminals.

6 Manufacture

6.1 Primed and alloy-coated 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 algicide followed by stone granules and a clear acrylic glaze coat. After coating the tiles are oven cured.

6.2 Quality control tests are conducted on the acrylic paint. The finished product is tested for adhesion, flexibility and coating hardness.

6.3 Accessories are produced in the same finishes by pressing and coating to the specifications described in section 6.1.

7 Delivery and site handling

7.1 Tiles are delivered to site on timber pallets 1370 mm long by 1080 mm wide. The maximum number of tiles per pallet is 400 for 0.45 mm thick tilesheets and 280 for 0.9 mm thick tilesheets, giving a total weight of approximately 1300 kg.

7.2 During transport the edges and corners of tiles must be protected to prevent damage.

7.3 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.

Design Data

8 General

8.1 The Metrotile 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 structure. Minimum roof pitches are given in the appropriate product Detail Sheet.

8.2 On roof constructions with pitches from 10° to 12°, Metrotile roof tiles should be installed on simple structures only (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 is 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 tiles may be deformed by impact. 0.9 mm thick tilesheets will be more resistant to impact damage than 0.45 mm thick tilesheets. Damaged tiles can be replaced relatively easily but care should be taken to prevent damage to adjacent tiles. The slight variation in colour between new and existing tiles should be acceptable.

11.3 For maintenance work, roof ladders or crawling boards should be used, but care is still required to prevent damage. Flat rubber-soled shoes must be worn when walking on the roof.

11.4 Small damaged areas should be re-coated using the touch-up kit comprising pigmented acrylic-based emulsion, with matching granules if required.

12 Properties in relation to fire

When tested to BS 476-3 : 1958 with an underlay the Metrotile Roofing System achieved an EXT.S.AA rating.

13 Durability

13.1 The acrylic and aluminium-zinc alloy coatings will protect the steel substrate against corrosion and will give the product an ultimate life in excess of 40 years.

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

Installation

14 General

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

14.2 Installation must be conducted by operatives trained and approved by the Certificate holder.

14.3 Metrotile roof 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 required batten size for standard truss spacings is given in Table 1. The roof construction should be in accordance with the relevant requirements of BS 5534-1 : 1997.

Table 1 Permitted batten size for standard truss spacings

Tile profile batten size (mm)	Truss spacing (mm)
50 x 25	450
50 x 40	600
50 x 40	900
50 x 50	1200

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

14.6 The underlay must be to BS 747 : 2000, Type 1F or 5U, or 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 or 1200 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 Rafters are securely tied to the building structure with, for example, galvanized steel straps complying with BS 5628-3 : 2001.

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

15.5 Tiles are laid on to the battens with the upper and lower edges interlocking and with side laps of one small corrugation. Fixing is by nailing through the small corrugations adjacent to the battens on the downturned nose and rear upstand interlocking edges using 50 mm long by 2.8 mm diameter nails as shown in the appropriate Detail Sheet. For 0.9 mm thick tiles it is recommended that nail positions are pre-punched to aid nail penetration through the thicker steel.

15.6 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.

15.7 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 Metrotile Roofing System.

16 Tests

16.1 Assessments were made of tests carried out by independent laboratories to determine:

durability of tiles
strength of tiles
resistance to rain penetration
corrosion resistance
watertightness
loading
resistance to wind uplift.

16.2 Tests were carried out by the BBA to determine:

resistance to chipping
resistance to artificial weathering.

17 Investigations

17.1 The manufacturing process was examined and details were obtained of the method of manufacture and quality controls conducted on intermediates and the final product.

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

17.3 Visits were made to sites in progress to assess the practicability of installation and ease of repair.

17.4 The technical data contained in BRANZ Appraisal Certificate No 331 was examined in the context of UK practice.

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 : 1985 *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 10214 : 1995 *Continuously hot-dip zinc-aluminium (ZA) coated steel strip and sheet — Technical delivery conditions*

BS EN 10215 : 1995 *Continuously hot-dip aluminium-zinc (AZ) coated steel strip and sheet — 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.

BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

In the opinion of the British Board of Agrément, the Metrotile Roofing System is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 00/3695 is accordingly awarded to Metrotile UK Limited.

On behalf of the British Board of Agrément

Date of Second issue: 19th November 2002

Chief Executive

**Original Certificate issued 27th March 2000. This amended version includes revised Building Regulations and additional CDM Regulations, a change of name and address of the Certificate holder, and reference to 0.9 mm thick tilesheets.*

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BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

Metrotile UK Limited

METROBOND 450

Certificate No 00/3695

DETAIL SHEET 2

*Second issue**

Product

- *THIS DETAIL SHEET RELATES TO METROBOND 450, PREFORMED ACRYLIC-COATED, ALUMINIUM-ZINC ALLOY-COATED STEEL TILES WHICH SIMULATE EIGHT CONVENTIONAL ROOFING TILES.*
- *Metrobond 450 tiles have a mineral-filled acrylic coating followed by stone granules and a clear acrylic glaze coat, and are available in five colours with a steel thickness of 0.45 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 Metrobond 450 tiles are pressed from epoxy or acrylic-coated aluminium-zinc alloy-coated steel sheet to a shape simulating eight conventional tiles (see Figure 1). The tiles are available in a steel thickness of 0.45 mm and have a mineral-filled acrylic coating followed by stone granules and a clear acrylic glaze coat (see Figure 2).

1.2 The tiles have dimensions of:

thickness of sheet (mm)	0.45
length of sheet (mm)	1330
cover length (mm)	1257
cover width (mm)	370
upstand (mm)	24
side lap (mm)	64
weight of tile (kg)	2.85
weight of tiled roof (kgm^{-2})	6.2

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

1.4 Adjacent tiles are overlapped with side laps of 64 mm (see Figure 4).

1.5 Fixing is by nailing through the small corrugations on the downturned nose and rear upstand interlocking edges into each batten using four 50 mm long by 2.8 mm diameter Metrotile nails per tile (see Figures 1, 3 and 5).

1.6 The tiles are available in five standard colours:

terracotta
charcoal
coffee
greenstone
brindle.

Figure 1 Metrobond 450 tiles and nailing points

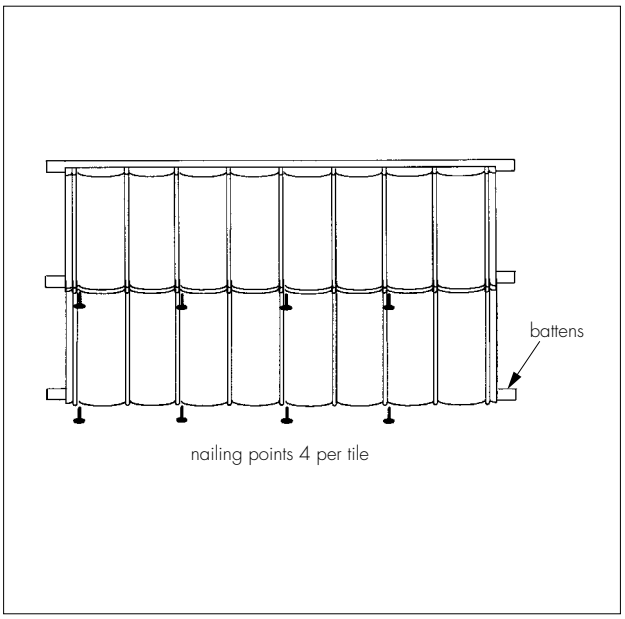


Figure 2 Section through tile

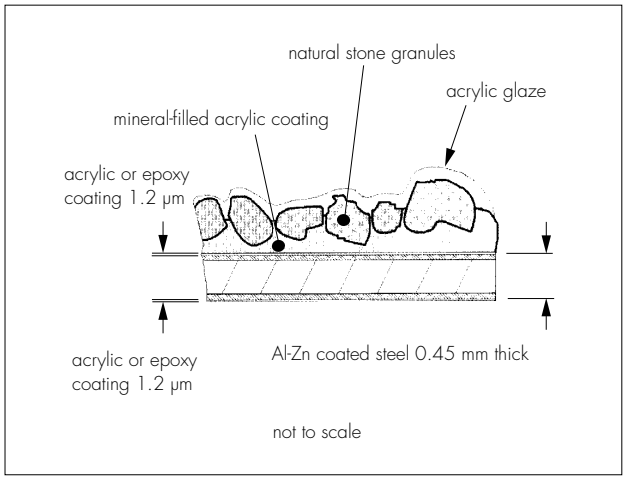


Figure 3 Spacing and fixing details

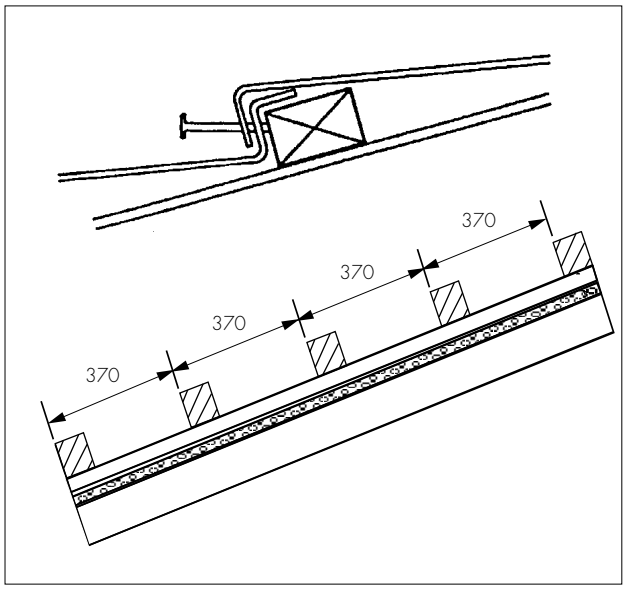


Figure 4 Overlap details

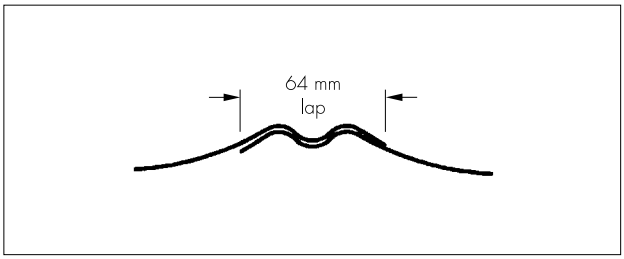
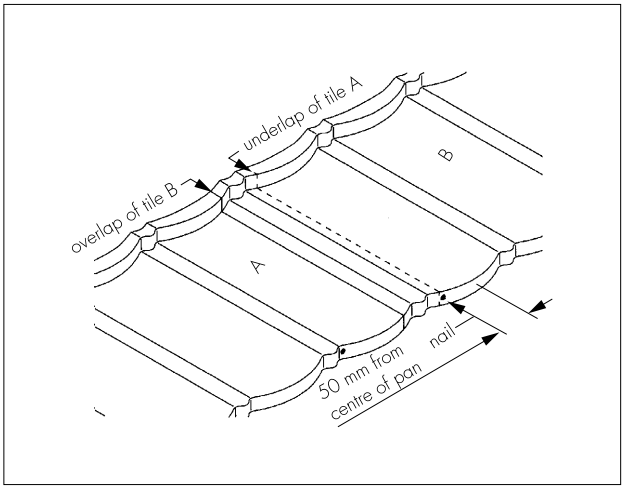


Figure 5 Overlap and nailing points



BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

On behalf of the British Board of Agrément

Date of issue: 19th November 2002

Chief Executive

**Original Detail Sheet issued 27th March 2000. This amended version includes a change of name and product and the Certificate holder.*

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BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

Metrotile UK Limited

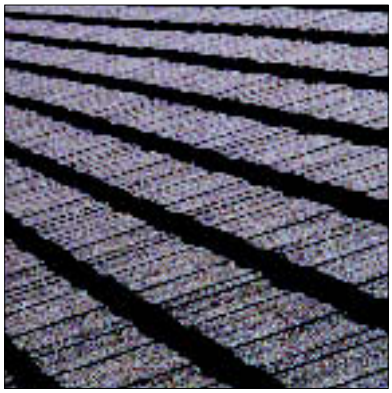
SETTLER SHAKE

Certificate No 00/3695

DETAIL SHEET 3

*Second issue**

Product



- *THIS DETAIL SHEET RELATES TO SETTLER SHAKE, PREFORMED ACRYLIC-COATED, ALUMINIUM-ZINC ALLOY-COATED, STEEL TILES WHICH SIMULATE IRREGULAR SHAPED SHAKE ROOFING TILES.*
- *Settler Shake Tiles have a mineral-filled acrylic coating followed by stone granules and a clear acrylic glaze coat, and are available in five colours with a steel thickness of 0.45 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 Settler Shake tiles are pressed from epoxy- or acrylic-coated aluminium-zinc alloy-coated steel sheet to a shape simulating irregular shaped shake tiles (see Figure 1). The tiles are available in a steel thickness of 0.45 mm and have a mineral-filled acrylic coating followed by stone granules and a clear acrylic glaze coat (see Figure 2).

1.2 The tiles have dimensions of:

thickness of sheet (mm)	0.45
length of sheet (mm)	1330
cover length (mm)	1257
cover width (mm)	370
upstand (mm)	28 (at highest point)
side lap (mm)	64
weight of tile (kg)	2.85
weight of tiled roof (kgm^{-2})	6.2

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

1.4 Adjacent tiles are overlapped with side laps of 64 mm (see Figure 4).

1.5 Fixing is by nailing through the small corrugations on the downturned nose and rear upstand interlocking edges into each batten using four 50 mm long by 2.8 mm diameter Metrotile nails per tile (see Figures 1, 3 and 5).

1.6 The tiles are available in five standard colours:

terracotta
charcoal
coffee
greenstone
brindle.

Figure 1 Settler Shake tiles and nailing points

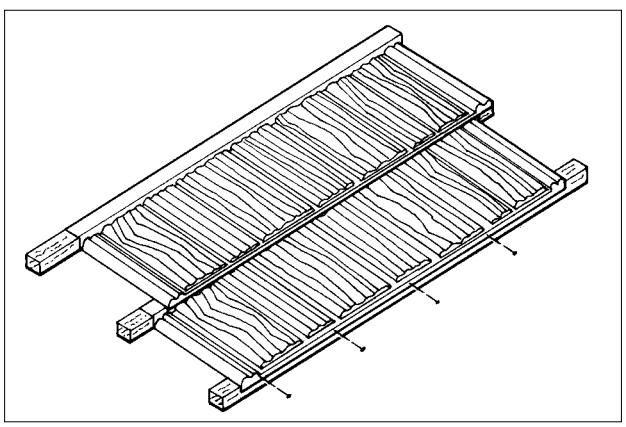


Figure 2 Section through tile

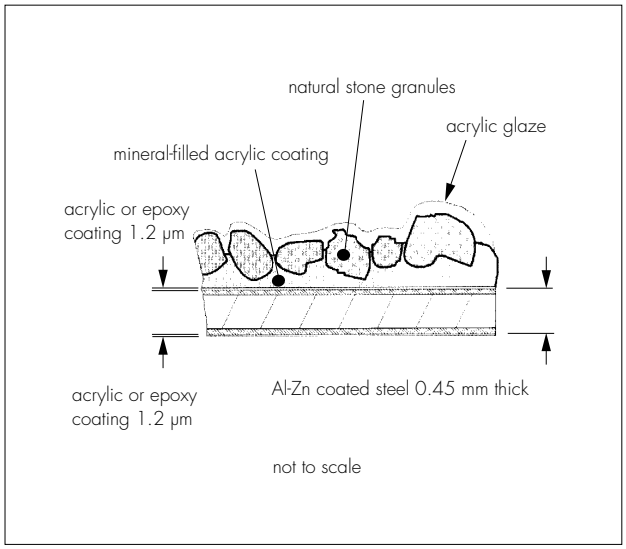


Figure 3 Spacing and fixing details

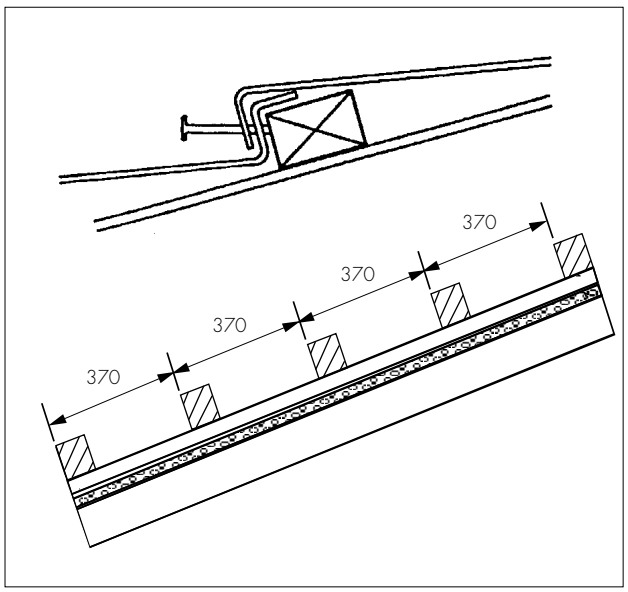


Figure 4 Overlap details

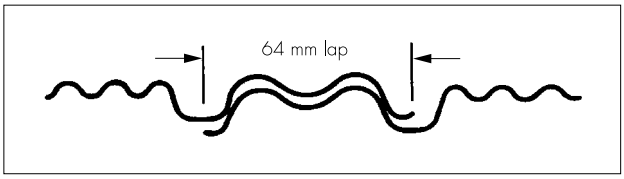
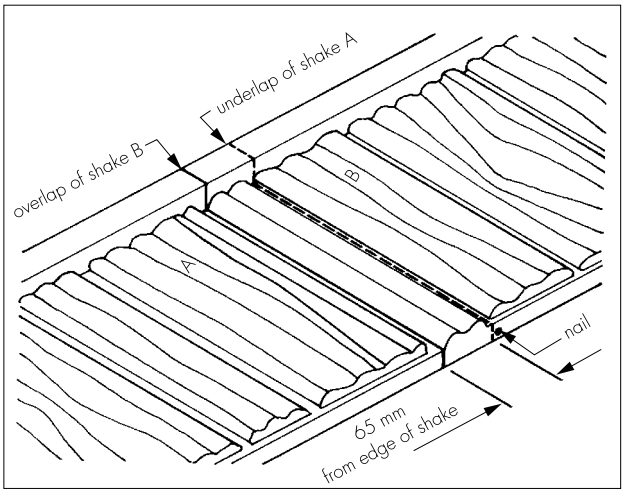


Figure 5 Overlap and nailing points



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TECHNICAL APPROVALS FOR CONSTRUCTION

On behalf of the British Board of Agrément

Date of issue: 19th November 2002

Chief Executive

**Original Detail Sheet issued 27th March 2000. This amended version includes a change of name of the Certificate holder.*

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BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

Metrotile UK Limited

METROBOND 900

Certificate No 00/3695

DETAIL SHEET 4

Product

- *THIS DETAIL SHEET RELATES TO METROBOND 900 TILES, PREFORMED ACRYLIC-COATED, ALUMINIUM-ZINC ALLOY-COATED STEEL TILES WHICH SIMULATE EIGHT CONVENTIONAL ROOFING TILES.*
- *Metrobond 900 tiles have a mineral-filled acrylic coating followed by stone granules and a clear acrylic glaze coat, and are available in five colours with a steel thickness of 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 Metrobond 900 tiles are pressed from epoxy or acrylic-coated aluminium-zinc alloy-coated steel sheet to a shape simulating eight conventional tiles (see Figure 1). The tiles are available in a steel thickness of 0.9 mm and have a mineral filled acrylic coating followed by stone granules and a clear acrylic glaze coat (see Figure 2).

1.2 The tiles have dimensions of:

thickness of sheet (mm)	0.9
length of sheet (mm)	1330
cover length (mm)	1257
cover width (mm)	368
upstand (mm)	25
side lap (mm)	64
weight of tile (kg)	4.6
weight of tiled roof (kgm^{-2})	9.9

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

1.4 Adjacent tiles are overlapped with side laps of 64 mm (one corrugation) (see Figure 4).

1.5 Fixing is by nailing through the small corrugations on the downturned nose and rear upstand interlocking edges into each batten using four 50 mm long by 2.8 mm diameter Metrotile nails per tile (see Figures 1, 3 and 5).

1.6 The tiles are available in five standard colours:

terracotta
charcoal
coffee
greenstone
brindle.

Figure 1 Metrobond 900 tiles and nailing points

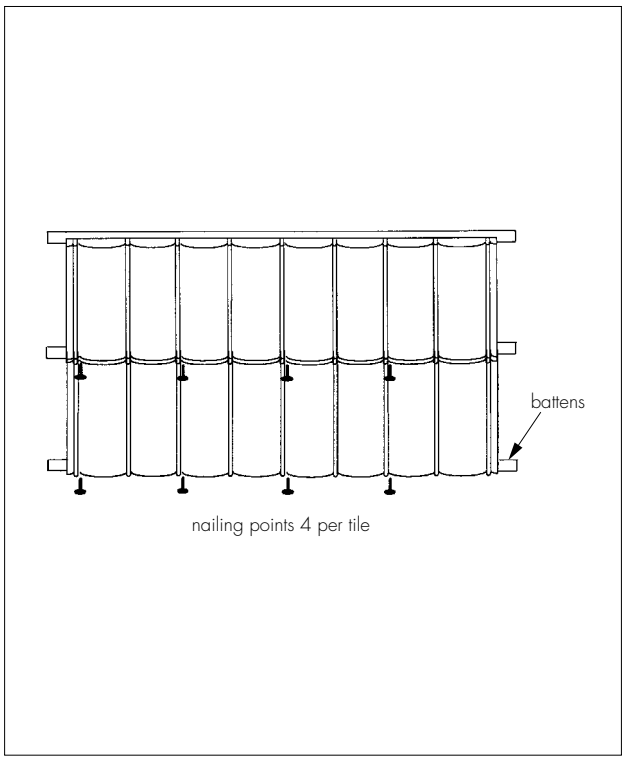


Figure 2 Section through tile

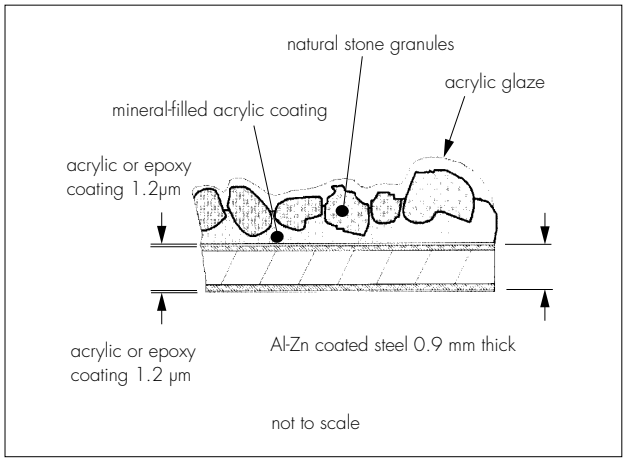


Figure 3 Spacing and fixing details

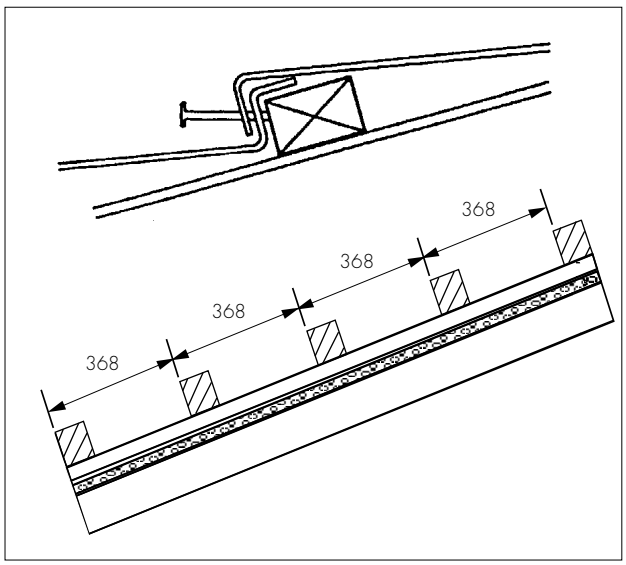


Figure 4 Overlap details

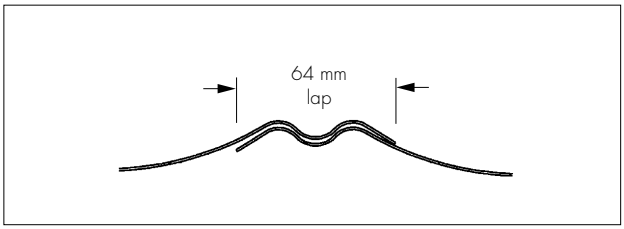
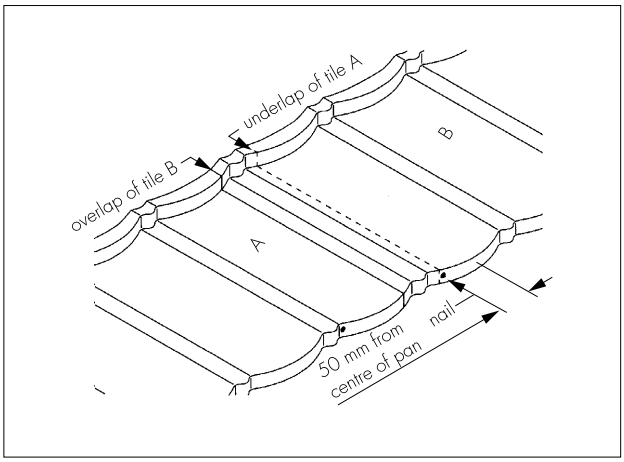


Figure 5 Overlap and nailing points



BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

On behalf of the British Board of Agrément

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