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ATG Technical Approval with Certification

ATG 11/2469

Metallic tile roofing
METROTILE BOND, ROMAN, SHAKE, SHINGLE

Valid from 02/12/2011
to 31/12/2012

Approval and certification operator

BCCA

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1. Objective and scope of the technical approval

This technical approval relates to a favourable evaluation of a product or a system by an independent licensing operator designated by the UBAtc asbl for a specific application. The results of this evaluation have been indicated in this approval text. The text identifies the product or products included in the system and determines the expected performances upon implementation, utilisation and maintenance of the product(s) or of the system(s) carried out in conformity to what is specified within this approval text.

The technical approval is accompanied by regular monitoring, and an adaptation for any progress in the technique, when such modifications are relevant. A review is required every three years.

In order to retain the technical approval, the manufacturer must provide constant proof that it is doing everything necessary to reach the levels of performance indicated in the approval. This monitoring is essential to create confidence in the conformity of the product to this technical approval. It is assigned to a certification operator designated by UBAtc.

The ongoing nature of these controls and the statistical interpretation of the results ensure that the corresponding certification achieves a high level of reliability

The approval and the certificate of conformity with the approval are independent of the work carried out individually. The contractor and the architect remain entirely responsible for the compliance of the implementation with the requirements laid out in the specifications.

2. Subject

Metallic tiles coated with stone aggregate, presented in the form of large elements, using the commercial brands Metrotile Bond, Roman, Shake and Shingle. Metrotile Bond, Roman and Shake can be applied on roofs with a slope of more than or equal to 15°.

The technical approval with certification covers the metallic tiles, including the installation technique, but not the quality of its execution.

The technical approval with certification includes continuous monitoring of the production by the manufacturer, complemented by regular external monitoring for this purpose by the certification body designated by UBAtc

3. Materials

Metrotile Bond, Roman, Shake and Shingle metallic tiles are composed of pre-painted, stamped, galvanised steel, coated on the inside with an acrylic emulsion pigmented by a coating of coloured mineral grains, and on which is then applied a colourless acrylic binder.

Types (see table 1)

- Metrotile Bond (Metrotile Bond and Metrotile Bond 900)
- Metrotile Roman
- Metrotile Shake (Metrotile Shake and Metrotile Shake 900)
- Metrotile Shingle

Table 1	Metrotile Bond		Metrotile Roman	Metrotile Shake		Metrotile Shingle
	Metrotile Bond	Metrotile Bond 900		Metrotile Shake	Metrotile Shake 900	
Steel DX52D						
- nominal thickness (mm) ± 5%	0.45	0.90	0.45	0.45	0.90	0.45
- thermal galvanising	AZ 185					
- base coat (SPT primer on both sides)	1 – 5 µm					
Acrylic emulsion or base coat (100% acrylic polymer-based emulsion, either black or red depending on the colour of the mineral grains, containing 0.5 % fungicides and algaecides)						
- thickness (µm)	185 – 325 µm (depending on the diameter of the mineral grains and the profile type)					
- weight (g/panel)	155 – 220 g		210 – 235 g	155 – 220 g		95 – 215 g
Coloured mineral grains (various colours are available)						
- weight (g/panel) Ø 0,8 à 1 mm	450 – 580 g			450 – 580 g		330 – 370 g
Ø 1 to 1.2 mm	690 – 790 g		700 – 780 g	690 – 790 g		
Ø 1.1 à 1.7 mm	750 – 850 g		750 – 850 g	750 – 850 g		420 – 480 g
Colourless acrylic binder or top coat (this binder serves to attach the mineral grains to the emulsion layer and to facilitate the washing of the tiles with rain water)						
- weight (g/panel)	35 – 44 g					16 – 30 g

Finishing product for repairing damage to the top coat of the metal tiles. This product consists of an acrylic emulsion with the same composition as the top coat and the appropriate coloured mineral grains to propel onto the acrylic binder. The cut sides do not require repair due to the binding effect of the galvanising.

Galvanised threaded or flat headed ring nails (Ø 7.2 to 5.7 mm) for attaching the metallic tiles.

- length : 50 mm
- shank diameter: 2.8 mm.

4. Elements

1.1 Dimensions and weight

1.1.1 Metrotile Bond (fig. 1a)

Each element is made up of eight tiles and has overall dimensions of 1330 mm x 415 mm.

The elements are installed with an overlap of 60mm along the axis of length and 47mm along the axes of height, which is equal to approximately 2.15 elements per m2 of covered surface.

Metrotile Bond:

- Weight per element : 3.0 kg
- Weight of the covered surface: 6.5 kg/m².

Metrotile Bond 900:

- Weight per element : 5/1 kg
- Weight of the covered surface 10/9 kg/m².

1.1.2 Metrotile Roman (fig. 1c)

Each element is made up of five tiles and has overall dimensions of 1 280 mm x 415 mm.

The elements are installed with an overlap of 60mm along the axis of length and 47mm along the axis of height, which is equal to approximately 2.35 elements per m² of surface covered.

- Weight per element : 2.7 kg
- Weight of the covered surface: 6.3 kg/m².

1.1.3 Metrotile Shake (fig. 1b)

Each element is made up of six sections, and has overall dimensions of 1 330 mm x 415 mm. The elements are installed with an overlap of 60mm along the axis of length and 47mm along the axis of height, which is equal to approximately 2.15 elements per m2 of covered surface.

Metrotile Shake:

- Weight per element : 2.85 kg
- Weight of the covered surface: 6.2 kg/m².

Metrotile Shake 900:

- Weight per element : 4.64 kg
- Weight of the covered surface: 9.98 kg/m².

1.1.4 Metrotile Shingle (fig. 1d)

Each element is made up of various sections and has overall dimensions of 1 330 mm x 265 mm. The elements are installed with an overlap of 75 mm along the axis of length and 30 mm along the axes of height, which is equal to approximately 3.45 elements per m2 of covered surface.

- Weight per element : 1.7 kg

- Weight of the covered surface: 5.9 kg/m².

1.2 Accessories

All the accessories are compatible with the Metrotile Bond tiles, as well as with the Roman and Shake tiles. The roof flashing elements, the start profiles and the hidden gutter of Metrotile Shingle have a different size, and are only compatible with Metrotile Shingle.

All of the accessories have the same composition as the metallic tiles. These elements, as well as the nails, are provided by the manufacturer. These accessories are part of the system but are outside the scope of this technical approval and are not covered by the certification.

The other elements, such as flashings, valleys and racks can, be produced in the traditional way in zinc or lead.

5. Manufacture and marketing

Metrotile Bond, Roman, Shake and Shingle metallic tiles are manufactured and marketed by METROTILE EUROPE N.V., from its factory located in Tongres.

METROTILE N.V. can offer technical assistance to users for the design as well as for the implementation of the covering.

6. Composition of the roof

Rafters and trusses must be provided with an underlay (dust, powdery snow, insulation, etc.) and both battens and counter-battens (see BBRI NIT 175 and 240).

In the case of uninsulated industrial buildings, an underlay is not necessary. However, attention should be given to the risk of condensation and its consequences.

An uninterrupted airtight layer should be installed under the roof insulation. The quality of this airtight screen will depend on the type of underlay and on the category of the interior climate. The insulating materials are placed below the underlay.

Underlay	Category of interior climate	Type of airtight screen
Capillary	I II III	- - -
Non capillary strips	I II III	- E1 E1
Non capillary and continuous	I II III	- E2 E2
Insulating roof elements	I II III	- E1 E1
- : Airtight screen or E1 or E2 E1 : Bituminised kraft paper or aluminised plasterboard or E2 E2 : PE foil ≥ 0.2 mm		

Category IV interior climate requires a specific study.

7. Installation of metallic tiles

1.3 Overview

The metallic tiles are delivered on pallets and packaged under plastic film.

During on-site storage, the metallic tiles must be stacked on a perfectly flat and horizontal surface, in a covered, well-ventilated area.

For handling during transport and storage, precautions should be taken to prevent the elements from slipping and being damaged.

The metallic tiles must be installed by trained personnel.

Roofing contractors can procure devises for cutting and bending the metallic tiles from the distributor or from the headquarters of METROTILE EUROPE N.V.

Any superficial damage made to the elements during their installation must be repaired on site using acrylic paste. The protective layer on the outer face must be completed with the manual application of mineral grains.

Regarding the possibility of zinc or lead flashing being pushed under the tiles, the general rules of NBN B 41 and B 42 apply.

To ensure the durability of the metallic tiles, if the roof construction is taking place in an aggressive environment (industrial or urban environment, coastal zone or special sites) the influence of the external atmosphere on the tiles should be taken into account. The installation of the metallic tiles in these environments must take place in conjunction with the manufacturer.

1.4 Timbers and battens

Unless otherwise specified below, the timbers conform to STS 31-32.

The wooden elements (battens and counter-battens) of all of the insulated roofs and their fixtures are at high risk of exposure to humidity. They must therefore undergo a preservation treatment (STS 31-32).

The distance between the batten placements is established as:

Minimum size of the battens	Distance between batten placements
27 x 27 mm	60 cm
38 x 38 mm	90 cm
50 x 32 mm	100 cm

For battens of 27 mm x 27 mm, the roofer must take care not to break the batten during nailing.

The distance between the battens, measured from their exteriors, is maximum 368 mm for Metrotile Bond, Roman and Shake and maximum 235 mm for Metrotile Shingle.

Any adaptation must always be made to the right of the ridge.

1.5 Intermediate section

1.5.1 Metrotile Bond, Roman and Shake

The installation of the metallic tiles in the intermediate section is done from top down.

To start, the second row is placed starting from the ridge. The elements of this row must be fitted well, with particular emphasis paid to the side laps, and secured with tile nails. Each subsequent row is then placed parallel to the previous row

After verifying the proper longitudinal and transverse fitting of the elements, they are nailed to the battens as indicated in Fig. 1a, 1b and 1c. Each element should require four nails.

1.5.2 Metrotile Shingle

The installation of the metallic tiles in the intermediate section is done from top down and from right to left

To start, the start profiles (see fig. 3b) and the hidden gutters are installed. The first Metro Shingle tile is nailed to the upper side of the tile above the start profile (see fig. 1d). The elements of this row must be well fitted well, with particular emphasis paid to the side laps. They are attached using blind nailing to the upper side of the tile. The following rows are then installed.

1.6 Eaves (fig. 2)

The finishing of the eaves uses a special piece provided by the manufacturer. However, this piece is not necessary for Metrotile Shingle.

The positioning of the nails is identical to that of the rest of the covering (4 per element).

The dimensions of the lower batten must allow a proper alignment in the roofing plane. This is not applicable for Metrotile Shingle.

1.7 Roofing ridges and gables (fig. 3)

When the length of the eaves is not a multiple of the usable height of the metallic tiles, the row adjoining the ridge must be made up of metallic tiles cut to the desired height, with a flattened upper edge that is raised to a height of at least 60mm. This raised edge is to be nailed to the ridge lath (fig. 3).

When the distance between the last row of battens and the roof ridge plate is less than 120mm, the cut and bent tile risks deformation. In this case, under-ridge parts, bent at the worksite and with the edge raised to a height of at least 60mm, are used instead of the cut and bent elements.

The covering of the ridges is carried out using ridging elements ("V"-shaped and half-round ridge tiles) (fig. 3). Fascia elements are used for making the fascia boards (fig.4). A 20mm raised edge must be made on the element to avoid water infiltration in the fascia.

1.8 Roof hips - Flashing

Specific roofing details such as roof hips and flashing can be realised either using accessories that can be cut and rebent on the worksite, or using traditional elements in zinc or lead. The general rules of STS 34 apply.

8. Performance

1.9 Characteristics guaranteed by the manufacturer

- Nominal thickness of the plate: 0.45 mm or 0.90 mm (tolerance: ± 5%)
- Thermal galvanisation : AZ 185
- Thickness and weight of the acrylic emulsion (base coat) : see table 1
- Weight of the coloured mineral grains: see table 1
- Weight of the colourless acrylic binder (top coat) : see table 1

1.10 Resistance to flew

1.10.1 Metrotile Bond

Metrotile Bond elements installed in compliance with the requirements as laid out in this technical approval resist a uniformly distributed load of 6250 Pa (underpressure) (failure at 6500 Pa - detachment of the tiles) and a uniformly distributed load of 6500 Pa (overpressure) (failure at 7000 Pa - rupture of the test frame).

1.10.2 Metrotile Shingle

Metrotile Shingle elements installed in compliance with the requirements as laid out in this technical approval resist a uniformly distributed load of 2 500 Pa (underpressure) (failure at 2 750 Pa – stripping of the nails attaching the tiles) and a uniformly distributed load of 7 000 Pa (overpressure) (failure at 7 500 Pa – too much loss of air to reach higher pressures).

1.11 Resistance to thermal effects

1.11.1 After 21 days in an oven at 75 °C

No modification is visible to the naked eye after 21 days.

1.11.2 Thermal shocks (for 1000 uninterrupted hours 42 cycles):

- cycle of 8 h at -18°C
- cycle of 16 h at 75°C

No modification is visible to the naked eye after 1000 hours.

1.12 Resistance to corrosion and wear

No rusting was observed after the following tests:

- Salt spray - 350 h NaCl (ISO 9227)
- 30 Kesternich cycles SO_2 – 0.2 l (ISO 3231)

No alteration in appearance (no discolouration) was observed after 1000 hours of exposure to QUV waves

(ASTM G53/88).

1.13 Waterproofing test

Test combining rain and wind

- Air canon: 10 000 m³/h at 1200 Pa
- Water spray : intensity of rain : 2 litres/m² minute
- Duration of the test 5 minutes per wind speed and slope

1.13.1 Metrotile Bond

Wind speed (m/sec)	Roof slope			
	5°	8°	30°	45°
0	0	0	0	0
5	1	0	0	0
10	2	0	0	0
15	2	0	0	1
20	-	2	2	2
25	-	2	2	-

0 : no water penetration
1 : no measurable water penetration
2 : dripping or running water

1.13.2 Metrotile Shingle

Wind speed (m/sec)	Roof slope				
	5°	8°	16°	30°	45°
0	1	1	0	0	0
5	1	1	0	0	0
10	2	2	0	0	0
15	-	-	1	1	1
20	-	-	2	2	2
25	-	-	-	2	2

0 : no water penetration
1 : dripping water
2 : running water

1.14 Reaction to fire and to external fire

These tests were not carried out within the context of this ATG approval.

9. Guidelines for use

It is possible to walk on the material after first placing a load-spreading material (for example wood planks or a ladder).

During the manufacturing, slightly more mineral grains than are necessary are intentionally applied to the elements. During the first month after installation, this surplus will disappear under the effect of weather conditions. If a too great amount of mineral grains detaches, the covering can be repaired using a special coating application available from METROTILE EUROPE N.V.

The longevity of the fungicide integrated into the acrylic binder generally varies from 3 to 5 years. If necessary, that is to say in the event of the formation of moss, a special solution can be sprayed over the roof covering.

This solution, which is available from METROTILE EUROPE N.V., contains no copper sulphate-based products.

Avoid direct contact between the bare metal of the element and non-ferrous metals.

10. Conditions

A. Only the company mentioned in the first page as the holder of the ATG and the company/ies) responsible for the marketing of the subject of the technical approval may claim application of this technical agreement.

B. This technical approval is valid only for the product or system whose trade name is indicated in the header. The holders of a technical approval cannot use the name of UBAtc, its logo, the ATG brand, the text of the approval number to claim any product evaluations that are not compliant with the technical approval and/or concerning products and/or systems and/or properties or characteristics that are not covered in this technical approval.

C. Any and all information made available to the (potential) users of the product or system covered in the technical approval (for example, worksite owners, contractors, project specifiers, etc.) by the holder of the ATG or by its designated and/or licensed installers may not be in contradiction with the contents of the text of the technical approval, nor with the information referred to within the text of the technical approval.

D. The holders of a technical agreement are required to inform UBAtc asbl and the certification operator designated by UBAtc in a timely way and in advance about any potential modifications to the raw materials and products, the installation instructions, the production and implementation process and/or the equipment, so that UBAtc and the certification operator can determine if it is necessary to adapt the technical approval.

E. The copyrights belong to UBAtc.

Fig. 1 a

Metrotile Bond

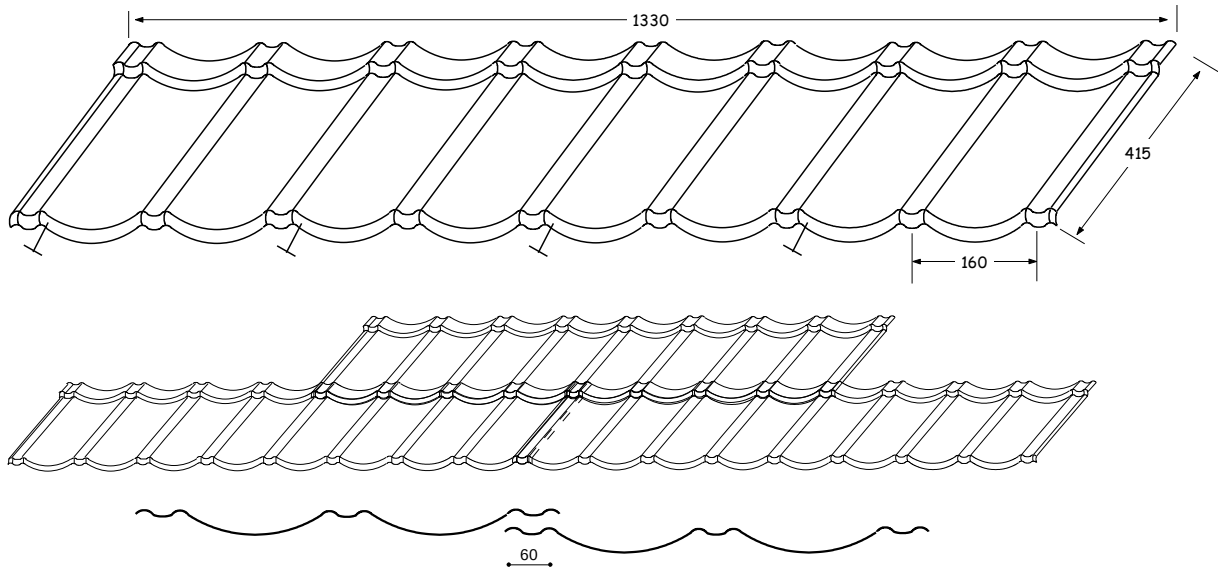


Fig. 1 b

Metrotile Shake

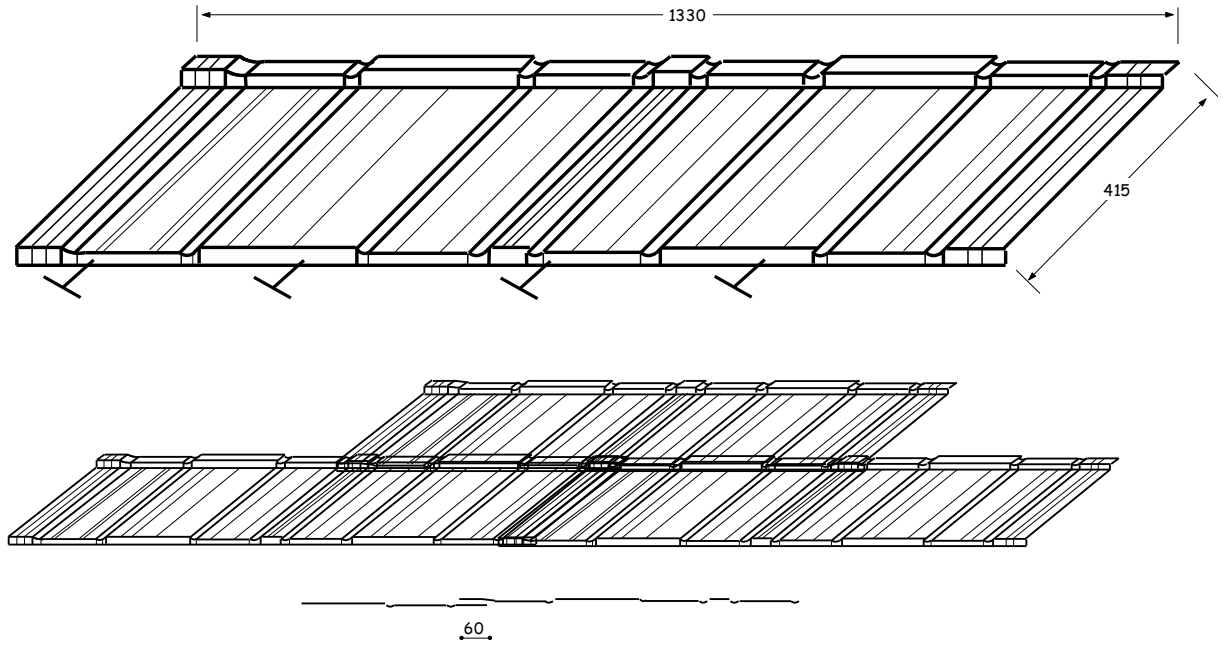


Fig. 1 c

Metrotile Roman

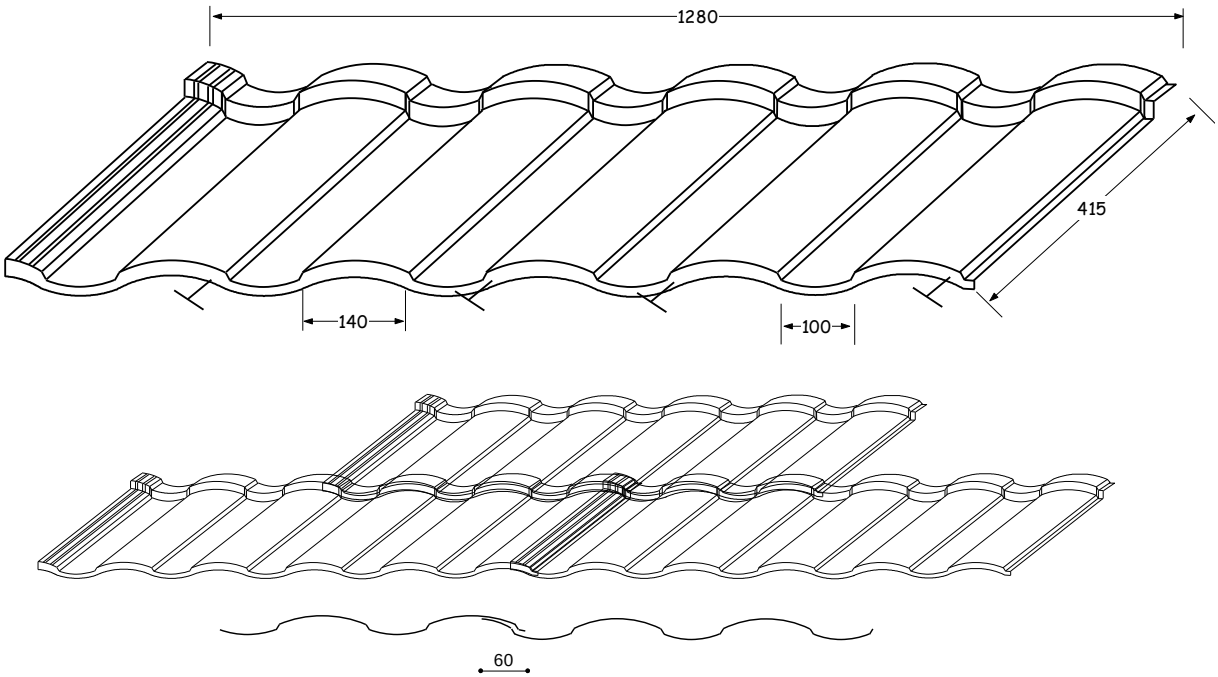


Fig. 1 d

Metrotile Shingle

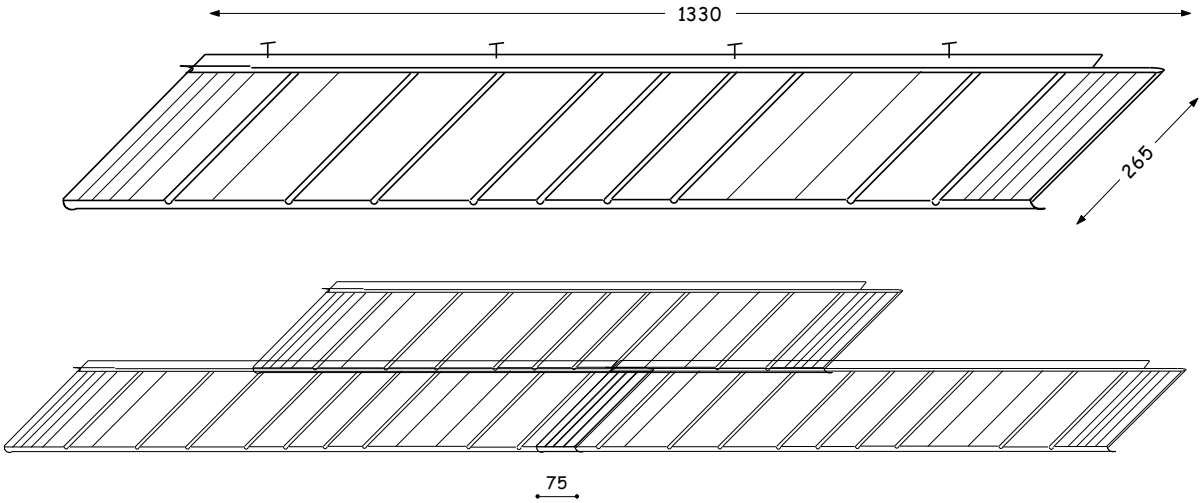


Fig. 2 a: Roof slope

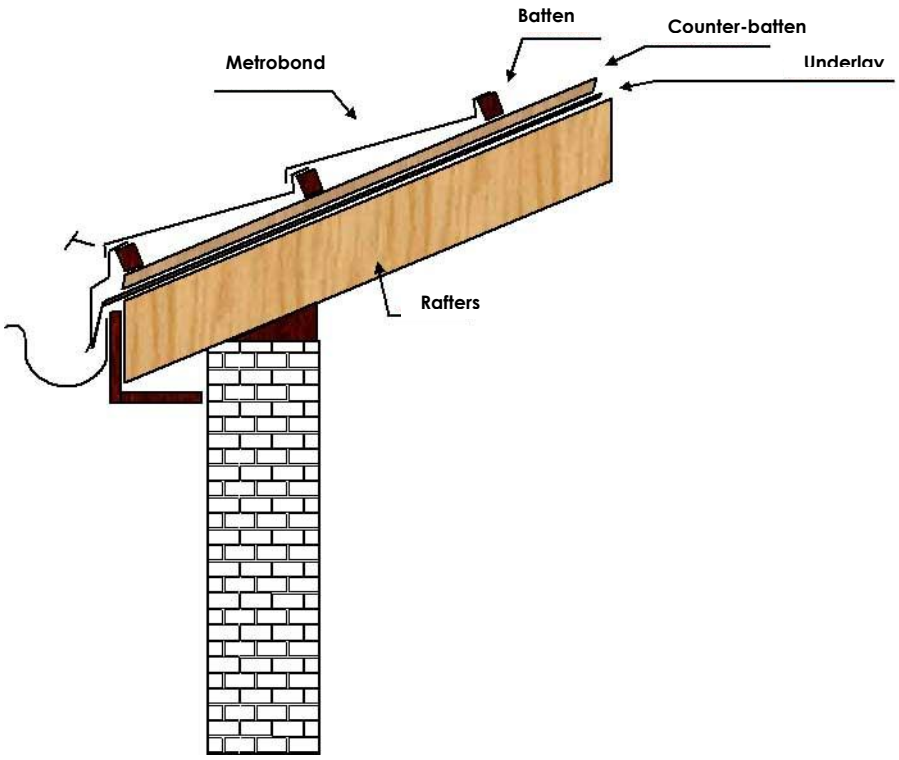


Fig. 2 b: Roof slope + Metrotile Shingle start profile

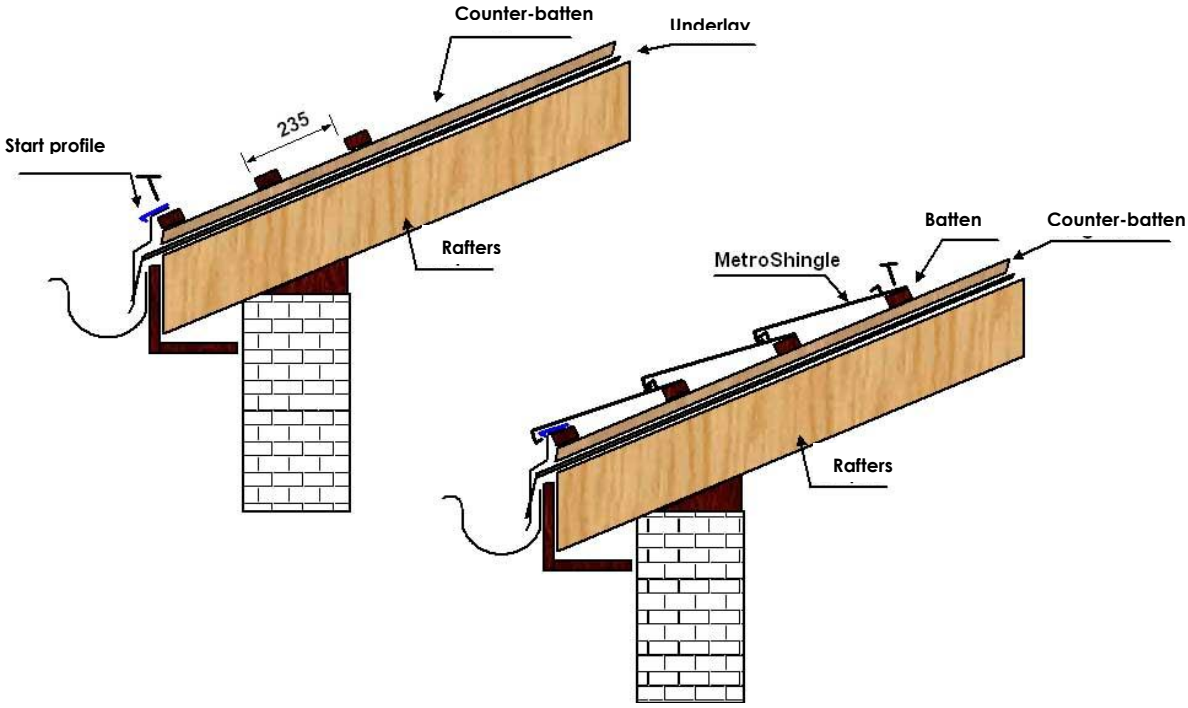


Fig. 3: Finalisation with V-shaped ridge, and with half-round ridge

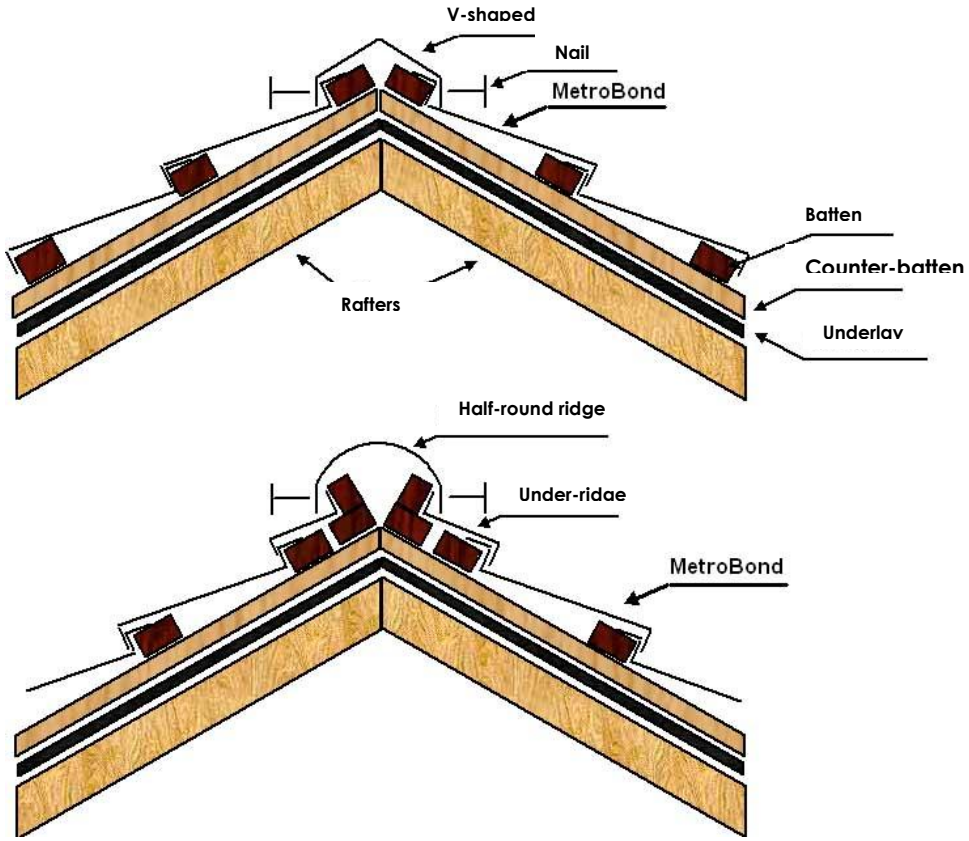


Fig. 4 a: Gables

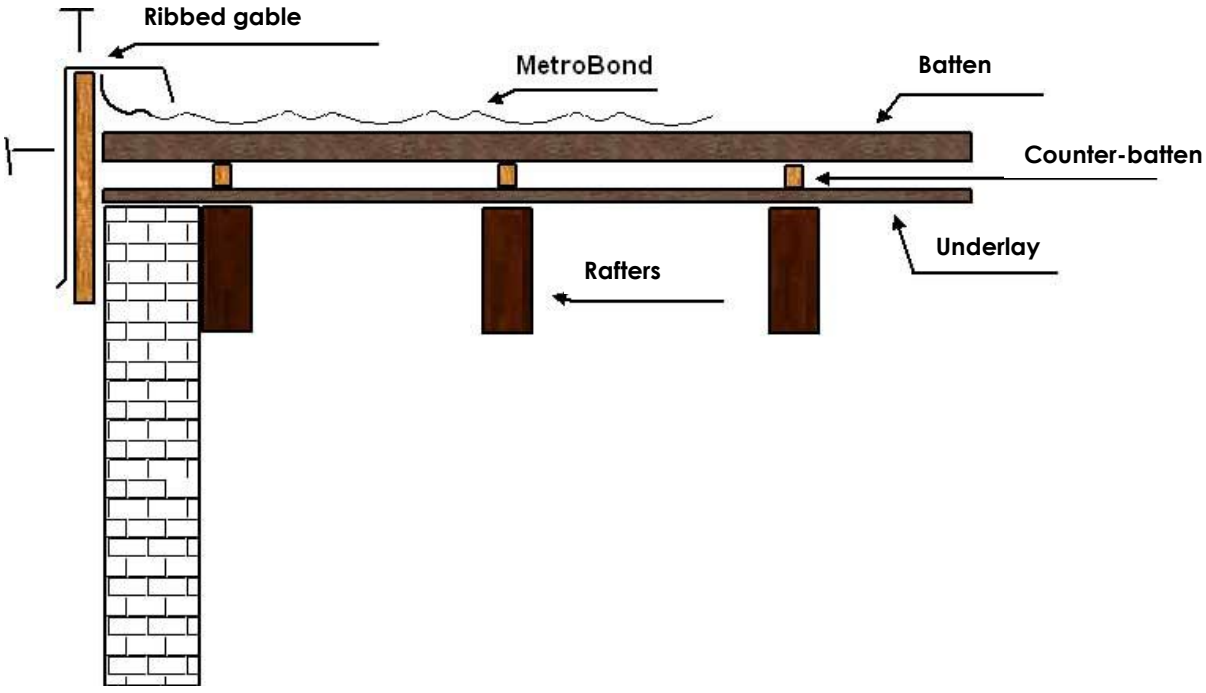
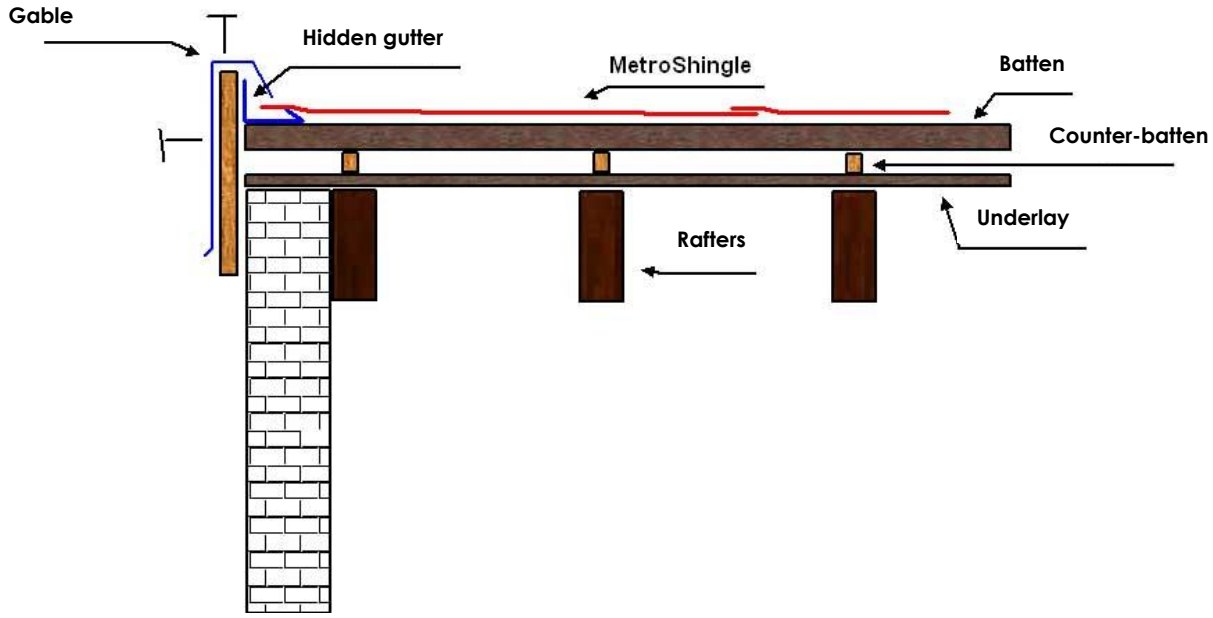


Fig. 4 b: Metrotile Shingle gable



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This technical approval has been issued by the UBAtc, under the responsibility of approval operator BCCA, and based on the favourable opinion of the "Roofing" specialist group, given on 30 June 2011.

Furthermore, certification operator BCCA confirms that the production meets the certification conditions and that a certification agreement was concluded with the holder of the ATG.

Date of publication : 2 December 2011

For UBAtc, as a declaration of validity of the approval process

Peter Wouters, director

For the approval and certification operator

Benny De Blaere, director

This approval will remain valid as long as the product, its manufacturing and all of the relevant processes :

- are maintained in such a way as to achieve the minimum level of performances as defined within the approval text;
- are the subject of continuous monitoring by the certification operator, who confirms that the certification remains valid.

If these conditions are no longer being respected, the technical approval will be suspended or withdrawn and the approval text removed from the UBAtc's website.

The validity and the latest version of this present approval text can be verified by consulting the UBAtc's website (www.ubatc.be) or by directly contacting the secretariat of UBAtc.