



FLAT Roof Tiles

**Technology,
innovation and
sustainability**


TEJAS BORJA
Since 1899

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Ceramic Roof Tile
SOLAR FLAT-5XL
MONOCRYSTALLINE

Large-format flat roof tile with integrated solar energy system on the ceramic support for perfect integration into the roof.

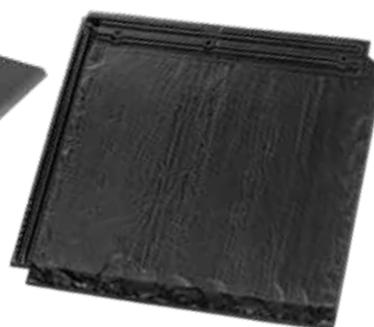
P.8



Roof Tile
SOLAR FLAT-10
CIGS

SOLAR roof tile with CIGS technology, the most effective in terms of shading, high efficiency and environmentally friendly.

P.10



FLAT-5XL

An example of the innovation and technological development in ceramic roof tiles. The largest ceramic tile in the world.

P.12



FLAT-10

A new generation of flat tiles now lighter and with greater definition. Suitable for roofs and facades.

P.14



TECHNICA-10

Innovative flat tile in a Marseille style. Safer and technologically up-to-date. The most versatile format on the market. Ideal for all kinds of projects.

P.16



ALICANTINA-12

Our classic and versatile flat tile. Flat profile with two soft grooves manufactured along three generations by Tejas Borja.

P.18



ESCAMA

The classic tile normally used to cover conical or spherical areas. Used also indoors as a decorative element.

P.20



FLAT-11

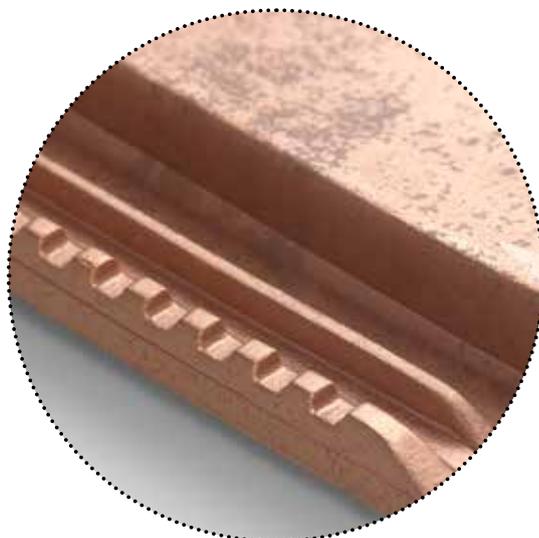
Perfectly flat tile available for custom projects. Consult the possibility of different finishes.

P.21

Note: The colour reproduction is approximate, subject to change due to the natural colours of the clays. Check finishing colours for different accessories by telephone at: **+34 96 279 80 16**.



Technology, innovation and sustainability



- Long-lasting colours
- Guaranteed watertightness
- Fast and secure installation
- Low maintenance







Borja JET

Inkjet technology in ceramic roof tiles

The fusion of the richness of natural materials with the technical properties of ceramic tiles. Excellent definition in the reproduction of all kinds of effects never achieved until before.

A technological revolution for roof tiles with finishes as varied as slate, wood, stone, marble, oxide, etc.



Borja **LINE**

Analog technology based on the application of engobes and ceramic deposits. Unique aged and monochrome colours.

Borja **DECOR**

High gloss glazed roof tiles
which prevent premature aging,
delaying moss formation.



Glazed



Metallic / Crystal



Matt

Ceramic Roof Tile

SOLAR FLAT-5XL



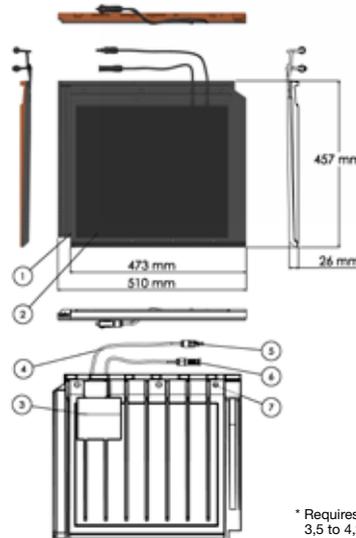
SOLAR Flat-5XL ceramic roof tiles are the only large ceramic tiles with an integrated solar energy system. They are ideal for providing a reliable supply of solar energy. Thanks to the integration of the solar panel into the tile, they provide all the benefits of a roof made from ceramic tiles in terms of watertightness, without any risk of deterioration or oxidation.

The perfect integration is completed with the FLAT-5XL ceramic roof tiles and their clay accessories in the installation on the roof or facade.



TECHNICAL characteristics

Dimensions: 457 x 510 mm
Panel dimensions: 410 x 360 mm (385 x 315 mm useful area)
Individual weight: 7,50 Kg./Roof Tile
Units/sq. m.: 5,85- 5,50 units
Useful length (Batten distance) VARIABLE: 340-385 mm - 360-385 mm recommended batten step.
Placing: Continuous or staggered pattern according to the Flat-5XL roof tile ⁽¹⁾
Standard ⁽²⁾ : IEC 61646 - IEC 61730
Maximum power (P_{max}): 23 Wp
Maximum power current (I _{mpp}): 1,79 A
Maximum power voltage (V _{mpp}): 14,30 V
Cell type: Monocrystalline
Front glass panel: 3,2 mm tempered glass FULL-BLACK
Junction box: IP 67
Connectors: MC4
Maximum power/sq. m.⁽³⁾: 143,26 Wp/sq. m.
sq. m. - 1 KWp: 6,96 sq. m.
Units/kWp: 41,32 units



Key box:

- 1 - Flat-5XL ceramic support
- 2 - Photovoltaic panel
- 3 - Junction box ceramic housing
- 4 - Connection cables
- 5 - MC4 connector (+) positive terminal
- 6 - MC4 connector (-) negative terminal
- 7 - Holes for fixing to the batten*

* Requires 2 screws for fixing to the batten (per solar tile unit): diameter from 3,5 to 4,2 / thread length 45 - 55 mm, depending on the batten type.

All measurements are approximate.

Note: The SOLAR FLAT-5XL roof tile has an entirely black (FULL-BLACK), anti-reflective finish, with none of the typically visible connections. It is entirely compatible with the FLAT-5XL ceramic tile (see available finishes on the Tejas Borja website). Always check the latest technical data on the website.

(1) SOLAR Flat-5XL Ceramic Tile must always be installed on ventilated roofs using a double batten system or equivalent.

(2) Certification reference: SMG-20W

(3) Depending on batten spacing.

STC standard conditions: irradiance = 1,000 W/sq. m.; cell temperature = 25°C; AM = 1.5.





Roof Tile

SOLAR FLAT-10

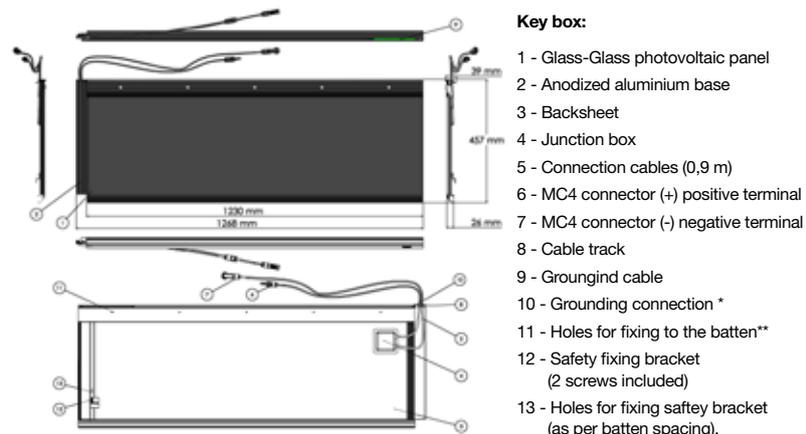


The **SOLAR Flat-10 roof tile** is designed to blend seamlessly into your roof. Thanks to its integration, it confers all the benefits of capturing renewable photovoltaic solar energy as well as presenting excellent reliability in terms of watertightness throughout the roof.

The **Solar Flat-10 roof tile** is a photovoltaic tile manufactured using the latest photovoltaic cell technology. Denoted by the acronym CIGS (copper, indium, gallium and selenium), it is the most effective technology when it comes to operating in the shade. Using this technology, we can produce high-efficiency solar cells with a high output which are also environmentally-friendly as they are **free of cadmium and lead**.

TECHNICAL characteristics

Dimensions: 457 x 1268 mm
Panel dimensions: 345 x 1215 mm (300 x 1200 mm useful area)
Individual weight: 9,30 Kg./Teja
Units/sq. m.: 2,22- 2,02 units
Useful length (Batten distance) VARIABLE: 365-400 mm
Placing: Continuous or staggered pattern according to the Flat-10 roof tile ⁽¹⁾
Standard ⁽²⁾ : IEC 61646 - IEC 61730
Maximum power (P_{max}): 56 Wp
Maximum power current (I _{mpp}): 1,7 A
Maximum power voltage (V _{mpp}): 33 V
Cell type: CIGS (Libre de Cd y Pb) ⁽³⁾
Front glass panel: 3,2 mm tempered glass FULL-BLACK
Back glass panel: 1,8 mm tempered glass
Junction box: IP 67
Connectors: MC4
Maximum power/sq. m. ⁽⁴⁾: 123 Wp/sq. m.
sq. m. - 1 kWp: 8,12 sq. m.
Units/kWp: 17,86 units.



* Requires an ISO 7049 screw (Thread size: ST 4,2 / Thread length: from 9,5 to 13 mm) for each ground connection.
** Requires 5 screws for fixing to the batten (per solar tile unit): diameter from 3,5 to 4,2 / thread length 45 - 55 mm, depending on the batten type.

All measurements are approximate.
Note: The SOLAR FLAT-10 roof tile has an entirely black (FULL-BLACK), anti-reflective finish, with none of the typically visible connections. It is entirely compatible with the FLAT-10 ceramic tile (see available finishes on the Tejas Borja website). Always check the latest technical data on the website.

(1) SOLAR Flat-10 Tile must always be installed on ventilated roofs using a double batten system or equivalent.
(2) Certification reference TUV: CIGS-05xxT1.
(3) CIGS (copper, indium, gallium and selenide) is an acronym which describes the latest development in high efficiency solar cell technology (this technology is the most effective in shady conditions) providing high performance while being free from cadmium and lead.
(4) Depending on batten spacing.
STC standard conditions: irradiance = 1,000 W/sq. m.; cell temperature = 25°C; AM = 1,5.





FLAT-5XL

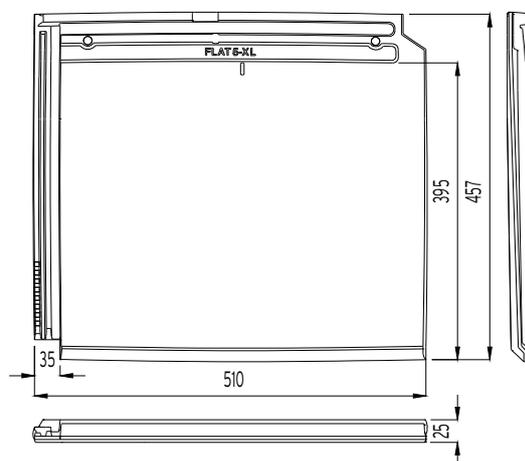


reddot award 2019
winner

- The largest ceramic tile ever made
- High performance in installation (5 units/sq.m.)
- Wide range of finishes
(BorjaJET exclusive)



© TRADE MODEL
> Klinker



Dimensions	457 mm x 510 mm
Minimum pitch recommended	30% - 17° (*)
Weight	6,55 Kg./unit
Units / sq. m.	5,48 units
Units per LM eave line	2 units
Useful width	475 mm
Useful length (Batten distance) VARIABLE	340-385 mm
Pallet data	(G1) 152 units
Minimum order	2 units **



Approximate values: If the roof tiles are installed on battens, the useful length must be calculated on site. A tolerance of $\pm 2\%$ is allowed on the dimensions of the roof tiles according to EN 1024.

(*) In zone 1 (protected area), arranged in staggered formation with waterproof membrane and batten distance of 340 mm on a skirt of up to 6.5 m. Check pitch pannel according to the roof length and the geographical area according to EN 136020.

** The tiles are subject to minimum order and must be multiples thereof.

FLAT-5XL / FINISHES

PLAIN COLOUR



Leon Matte

Ceramic SLATE



Nepal Orange



Paris Ocre



Irish Green

Ceramic STONE



Austin Grey



Denver Gold



Denver Iris

Ceramic OXIDE



Tokyo Copper

Ceramic CEMENT



Sidney Graphite

Ceramic MARBLE



Roma Dark

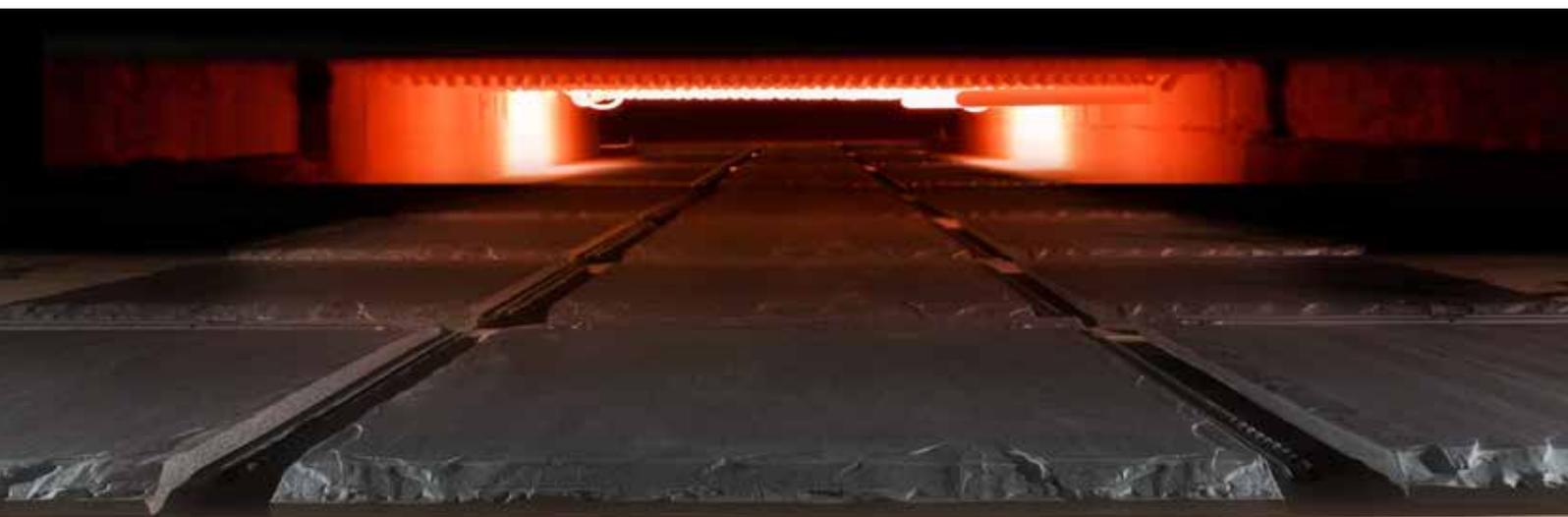
Ceramic COTTO



Ibiza Pink

NOTES:
 FLAT-5XL BorjaJET available upon request. Delivery time 4-6 weeks.
 All Flat-5XL finishes are produced only on 1 side colour.

TX - models with texture
 (Leon Matte, Ceramic Slate and Ceramic Stone)



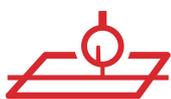
FLAT-10



- Perfect, deep fit
- Large format - 10 units per sq. m.
- Exclusive BorjaJET finishes
- Lightweight



> Klinker



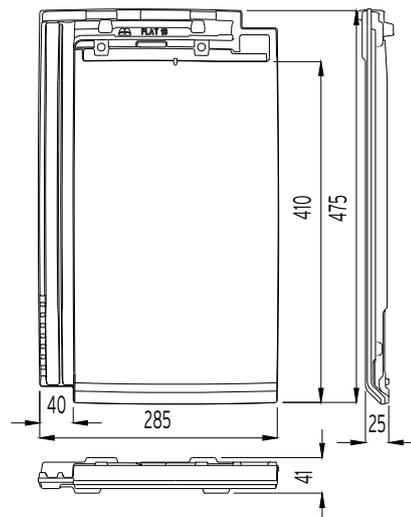
Maximum Surface Flatness



Mountain climate



Juego Longitudinal 35 mm



Dimensions	475 mm x 285 mm
Minimum pitch recommended	30% - 17° (*)
Weight	3,5 Kg./unit
Units / sq. m.	10,20 units
Units per LM eave line	4 units
Useful width	245 mm
Useful length (Batten distance) VARIABLE	365-400 mm
Pallet data	(T1) 252 units / 930 Kg. (T2) 336 units / 1.230 Kg.
Minimum order	6 units **



Approximate values: If the roof tiles are installed on battens, the useful length must be calculated on site. A tolerance of $\pm 2\%$ is allowed on the dimensions of the roof tiles according to EN 1024. The certified characteristics for the NF Terracotta tiles are compliant with the requirements of the NF EN 1304 standard: Structural faults, the geometric characteristics, resistance to flexural strength, impermeability (class 1), frost resistance according to the NF EN 539-2 standard for all products made with red mixture. AFNOR Certification: 11 rue Francis de Pressensé // 93571 LA PLAINE SAINT-DENIS CEDEX // www.marque-nf.com.

(*) In zone 1 (protected area), arranged in staggered formation with waterproof membrane and batten distance of 365 mm on a skirt of up to 6.5 m. Check pitch pannel according to the roof length and the geographical area according to EN 136020.

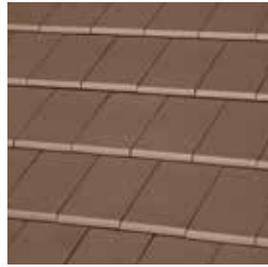
** The tiles are subject to minimum order and must be multiples thereof.

FLAT-10 / FINISHES

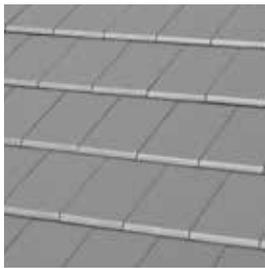
PLAIN COLOUR



Graphite



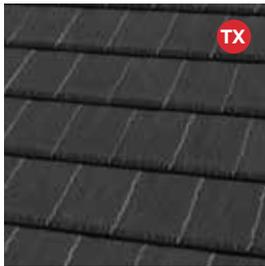
Chocolate



Mid Grey



Natural Black



Leon Matte

NATURE



Red



Moss Red



Ceramic SLATE



Nepal Orange



Paris Ocre

Ceramic WOOD

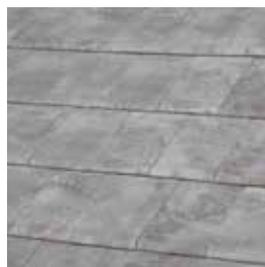


Toronto Oak



Weathered Cedar

Ceramic CEMENT



Sidney Graphite

Ceramic OXIDE



Tokyo Copper

Ceramic COTTO

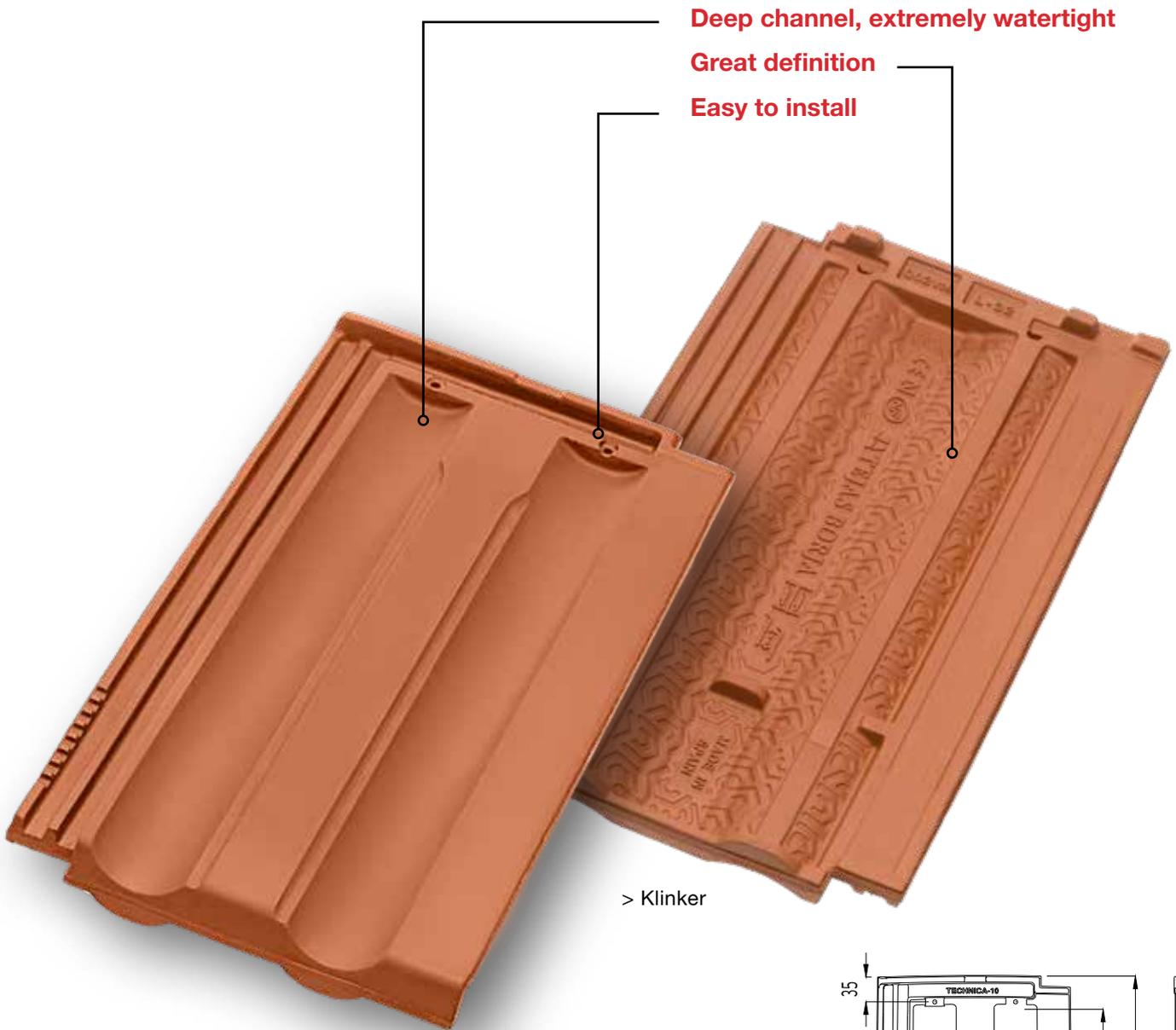


Ibiza Pink

TX - models with texture
(Leon Matte, Ceramic Slate
and Weathered Cedar)

NOTES: All Flat-10 finishes are produced only on 1 side colour.

TECHNICA-10



> Klinker



Easy to install

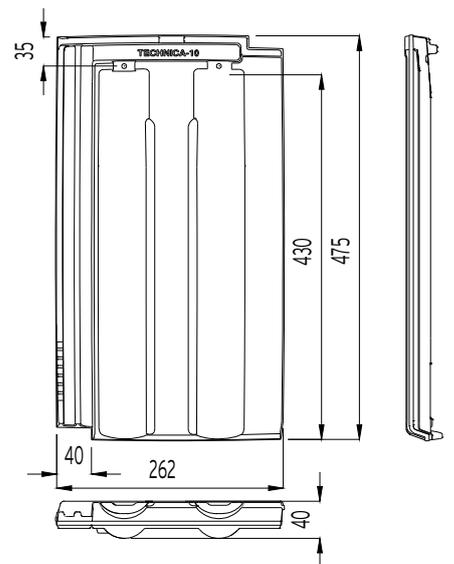


Mountain climate



Longitudinal Overlap 45 mm

Dimensions	475 mm x 262 mm
Minimum pitch recommended	30% - 17° (*)
Weight	3,05 Kg./unit
Units / sq. m.	10,90 units
Units per LM eave line	4,5 units
Useful width	220 mm
Useful length (Batten distance) VARIABLE	370-415 mm
Pallet data	(TB) 320 units / 1.070 Kg. (TC) 240 units / 805 Kg.
Minimum order	6 units **



Approximate values: If the roof tiles are installed on battens, the useful length must be calculated on site. A tolerance of ± 2% is allowed on the dimensions of the roof tiles according to EN 1024.

The certified characteristics for the **NF** Terracotta tiles are compliant with the requirements of the NF EN 1304 standard: Structural faults, the geometric characteristics, resistance to flexural strength, impermeability (class 1), frost resistance according to the NF EN 539-2 standard for all products made with red mixture. AFNOR Certification: 11 rue Francis de Pressensé // 93571 LA PLAINE SAINT-DENIS CEDEX // www.marque-nf.com.

(*) In zone 1 (protected area), arranged in staggered formation with waterproof membrane and batten distance of 370 mm on a skirt of up to 6.5 m. Check pitch panel according to the roof length and the geographical area according to EN 136020.

** The tiles are subject to minimum order and must be multiples thereof.

PLAIN COLOUR



Graphite

NATURE



Red



ALICANTINA-12

Curved channels to allow water drainage

Ideal for roof renovation

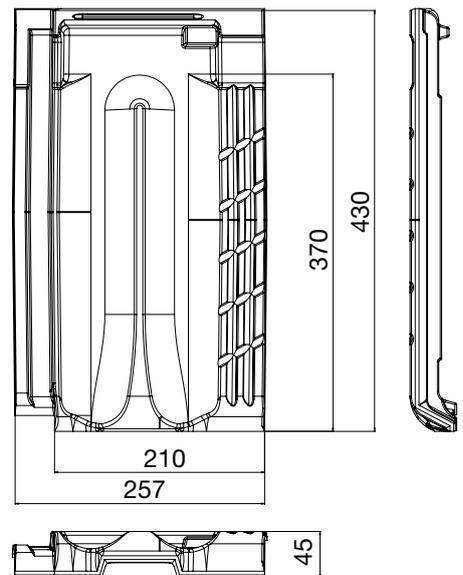


Easy to install



Minimum Slope 40%

Dimensions	430 mm x 257 mm
Minimum pitch recommended	40% - 22° (*)
Weight	3 Kg./unit
Units / sq. m.	12,30 units
Units per LM eave line	5 units
Useful width	215 mm
Useful length (Batten distance)	370 mm
Pallet data	(X5) 280 units / 845 Kg. (X1) 240 units / 730 Kg. (X6) 210 units / 635 Kg. (X7) 140 units / 425 Kg.
Minimum order	6 units **



Approximate values: If the roof tiles are installed on battens, the useful length must be calculated on site. A tolerance of $\pm 2\%$ is allowed on the dimensions of the roof tiles according to EN 1024.

(*) In zone 1 (protected area), arranged in staggered formation with waterproof membrane and batten distance of 370 mm on a skirt of up to 6.5 m. Check pitch panel according to the roof length and the geographical area according to EN 136020.

** The tiles are subject to minimum order and must be multiples thereof.

ALICANTINA-12 / FINISHES

NATURE



Red



Fosca



Norteña



Litoral

ALICANTINA-12 / BorjaDECOR



Glazed Cognac



Glazed Green



Glazed Cobalt Blue



Glazed Carmin



Crystal Red



Matt Green



Matt Blue



Metallic Copper



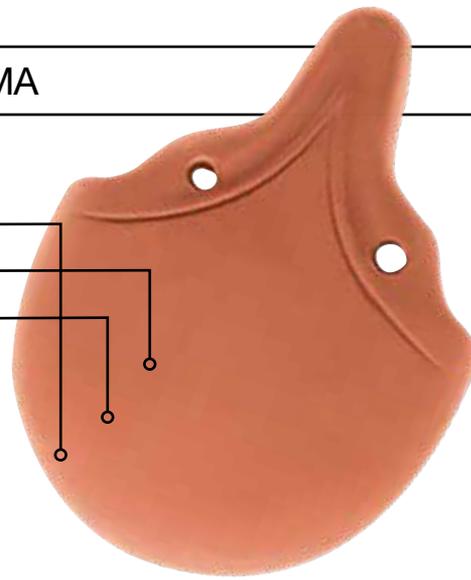
Metallic Lead

ESCAMA

Perfect for domes

Ideal for rehabilitation

Indoor and outdoor use



Width	150 mm
Length	195 mm
Weight	0,40 Kg./Unit
Units / sq. m.	78 Units

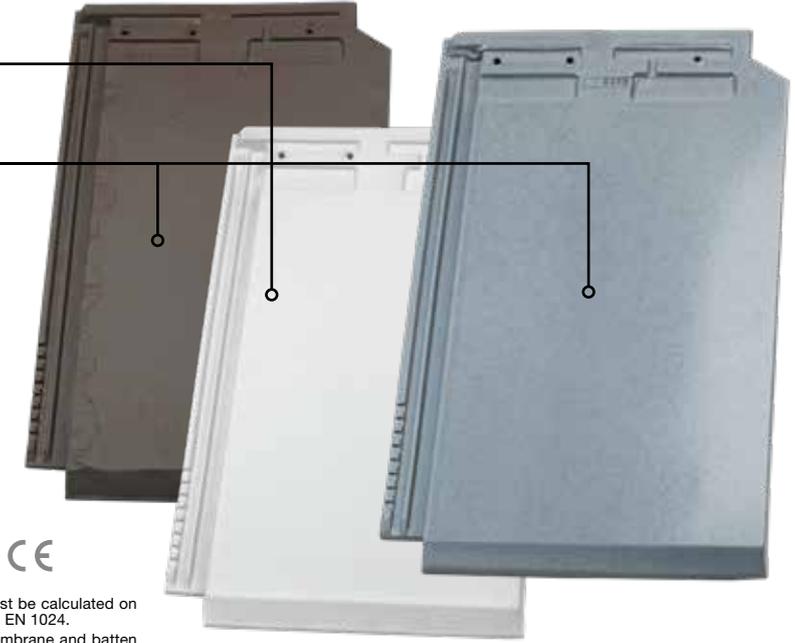
Approximate values: On roof, total waterproof of the entire surface is required for any pitch. A tolerance of $\pm 2\%$ is allowed on the dimensions of the roof tiles according to EN 1024.



FLAT-11

Special for CUSTOMIZED PROJECTS
Check availability and finishes
Models available with or without texture

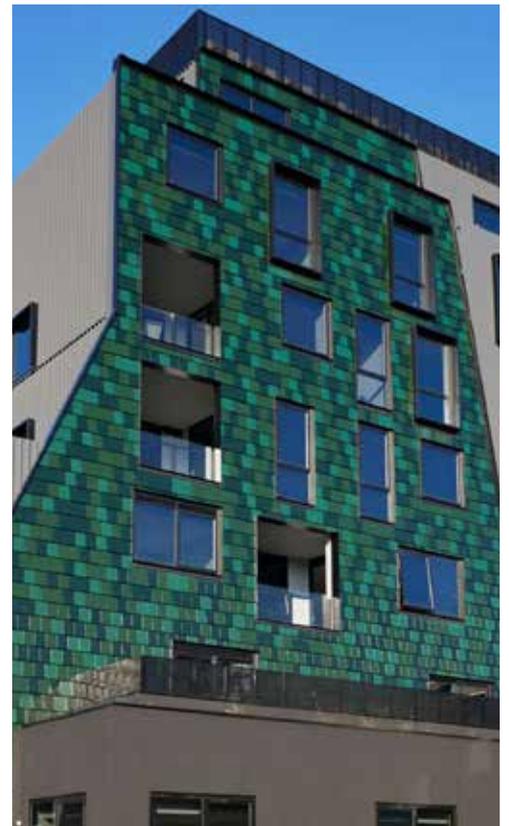
Dimensions	453 mm x 269 mm
Minimum pitch recommended	30% - 17° (*)
Weight	3,15 Kg./Unit
Units / sq. m.	11 Units
Units per LM eave line	4 Units
Useful width	238 mm
Useful length (Batten distance) VARIABLE	350 - 385 mm
Pallet data	320 Units / 1.020 Kg. 240 units / 750 Kg.
Minimum order	4 Units **



Approximate values: If the roof tiles are installed on battens, the useful length must be calculated on site. A tolerance of ± 2% is allowed on the dimensions of the roof tiles according to EN 1024.

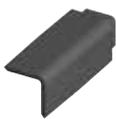
(*) In zone 1 (protected area), arranged in staggered formation with waterproof membrane and batten distance of 350 mm on a skirt of up to 6.5 m. Check pitch panel according to the roof length and the geographical area according to EN 136020.

** The tiles are subject to minimum order and must be multiples thereof.

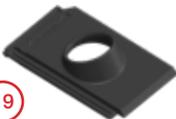


ACCESSORIES

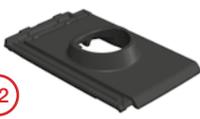
 1	 2	 3	 4	 5
Angular Ridge 42 x 30,5 x 9,7 cm. 2,5 Units/ml / 3,2 kg. Max. Slope 62%-31.5°	Angular Hip Starter 42,2 x 30,5 x 10 cm. 2,83 kg.	Angular 3 Ways 45,2 x 29,3 x 10 cm. 4,37 kg.	Angular 4 Ways 46 x 41,5 x 16,5 cm. 6,50 Kg.	Straight End Cap 8,5 x 28,5 x 12,5 cm. 2,65 kg.
 6	 7	 8	 9	 10
100° Ridge 47,5 x 25 x 10,5 cm. 2,22 Units/ml / 4,00 kg. Max. Slope 100% - 45°	100° Hip Starter 37 x 25 x 10,5 cm. 2,70 kg.	100° 3 Ways 40 x 45 x 22 cm. 5,15 kg.	100° 4 Ways 46,5 x 46,5 x 16 cm. 7,50 Kg.	100° End Cap 27,5 x 28 x 7 cm. 2,1 kg.

 11	 12
Interlocking EdGES FLAT-5XL Left 45,5 x 8 x 15 cm. 2,20 kg.	Interlocking Edge Left 45,5 x 8 x 15 cm. 2,20 kg.
 13	 14
Interlocking Edge Right 47,2 x 11,2 x 15 cm. 3 kg.	Straight Edge FLAT (Left/Right) 40,4 x 12,4 x 12,4 cm. 2,6 - 3 Units/ml / 2,50 kg.
 15	 16
Universal Angular Edge A: for Alicantina-12 B: on monopitch 43 x 14,5 x 14,5 cm. 2,5 Units/ml / 2,85 kg.	Ventilation Cap 24,5 Øext - 22 Øint x 6 cm. 1,70 kg.

FLAT-5XL

 19	 20	 21
Chimney Carrier FLAT-5XL d.140 45,7 x 27,2 x 16 cm. 17 Øext - 13 Øint / 3,75 kg.	Half FLAT-5XL 45,7 x 27,2 x 2,4 cm. 3,5 kg.	Ventilation FLAT-5XL 45,7 x 27,2 x 5 cm. 3,5 kg.

FLAT-10

 22	 23	 24
Chimney Carrier FLAT-10 d.140 47,5 x 28,5 x 10,5 cm. 18 Øext - 13,5 Øint / 4,5 kg.	Half FLAT-10 47,5 x 16,6 x 2,6 cm. 2 kg.	Ventilation FLAT-10 47,5 x 28,5 x 3,7 cm. 3,5 kg.

TECHNICA-10

 25	 26	 27
Chimney Carrier TECHNICA-10 d.130 47,3 x 26,2 x 10,5 cm. 17 Øext - 13 Øint / 3,7 kg.	Half TECHNICA-10 47,5 x 15,5 x 2,6 cm. 2 kg.	Ventilation TECHNICA-10 47,5 x 26,2 x 10,5 cm. 3,4 kg.

A tolerance of ± 2% is allowed on the dimensions of the roof tiles according to EN 1024.

Dimensions in centimeters.

Check finishing colours for different accessories.

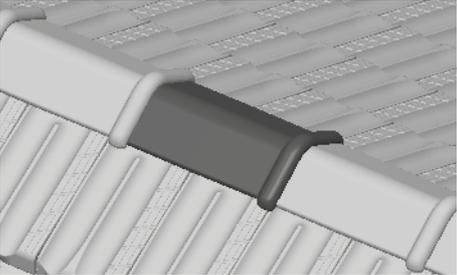
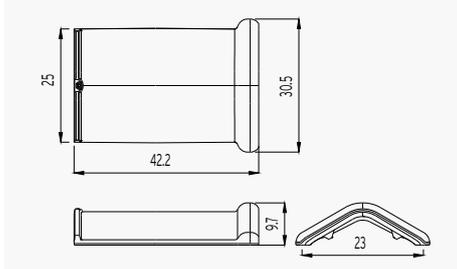
Accessories are subject to minimum order and must be multiples thereof.

For textured roof tiles finishes, the Half and Ventilation roof tiles are with texture; other accessories are without texture.

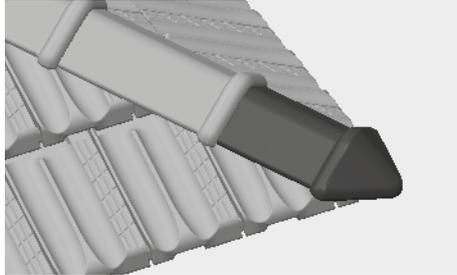
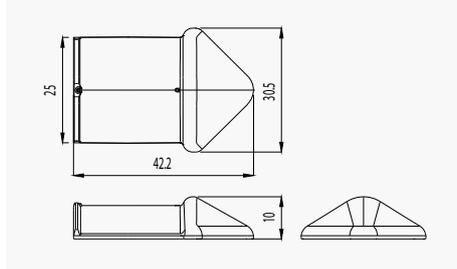
 28	 29	 30	 31
Chimney Carrier ALICANTINA-12 43 x 25,7 x 12 cm. 15,5 Øext-13,5 Øint cm. - 4 Kg.	Half ALICANTINA-12 (Left/Right) 43 x 15 x 4,5 cm. 1,25 Units/ml / 1,80 Kg.	Ventilation ALICANTINA-12 43 x 25,7 x 10 cm. 4 Kg.	Half FLAT-11 45,7 x 15,3 x 2,5 cm. 1,5 Kg.

ACCESSORIES

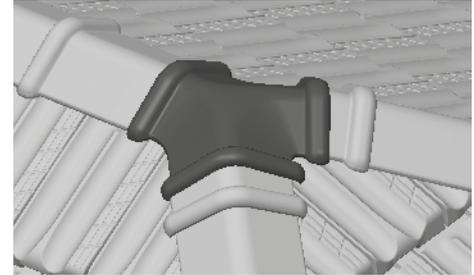
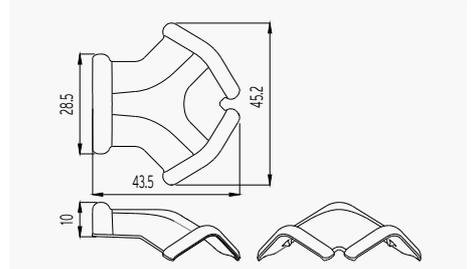
1 Angular Ridge



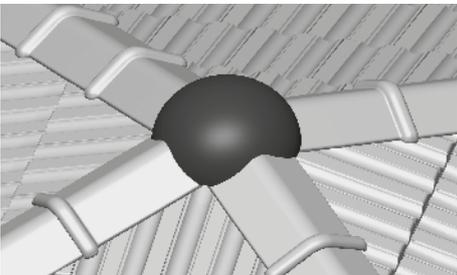
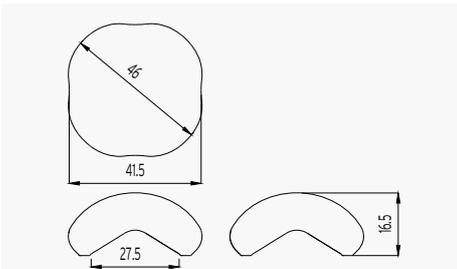
2 Angular Hip Starter



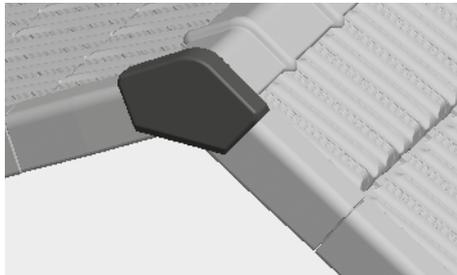
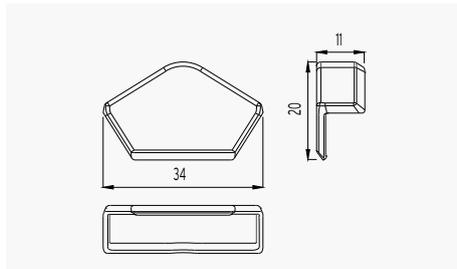
3 Angular 3 Ways



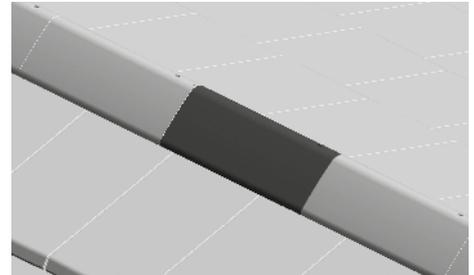
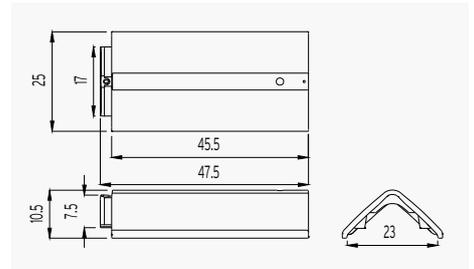
4 Angular 4 Ways



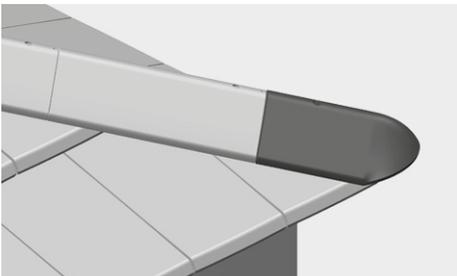
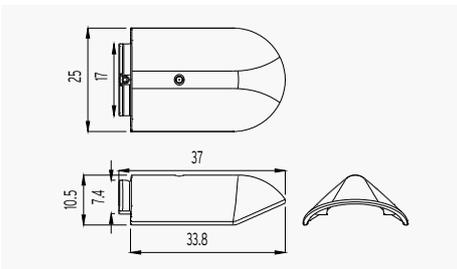
5 Straight End Cap



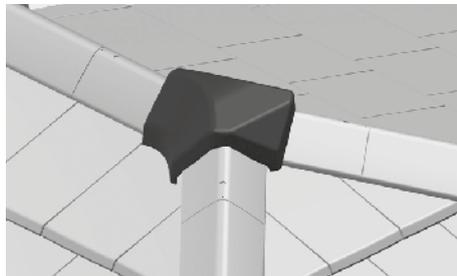
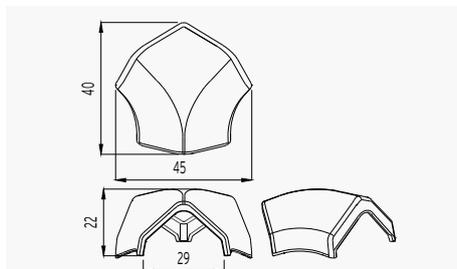
6 100° Ridge



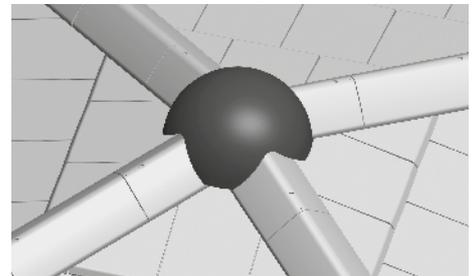
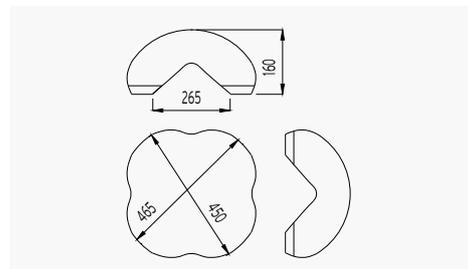
7 100° Hip Starter



8 100° 3 Ways

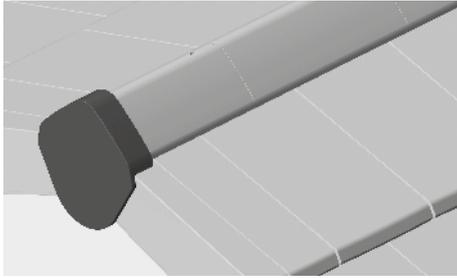
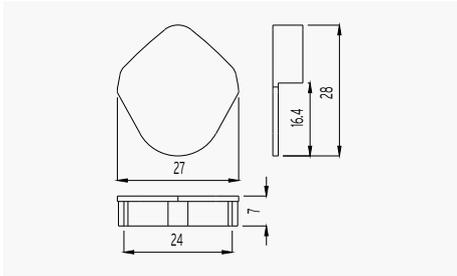


9 100° 4 Ways

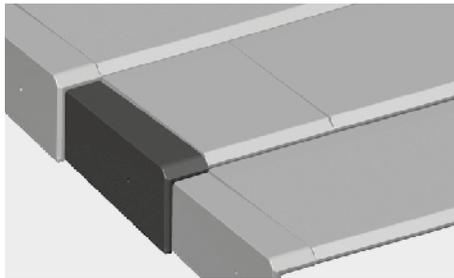
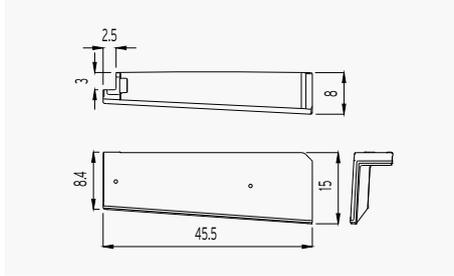


ACCESSORIES

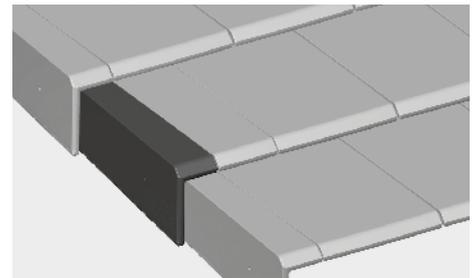
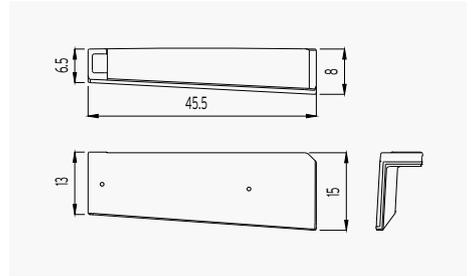
10 100° End Cap



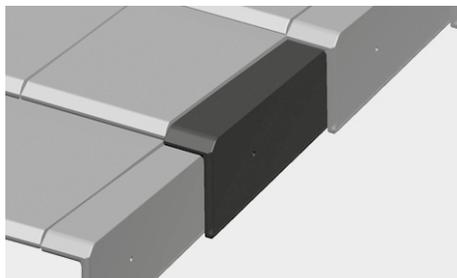
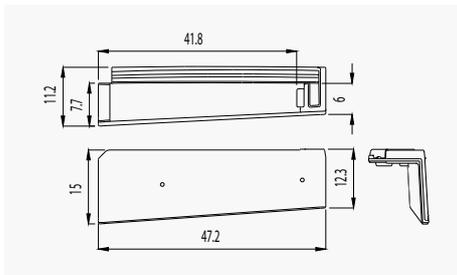
11 Interlocking Edges FLAT-5XL Left



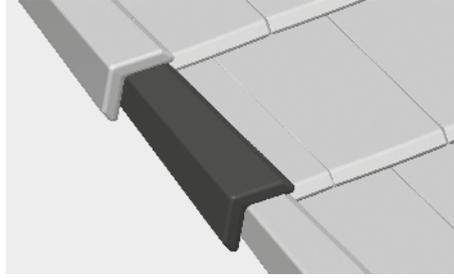
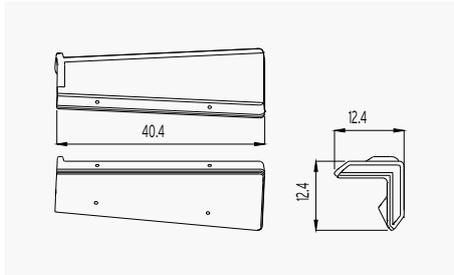
12 Interlocking Edge Left



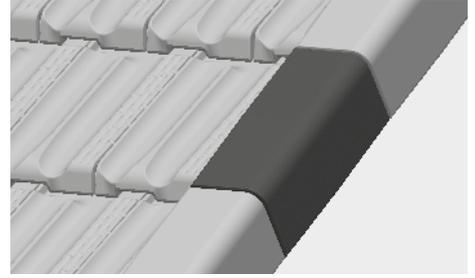
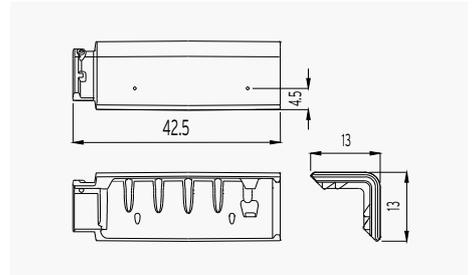
13 Interlocking Edge Right



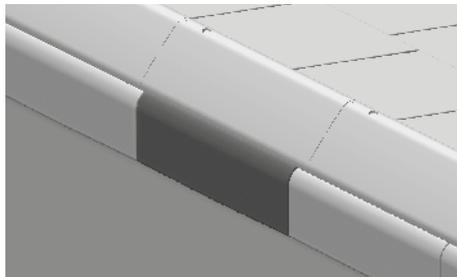
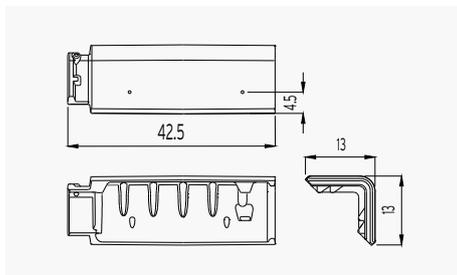
14 Straight Edge FLAT (Left/Right)



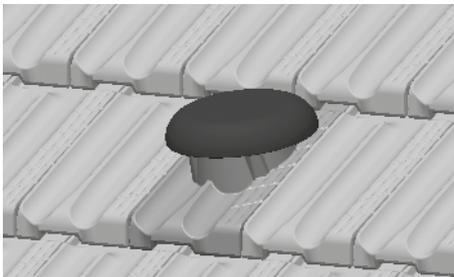
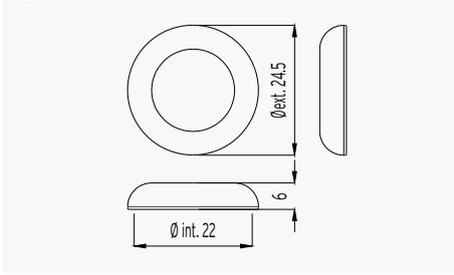
15 A: Universal Angular Edge for Alicantina-12



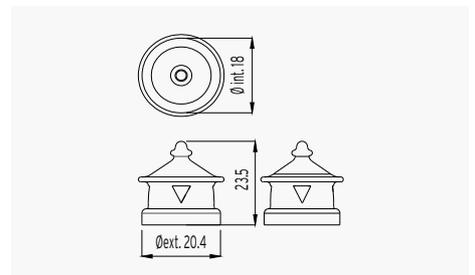
15 B: Universal Angular Edge on monopitch



16 Ventilation Cap

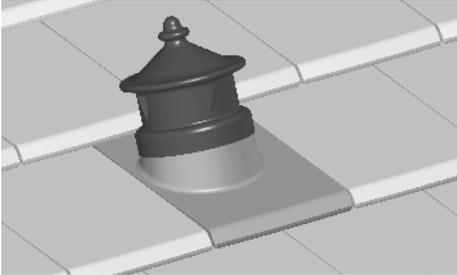
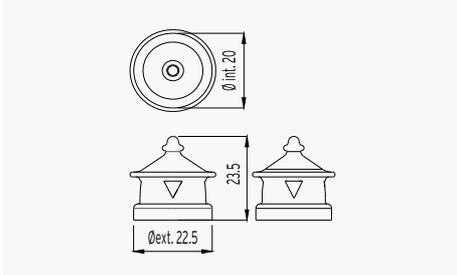


17 Chimney d.130

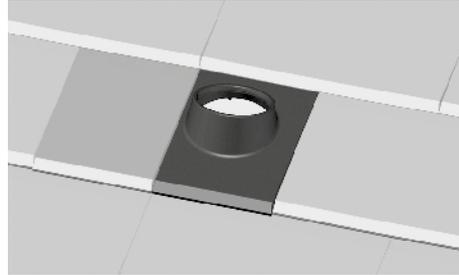
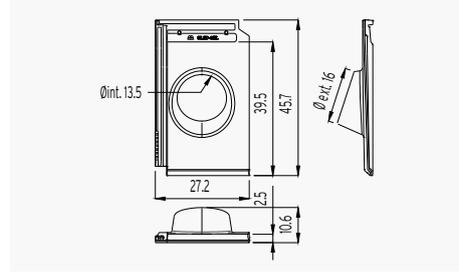


ACCESSORIES

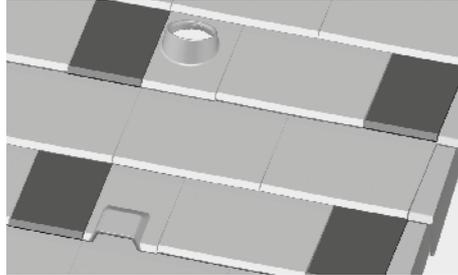
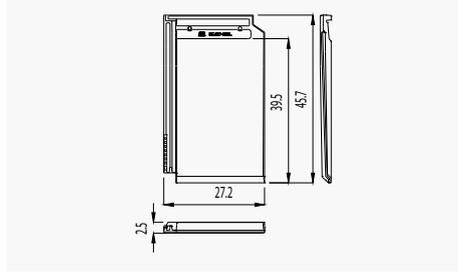
18 Chimney d.140



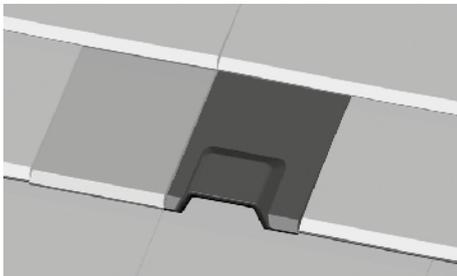
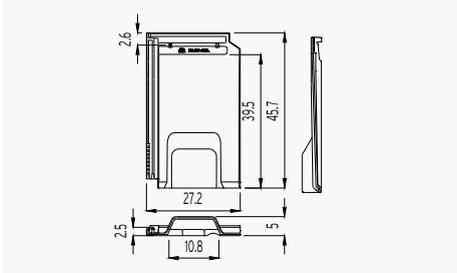
19 Chimney Carrier FLAT-5XL d.140



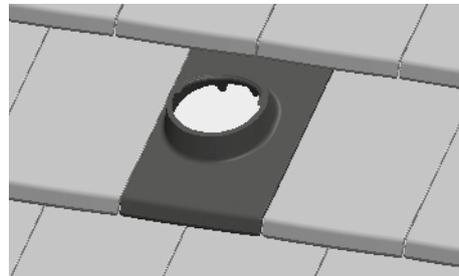
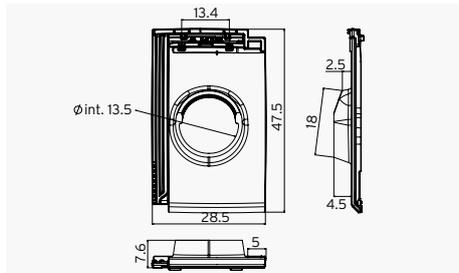
20 Half FLAT-5XL



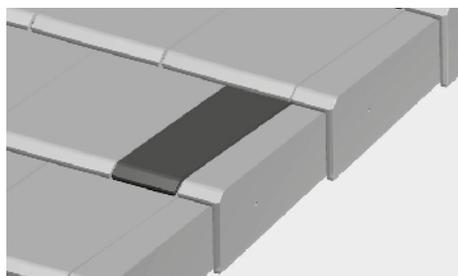
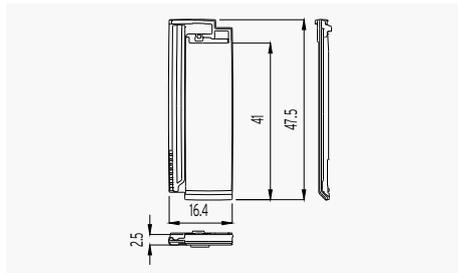
21 Ventilation FLAT-5XL



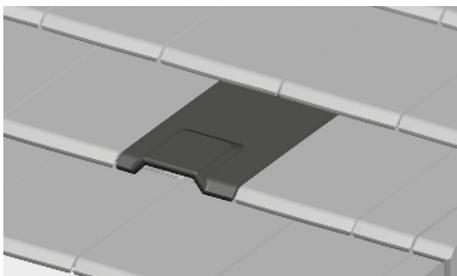
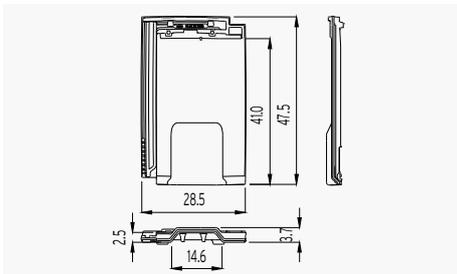
22 Chimney Carrier FLAT-10 d.140



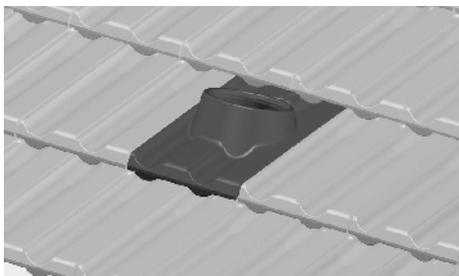
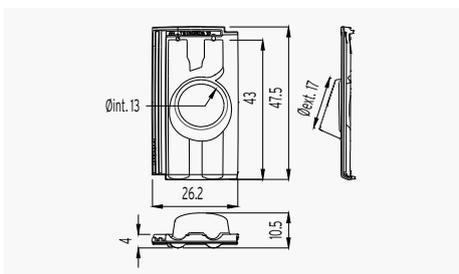
23 Half FLAT-10



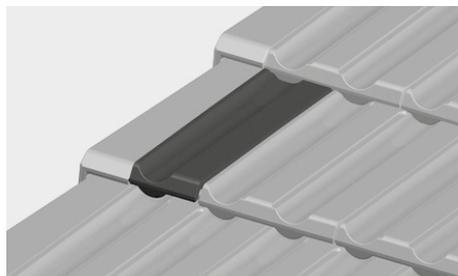
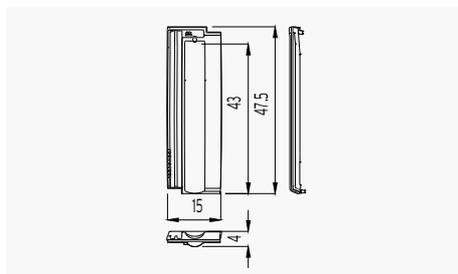
24 Ventilation FLAT-10



25 Chimney Carrier TECHNICA-10 d.130

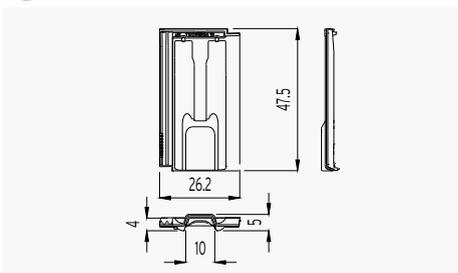


26 Half TECHNICA-10

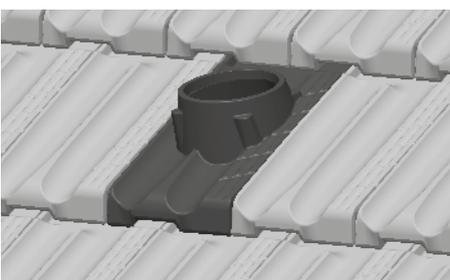
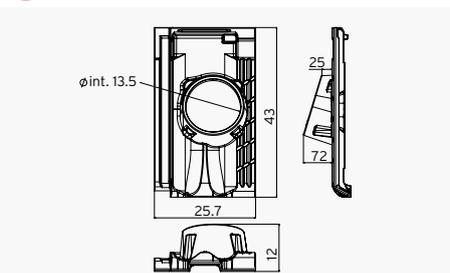


ACCESSORIES

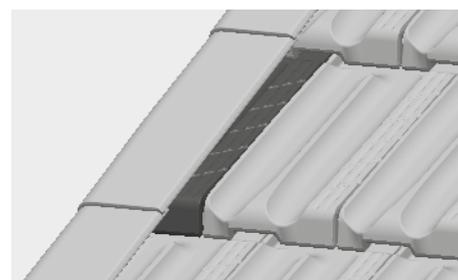
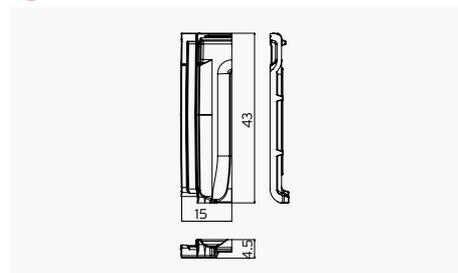
27 Ventilation TECHNICA-10



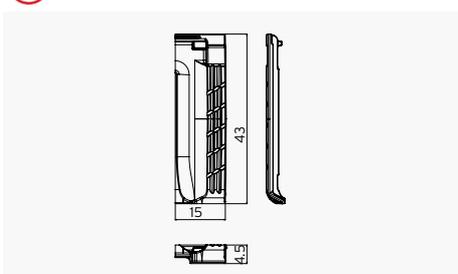
28 Chimney Carrier ALICANTINA-12



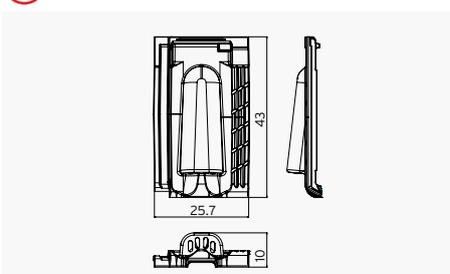
29 Half ALICANTINA-12 Izquierda



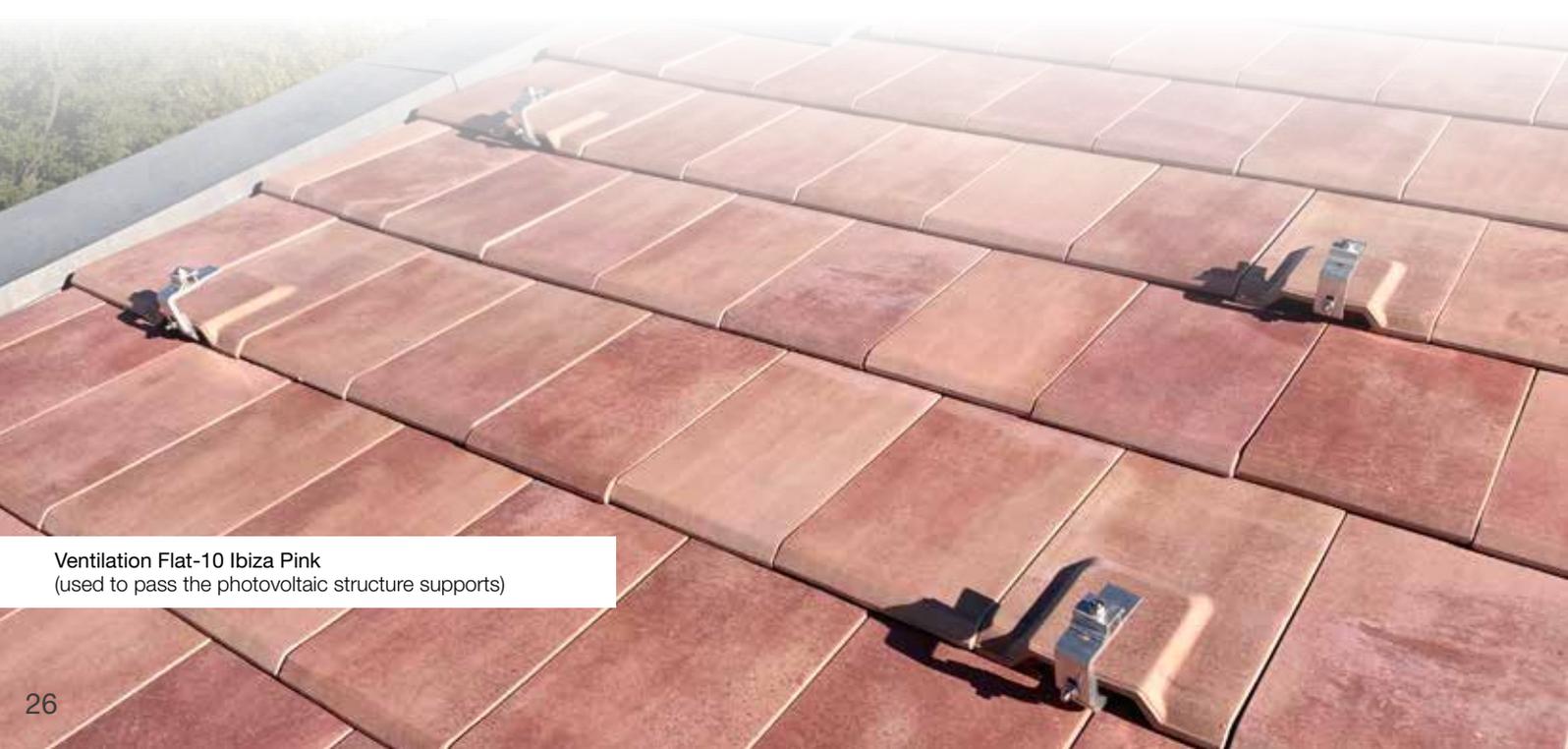
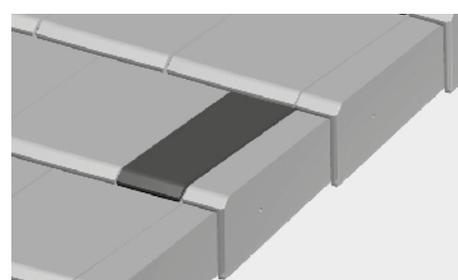
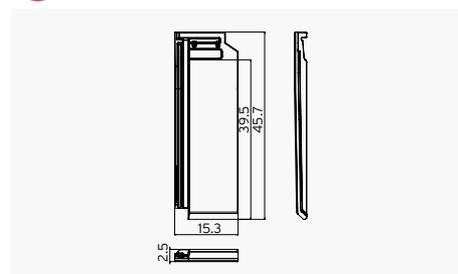
29 Half ALICANTINA-12 Derecha



30 Ventilation ALICANTINA-12



31 Half FLAT-11



Ventilation Flat-10 Ibiza Pink
(used to pass the photovoltaic structure supports)



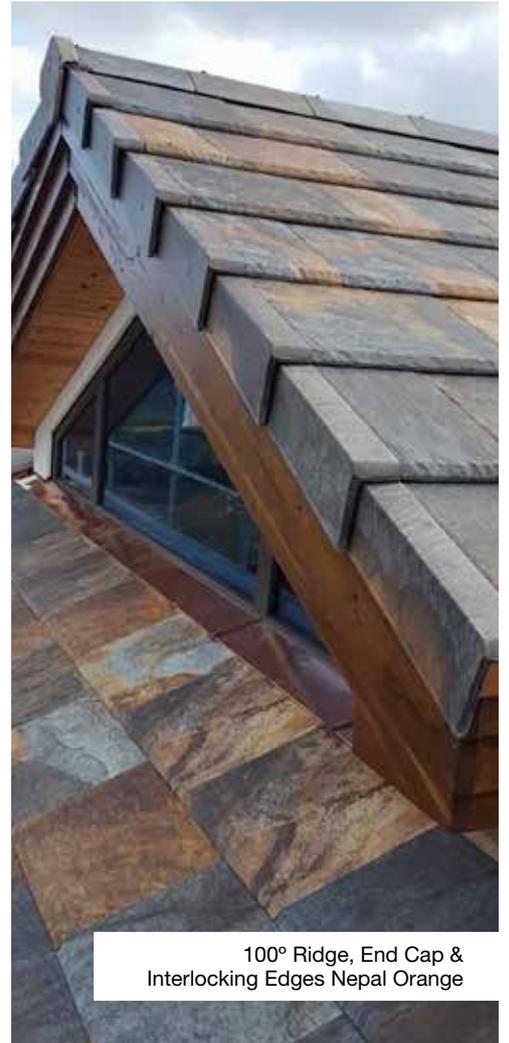
100° Ridge Toronto Oak
End Cap & Interlocking Edges Graphite



100° 3 Ways Tokyo Copper



Interlocking Edges Flat, Ventilation & Half Flat-5XL Leon Matte



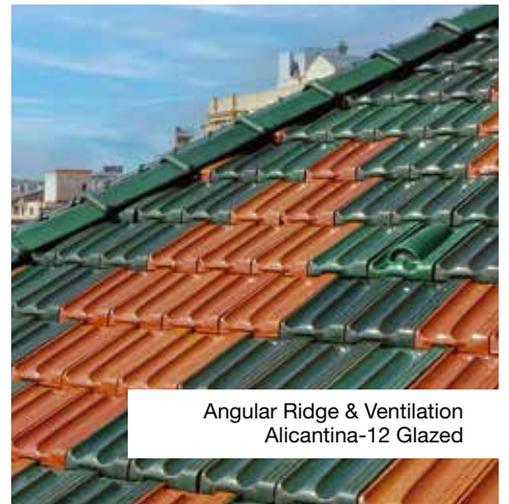
100° Ridge, End Cap &
Interlocking Edges Nepal Orange



100° Ridge & Ventilation Flat-10 Paris Ocre



Intermediate gutter Flat-10 Leon Matte



Angular Ridge & Ventilation
Alicantina-12 Glazed

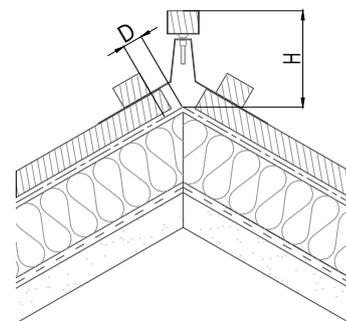
FLAT ROOF TILES INSTALLATION

ROOF SLOPES

Each roof must be planned taking into account where it should be built and the length of the deck, in accordance with the technical standards applicable in each territory. It is for this reason that for each area and location, must take into account of the minimum slopes for installation and the roof length.

Pitch panel according to the roof length and the location.
(according to UNE - 136020)

Location	Roof length up to 6.5 m	Roof length from 6.5 to 9 m	Roof length from 9 to 12 m
Protected	42% - 22,5°	50% - 26,5°	55% - 29°
Normal	50% - 26,5°	55% - 29°	65% - 33°
Exposed	65% - 33°	75% - 37°	85% - 40,5°



Use the breathable/waterproof membrane on the support.

A special study should be carried out for roof length more than 12m in length (ask us).

°	FLAT-5XL			FLAT-10			TECHNICA-10		ALICANTINA-12
	100° Ridge			100° Ridge			100° Ridge	Angular Ridge	Angular Ridge
°	20°	30°	40°	20°	30°	40°	20°	30°	20°
D (mm)	60	55	55	70	65	65	85	65	90
H (mm)	60	45	35	60	45	35	60	45	55

D - Distance between the last batten and ridge line; H - Height of ridge batten; ° - Pitch

The technical drawing is an example of construction. The roof tiles must be overlapped approx. 7-9 cm with the ridge.

FITTING

Roof tiles on the roof surface must be fixed to the support to a greater or lesser extent, depending on the pitch. In the case of singular points such as eave lines, edges, hip lines, valleys, joints and the ridge line, all roof tiles and accessories of these joints must be fixed to the battens.

We recommend that all roof tiles that form the perimeter of each skirt be fixed mechanically.

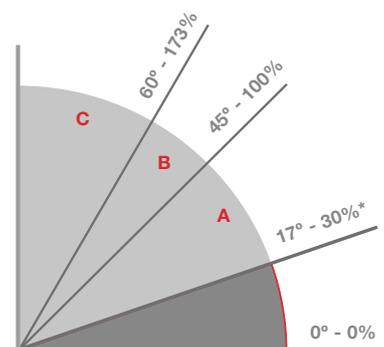
Batten type:	Metallic
	Treated wood
Dry installation:	Screws, nails and clips (depending on the support)
	Roof tiles adhesives

A 30% - 100% The roof tiles will rest on battens, since they are provided with nib support.

* For the Alicantina-12 Roof Tile, 40%

B 100%-173% All the roof tiles around the perimeter of each roof surface must be fixed and at least one in every five should be fixed in a regular manner.

C > 173% In areas with strong winds, exposed areas or areas with basic seismic acceleration of > 0.12g, all roof tiles should be fixed mechanically to the battens.



Less than 30% - Total waterproof of the entire roof surface is required for any pitch.

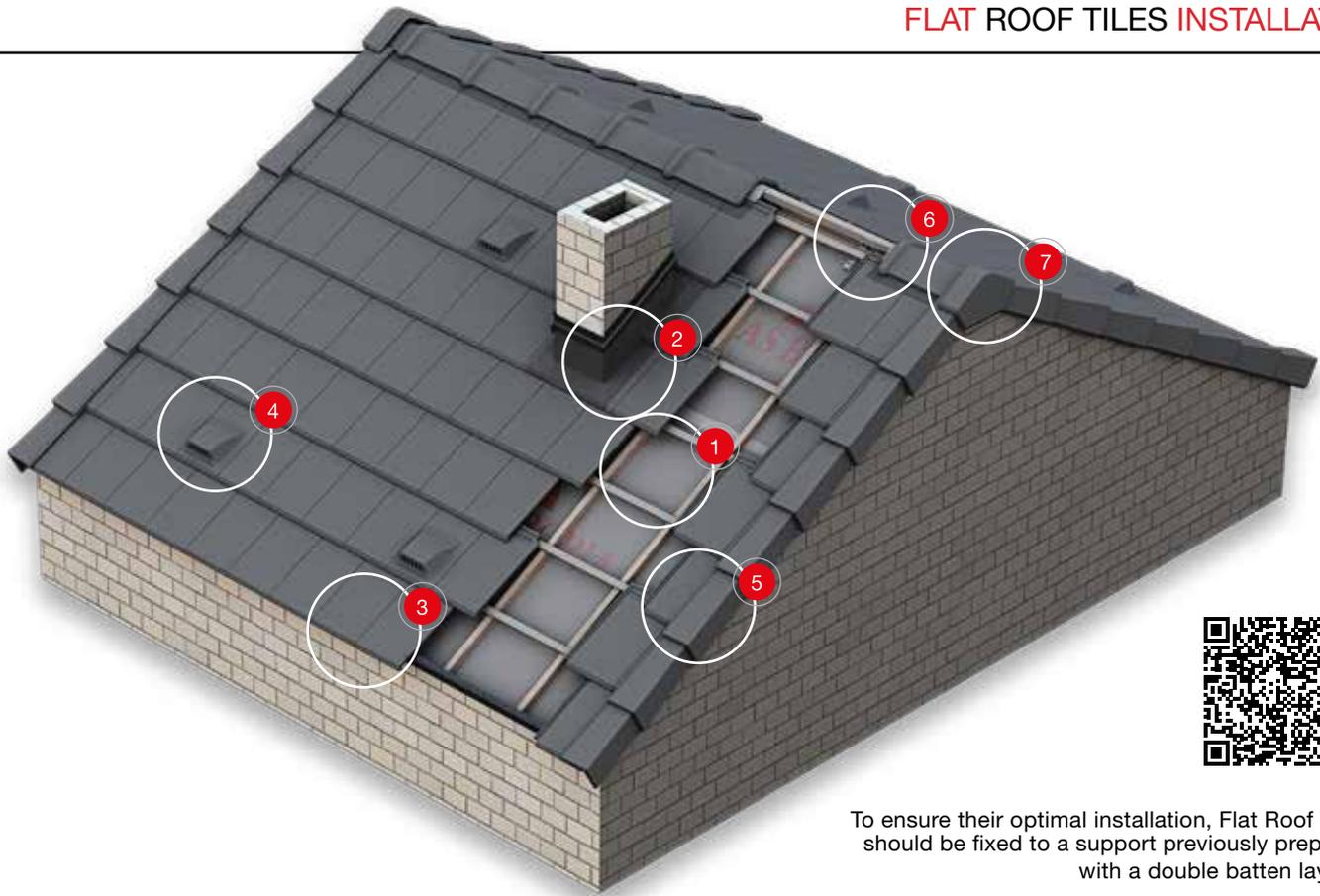
Installation must comply with the technical standards applicable in each territory Code of practice for design and fixing of roofs with clay roofing tiles and Tejas Borja specifications.

VENTILATION

Under-tile ventilation is necessary at all times. This will guarantee the durability of the material used to build the roof with their optimal characteristics, improving the hygrothermal performance of the roof tiles against the moisture resulting from condensation.

There must be a continuous air flow between eave lines and ridge line. Therefore, a space must be left between the roof tiles and the support. As a result, eave lines, ridge lines and singular points must never be filled in with mortar, as this will impede micro-ventilation.

Ventilation roof tiles will also be installed in a uniform manner across the surface of the roof. In case of dry installation, it is recommended that at least 1 ventilation roof tile be used every 10 sq.m. and 4 ventilation roof tiles per each roof skirt.



To ensure their optimal installation, Flat Roof Tiles should be fixed to a support previously prepared with a double batten layout.

*Consult dry installation videos at www.tejasborja.com



A breathable waterproof membrane should be laid on the support of the roof and the main battens (L1) should be installed every 50/70 cm, parallel to the steepest slope. The horizontal support battens (L2) for the roof tiles should be fixed to the main battens depending on the useful length of each roof tile (the useful length must be calculated on site).



Ventilation roof tiles are installed in the same manner as other roof tiles, interlocking into each other laterally and from the top. These roof tiles should be distributed along the roof surface.



To adequately solve roof joints and chimneys, multi-use (Premium or Aluminium) waterproofing bands should be used. Once attached to the clean dry surface, they must then be finished with the Counter flashing profile, sealing the upper line with a continuous line of putty.



Edges clay accessory (left and right) should be installed overlapping the roof tiles and following the direction of the tile. To complete the slope on the left it should be placed on the roof tile or half-tile, depending on the width of the roof surface and method of installation (straight or in staggered formation).



To prevent birds from entering the roof and allow ventilation, Eave ventilation comb should be installed.

The first batten to be installed on the eaves must be 2 cm taller than the others. To achieve this effect, a taller batten or a Eave Ventilation Comb Profile, which combines both products, can be installed in this area. Flat 12 Starter Roof Tile can be used for this purpose.



The batten installed on the ridge line should be attached to the Cantilevel supports. To install the battens, they must be installed to the Cantilevel support at the required pitch and height so that the ridges are directly supported on the roof tiles in the last row.



Flat roof tiles are installed from right to left, and from the eave to the ridge line. The first row of roof tiles have variable overhanging, depending on the model and installation.

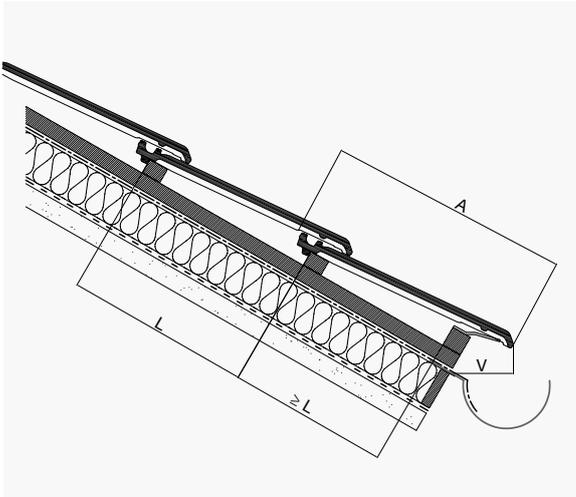


The Under ridge roll tape (mixed, aluminium or Roof ridge pvc vent brush) should be placed on the ridge batten and fixed with clips or nails. The rolls have adhesive strips of butyl to attach to the profile of the roof tiles and waterproof joints. Finally, the Ridges and End Caps clay accessory should be installed with screws/nails and ridge clips.

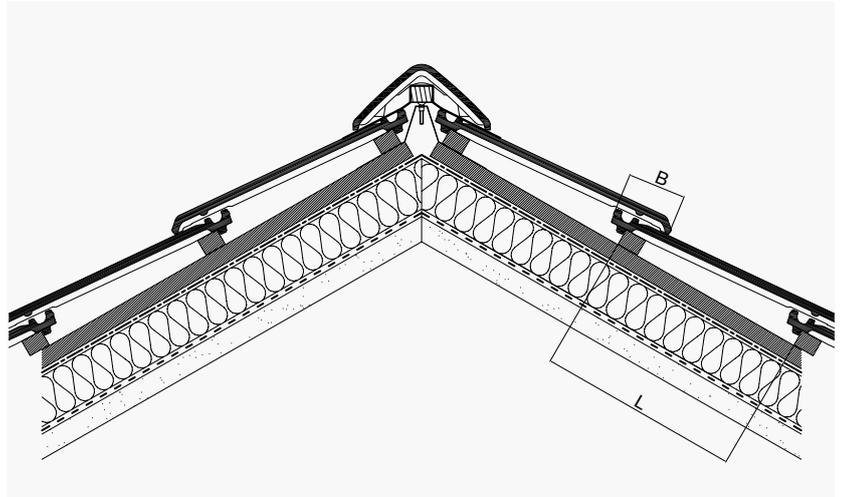
Always follow the Code of practice for installation of roofs with clay roofing tiles in accordance with latest regulations and those applicable in each zone of application.

FLAT ROOF TILES INSTALLATION

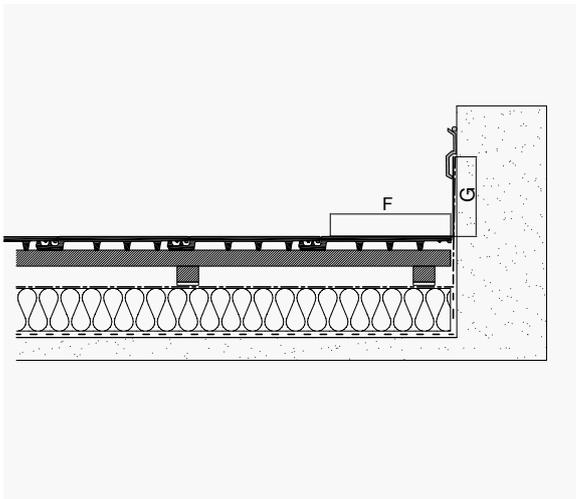
EAVE LINE



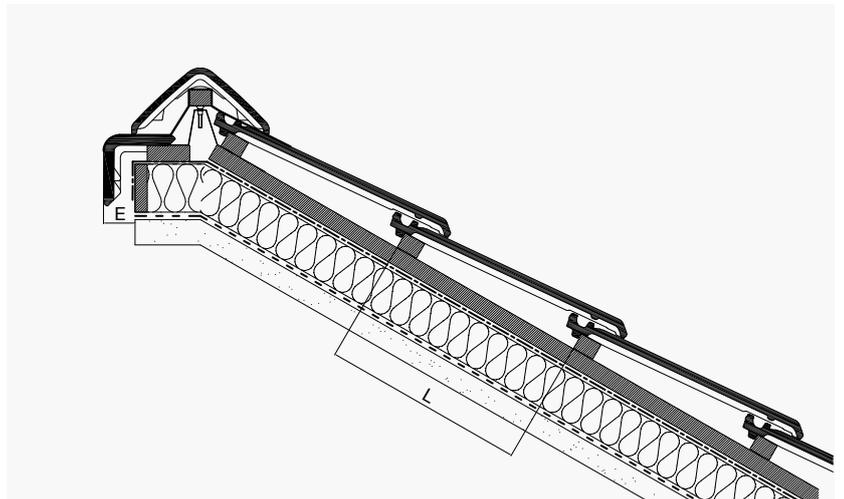
RIDGE LINE



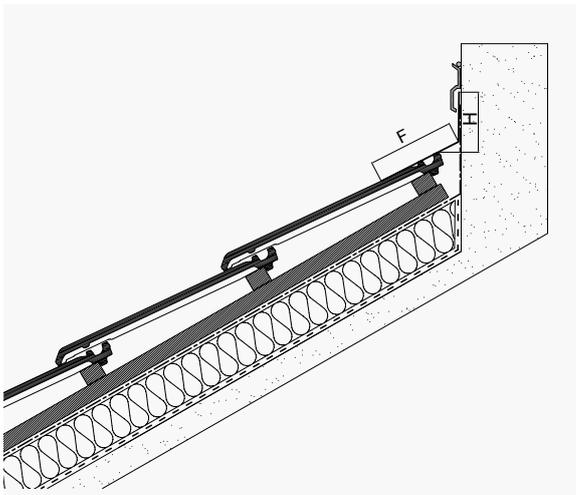
HORIZONTAL FLASHING



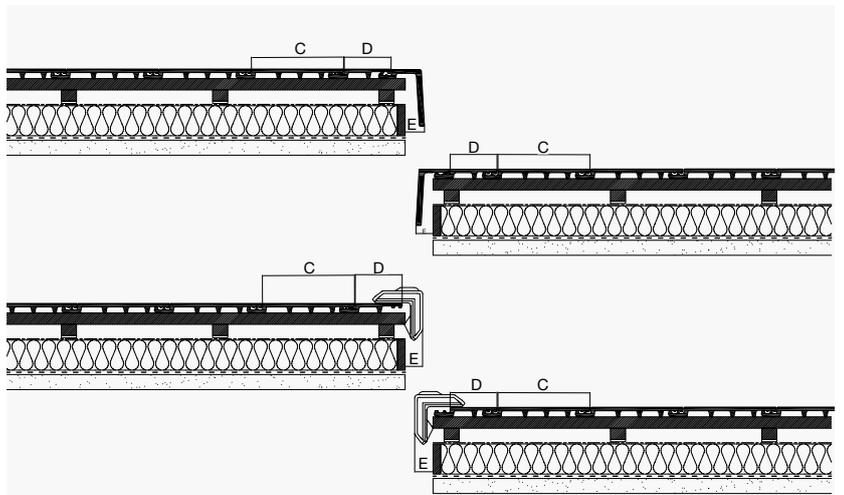
MONOPITCH



UPPER FLASHING



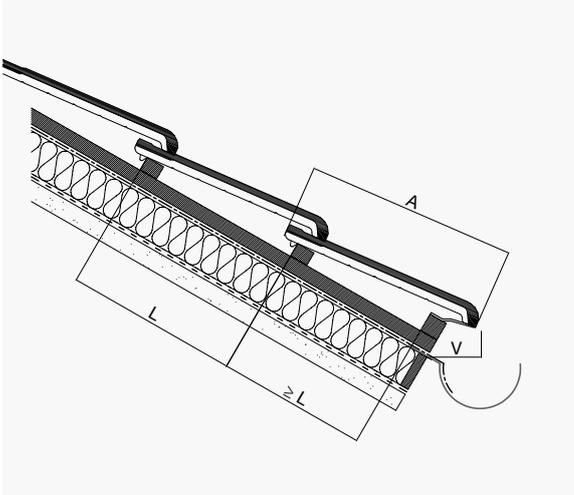
GABLES



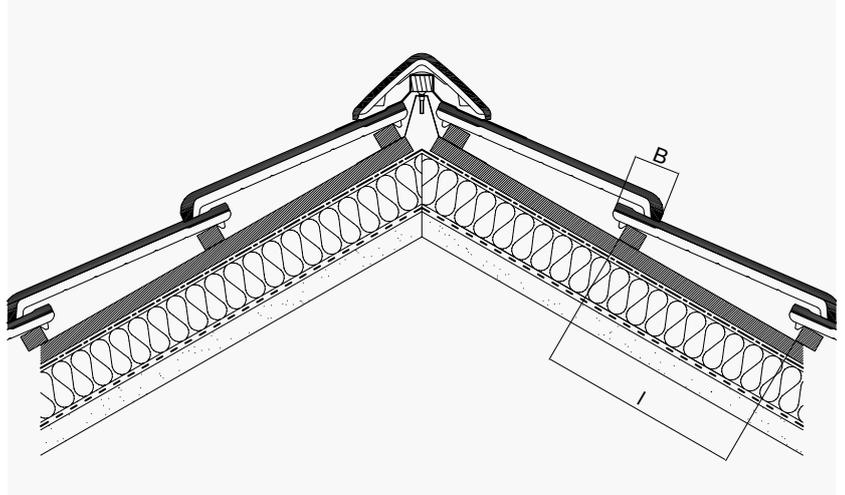
ROOF TILE	A	B	C	D	E	F	G	H	L	V
FLAT-5XL	457	72-117	475	237	≥ 50	≥ 100	≥ 250	≥ 150	340-385	≥ 50
FLAT-10	475	75-110	245	124					365-400	
FLAT-11	457	72-117	238	120					350-385	

MARSELLESA/TECNICA ROOF TILES INSTALLATION

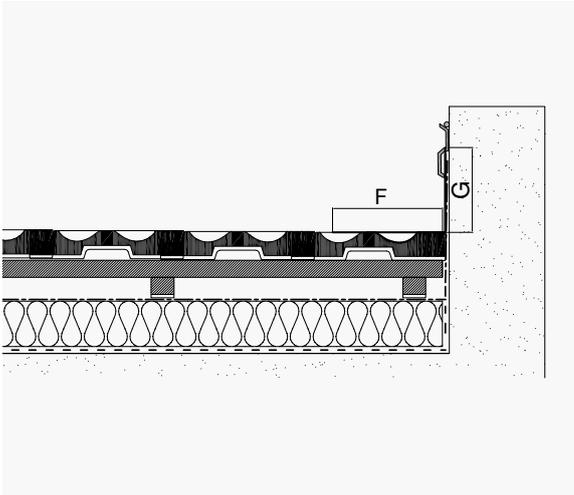
EAVE LINE



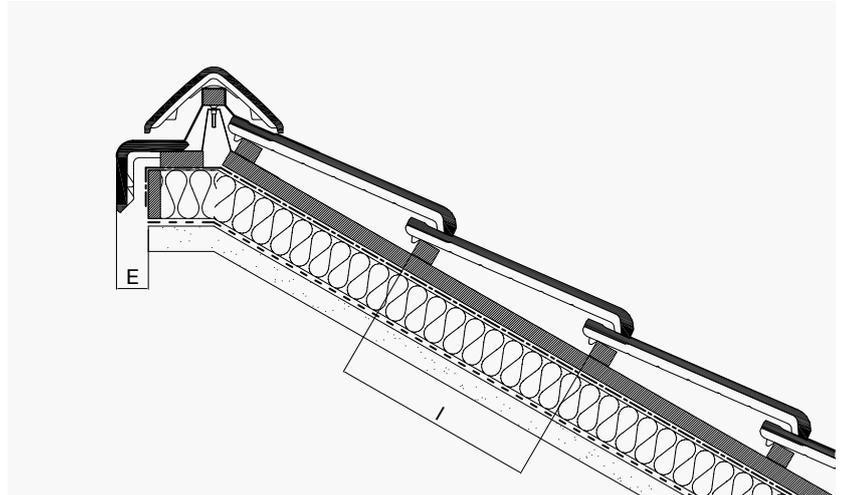
RIDGE LINE



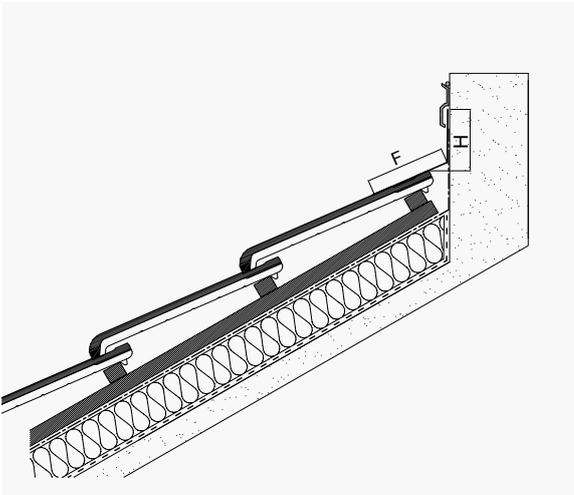
HORIZONTAL FLASHING



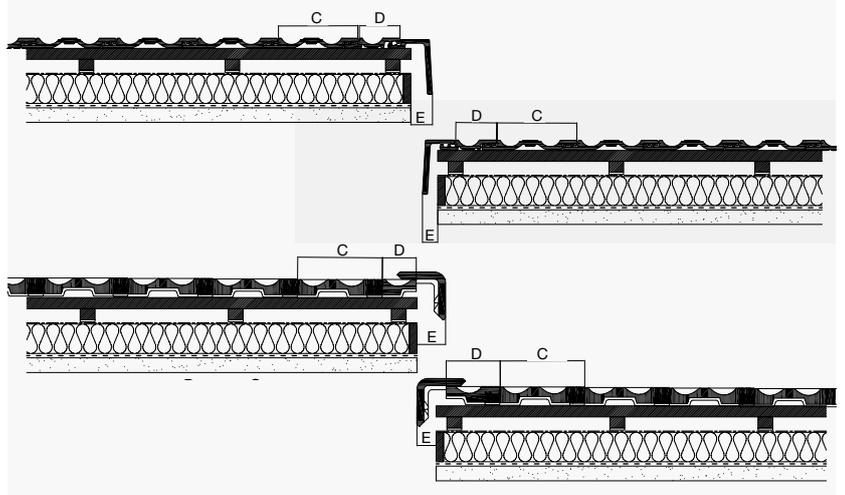
MONOPITCH



UPPER FLASHING



GABLES



ROOF TILE	A	B	C	D	E	F	G	H	L	V
TECNICA-10	475	65-105	225	110	≥ 50	≥ 100	≥ 250	≥ 150	370-410	≥ 50
ALICANTINA-12	430	60	210	103					370	

BORJASAT

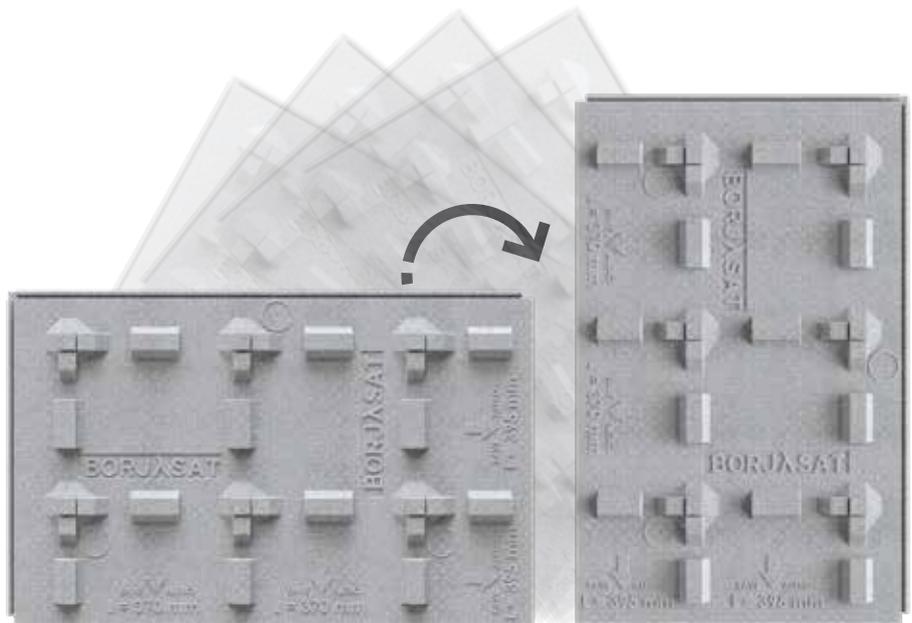
Advanced Roofing System



Install **horizontally** for a batten spacing of **370 mm**.



Install **vertically** for a batten spacing of **395 mm**.



100% Neopor®

$\lambda = 0,031 \text{ W/mk}$

BORJASAT
ACCESSORIES

**JUST ONE PANEL
FOR ALL TILE
MODELS**

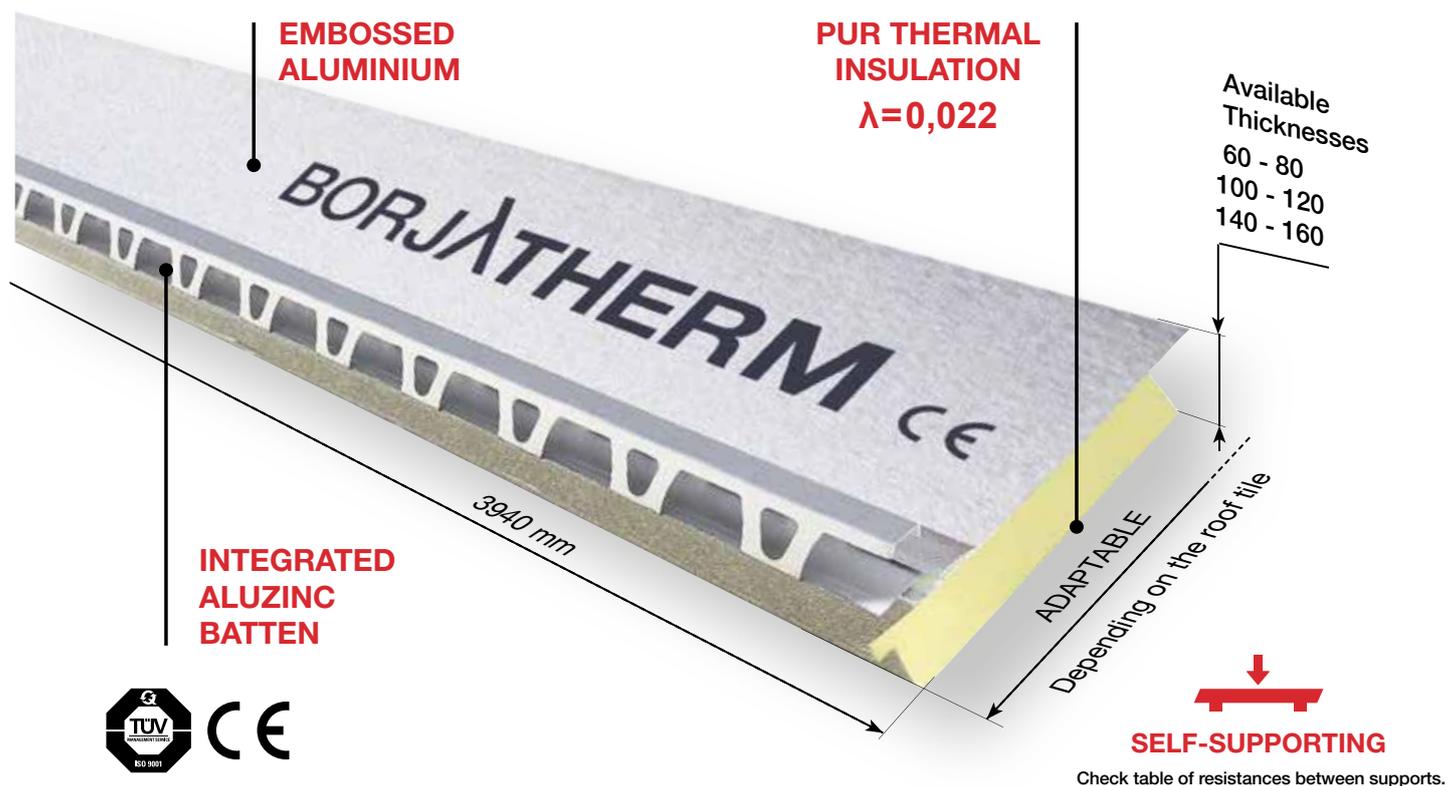


Metallic Batten U 40x15
BorjaSAT



BORJATHERM®

Insulation System for Energy Efficient Roofs



BORJATHERM ACCESSORIES



BORJATHERM Extra Batten



Butyl Adhesive Band BORJATHERM 100 mm.



Treated Wooden Batten 60x50 mm.



Treated Wooden Batten 80x50 mm.

ROOF COMPONENTS

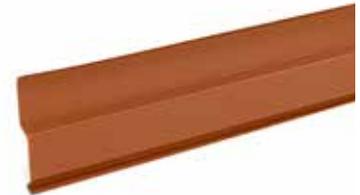
WATERPROOFING OF ENCOUNTERS



Multi-Use Premium 300/450
(waterproofing flashing)



Multi-Use Alu 300
(waterproofing flashing)



Counter Flashing
Profile



Valley Adjustable
Alu Flashing



Auto-adhesive
Butyl Band 300



BATTENS



Metallic Batten
30x30



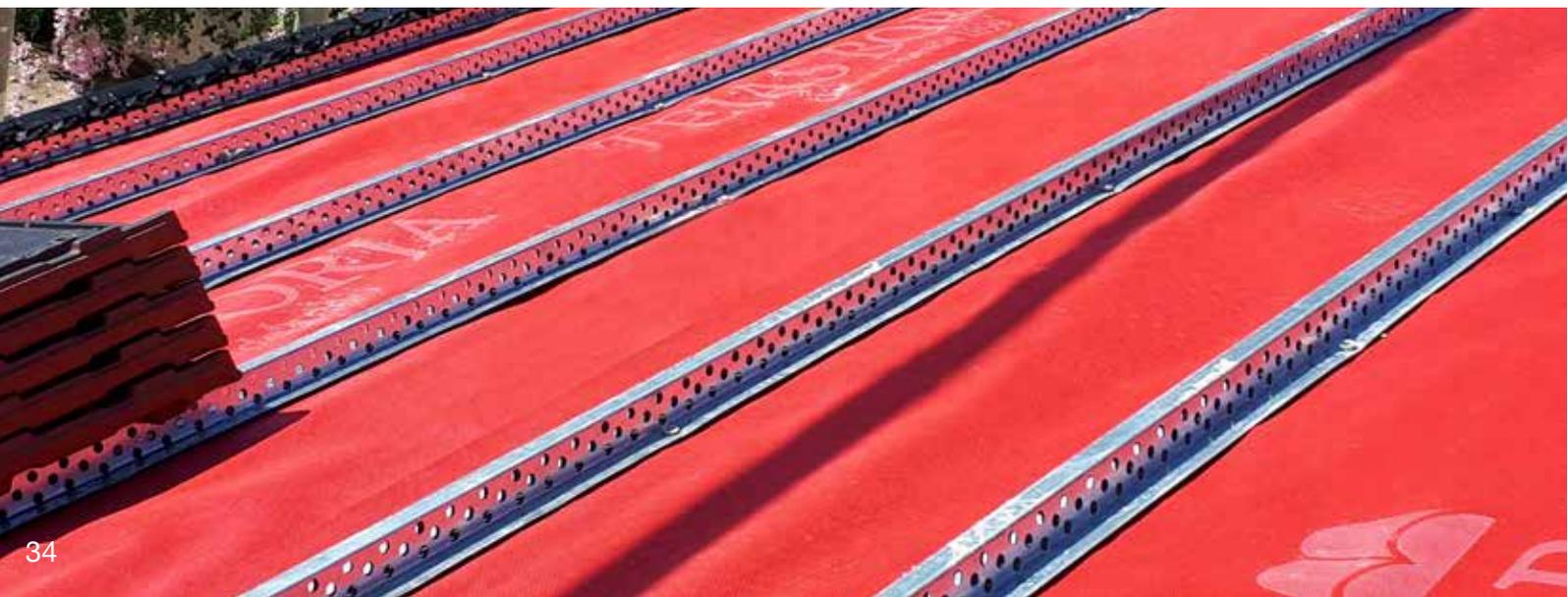
Ventilated Batten
30x20



Treated Wooden
Batten 40x30



Metallic Batten U
40x40 (Ridge Line)



ROOF COMPONENTS

WATERPROOF AND BREATHING



Waterproof and Breathing Membrane 180 Premium



Waterproof and Breathing Membrane TB 160



Waterproof and Breathing Membrane TB 130



Vapour Barrier 100 (installation under insulation)



Waterproof and Breathing Membrane Eco -135



Nail Sealing Tape



Roofing Adhesive Tape 50 mm

ROOF SHEETS



Fiber Cement Aged Sheet 234 Reinforced (For curved roof tiles 45 and 50 cm)



Corrugated Bitumen Sheet for Tiles with Battens (Interlocking Roof Tiles)



Corrugated Bitumen Sheet 235 (For curved roof tiles 45 and 50)

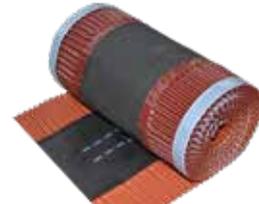
RIDGE LINE VENTILATION



Mixed Ridge Tape



Alu Ridge Tape



TB-Roll Ridge Tape (waterproof)



NOTE: The roof components are subject to minimum order and must be multiples thereof.

ROOF COMPONENTS

FIXING



Adhesive foam for roof tiles



Ridge batten supports



Fixing clips for roof tiles



Ridge clips

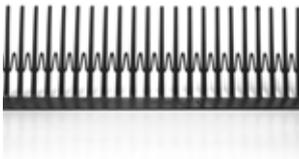


Straight snow stopper



Fixing screws

EAVE LINE VENTILATION



Ventilation Comb 100 mm



Ventilation Comb 60 mm



Bird Stop Grate 80 mm



Batten + Ventilation Comb
(Batten 30 mm; comb 60 mm)



PAINT



Touch-up paints



NOTE: The roof components are subject to minimum order and must be multiples thereof.

Installation system



Projects

TECHNICA-10



Technica-10 Graphite



Technica-10 wire-tie roof tile



Technica-10 Red

Projects

FLAT-10 / PLAIN COLOUR



Flat-10 Leon Matte



Flat-10 Graphite



Flat-10 Mid Grey



Flat-10 Leon Matte



Flat-10 Natural Black

Projects

FLAT-10 / BorjaJET



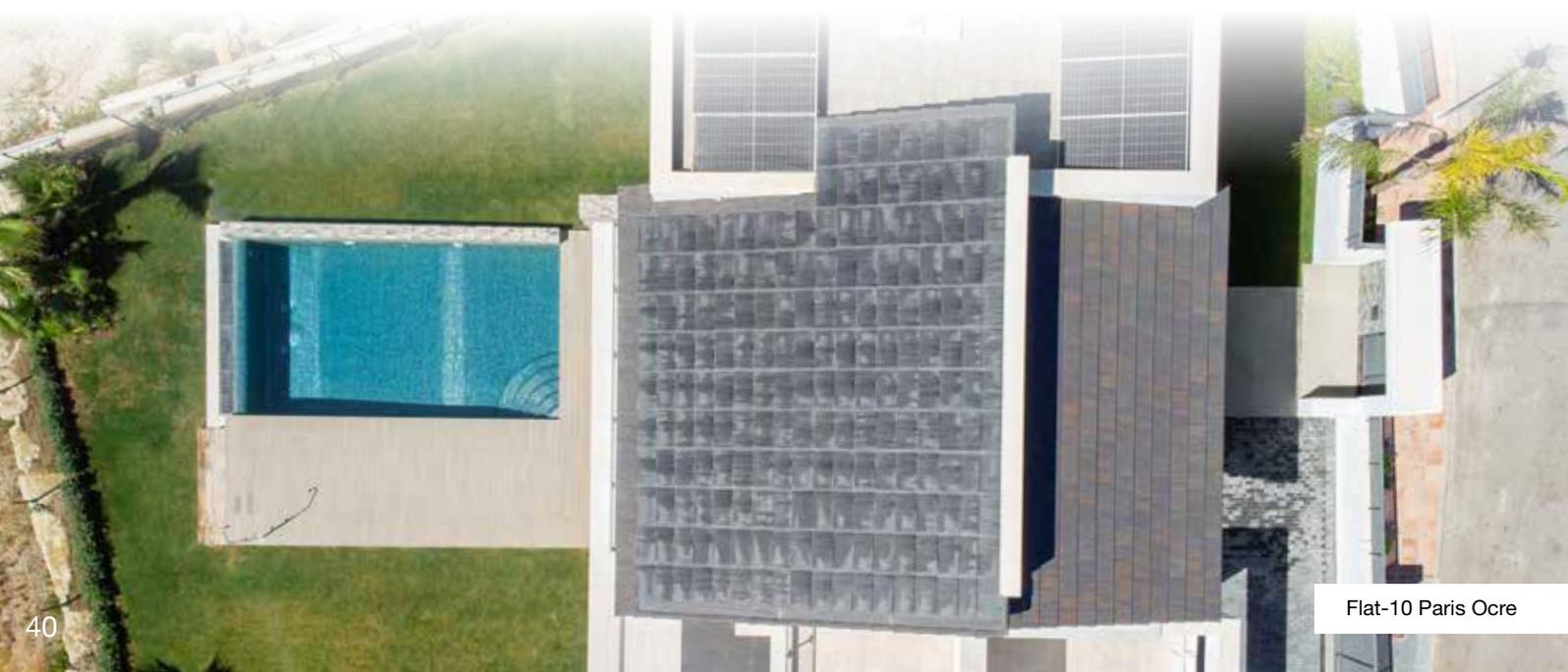
Flat-10 Nepal Orange



Flat-10 Nepal Orange



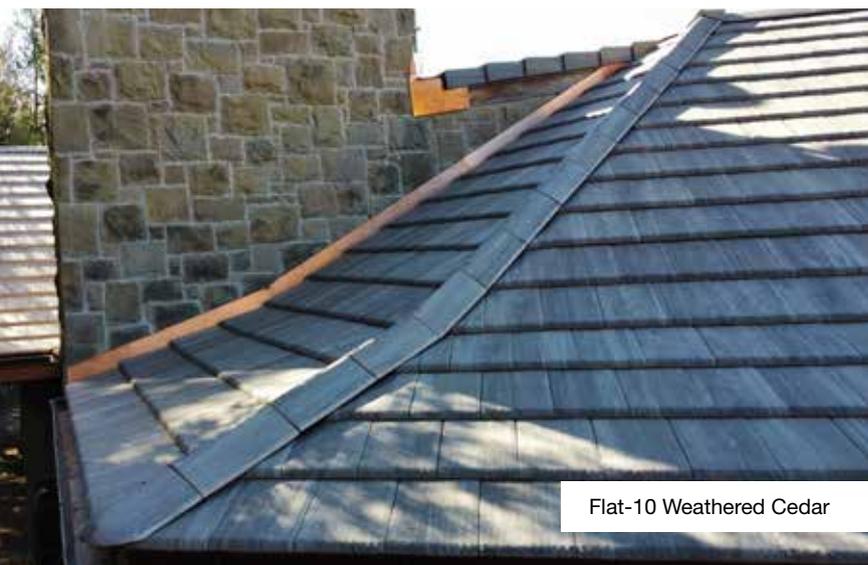
Flat-10 Paris Ocre



Flat-10 Paris Ocre



Flat-10 Ibiza Pink



Flat-10 Weathered Cedar



Flat-10 Sidney Graphite



Flat-10 Toronto Oak



Flat-10 Tokyo Copper

Projects

FLAT-5XL / PLAIN COLOUR / Leon Matte



Projects

FLAT-5XL / BorjaJET



Flat-5XL Tokyo Copper



Flat-5XL Paris Ocre



Flat-5XL Denver Iris



Flat-5XL Nepal Orange

Projects

FLAT-5XL / BorjaJET



Flat-5XL Austin Grey



Flat-5XL Irish Green



Flat-5XL Denver Iris



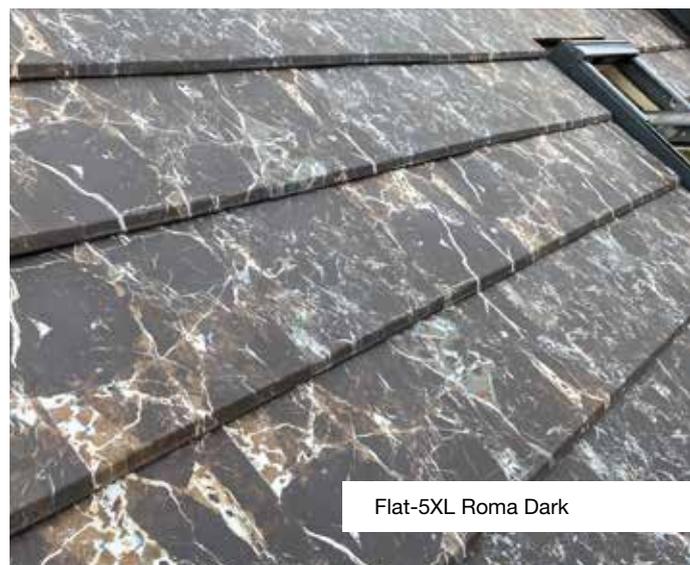
Flat-5XL Irish Green



FLat-5XL Tokyo Copper



Flat-5XL Tokyo Copper



Flat-5XL Roma Dark



Flat-5XL Tokyo Copper



Flat-5XL Irish Green

Projects

ALICANTINA-12



Alicantina-12 Litoral



Alicantina-12 Nortegna



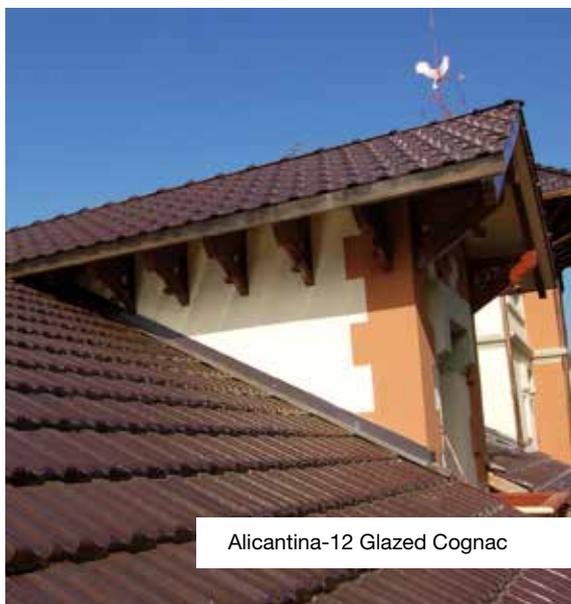
Alicantina-12 Glazed



Alicantina-12 Glazed



Alicantina-12 Litoral



Alicantina-12 Glazed Cognac



Alicantina-12 Glazed Carmin





See more projects in Flickr gallery

flickr



THE [®]EVOLUTION of the ceramic tile sector

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