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<http://www.gracewill.com.sg>

**COBERT**

**LOGICA CLAY ROOF TILE \_ MADE IN PORTUGAL**

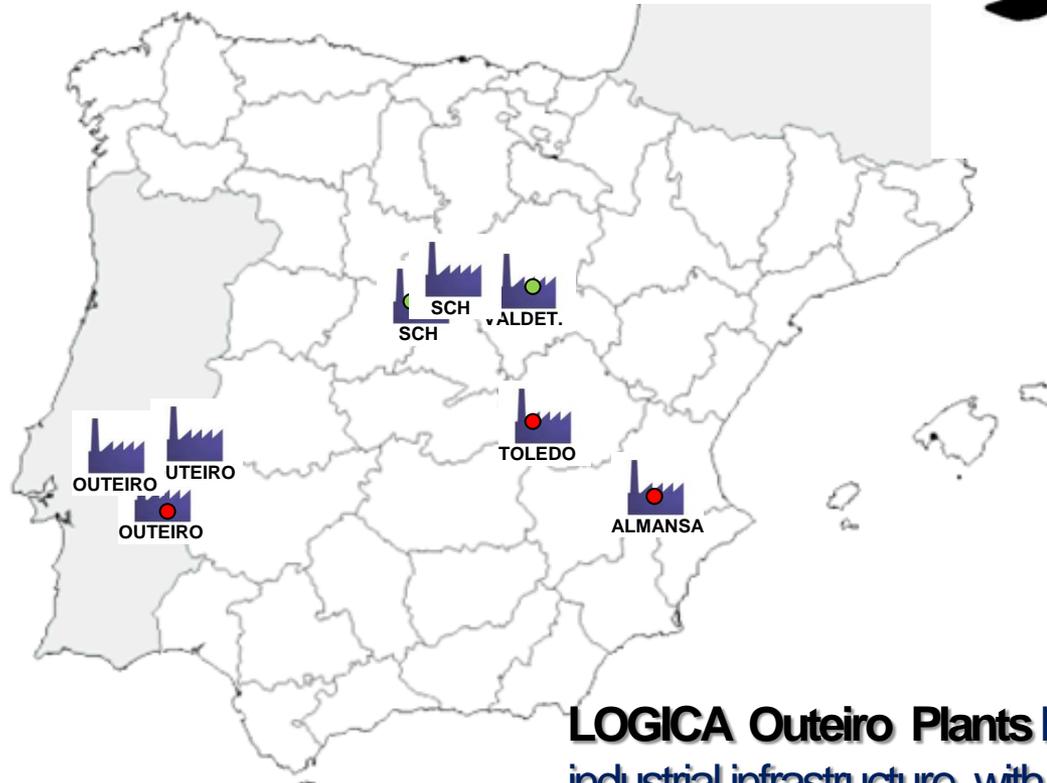
**Presentation**

# LOGICA PORTUGAL ESTABLISHMENT

## Outeiro (Portugal)



Roof tiles



**LOGICA Outeiro Plants** has a powerful industrial infrastructure, with 3 factories in **PORTUGAL** establishment, equipped with a state-of-the-art technology, and the most demanding quality controls.- **SPAIN** as parent 4 factories.



- **LOGICA** roof tiles are produced from a selection of mineral raw materials present in nature that are fully recyclable.
- At **LOGICA** , striving towards ongoing industrial improvement, together with continuous progress of the technology involved.
- **LOGICA** roof tiles factories has high standard technology processes, among which the H-cassette manufacturing process is remarkable. It involves individual ceramic supports that keeps each roof tile isolated from the others throughout the entire process.



- This allows increasing kiln temperature over 1000 °C preventing tiles from melting together while making possible to develop complex finishes.
- The use of this H-cassette supports confers singular characteristics to the tiles such as:
  - Geometric accuracy
  - Increased mechanical resistance
  - Reduced water absorption
  - Total flatness
  - Free of warps



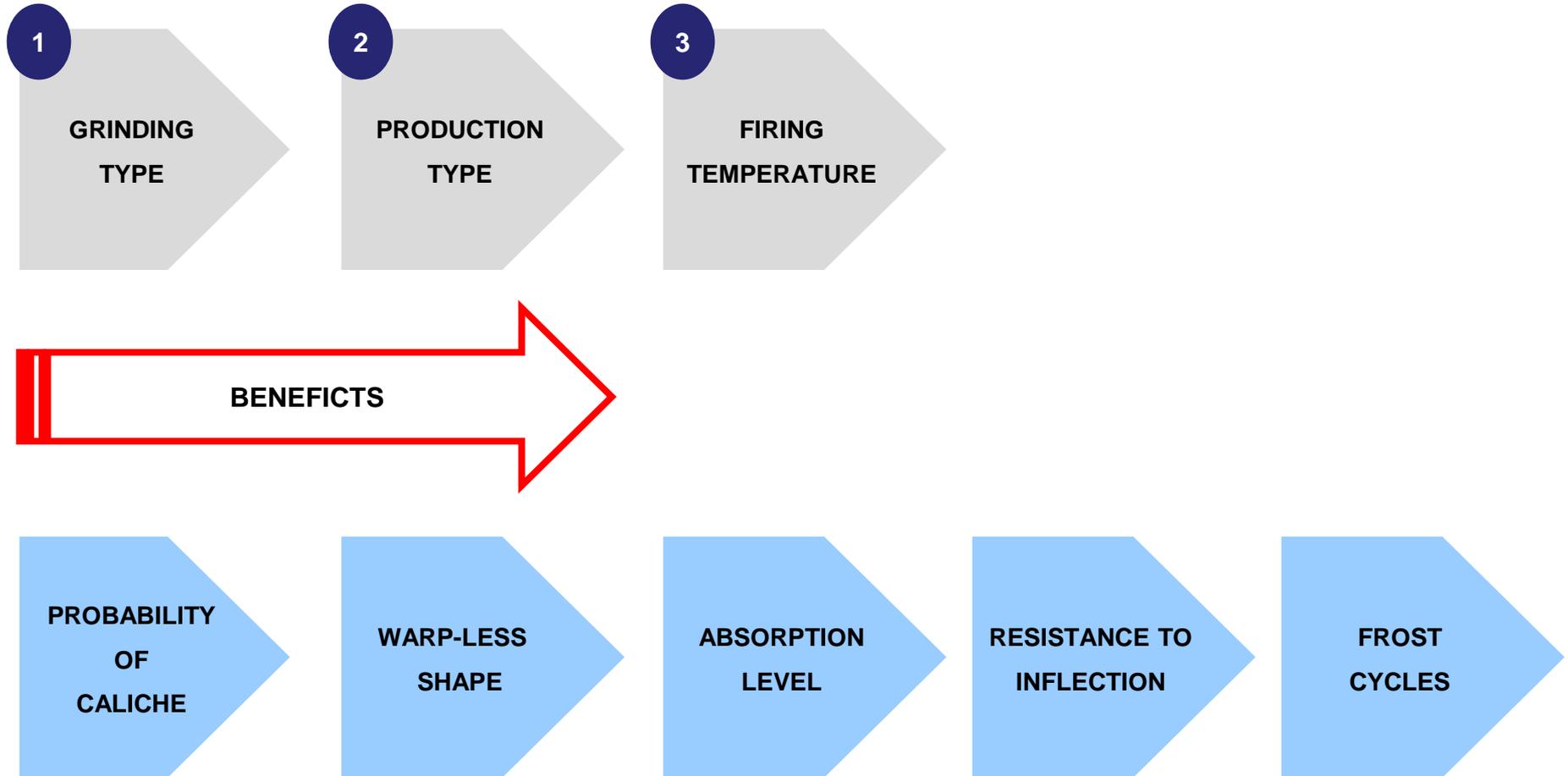
- In addition, the use of plaster moulds in the manufacturing process gives **LOGICA** roof tiles a perfect interlocking and coupling system, which facilitates its assembly.
- This system, combined with the H-cassette, provide **LOGICA** roof tiles a high-end finishing and impeccable aesthetics, which has been recognized by the most demanding international standards and certifications.
- **LOGICA Outeiro Plants** implemented a process of improvement and constant innovation to offer a unique product of the highest quality and guarantee for the best standard roofs on the international market.



## **LOGICA Roof Tiles Plants** **Outeiro (Portugal)**

- **H-Cassette Technology + plaster moulds.**
- **Logica Range:**  
**Plana, Onda, Lusa, Marselha.**

# TECHNOLOGIES: KEY FACTORS TO DETERMINATE TILES INTRINSIC QUALITY



# DIFFERENT PRODUCTION PROCESSES



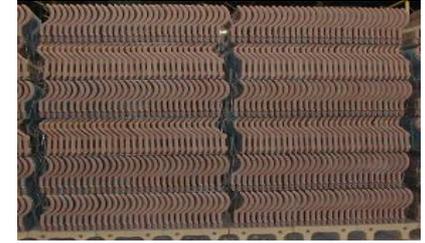
## H - CASSETTE



## U - CASSETTE



## CONVENTIONAL



### PROCESS

- High-end technology (Europe Standards)

- Top technology (Spanish standards)

- Traditional technology

### TILE TREATMENT

- Individual supports

- 15 tiles per support

- No individual support

### FIRING UNIFORMITY

- Hot air flow uniform for each individual tile

- Hot air flow uniform for each group of 15 tiles

- Hot air flow NOT uniform for all tiles

### FINISHING POSSIBILITIES

- Max complexity: mono color, mat finishing, gloss finishing, special textures,...

- High complexity: old looking tiles

- Easy finishing's: flamed effect

### STANDARD OF QUALITY

- **Top quality**

- **Standard quality**

- **Regular quality**



## H - CASSETTE

- HEAT RESISTANCE INDIVIDUAL SUPPORT
- EACH TILES REMINDS ISOLATED FROM THE REST DURING THE WHOLE FIRING PROCESS
- HIGHER FIRING TEMPERATURE
- WARP-LESS SHAPE
- LOWER ABSORPTION LEVELS
- HIGHER RESISTANCE TO INFLECTION
- COMPLICATED FINISHING´S WITHOUT IMPERFECTIONS

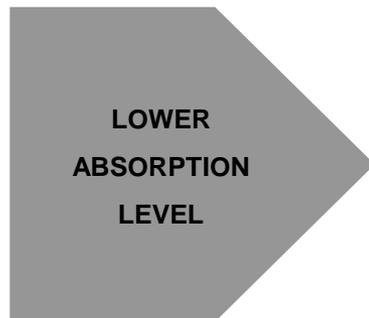
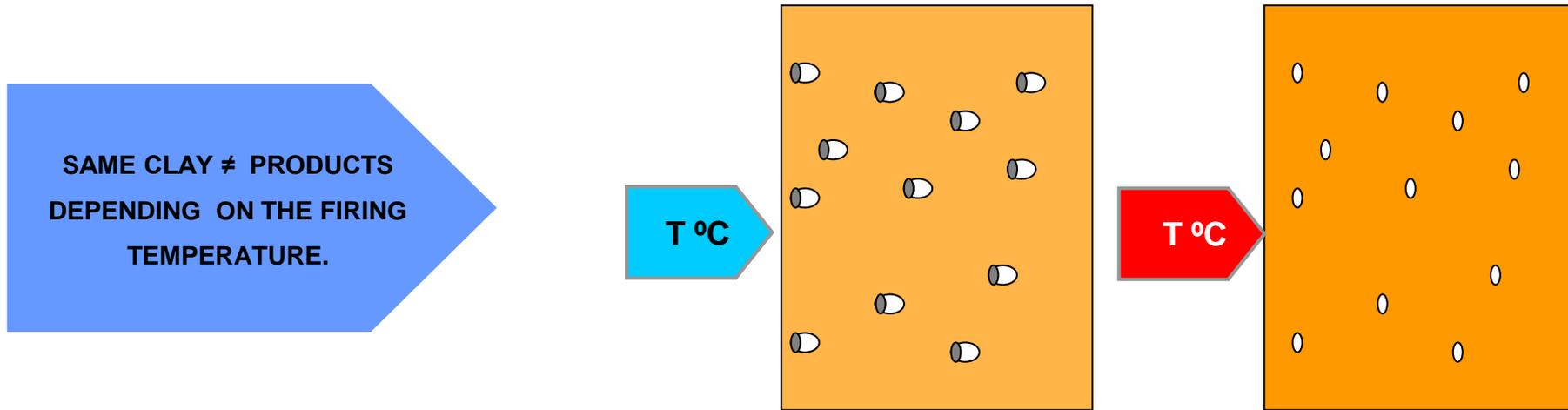


# PRODUCTION PROCESS H CASSETTE

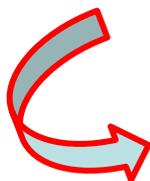


# PRODUCTION PROCESS

## DIRECT RELATION BETWEEN FIRING TEMPERATURE AND ABSORPTION LEVELS



- HIGHER DURABILITY
- LESS PROBLEMS RELATED TO FROZEN AND DESFROZEN CYCLES, HIGH LEVELS OF HUMUDITY OR THE PROXIMITY TO THE SEA (SALT RESIDUE)
- LESS FUNGUS AND LATER APPEARING



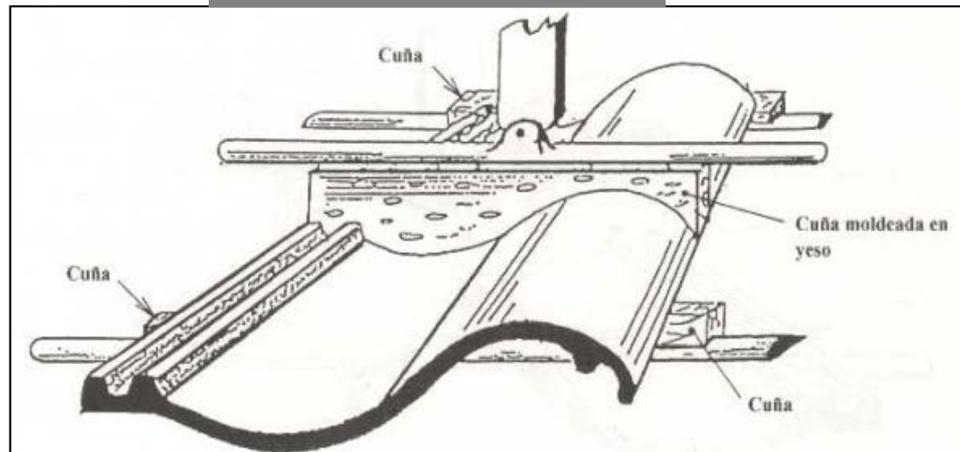
- FIRING TEMEPRATURE
- TYPE OF CLAY



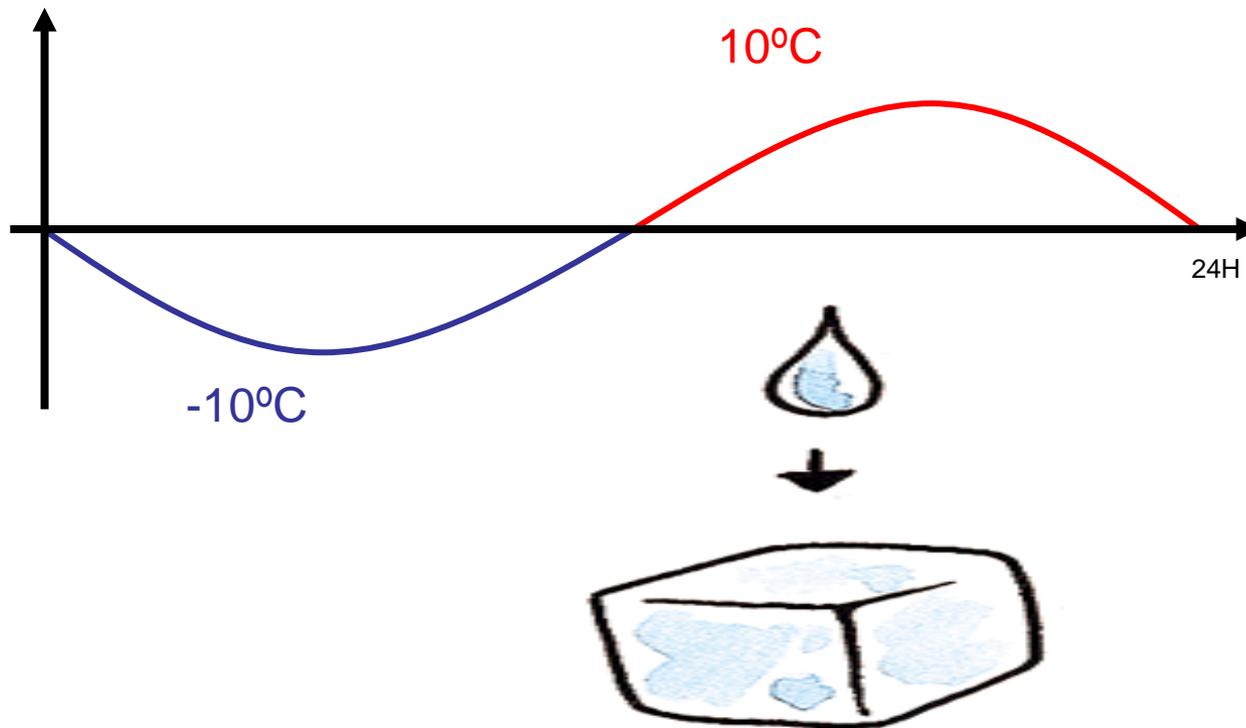
**WHAT INFLUENCE ON THE  
HARDNESS OF THE TILE?**

- HIGHER FIRING TEMPERATURE
- CLAY COMPOSITION (DIFFERENT TYPE OF CLAYS OR ADDING ADDITIVES, SANDS)

## INFLECTION TEST



# PRODUCTION PROCESS FROST CYCLES



•KEY FACTOR TO INCREASE THE NUMBER OF FROST  
CYCLES: **ABSORPTION**

**LESS ABSORPTION = MORE FROST CYCLES**



**Logica Plana RED**



**Logica Plana BROWN**

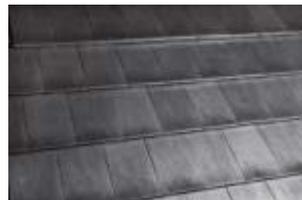
**1. Dimensions: 460\*290 mm.**

**2. Weight: 4,6 kg.**

**3. Units/M2: 11 units.**



**Logica Plana EBONY**



**Logica Plana SATINADO LUNA**



1. **Dimensions: 457\*289 mm.**
2. **Weight: 4,0 kg.**
3. **Units/M2: 10,5 units.**



**Logica Onda RED**



**Logica Onda BROWN**



**Logica Onda MAGMA**



1. **Dimensions: 457\*262 mm.**
2. **Weight: 3,6 kg.**
3. **Units/M2: 11,5 units.**



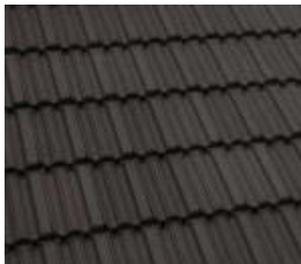
**Logica Marsella RED**



**Logica Marsella MAGMA**



**Logica Marsella BROWN**



**Logica Marsella EBONY**



1. **Dimensions: 457\*262 mm.**
2. **Weight: 3,6 kg.**
3. **Units/M2: 11,5 units.**



**Logica Marsella BLUE GLOSSY**



**Logica Marsella PALHA**



**Logica Marsella CAMEL**



**Logica Marsella CUPPER**



1. **Dimensions: 452\*271 mm.**
2. **Weight: 3,65 kg.**
3. **Units/M2: 12 units.**



**Logica Lusa RED**



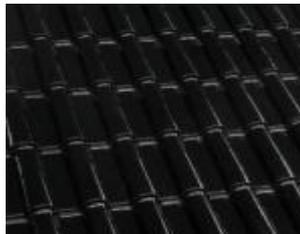
**Logica Lusa STRAW**



**Logica Lusa AZAMOR**



**Logica Lusa CANELA**



**Logica Lusa GRAPHITE**



**Logica Lusa BLUE GLOSSY**



**Logica Lusa MAGMA**



**Logica Lusa SAHARA**



**Logica Lusa BROWN**

1. **Dimensions: 452\*271 mm.**
2. **Weight: 3,65 kg.**
3. **Units/M2: 12 units.**



**Logica Lusa EBONY**



**Logica Lusa CUPPER**



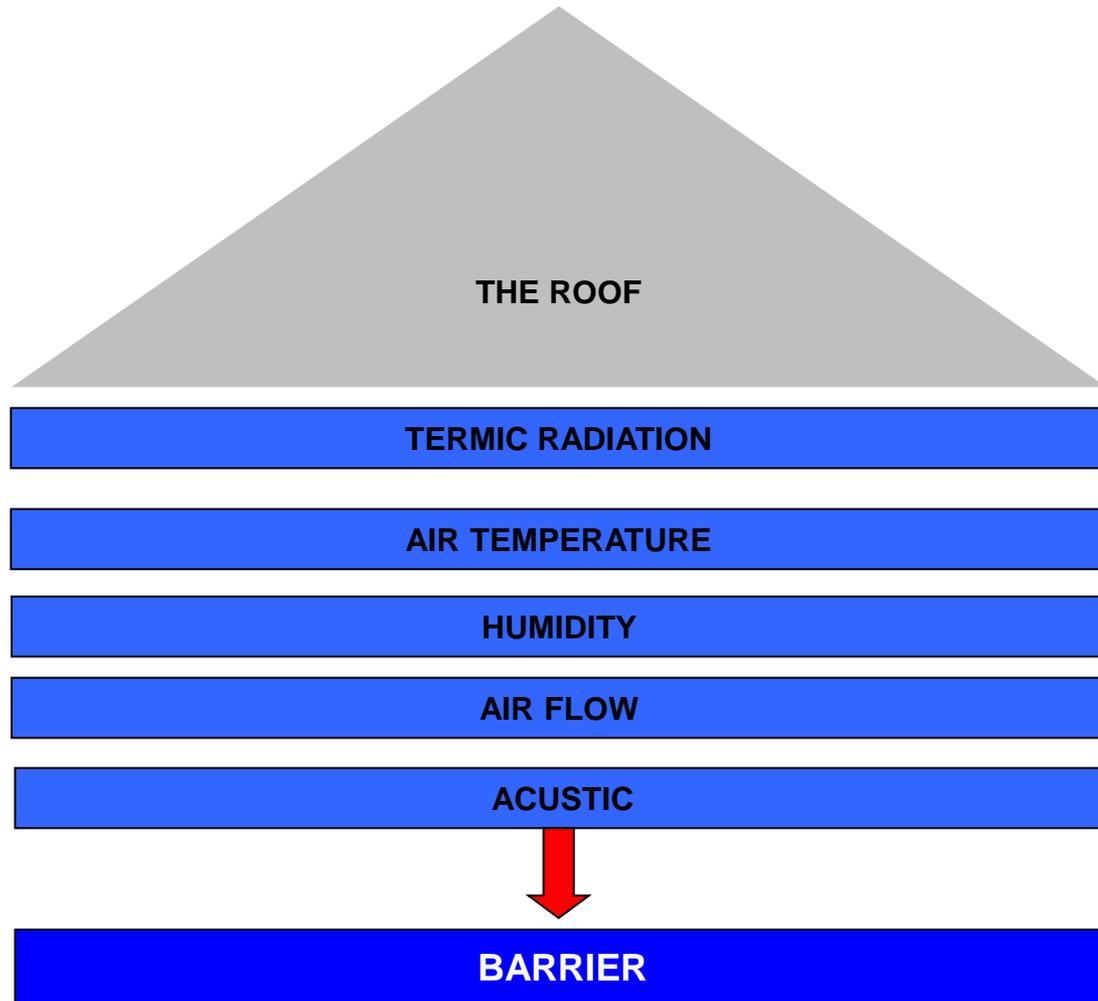
**Logica Lusa JADE**



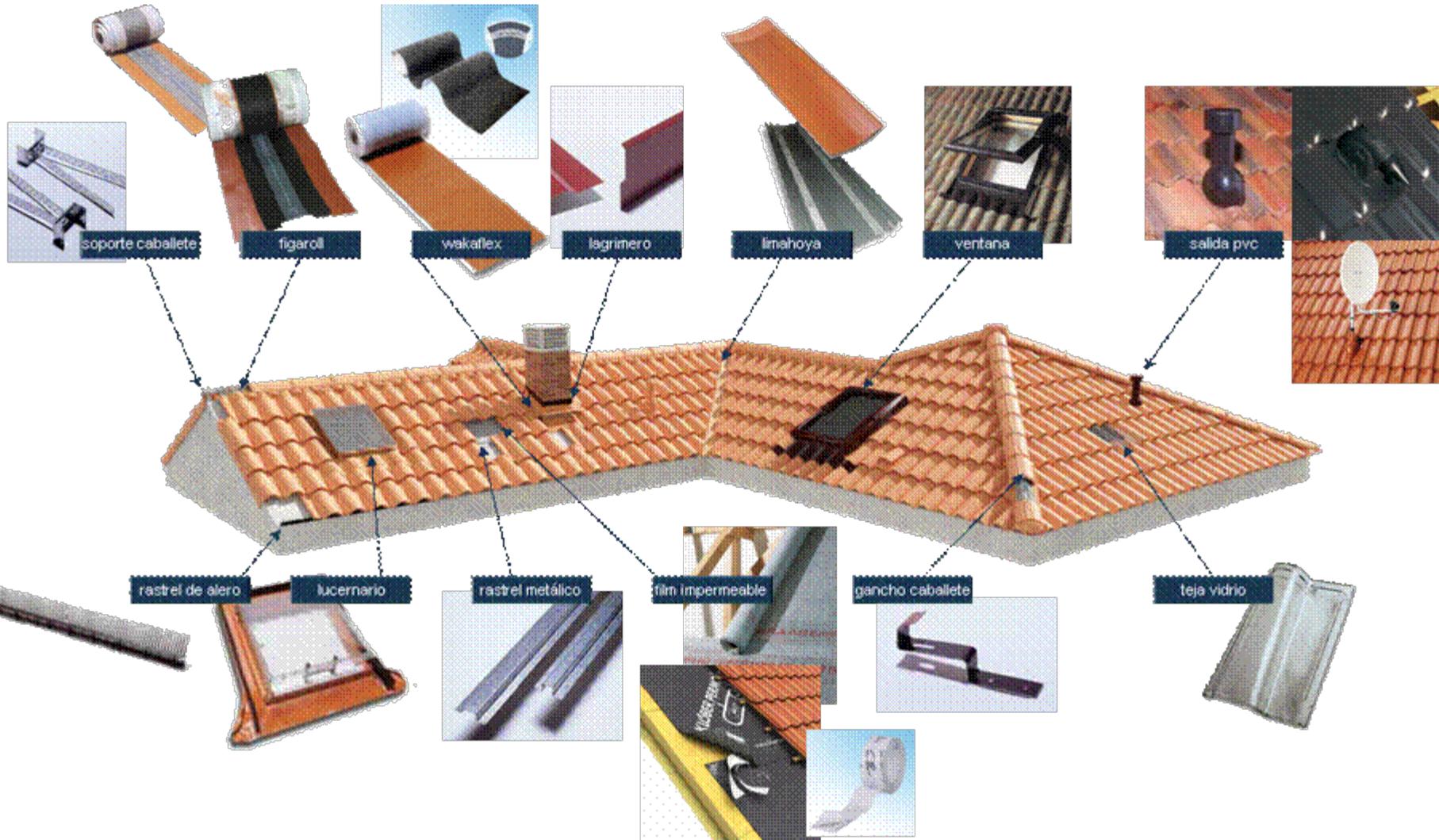
**Logica Lusa CAMEL**

1. **Dimensions: 452\*271 mm.**
2. **Weight: 3,65 kg.**
3. **Units/M2: 12 units.**

# WHY A VENTILATED ROOF IS IMPORTANT?

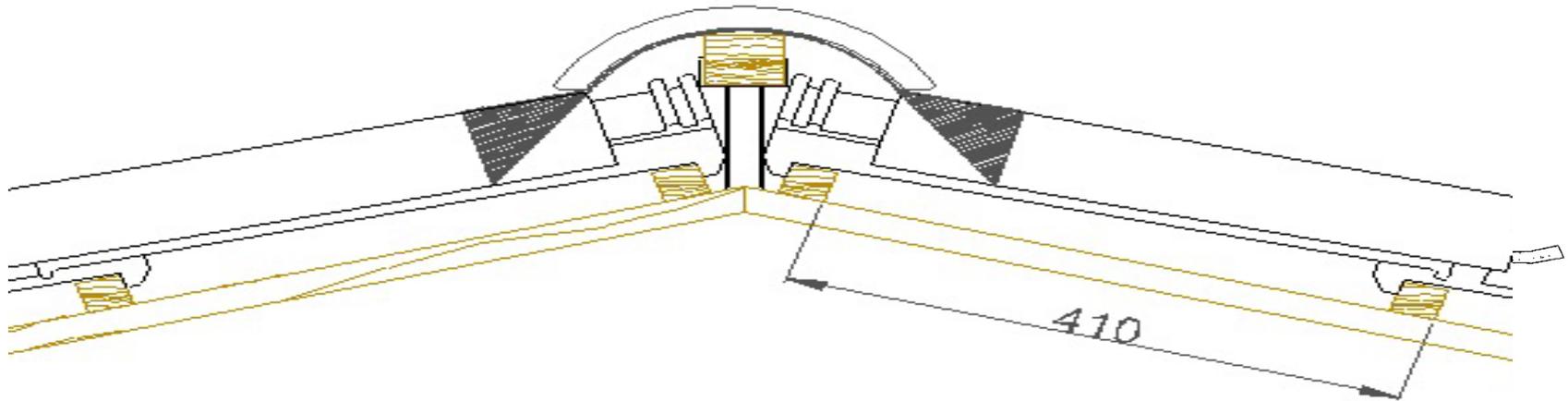


# ROOF ACCESSORIES





## WHY IS ESSENTIAL A VENTILATED AND DRY INSTALLED ROOF?



RIDGE

FIGAROLL

THE DRY INSTALLATION HELPS TO VENTILATE  
THE ROOF

METALIC/WOOD BATTENS

(PRIMARY/SECONDARY)



WHY IS ESSENTIAL A VENTILATED AND DRY INSTALLED ROOF?

## HOW TO CALCULATE THE DISTANCE BETWEEN BATTENS

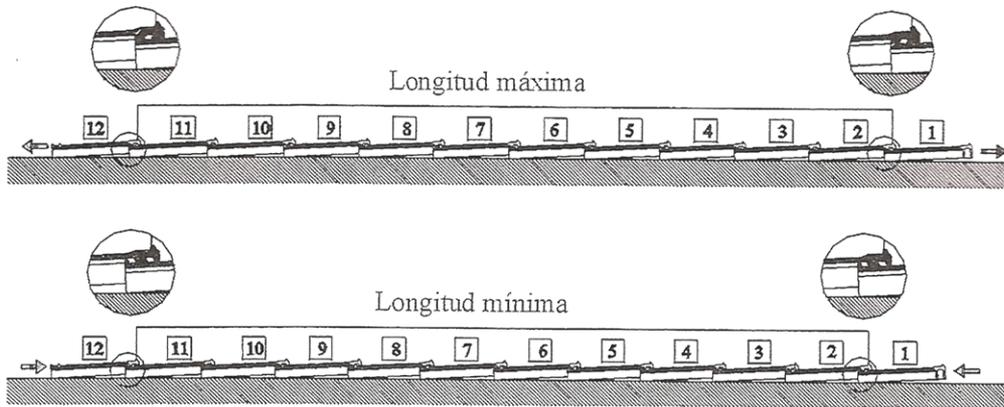
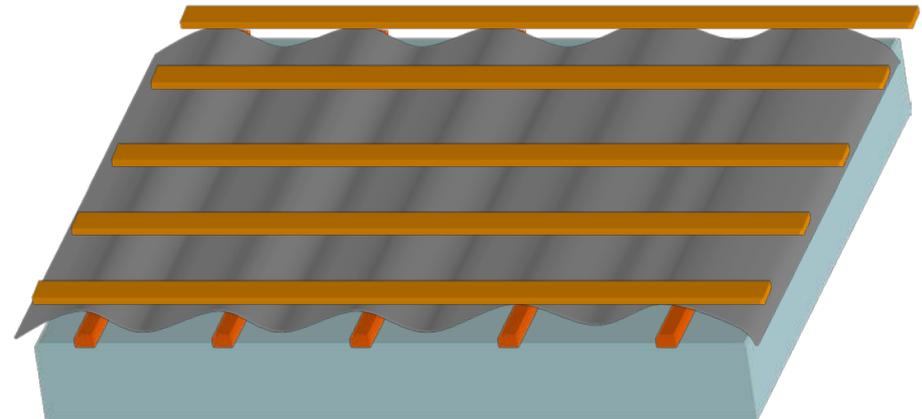


Fig. 19 – Montaje longitudinal

$$\text{Paso de montaje transversal} = \frac{\text{Longitud máxima} + \text{Longitud mínima}}{20}$$





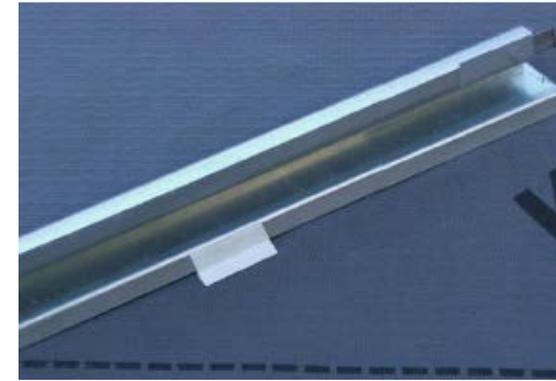
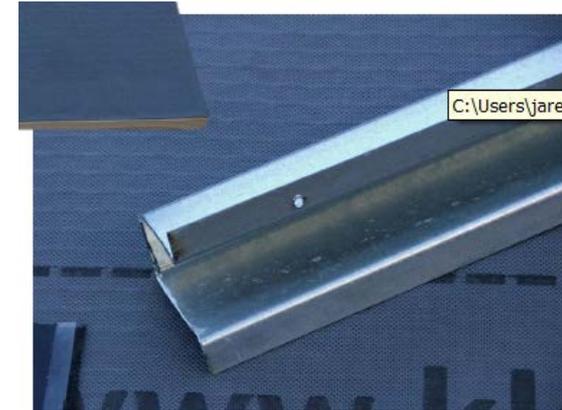
## FIXATION

SLOPE	LEVEL OF FIXATION
<b>SLOPE &lt; 25%</b>	NIVEL 1: SLOPE NOT RECOMENDED. NECESSARY DOUBLE ROOF
<b>25%&lt;SLOPE&lt;80%</b>	NIVEL 2: TILES LIE ON THE BATTENS OR WILL BE FIXED WITH MORTER (FOLLOWING NORM)
<b>80%&lt;SLOPE&lt;100%</b>	NIVEL 3: TILES WILL LIE ON THE BATTENS WITH THE TILE HILLS
<b>100%&lt;SLOPE&lt;173%</b>	NIVEL 4: ONE OF EACH 5 TILES WILL BE FIXED WITH NAILS, HOOKS,... ALL THE EAVES TILES, CUME TILES AND LIMAHOYA TILES WILL BE FIXED.
<b>173%&lt;SLOPE</b>	NIVEL 5: ALL THE TILES SHOULD BE FIXED

# GALVANIZED STEEL BATTEN SYSTEM



- Provides effective thermal barrier and ventilation
- Prevents water damming
- BUTYL adhesive applied where the batten fasteners are protect from leaks
- Significantly less penetrations through underlayment
- Easy to install. Facilitates the tile installation



# GALVANIZED STEEL BATTEN SYSTEM



Material: Acero galvanizado.  
Dimensiones: R-50: 50 mm. x 5 m.  
R-30: 30 mm. x 5 m.  
R-20: 20 mm. x 5 m.  
Moleteado: 20 mm. x 2,1 m.  
Peso: 0,44 k/m<sup>2</sup>.  
Espesor: 0,6 mm.

## Cinta Butylon



Material: Cinta adhesiva  
doble cara.  
Dimensiones: 0,02 x 25 m.

## CobertFilm 270 gr.



## CobertFilm 135 gr.

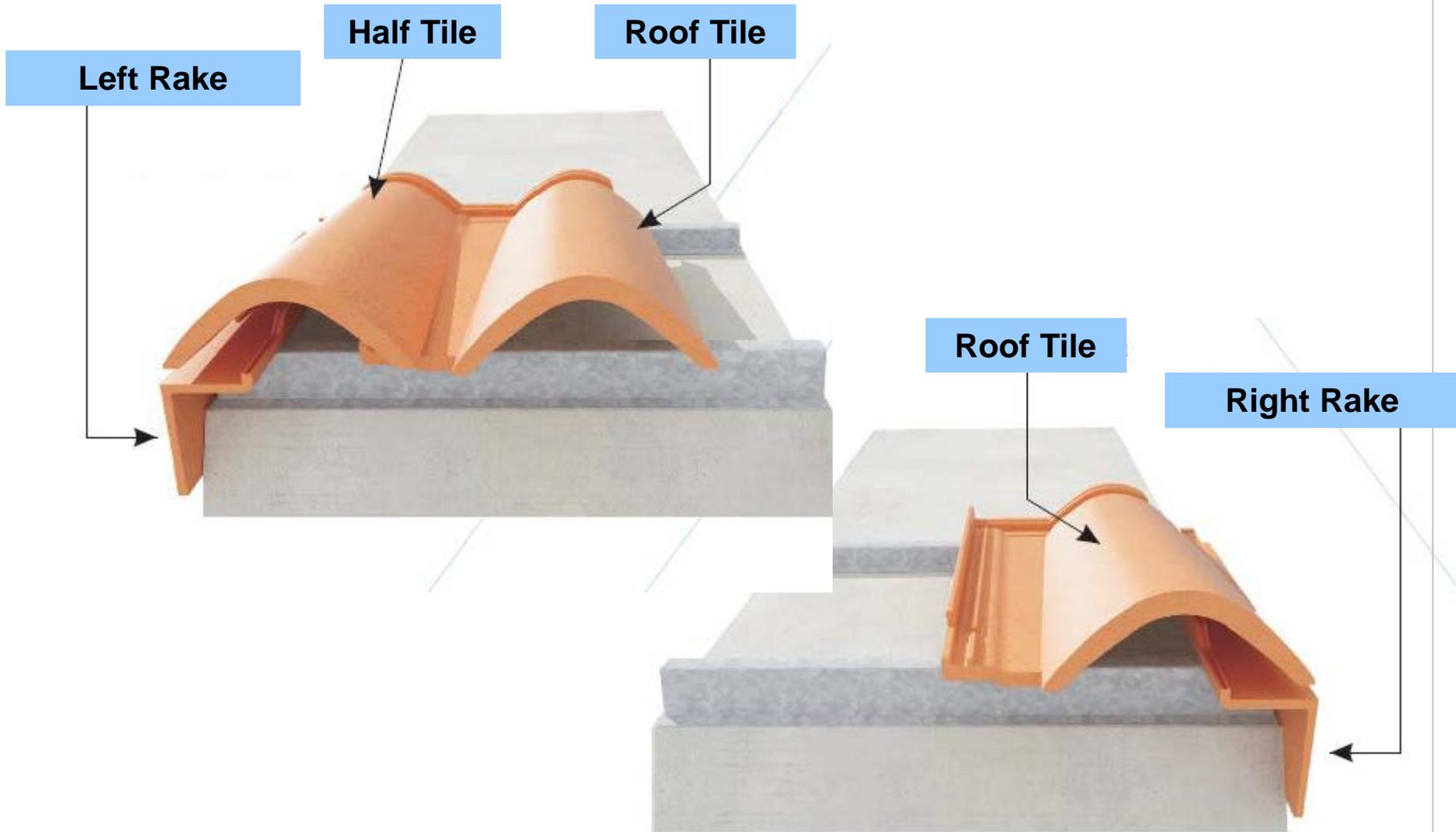


## Film Ecovent

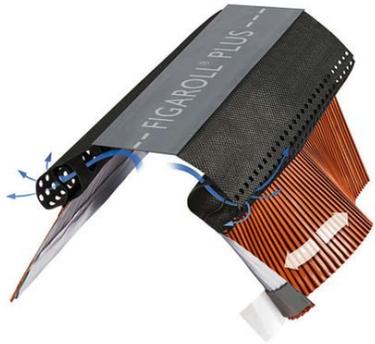




## HOW TO INSTALL: K2, DELTA



# DRY RIDGE

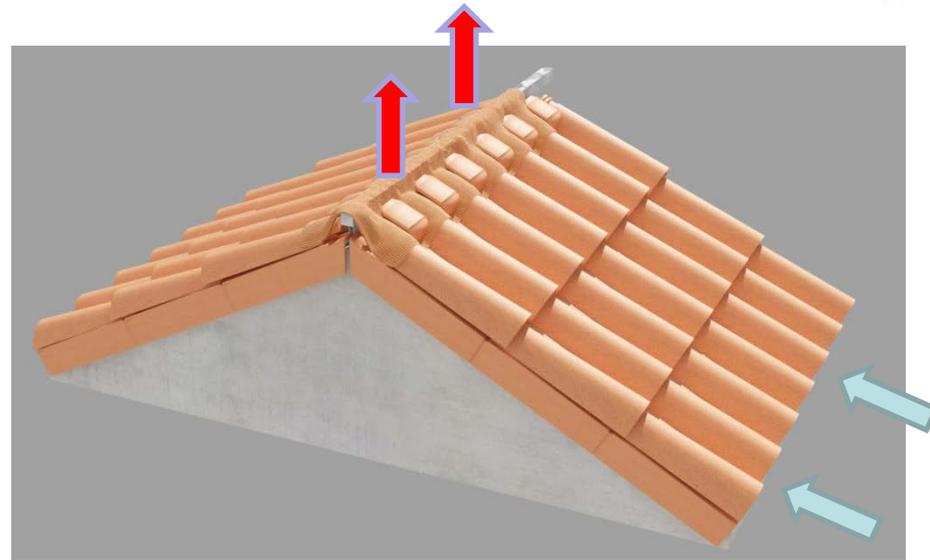
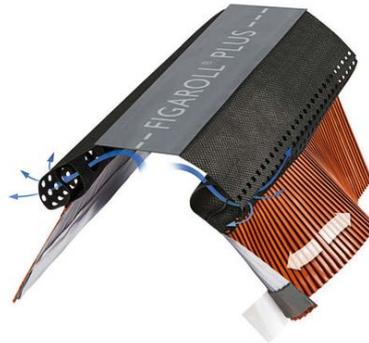
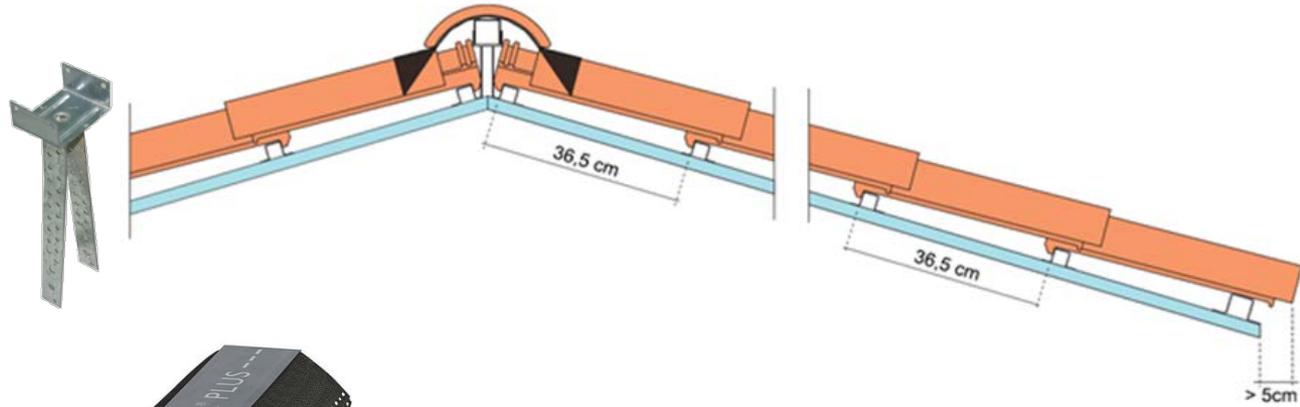
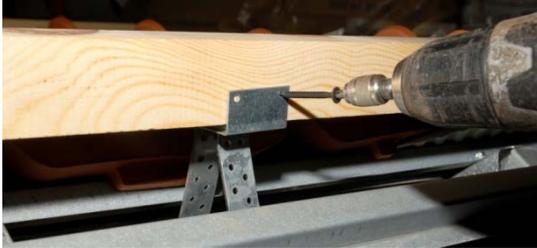


## FIGAROLL PLUS

- Quick, clean and easy to install
- Excellent protection against intrusion of driving rain
- Comfortable application thanks to highly stretchable fleece side strips
- Variable widths to an additional pleat for use on various roof tiles.



# DRY RIDGE





WHY IS ESSENTIAL A VENTILATED AND DRY INSTALLED ROOF?

## DRY INSTALLATION RIDGE: FIGAROLL

4 DIFFERENT  
COLOURS



1

Installing hook on the ridge system batten



WHY IS ESSENTIAL A VENTILATED AND DRY INSTALLED ROOF?

## DRY INSTALLATION RIDGE: FIGAROLL

4 DIFFERENT  
COLOURS



2

Mechanic installation



WHY IS ESSENTIAL A VENTILATED AND DRY INSTALLED ROOF?

## DRY INSTALLATION RIDGE: FIGAROLL

4 DIFFERENT  
COLORS



3

Every ridge gets into the previous one.

# VENTED EAVES



## EAVE COMB

Eaves combs and ventilation strips contribute substantially to a secure and durable roof system.

Without reducing the roof's ventilated area, they offer lasting and reliable protection against rodents and smaller birds intruding into the roof space.



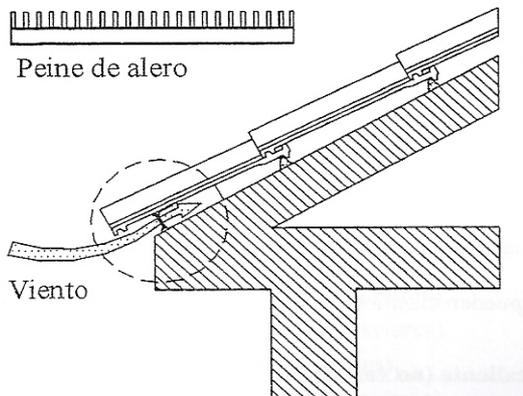
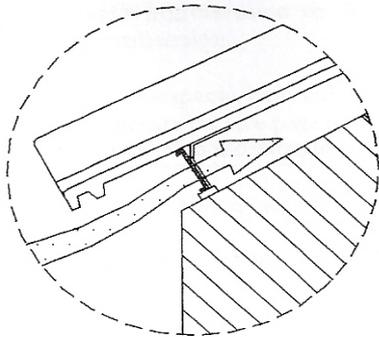
## CLAY STOP BIRD

Provides ventilation. Elevates eaves tiles. Different profiled for each tile model.



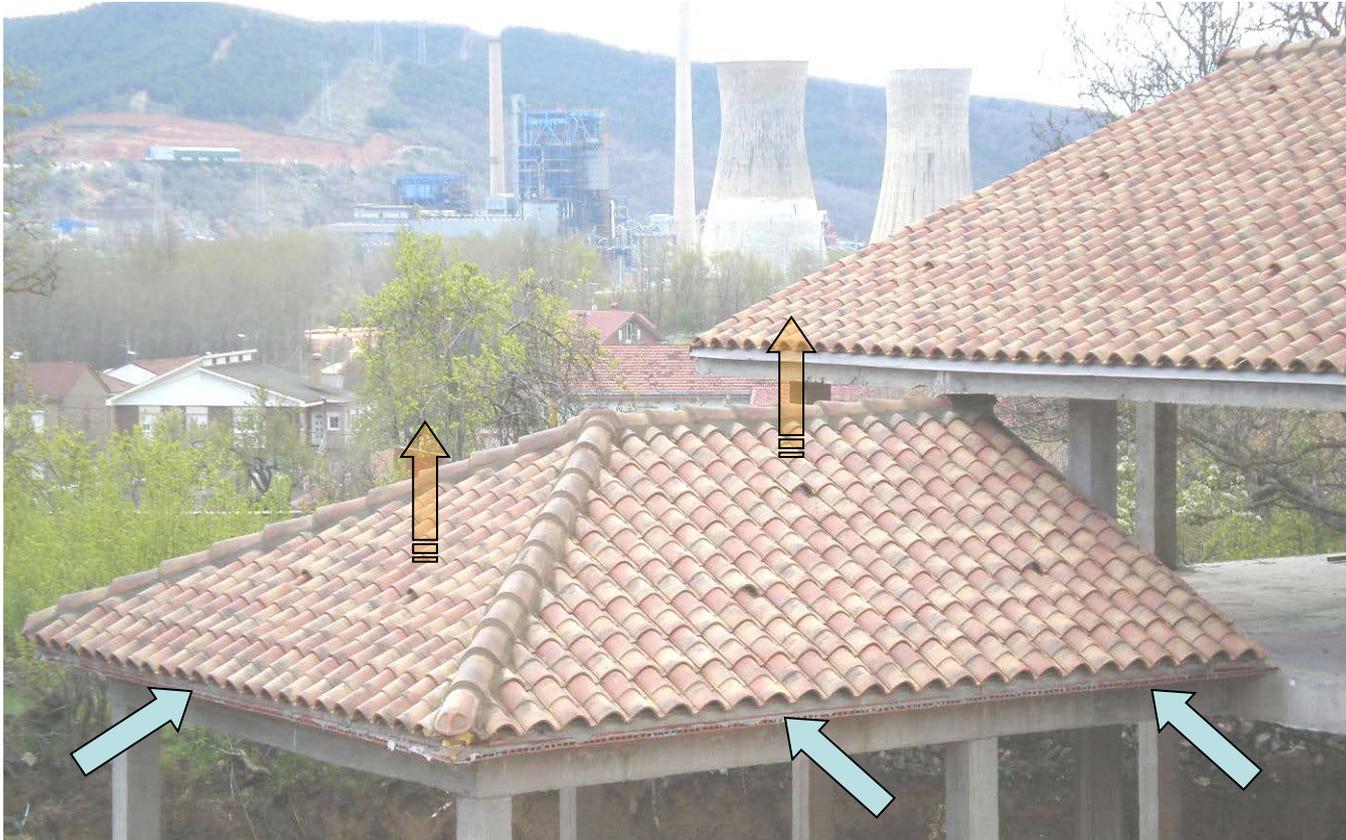
WHY IS ESSENTIAL A VENTILATED AND DRY INSTALLED ROOF?

## VENTILATED EAVES: BATTEN OR ACCESSORIES





WHY IS ESSENTIAL A VENTILATED AND DRY INSTALLED ROOF?



**VENTILATION TILE:**  
**1 x 10m<sup>2</sup>**

# UNIVERSAL FLASHING



## WAKAFLEX / EASYFORM

- Lead-free
- Lightweight, clean and quick to lay
- Usable anywhere
- Self-welding
- Flexible and stretches in both directions
- 100% water tight
- Extremely water-resistant

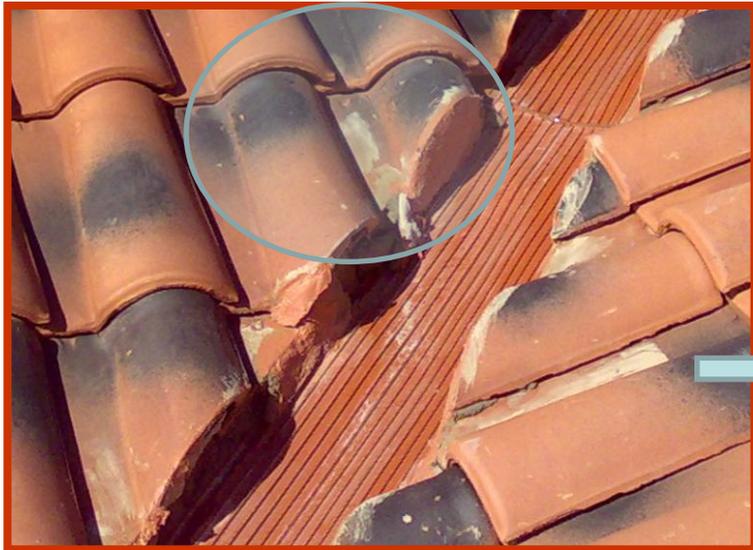
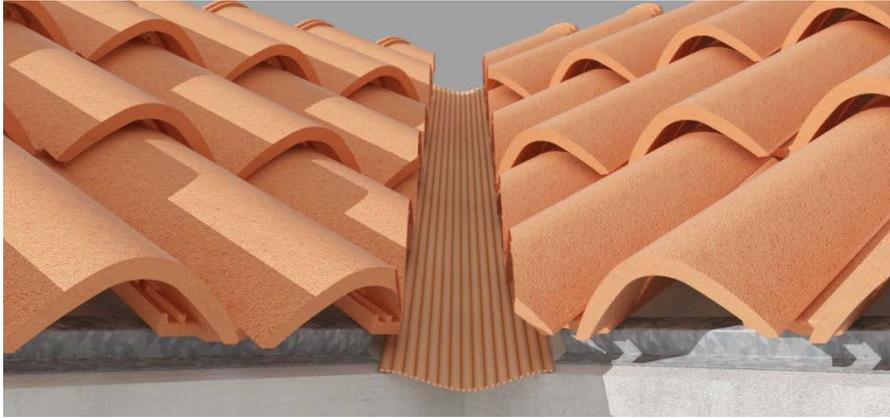


WHY IS ESSENTIAL A VENTILATED AND DRY INSTALLED ROOF?

WATERPROOF BAND: WAKAFLEX



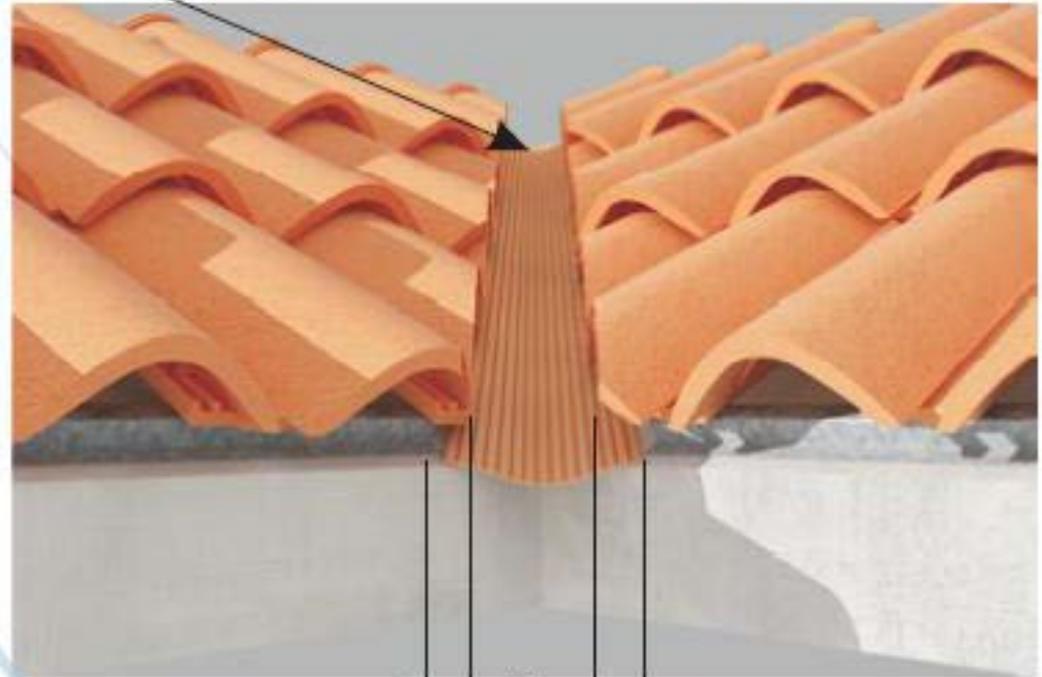
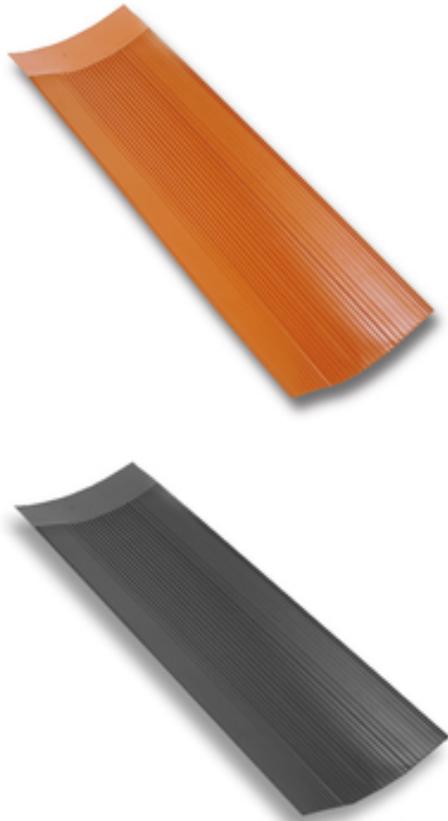
# VALLEYS





## WHY IS ESSENTIAL A VENTILATED AND DRY INSTALLED ROOF?

Limahoya flexible Cobert



$\geq 15$  cm.  
 $\geq 35$  cm.

Overlap for the PVC Valley will be  $\geq 10$  cm.



# PICTURES JOBSITES – LOGICA PLANA (FAÇADES)

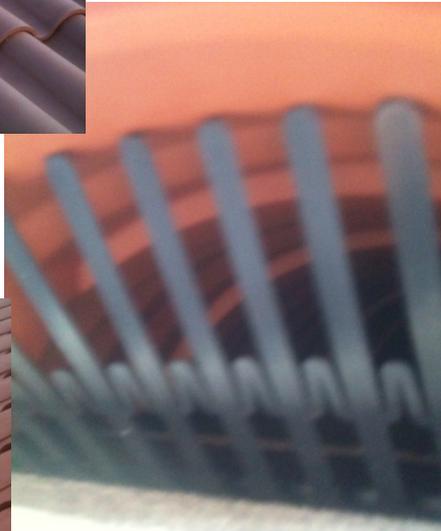














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**THANK YOU SO MUCH!**