

TERMINOLOGY

This installation guide has been put together to help you design your waterproof roof structure. It is valid for all roof constructions combining load bearing steel sheets, insulation and a waterproof ply.

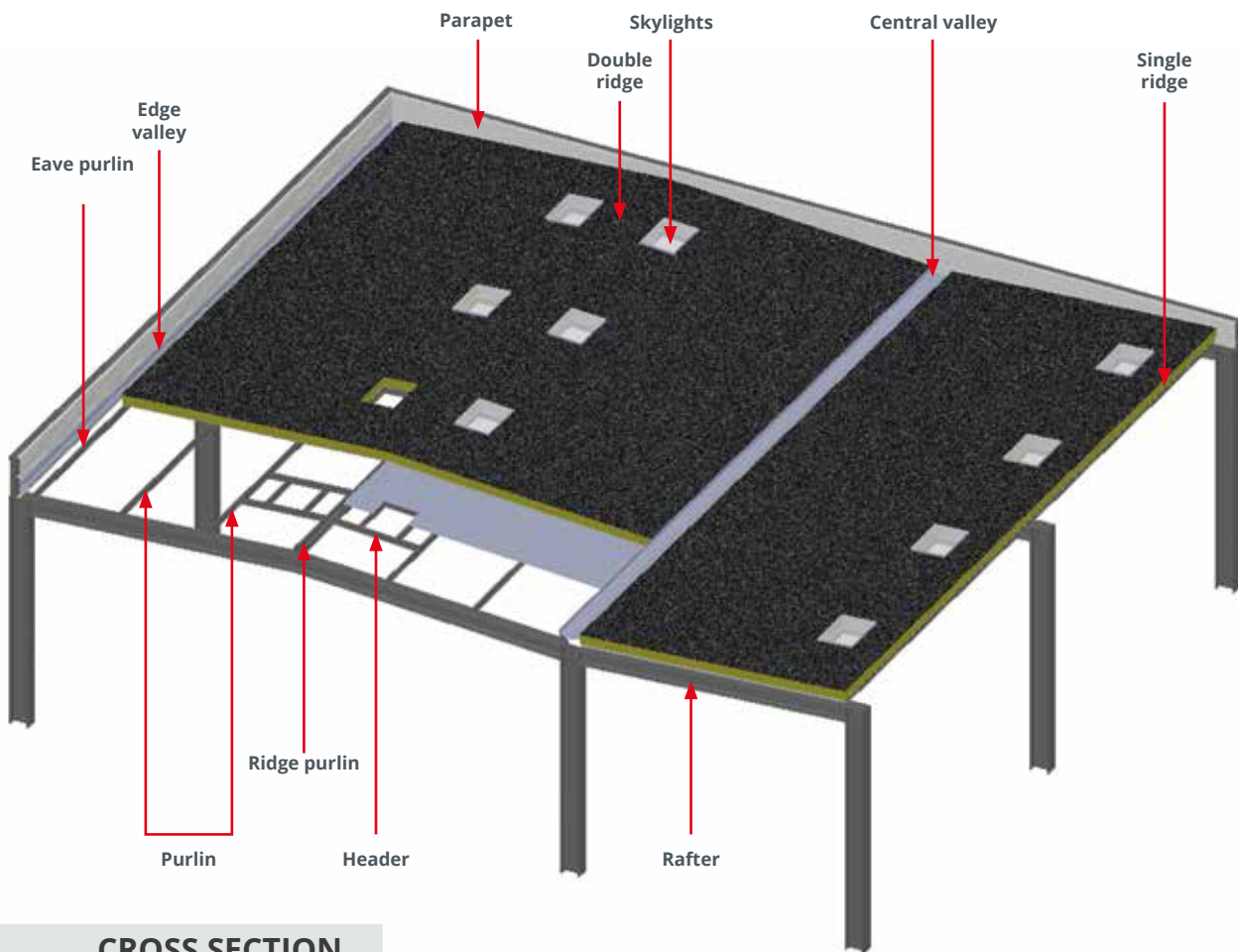
This guide is based on UTD 43.3 and is applicable in all French climate zones with the exception of equatorial and cyclonic areas, French overseas departments, buildings situated at an altitude of over 900m, buildings with a negative controlled temperature and temporary storm water retention decks.

For high and very high hygrometry buildings or those with harsh environments, particular attention should be paid to the choice of screws and coatings in order to prevent corrosion.

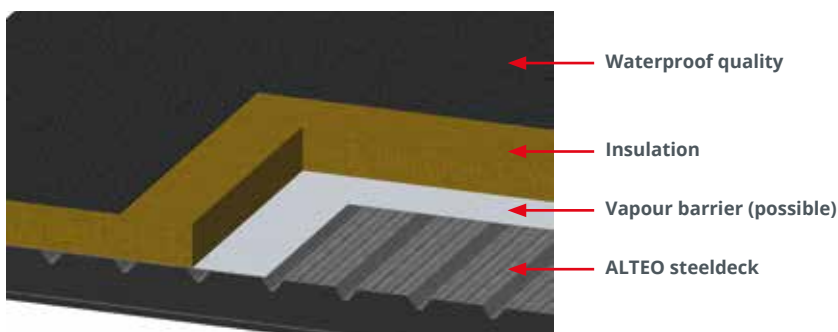
A minimum 3% slope must be respected.

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WATERPROOF ROOFING VOCABULARY



CROSS SECTION



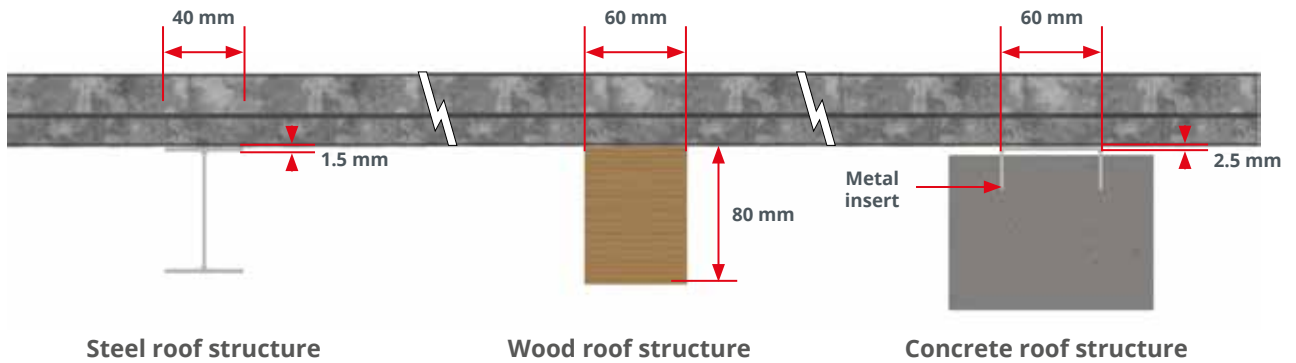
SUPPORTS

There is no preferred laying direction for corrugated steel sheets in relation to the slope. However, laying in the direction of the slope prevents potential water stagnation in the ribs during installation.

The upper surface of the supports is flat and parallel to the corrugated steel sheets.

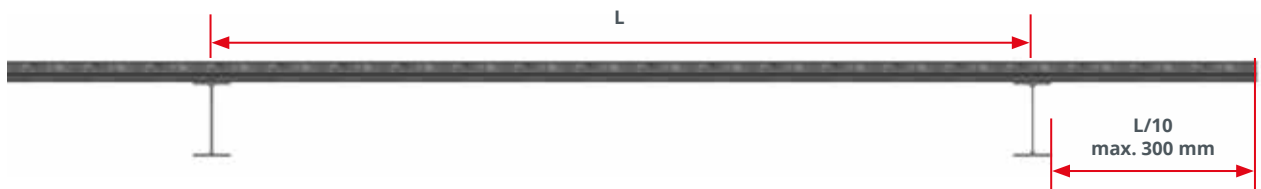
Minimum dimensions

The minimum dimensions of the supports depends on the nature of the structure.



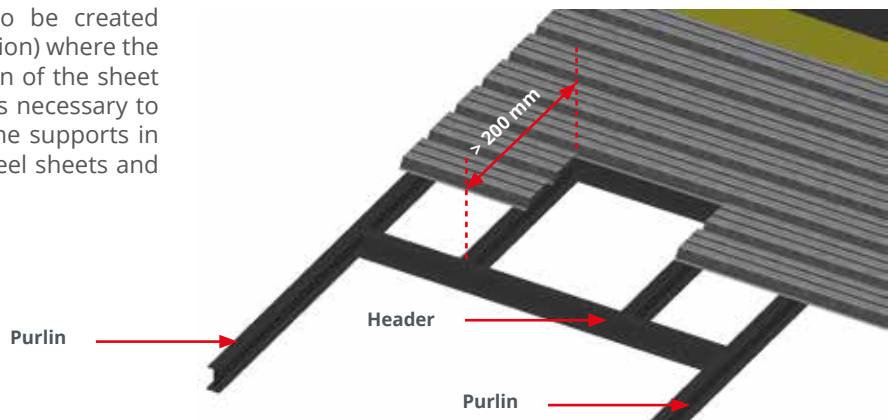
Authorised cantilever

The maximum authorised cantilever is limited to one tenth of the adjacent profile from the bare support and should not exceed 300mm



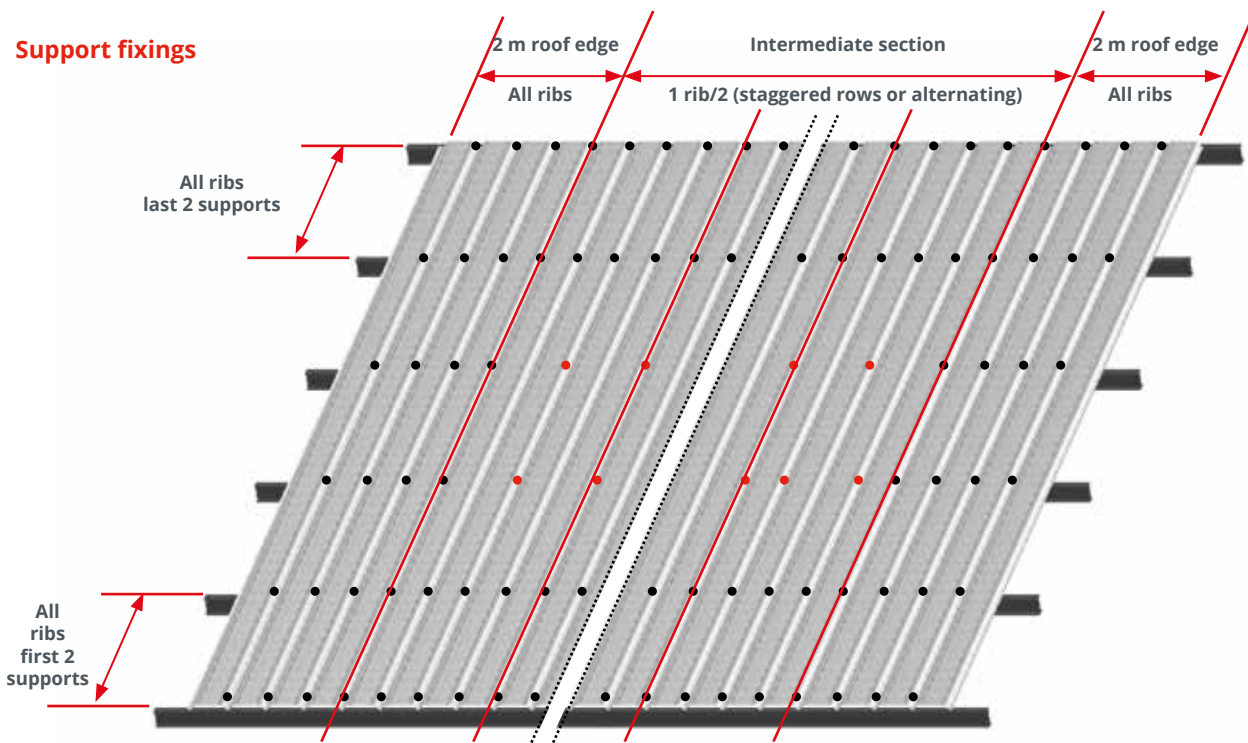
Header

When a passageway needs to be created (skylight, outlets, smoke extraction) where the largest perpendicular dimension of the sheet metal ribs exceeds 200mm, it is necessary to use a header in the plane of the supports in order to support and fix the steel sheets and possible stonework.

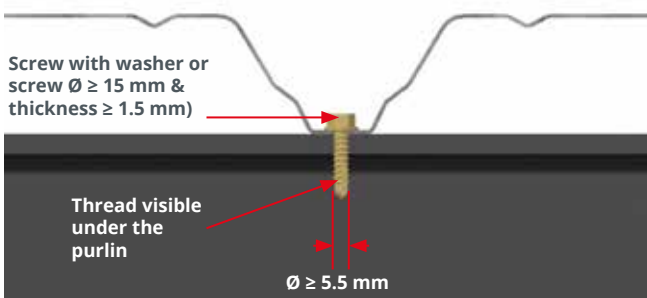


FIXINGS

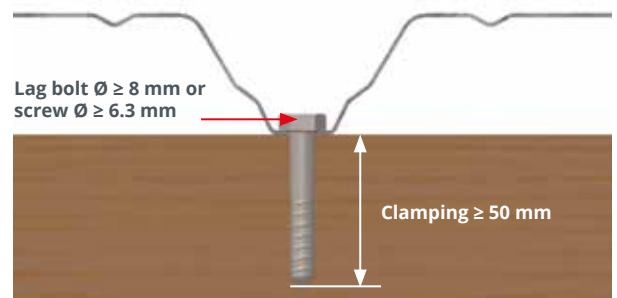
Mounting systems



This distribution is approved for high closed buildings < 20 m, excluding exposed sites in wind zones 3 and 4, and for profiles other than the ALTEO 106.750. For other cases, the fixing density needs to be determined using a resistance calculation.



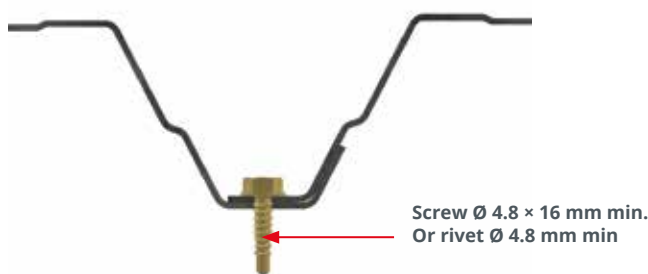
MOUNTING ON STEEL COMPONENTS



MOUNTING ON WOODEN COMPONENTS

For buildings exposed to high or very high levels of humidity or with harsh environments, the screws need to be protected against corrosion (A2 stainless steel for example).

Stitching



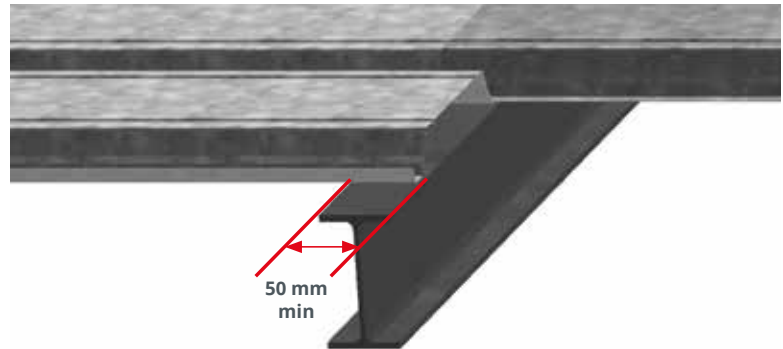
Generally, stitching is approximately every meter.

If the vapour barrier is implemented using self-adhesive strips, the stitching is spaced at a maximum of distance of 500 mm.

OVERLAPS

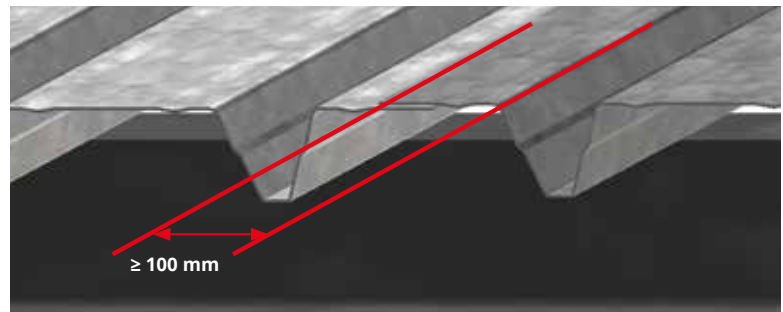
Side lap

This must be across the width of the support and must be a minimum of 50 mm.



End lap

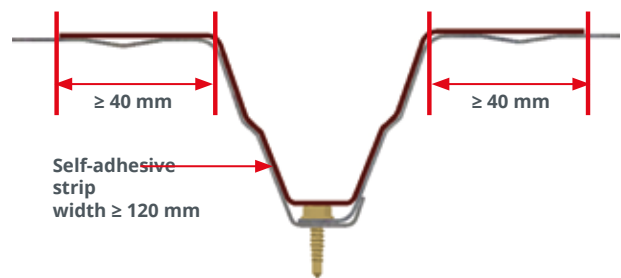
If the steel sheet metal needs to be cut in a longitudinal direction and if the overhang of the cut deck is greater than 100mm, the rib must be reconstituted. The rib is reconstructed by joining the seams approximately every 500 mm.



Vapour barrier

On plain steeldecks, the vapour barrier is only required in high or very high humidity buildings. In this case the vapour barrier can be implemented:

- Using single self-adhesive tape on the laps (end and side):



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- Using a screen applied to the entire covered surface:



The overlap of the strips is a minimum of 100mm. For steeldecks with perforated or punched valleys the vapour barrier is compulsory in all cases. The screen must therefore be applied to the whole surface.

INSULATION

Insulation

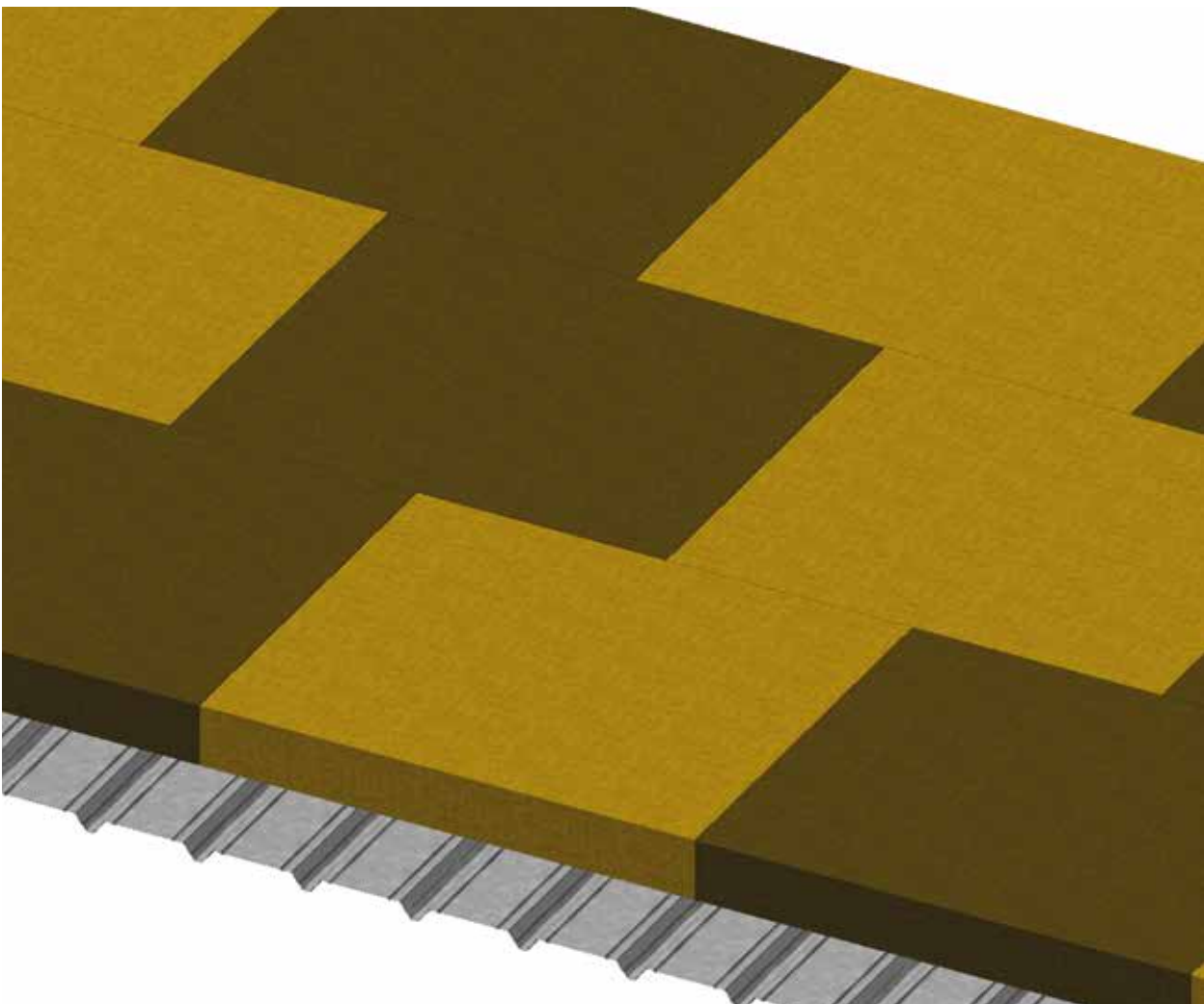
The thickness of the insulation layer must be such that the dew point is never on the soffit of the corrugated steel sheets.

The insulation panels can consist of one or multiple layers (of the same or different type) according to what is determined in the relevant norms and prescriptions.

Installation of insulation panels

Installation in a single layer: the joints must be staggered in one direction (laid in staggered rows). The aligned joints are perpendicular to the steeldeck ribs or possibly the slope.

-Installation in multiple layers: each layer is laid in staggered rows, the joints of the two layers are not superimposed.



INSULATION

Fixing insulating panels

Insulating panels are mainly attached using mechanical connectors. The diameter of these components (expanding rivet or self-drilling screw) must be more than 4.8 mm. These components are supplemented by a load distribution plate.

If using self-drilling screws, it is possible to use polyamide shafts instead of plates. These devices reduce the thermal bridges generated by the fixings.

In the case of **waterproofing with heavy protection**, a single central mechanical connector through the insulating panel is required.

For **self-protected waterproof coatings**, in the case of insulation for use with single ply membranes or for the upper ply of multi-ply insulation, the densities must be respected (by number of fixings per m²) given in the table below:

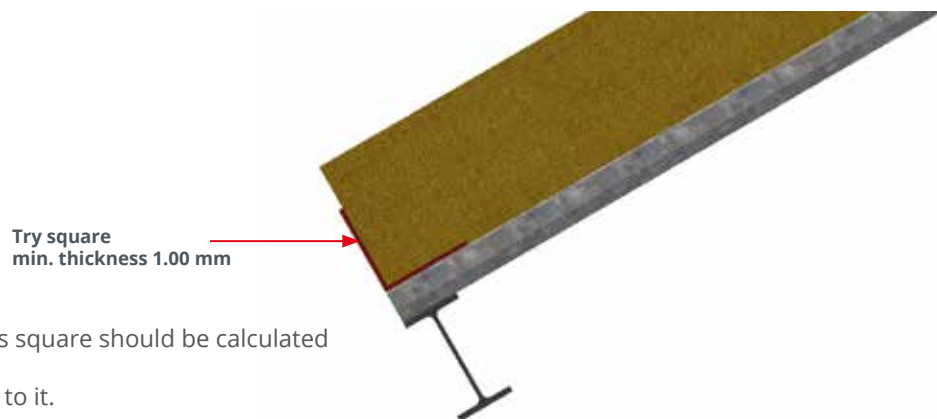
	Wind climatic areas							
	Zones 1 & 2				Zones 3 & 4			
	Closed buildings h < 20m		Open buildings h < 20m		Closed buildings h < 20m		Open buildings h < 20m	
Windy sites	Normal site	Exposed site	Normal site	Exposed site	Normal site	Exposed site	Normal site	Exposed site
On intermediate section	5	6	5	8	6	8	8	10
On periphery over 2 m width	6	10	6	10	10	10	10	10
On corner panels	10	12	10	12	12	12	12	12

The lower layers of multi-layer insulation only need one central mechanical connector per insulation panel.

For buildings over 20 metres high, please refer to the insulation panel Technical Application Document (DTA).

Specific cases

In addition to the provisions of the preceding paragraph, and for roof structures with an slope greater than 10% and over 5 metres long, the panels are abutted to the gutter on a continuous rigid support attached to the supporting structure before or after the vapour barrier.



The fixing density of this square should be calculated so as to resist all the shearing forces applied to it.

WATERPROOF QUALITY

Installation of a waterproof covering depends on the location of the flat roof (accessible, non accessible, garden, etc.), the slope of the roof, the underlying insulation and the protection.

Different types of waterproofing:

Bituminous waterproof covering

The most popular bituminous membranes on the market are those modified by SBS (Styrene - Butadiene - Styrene). They can be applied in a single or double layer. The surface layer is always self-protected (slate particles, aluminium sheets, etc.)

There are also APP (atactic polypropylene) modified waterproof bituminous membranes which are generally applied as a single layer.

Synthetic membranes

There are several types of synthetic waterproof membranes:

-EPDM (Ethylene Propylene Diene Monomer)

-PVC (polyvinyl chloride) membranes

-TPE (thermoplastic elastomers) membranes

-TPO (thermoplastic polyolefin) membranes

All these membranes can be adapted to many flat roof (accessible and non accessible) waterproofing situations. They are installed using hot air welding or by glueing, generally in a single layer.

Liquid waterproofing

Liquid waterproofing is particularly suitable for work sites that ban the use of flames.

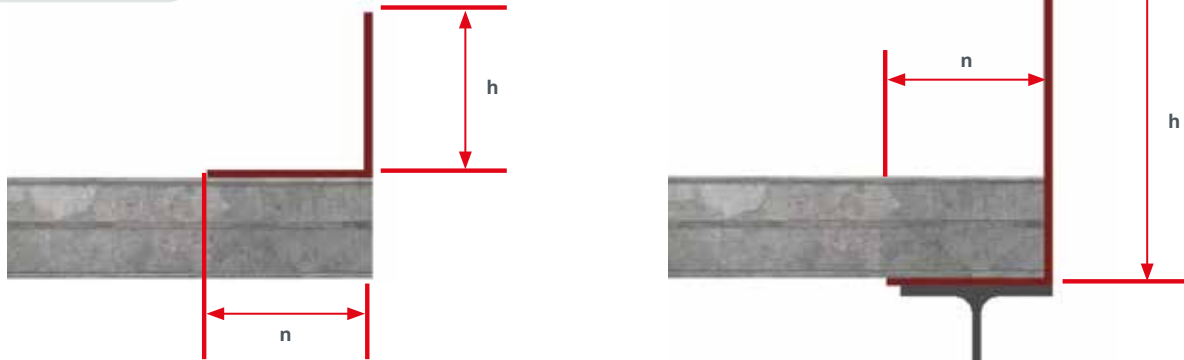
This type of waterproofing can also be used for dealing with irregular areas combined with bituminous waterproofing or for the treatment of small surfaces such as balconies and loggias.

There are various types of liquid waterproofing on the market: polyurethane resin, polyester resin, methacrylate and polyurethane polymer resin, polymethyl methacrylate.



FINISHES

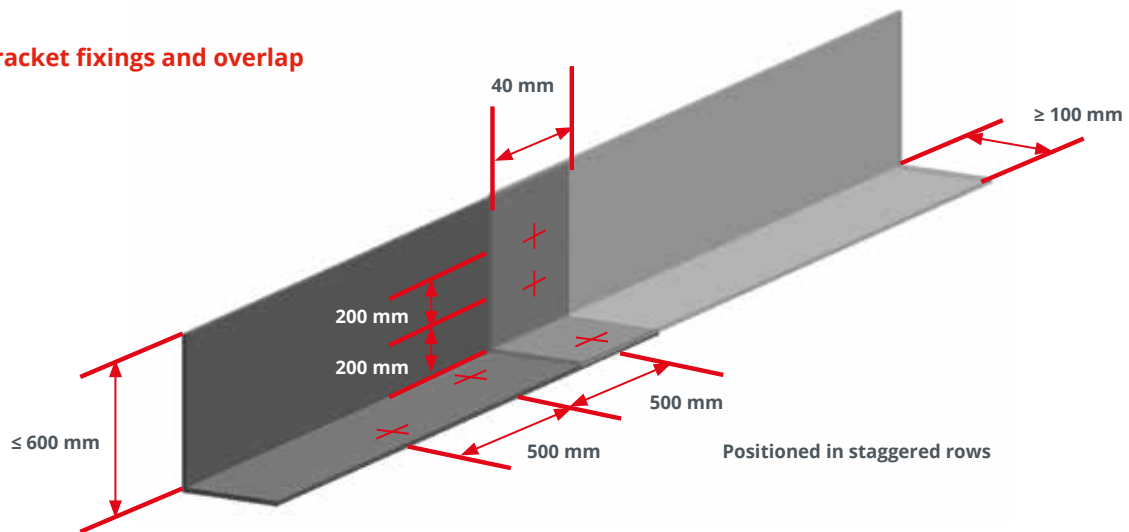
Brackets



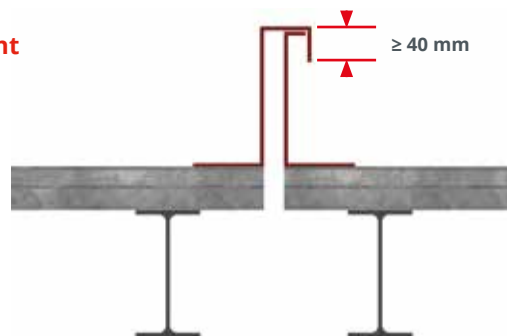
Position and dimensions of brackets

Nominal mm	Height h mm	Nib n mm
0.75	≤ 250	≥ 100
1.00	≤ 400	≥ 100
≥ 1.20	≤ 600	≥ 100

Bracket fixings and overlap

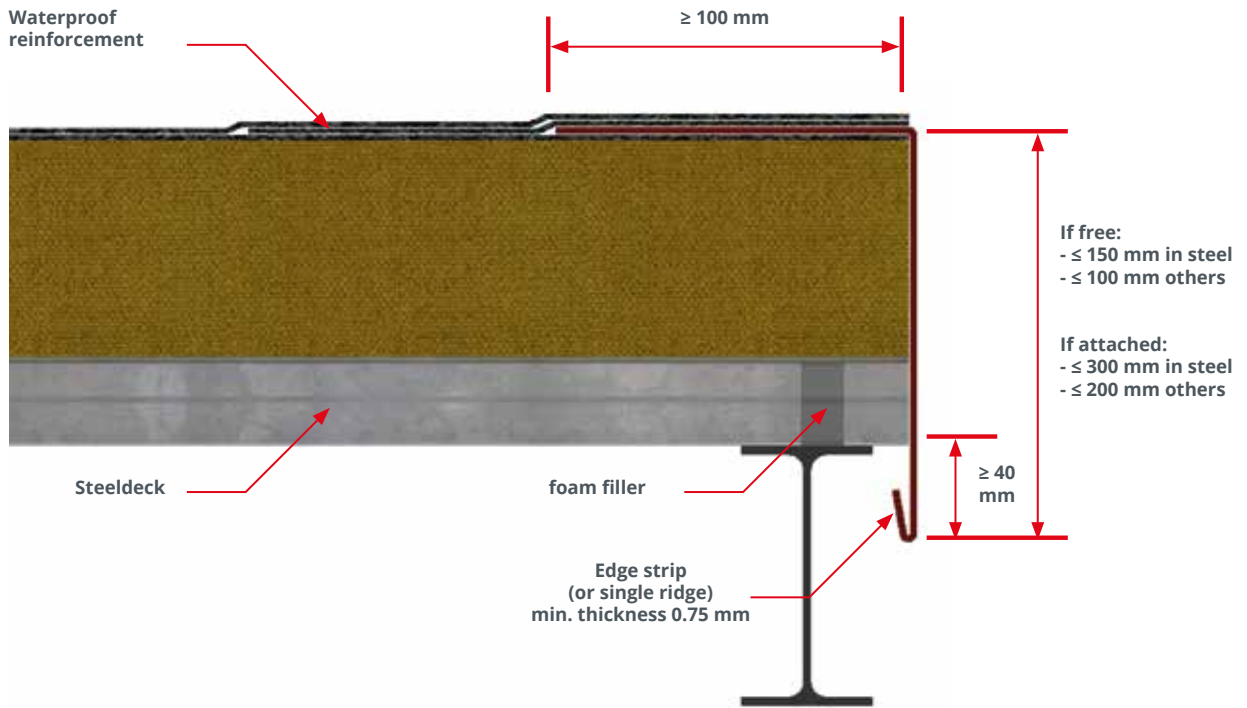


Brackets on expansion joint



FINISHES

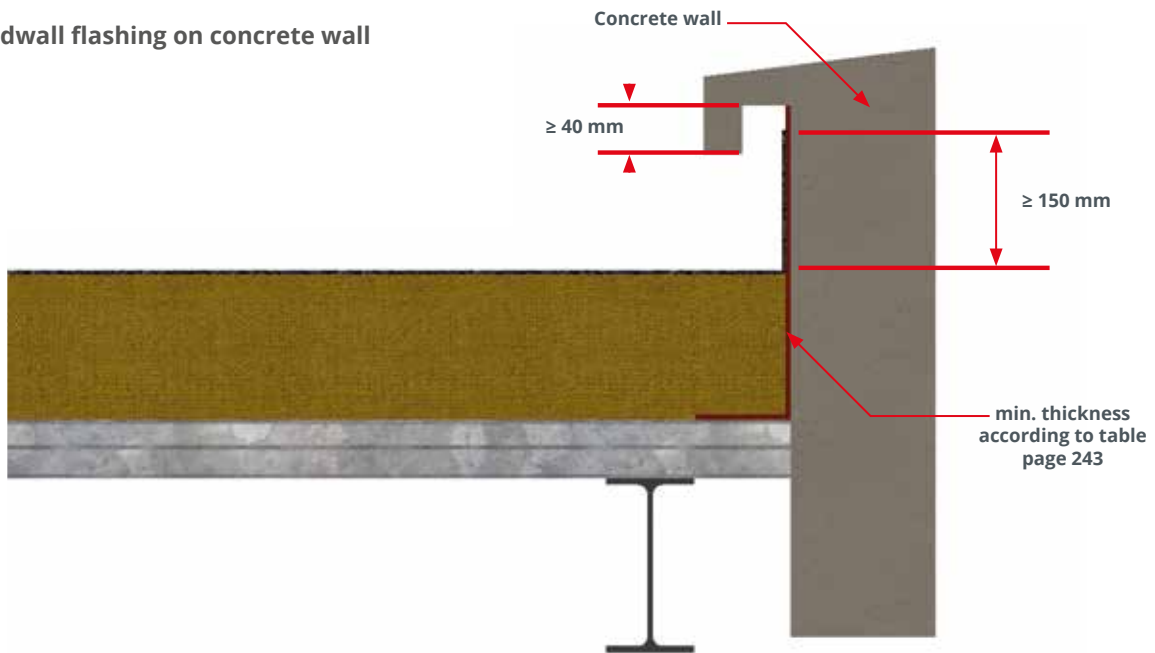
Edge flashings



Headwall flashings

The brackets acting as headwall flashing support galvanised steel sheets. The brackets should support the profiled steel sheets.

Headwall flashing on concrete wall

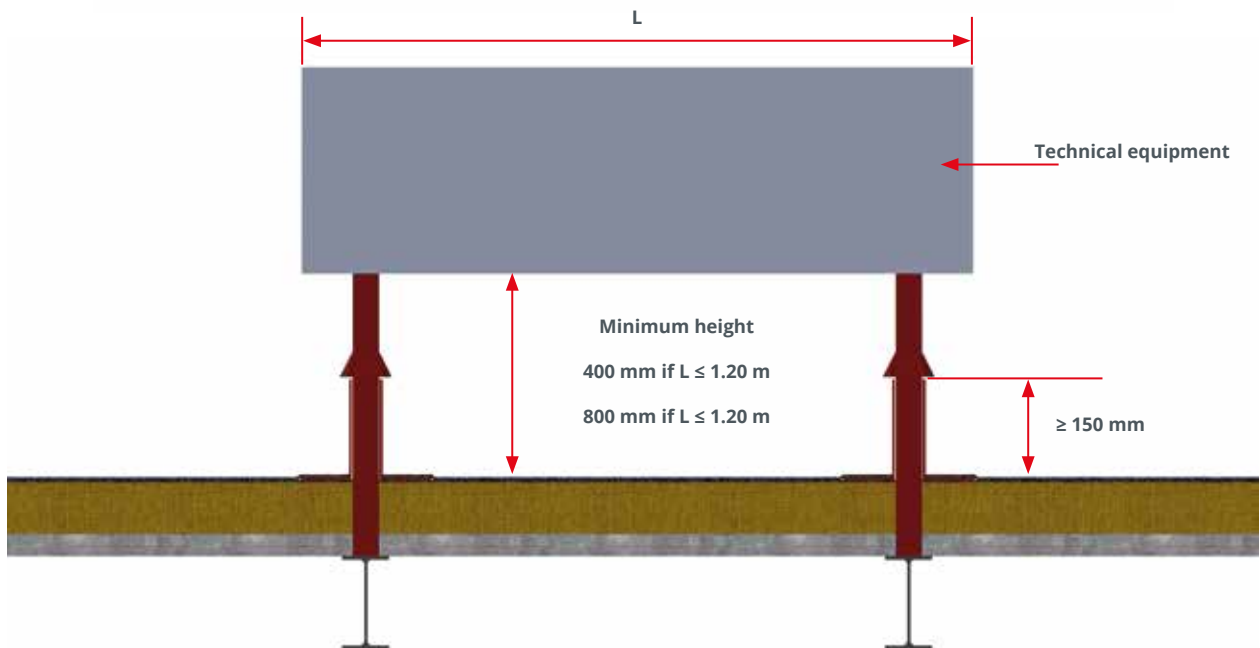


FINISHES

Headwall flashings



Technical equipment



Technical equipment loads (air conditioning, ventilation, etc.) installed on roof structures must be transferred directly onto the bearing structure.

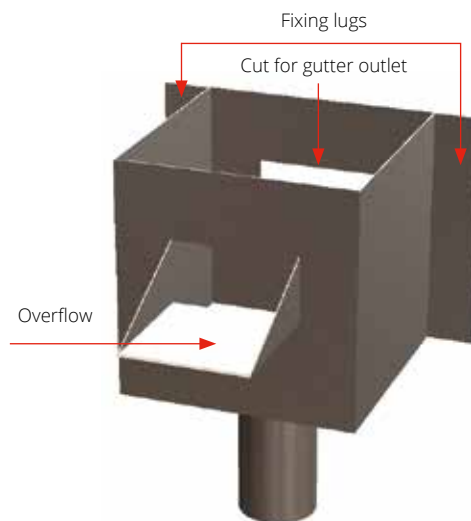
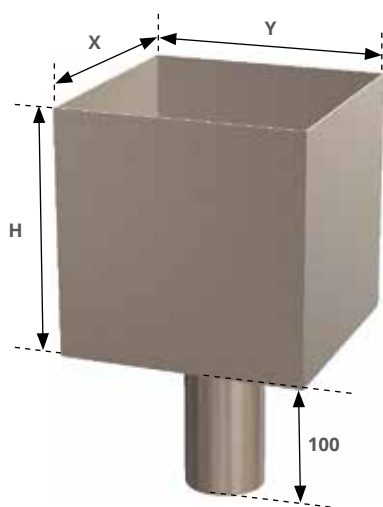
A width of at least 1m must be left between the arrays of equipment. To facilitate roof maintenance operations and possible repairs, there should be a minimum height between the bottom of the equipment and waterproof layer in the intermediate sections.

WELDED ROOF ACCESSORIES

Water box galva 1.5 or 2 mm

Item code: PLIBEG15

Item code: PLIBEG20

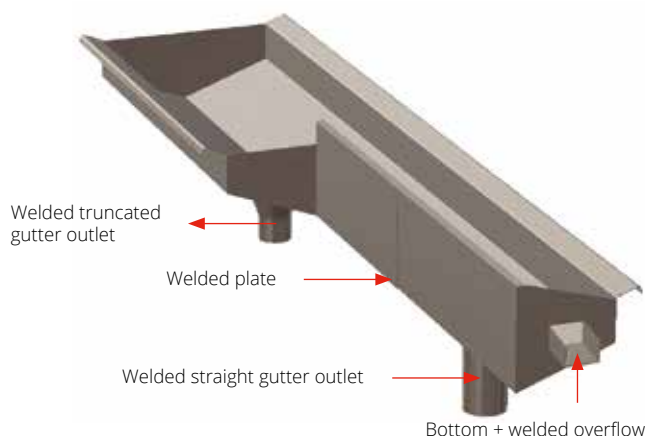


Post-painting available on request

Complete galvanised drainage channel

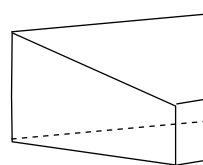
Options: Lifting ring

Item code: PLICGP



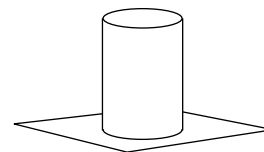
Bottom

Item code: PLICGPFOND



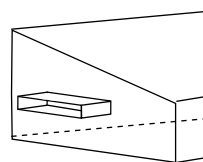
Welded gutter outlet diameter to be specified

Item code: PLICGPNAISS

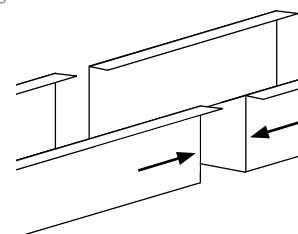


Bottom + welded overflow

Item code: PLICGPFONDTP

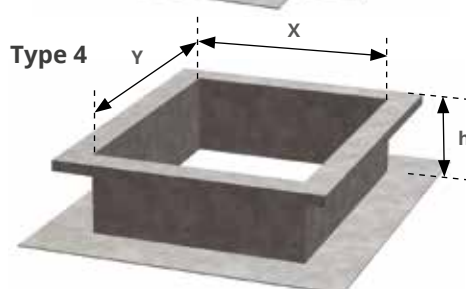
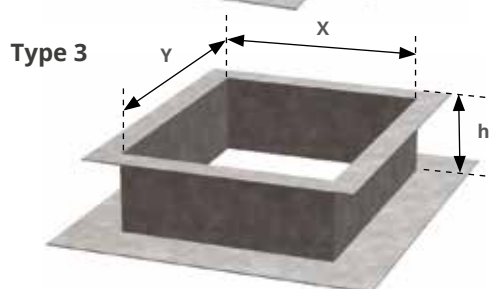
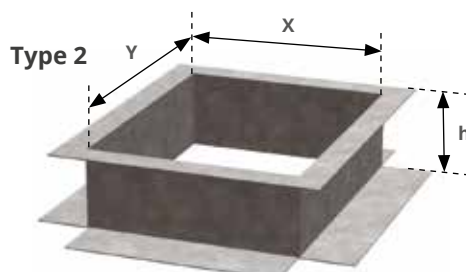
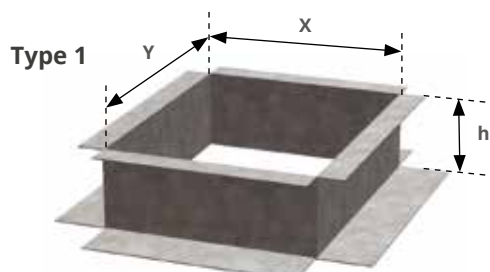


Welding



Welded curbs in galvanised sheet metal

Item code: CSG



Galva
1.5 mm PLICSG15
2 mm PLICSG20
3 mm PLICSG30

Give us your dimensions when ordering.

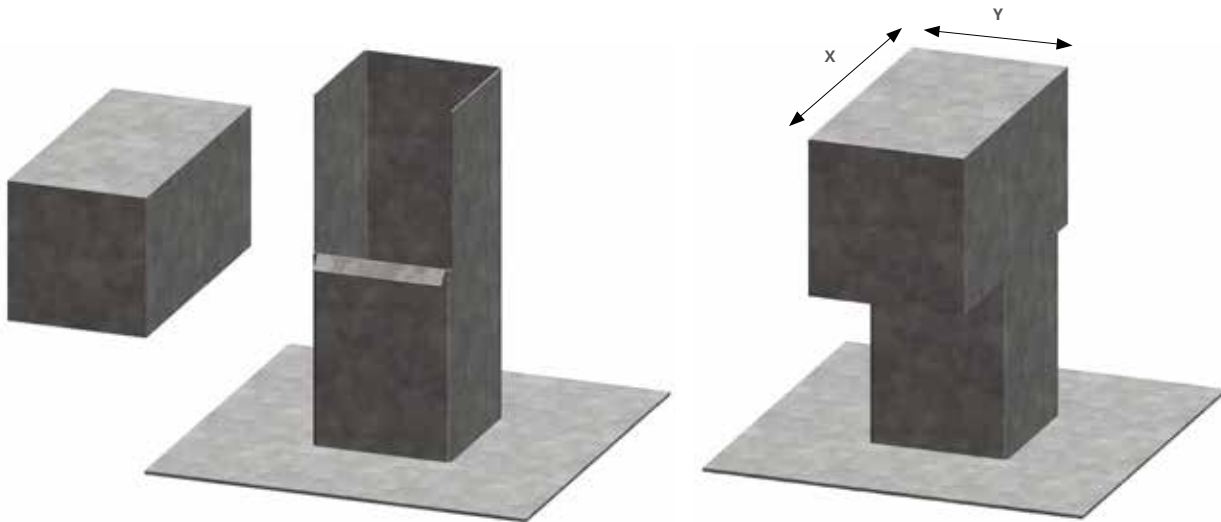
Contact us for roof outlet on reconstituted profile

WATERPROOF FLASHINGS

Standard thickness 0.75 to 2 mm galvanised

Roof jack with removable cover

Item code: PLICFCA



Dimensions (X/Y) - 80x80 - 100x100 - 130x130 - 150x150 - 200x200 - 250x250

For other dimensions, please contact us. If it needs to overrun the deck, please specify the length

Galvanised steel rain water evacuation system

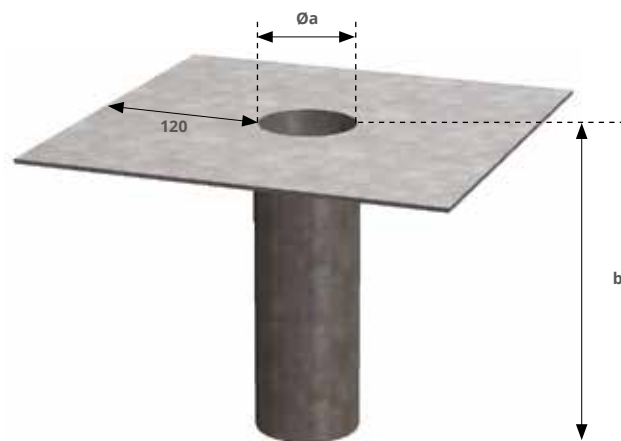
Truncated gutter outlet

Item code: PLINT



Straight gutter outlet

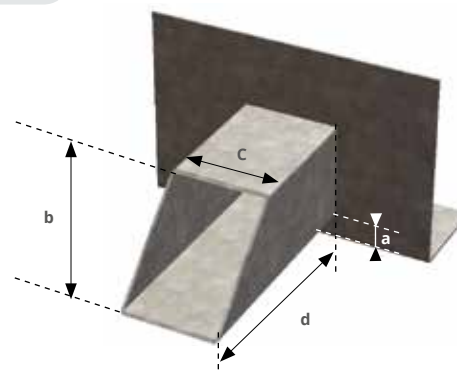
Item code: PLIND



Galvanised steel rain water evacuation system

Item code: PLIEEP

Dimensions (a, b, c, d) to be specified when ordering
Give us the height of the insulation and slope where applicable. If using on a drain, gutter outlet should be 20% in relation to the plate.

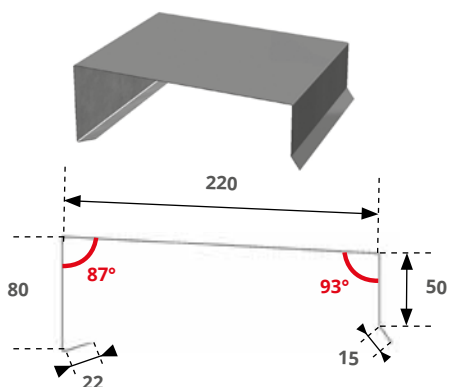


WATERPROOF FLASHINGS

Standard thickness 0.75 to 2 mm galvanised or painted

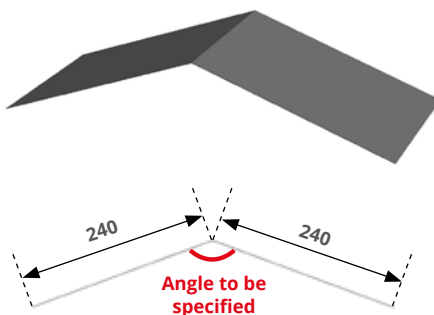
Coping

Item code: PLIACRO1



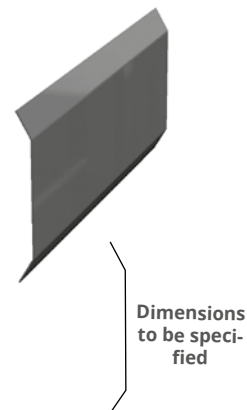
Ridge strip

Item code: PLIBF



Clamping strip

Item code: PLIBS



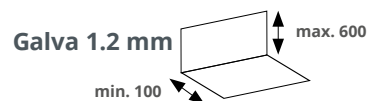
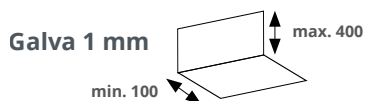
Curb

Item code: PLICOSTIERE75
PLICOSTIERE10
PLICOSTIERE12



Canted curb

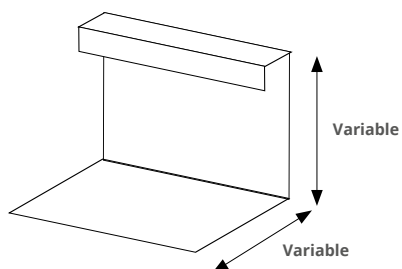
Item code: PLICOSTIEREBIAIS75
PLICOSTIEREBIAIS10
PLICOSTIEREBIAIS12



Roof curb

Item code: PLICV20 & PLICV30

Galva 2 or 3 mm



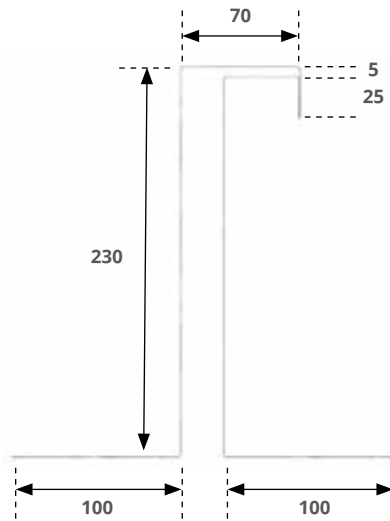
Give us your dimensions when ordering

WATERPROOF FLASHINGS

Standard thickness 0.75 to 2 mm galvanised

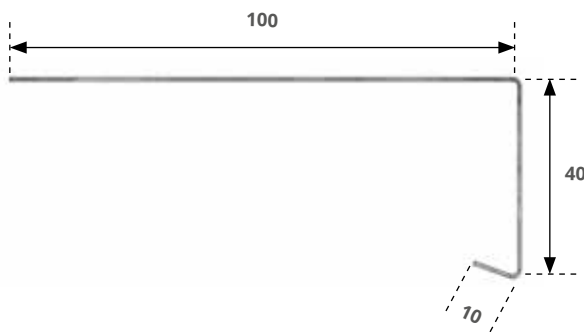
Expansion joint

Item code: PLIJD



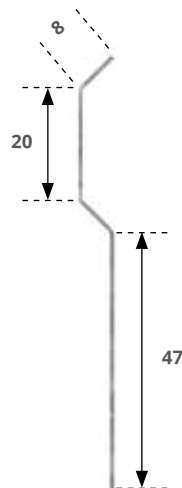
Roof edge

Item code: PLIRIVE



Cover flashing

Item code: PLISOLING



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