

Façade Cladding systems overview
Angle standing seam

el  **inc**[®]
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Main characteristics

The system is suitable for flat and curved façades. It is a traditional system that continues to be popular for façade cladding due to its attractive appearance, modest price and ease of installation. Its principal joint, subtle but well defined, transmits elegance, lightness and 'direction' to the building it protects.

It is a very durable, light-weight wall construction that requires virtually no maintenance. Installed in a vertical or horizontal direction, the standing seam offers many design possibilities which enable it to be used in different styles of architecture – from traditional to contemporary.

The façade is normally built as a ventilated construction, with all of the inherent advantages that this brings to the building. The fixing is hidden and indirect. It needs a continuous support behind it and normally uses thicknesses of 0.7 and 0.8mm.

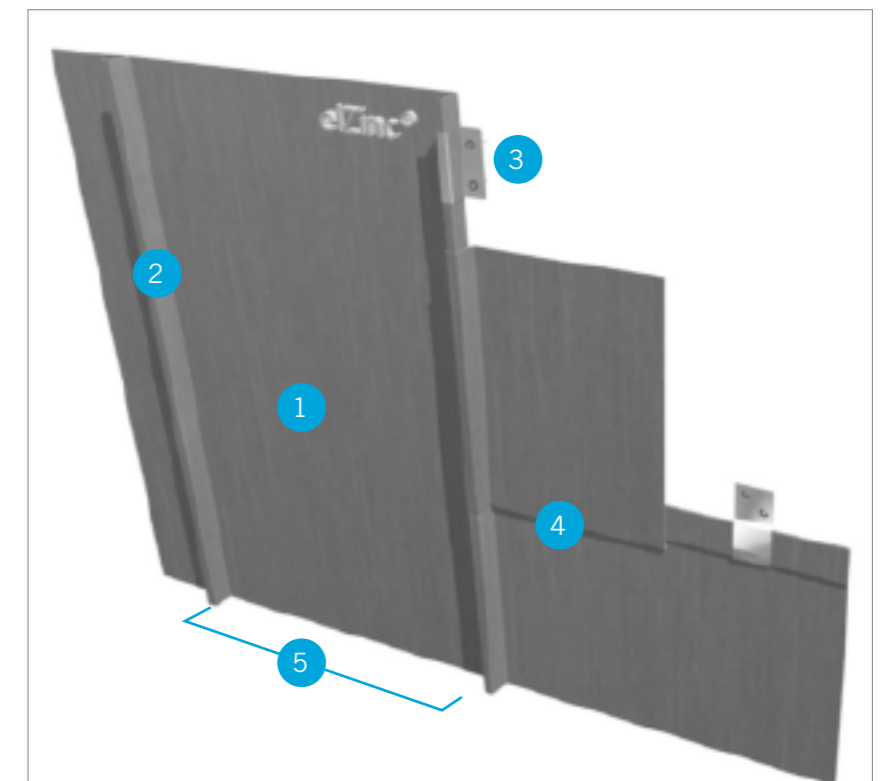
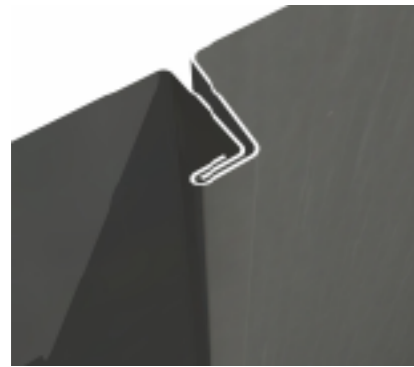


Diagram of vertical standing seam with cross welt:

- 1 - Standing seam tray
- 2 - Standing seam
- 3 - Fixing clip around seam undercloak
- 4 - Transversal single lock cross welt
- 5 - Axis measurement

Principal joints

The longitudinal joint is an adaptation of the standing seam used in roofing. In fact, it is the same joint save for being finished with a 90° fold instead of the 180° fold used in roofing (for increased weatherability), to form a 25mm upstand with a 12mm flange



Vertical and horizontal standing seam joint

Finishing the joint in this way gives three advantages for façade work:

- The metal is not stressed as much producing flatter trays
- It presents a stronger and more uniform joint width
- The joint is more stable and therefore results in a straighter seam

The standing seam is formed by profiling or bending elZinc® strips and sheets into trays. An undercloak is formed along one edge (this is the edge that is fixed using clips) and along the other edge an overcloak is formed, which is welded around the the undercloak of the adjoining tray, covering the clips and seaming up the trays. 70mm of material is used to form the seam.



Single lock cross welt

The transversal joint is a 40mm single lock cross welt. This is a flat lock joint that forms a small 5mm 'jump' in the face of the trays.

It is not nearly as noticeable as the standing seam, which is the main reason why this system is visually so directional. It is formed by making a 180° fold along each end of the trays (we recommend a 40mm fold along the undercloak and 30mm along the overcloak) that are hooked into each other to join the trays end to end.



Fixing

The hidden fixing is indirect using clips that are hooked into the seam and screwed or nailed to the substrate behind. If the cladding is composed of sheets over 3m in length then a combination of fixed clips (to hold the trays in position) and sliding clips (to let them freely dilate) should be used.

These clips should be sufficient in number to resist the design wind loading for each project. Normally 6 clips per sq. m prove to be enough for buildings not taller than 8m, whereas corners and edges of taller buildings will need more – please see our technical documentation for additional detailed information.



Fixed and sliding stainless steel clips

Installation

The system is installed from the bottom of the façade to its top and left to right or right to left, and if the cladding is installed at an angle to the vertical the transversal joints are set to shed rainwater rather than collect it.



Appearance

The standing seam gives direction to the cladding and the orientation of the seams is therefore an important consideration for the architect. The seams themselves are fairly fine, but in sunny weather the shadows they cast are clearly visible on the façade. Normally the seams are set either vertically or horizontally, although occasionally they are set at angle somewhere in between for design reasons. Vertical trays can be quite long, but horizontal trays are normally limited to 3m to keep their handling on site reasonably manageable.

Good coordination of window and door openings in the façade with the standing seam layout contributes to the façade transmitting a feeling of order and harmony to the observer. In a horizontal layout this affects the vertical position of the openings and in a vertical layout it affects the horizontal position.

A unique characteristic of light gauge metal façades is the subtle quilting that can appear naturally under different light conditions, bringing a bit of visual 'vibration' and 'energy' to the building. Many architects appreciate this. On the other hand this can,

if desired, be reduced to a minimum and elZinc® material helps here by having excellent flatness and low residual tension leading to very flat trays anyway. Other typical measures that can be adopted are:

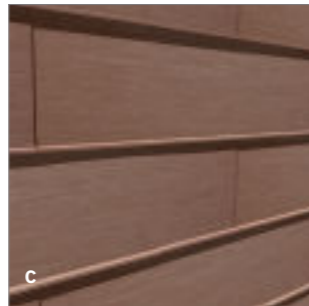
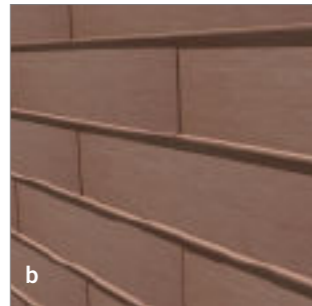
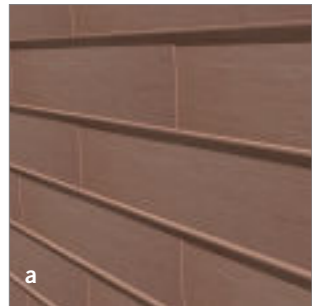
- Use 0,8mm thick elZinc®
- Fold the trays instead of profiling them
- Limit the width of the trays to 430mm
- Limit the length of the trays to 3000mm
- Ensure the support is plumb (by using adjustable wall anchors if required).



Horizontal layouts

The standing seams have considerable visual impact on the façade, and therefore architects have the opportunity to use them in their design to communicate varied effects and 'sensations' - a façade in which the openings are made to coincide with the standing seams will transmit the idea of order, formality and 'togetherness'. On the other hand, a façade in which the openings 'punch' through the metal skin independently of the seam positions will create a very different impression, but equally valid depending on the aims of the architect. The cross joints can also be used to underline certain other aspects of the façade. These joints, whose visibility varies depending on our viewing position and prevalent shadow effects, can exert a clear influence on our perception of the façade.

Below are shown some common layout designs. Other designs are possible – please contact us for more examples. The images are shown with a shadow effect for clarity.



Cross joints seen:

- a-From the front without casting a shadow
- b-From the front casting a shadow
- c-From the rear

Staggered design:

It is advised to limit tray length to 3m. Typical axis dimensions are 430, 530, 580 and 600mm. It has a visually unifying effect on the façades it dresses.



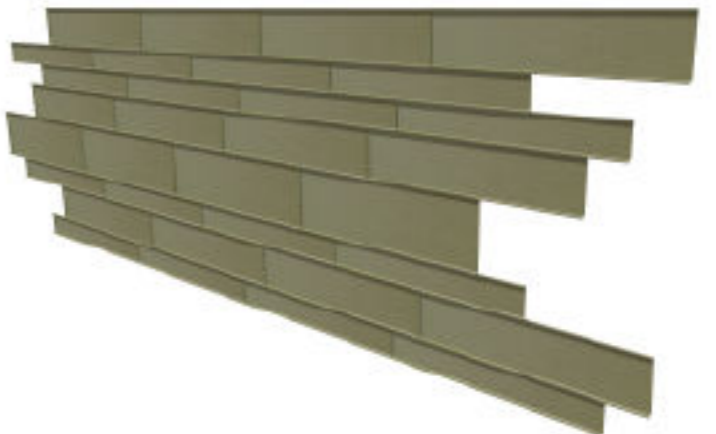
Stepped design:

The same axis measurements and tray lengths as above are used. It also brings together the façade and provides a sense of movement to the cladding. It is common practice to line up each fourth or fifth cross joint.



Different widths design:

Other common widths are 530 and 580mm. Other widths under 600mm can be used but they will generate off-cuts. This design adds character and identity to the façade and it is very horizontal.





Vertical layouts

Installation of standing seam trays in the vertical does not present the same handling problems on site as in the horizontal, so it is possible to clad many façades from top to bottom with one continuous tray. If an 'ordered' look to the façade is desired, it is important to plan the horizontal positioning of the jambs of any openings. The same horizontal designs seen earlier can also be used in a vertical layout.

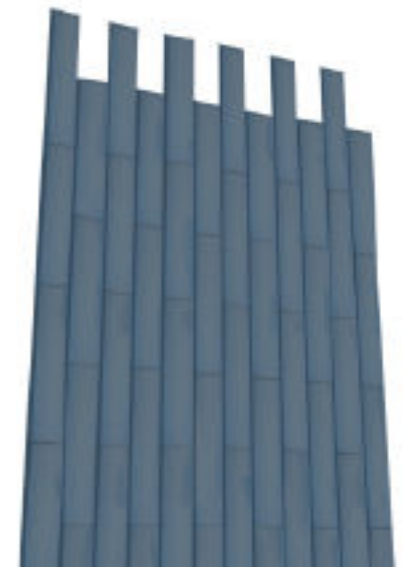
Long strip cladding:

The limit on the length of the trays is nominally 10m. A wide fixing plate should be used at the top of the trays to ensure they are fixed securely in position. Additionally, fixed clips are used at the top of the trays over the first metre cutting through them or pinching them to aid in the anchoring of the trays. Sliding clips are used over the remainder of the trays.



Staggered joint cladding:

The cross joints are nearly always seen from below and therefore from the front, and given that they are horizontal they always cast a shadow in sunny weather. This makes them more noticeable than in a horizontal layout.



Designs set at an angle can be chosen if so desired, which normally serve to highlight clad areas from their surroundings, or to 'fit' the cladding better to the building's geometry.

Substrates and façade construction

Standing seam trays are not self-supporting and require a fully or almost fully supporting substrate against which they rest and to which their clips are fixed. The substrate is usually ventilated with an air layer (minimum 2cm) between it and the insulation. Three examples of the many possibilities that exist are shown here. For more detailed informa-

tion on supporting materials and wall construction, please consult our technical documentation. Wood is the most common material used for the substrate. This can be in the form of soft wood planking or OSB or plywood boarding. All of these materials are combustible and therefore the relevant national building codes should be consulted to ascertain

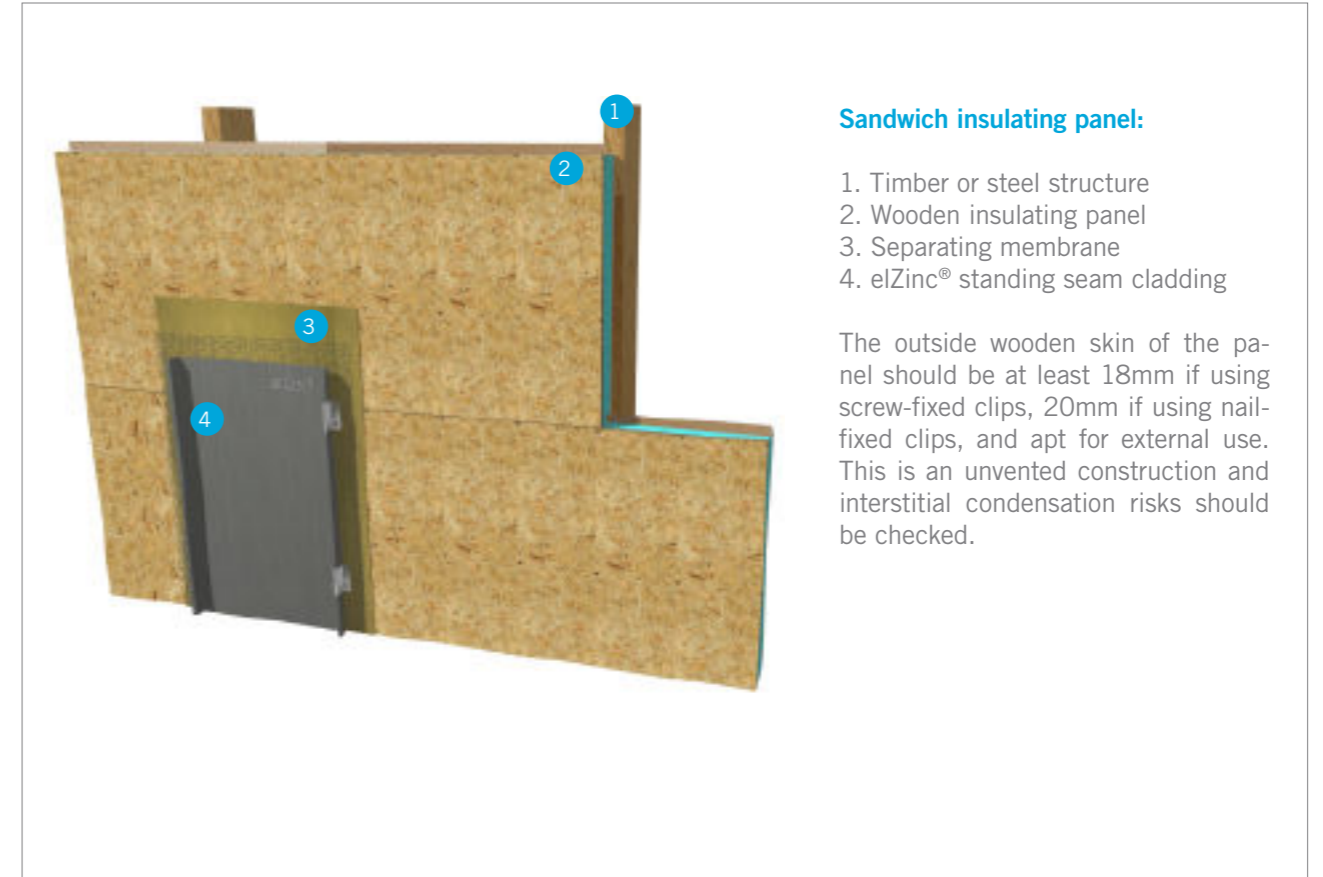
any possible limitations placed on their use in external walls. Lacquered steel trapezoidal sheet can be used as an alternative to wooden substrates. If the clips are to be fixed to the sheet using screws, a sheet thickness of 0,8mm is advised to ensure their required pull-out values for the clips are achieved.



Traditional vented substrate:

1. Concrete block structural support
2. Adjustable wall bracket
3. Soft wood battens
4. Insulation and air space
5. Soft wood boarding
6. Separating membrane (optional)
7. elZinc® standing seam cladding

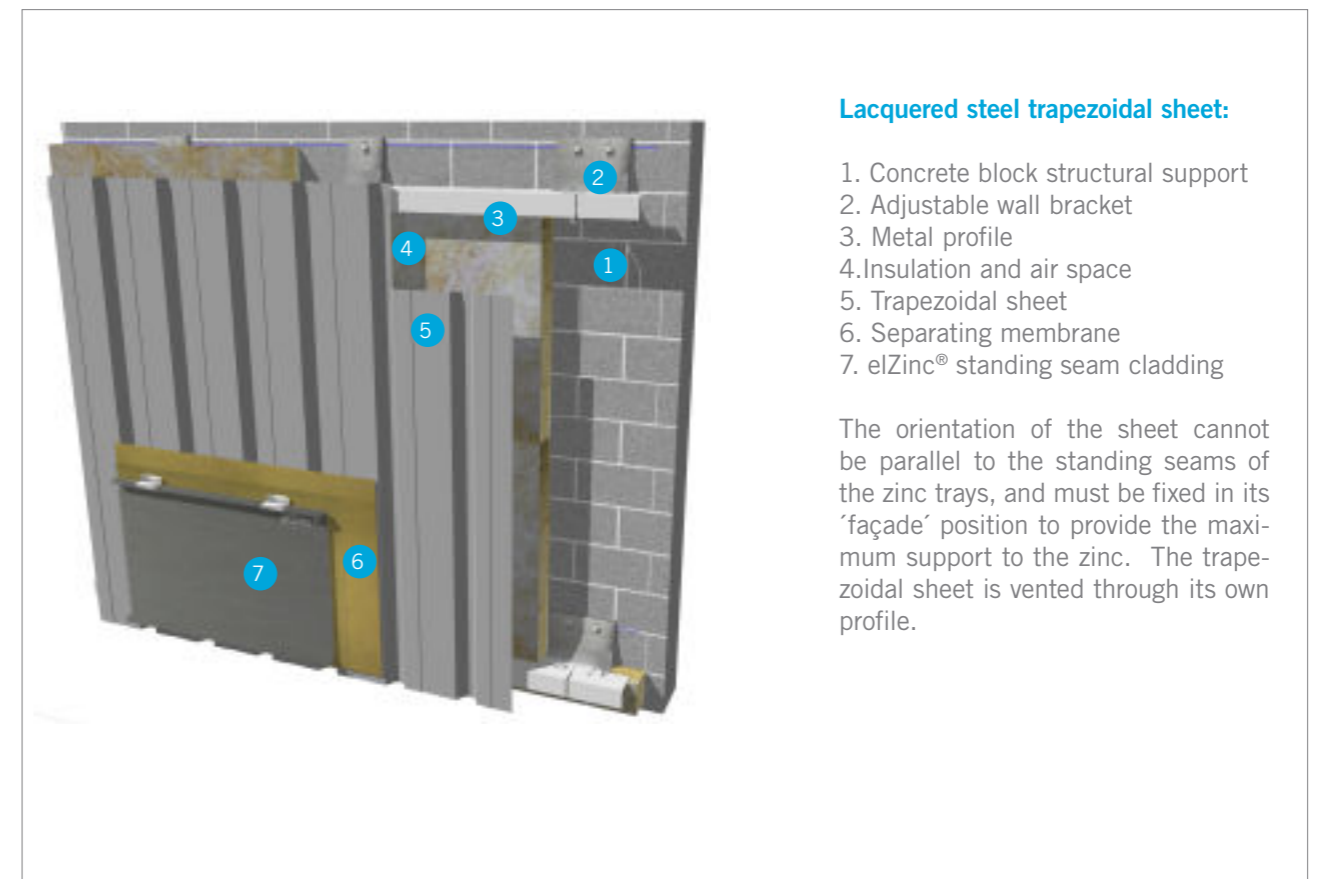
The orientation of the s/w boarding cannot be parallel to the standing seams.



Sandwich insulating panel:

1. Timber or steel structure
2. Wooden insulating panel
3. Separating membrane
4. elZinc® standing seam cladding

The outside wooden skin of the panel should be at least 18mm if using screw-fixed clips, 20mm if using nail-fixed clips, and apt for external use. This is an unvented construction and interstitial condensation risks should be checked.



Lacquered steel trapezoidal sheet:

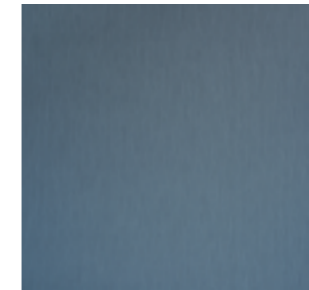
1. Concrete block structural support
2. Adjustable wall bracket
3. Metal profile
4. Insulation and air space
5. Trapezoidal sheet
6. Separating membrane
7. elZinc® standing seam cladding

The orientation of the sheet cannot be parallel to the standing seams of the zinc trays, and must be fixed in its 'façade' position to provide the maximum support to the zinc. The trapezoidal sheet is vented through its own profile.

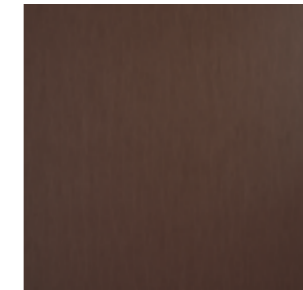
Summary

CHARACTERISTIC		OBSERVATIONS
Field of application	Flat and curved façades, soffits.	Minimum radius is 400mm using curving machines.
Longitudinal joint	Angle standing seam.	25mm high with a 12mm wide flange. 70mm of material is used in the seam.
Cross joints	Single lock cross welt.	Produces a jump of about 5mm between trays. 40mm undercloak and 30mm overcloak is recommended, resulting in 110mm of material in the joint.
Minimum thickness	0,65mm.	—————
Maximum thickness	0,8mm.	Profiling machines cannot work with thicker material.
eZinc® finishes	eZinc® Natural, eZinc® Slate, eZinc Rainbow® range of finishes.	Mill finish zinc is not generally very popular for façades due to its initial shine and the natural weathering characteristics of zinc, which can be rather patchy at first on vertical surfaces.
Weather tightness	Complete on vertical surfaces for all designs.	The angle standing seam should not be used on surfaces pitched below 25°.
Fixing method	Indirect and hidden using stainless steel clips nailed or screwed to the substrate (or riveted in the case of sheet metal support).	Fixed and sliding clips are used. Minimum pull-out values for the clips should be 560N.
Layout designs	Horizontal and vertical, or set at an in-between angle.	—————
Tray width	Normally between 430 a 600mm.	Trays wider than 600mm are not recommended for façades unless the possible oil canning is not an issue for the architect.
Tray length	In horizontal designs normally between 2 and 3m. In vertical designs up to a maximum of 10m.	Trays longer than 3m can give handling problems on site, especially in a horizontal design
Substrate	Continuous or semi continuous of soft wood boarding, OSB or plywood sheathing, or trapezoidal metal sheet.	—————
Wall construction	Normally ventilated with a ventilation space behind the substrate .	Ventilation layer a minimum of 2cm deep.
System weight	From about 5 to 7kg/m ² (zinc only).	Wooden support - 10 to 14kg/m ² ; trapezoidal sheet 7 to 12kg/m ² , both depending on types and thicknesses.
Cost	Relatively economical.	—————
Means of elevation for fixers	Platforms or scaffolding.	Ideally the positioning of the scaffold anchors should be agreed upon with the installer of the eZinc® cladding.
Variations	Double lock standing seam	Not recommended for façades because the joints are more difficult to keep straight and uniform.

Samples



eZinc Rainbow® blue



eZinc Rainbow® red



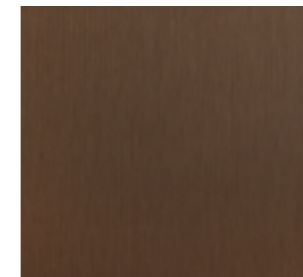
eZinc Rainbow® green



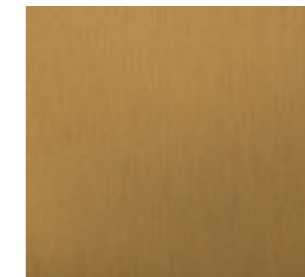
eZinc® natural



eZinc Slate®



eZinc Rainbow® brown



eZinc Rainbow® gold



eZinc Rainbow® black

Note: The colours shown in this document are for illustrative purposes only and should not be taken as representative of the real finishes. Please request our sample card to see the real eZinc® finishes.

For more detailed technical information, please consult our technical literature or contact our technical advisory Service.



ASTURIANA DE LAMINADOS, S.A. has developed the instructions and recommendations herein with the aim of providing a better service for its customers. It is generic information for standard installation of elZinc® products in a European climate.

This information must not substitute the considerations and requirements that, in each project, architects, designers and consultants may offer.

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