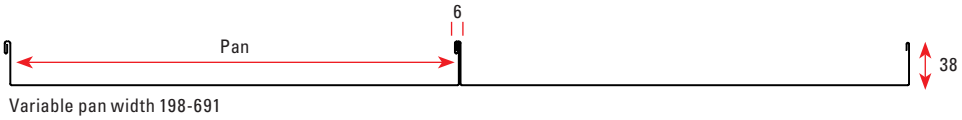
PRODUCT TECHNICAL STATEMENT

Eurostyle® epic™ Roofing and Cladding

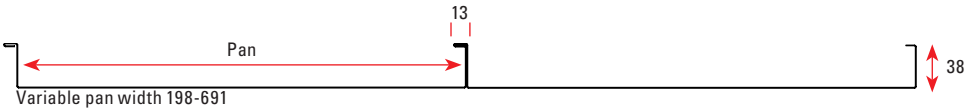
All dimensions are nominal, in mm. Sheet cover width tolerance +/-5mm.

(For standard pan width and minimum pitch refer to charts.)

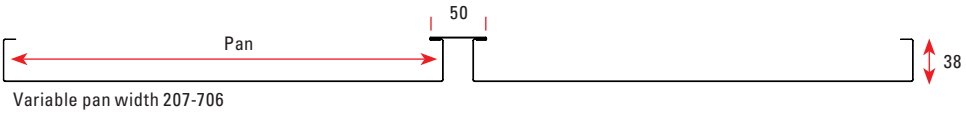
Double Standing Seam



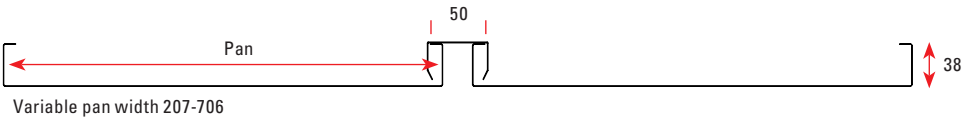
Angle Seam



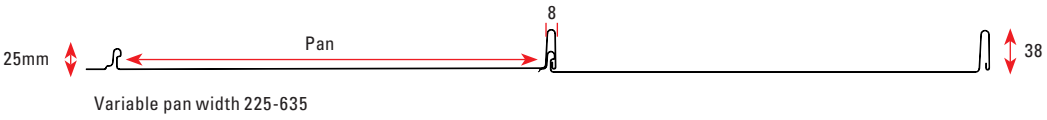
Roll Seam



Roll Cap



Snap Lock



Manufacturing Locations: Hamilton, Blenheim and Southern Lakes.

Description

Double Standing Seam
A well known and traditional technique that provides superior performance in high wind and rainfall areas and areas subject to snow.

Angle Seam
Displays a wider effect of the seam providing a striking appearance in both roofing and cladding situations.

Roll Seam
A seamed wide cap provides dramatic lines and variable shading to any roof or wall cladding application, yet still providing minimalistic lines.

Roll Cap
Provides the boldest look of the Eurostyle profile with highly defined longitudinal lines providing light and shade variations.

Snap Lock
Provides a similar but slightly bolder look to Double Standing Seam but is secret screw fixed and clipped together instead of seamed.

Branches: • Whangārei • Auckland • Pukekohe • Hamilton • Tauranga • Taupō • New Plymouth • Hawke's Bay • Palmerston North • Wellington • Blenheim • Christchurch • Dunedin • Southern Lakes • Invercargill

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EUROSTYLE® EPIC™ ROOFING AND CLADDING

Design Considerations

The designer should take into account the following factors when specifying Eurostyle:

- Preferred profile
- Material type
- Roof pitch
- Sheet lengths
- Pan width
- Wind Loadings (Refer to Wind Loadings Section)
- Snow design
- Reference to our detail drawings

Fully supported roof cladding due to its inherent nature of a flat pan without the use of structural ribs can give rise to undulations in the wide flat pan. These are considered to be an architectural feature of the profiles. Refer also to the Canning Section.

Eurostyle can offer the use of a double swage in each pan as an architectural feature which assists in eliminating this if required. It must be specified at the time of order.

Low gloss paint coatings are also available which assist in minimising any undulations but must be specified at time of coil ordering.

Penetration flashings for Eurostyle must be installed by the Eurostyle installation contractor only and other trades must not cut any holes. The placement of penetrations should ensure that they do not interfere with the panel seams.

Eurostyle falls outside the scope of E2/AS1 and is to be designed and installed to the manufacturers recommendations.

- Manufactured custom cut to length subject to transport and site limitations.
- Eurostyle can be manufactured at our local branch or in cases where access or transportation is an issue can be manufactured on site.
- As sheet lengths increase higher transportation costs may be applicable.
- Sheet lengths in excess of 13 metres for steel and 10 metres for other substrates, require specialised design and transportation. Refer to Roofing Industries for advice.
- Tapered panels for other than Snap Lock profile are available but are limited in length to generally 8.2 metres. If longer lengths are required refer to Roofing Industries.

MATERIAL RECOMMENDATIONS & STANDARD PAN WIDTHS TO SUIT STANDARD COILS

The use of the following sizes minimises waste and cost and generally shortens lead times. However other sizes are available, and if non-standard sizes are required, contact Roofing Industries for specific advice.

Profile	0.55mm Plain and Pre-painted Steel	0.90mm Aluminium	0.55mm Copper	0.70mm Copper	0.70mm Titanium Zinc
Double Standing Seam	Refer Roofing Ind.	Refer Roofing Ind.	498mm	498mm	498mm
Angle Seam	508mm	508mm	498mm	498mm	498mm
Roll Seam	518mm	518mm	508mm	508mm	508mm
Roll Cap	518mm	518mm	N/R	508mm	N/R
Snap Lock	455mm	455mm	445mm	445mm	445mm

Material availability is subject to available stock and some material such as copper and titanium zinc may have lead times of 3-4 months.
All measurements are nominal. N/R - Not Recommended.

MINIMUM PITCH

Profile	Full length sheets up to 13 metres	With cross welt transverse join	Snow Areas
Double Standing Seam	3 degrees	7 degrees	Refer Roofing Ind
Angle Seam	3 degrees	7 degrees	Refer Roofing Ind
Roll Seam	5 degrees	7 degrees	Refer Roofing Ind
Roll Cap	5 degrees	7 degrees	Refer Roofing Ind
Snap Lock	5 degrees	7 degrees	Refer Roofing Ind

Notes

- For sheets or runs in excess of 13 metres for steel and 10 metres for other substrates, please contact Roofing Industries
- Minimum pitch may be affected by snow loadings in areas subject to snow. Refer to Roofing Industries
- The transverse seams should be soldered or sealed in high or very high wind design load areas at pitches less than 20 degrees
- The building design pitch may need to be higher to take into account any cumulative deflections of the frame, purlin and roof sheeting.
- With curved roofing the roof cladding must not terminate at a pitch lower than permitted above.
- Refer to NZ Metal Roof and Wall Cladding Code of Practice for cross welt details and limitations.

SUBSTRATE

Eurostyle Roofing and Cladding are fully supported systems which use a secret clip fixing (Snap Lock is secret fixed without a clip) and panels are joined by clipping and seaming and do not have any external through fixings. It is non structural so requires continuous support underneath - typically plywood sheeting which is structurally fixed to the frame, generally 75 x 50 or 100 x 50 purlins on the flat, fixed in accordance with the NZ Building Code.

It must be smooth, dimensionally stable and with a moisture content of <18% (generally CPD) and a minimum thickness of 15mm plywood is generally recommended as the substrate. It must be H3.2 treated using a water based system, and of Stress Grade F11. A 2-3 mm expansion gap must be provided between sheets. Ventilations gaps to be provided at ridge, abutments and soffit areas.

Generally for 15mm plywood and rafters at 900mm centres the purlin spacing to which the plywood is fixed should be at 800mm centres and noggs provided to all sheet ends and edges (Not required on edges if tongue and groove system used).

With 17mm structural plywood, the purlin spacings may be increased to 900mm. Fixings for the plywood should be a minimum of 8g x 40mm for 15mm plywood and 10g x 40mm for 17mm plywood.

They must be countersunk screws manufactured from corrosion resistant material such as stainless steel fixed at 150mm centres to the perimeter of the sheet and 300mm to intermediate purlins. Fixings must not be closer than 10mm to sheet edges or 15mm when tongue and groove edges are used, and must not protrude above the surface.

Closer fixing centres may be required on high wind load areas such as gable ends. The plywood should be laid in a staggered pattern with the face grain at right angles to the supports.

The above is a guide only and reference should be made by the designer to the NZBC, the NZ Metal Roof and Wall Cladding Code of Practice, and plywood manufacturers technical information. In some cases increased support spacing may be applicable depending on wind loads.

WIND LOADINGS

It is first necessary for the designer to calculate the design wind load for the roofing and cladding in accordance with generally acceptable practice, by reference to AS/NZS 1170 : 2002, and /or NZS 3604 : 1999 as appropriate. For a fuller explanation of this refer to the NZ Metal Roof and Wall Cladding Code of Practice.

The uplift forces on Eurostyle roof and cladding are transferred through the building via the clips and fasteners to the substrate. The performance criteria is the number of clips or fasteners per m/2, which can be varied by the spacing of the clips, or the width of the panels.

To improve the uplift resistance of Eurostyle roof and cladding the design options are:

- to reduce the width of the end bays
- to increase the metal thickness
- to place the clips and fasteners closer together

with the latter being the standard option.

This requires extra clips and fasteners around the periphery because of the increased wind load on all buildings as required by the local pressure factor (kl). Additional clips and fasteners are also required in exposed situations subject to high wind design load areas.

In these areas consideration should also be given to reducing the maximum gable or verge panel width to a maximum of 400mm.

The number of secret fix clips and fasteners per lineal metre and ultimately per m/2 for Eurostyle roofing and cladding must be derived from the following graph as published by the NZMRM in the Metal Roof and Wall Cladding Code of Practice.

Wind Load Design

The following table is based on standing seam clip spacings from (and to be read in conjunction with) section 15.4 of the NZ Metal Roof and Wall Cladding Code of Practice.

Eurostyle Roofing and Cladding - Maximum Clip Spacing

Maximum Pan Width	NZS 3604 Wind Zone Medium	High	Very High	Extra High
300mm	600mm	600mm	600mm	600mm
400mm	600mm	600mm	600mm	600mm
500mm	600mm	600mm	600mm	400mm

SED Wind Zones require specific design by a suitably qualified engineer. Fixing types, embedment, pullout, etc. need to be checked with the fastener manufacturer to ensure design loads are met. Contact roofing Industries for guidance.

INFORMATION TABLE

Substrate Material	Steel	Aluminium	Copper	Copper	Titanium/Zinc
Thickness	**0.55mm**	**0.90mm**	**0.55mm**	**0.70mm**	**0.70mm**
Aprox weight per lineal metre (kg/m) for Standard Pan width for all profiles per sheet	2.8	1.55	2.86	3.78	3.02
Nominal Effective Cover for Standard Pan (mm)					
Double Standing Seam	510 *	510 *	500	500	500
Angle Seam	510	510	500	500	500
Roll Seam	550	550	540	540	540
Roll Cap	550	550	N/R	540	540
Snap Lock	463	463	453	453	453

*Refer to Roofing Industries N/R = Not Recommended

SPECIFICATION

Refer to our Full Specification on Masterspec, our website, or our Selection Guide.

VENTILATION

Eurostyle fully supported metal roofs must have provision for ventilation of the timber substrate to allow condensation to dissipate. Ventilation should be provided at the eaves and ridge.

A ventilation space of 40 mm minimum is recommended below the plywood with air flow to eaves and ridges.

A 3D synthetic mesh (e.g. Drainage Mat) is required between the Eurostyle sheeting and plywood to provide ventilation and allow condensation and moisture to dissipate. This will provide support and fullness to profile pans, reducing potential for both nuisance noise and canning.

Ventilation is particularly important with skillion type roofs and also when Titanium Zinc is being used.

ROOF EXPANSION PROVISIONS

Thermal movement across the pan is taken up by the provision of a small gap at the base of the profile. Linear expansion is accommodated by the use of a combination of fixed and sliding clips where necessary.

Double Standing Seam,Angle Seam and Seam Roll sheeting up to 3 metres length can be fixed entirely with fixed clips. For these profiles, sheets in excess of this require the use of sliding clips located either above or below (or both) the fixed clips.

Some variation of this is acceptable dependent upon the specific material being used and generally steel based materials can be fixed with fixed clips up to 5 metre sheet lengths.

The graph below illustrates the positioning of the fixed and sliding clips.

For roll cap the expansion is taken up by the profile sliding on the standardclip. With Snap Lock the expansion is taken up by screw fixings not fully tightened in a slotted secret fixing point.

Due allowance must be made for expansion where the roofing forms a connection with any flashings.

Wall panels should in general be positively fixed at the top.

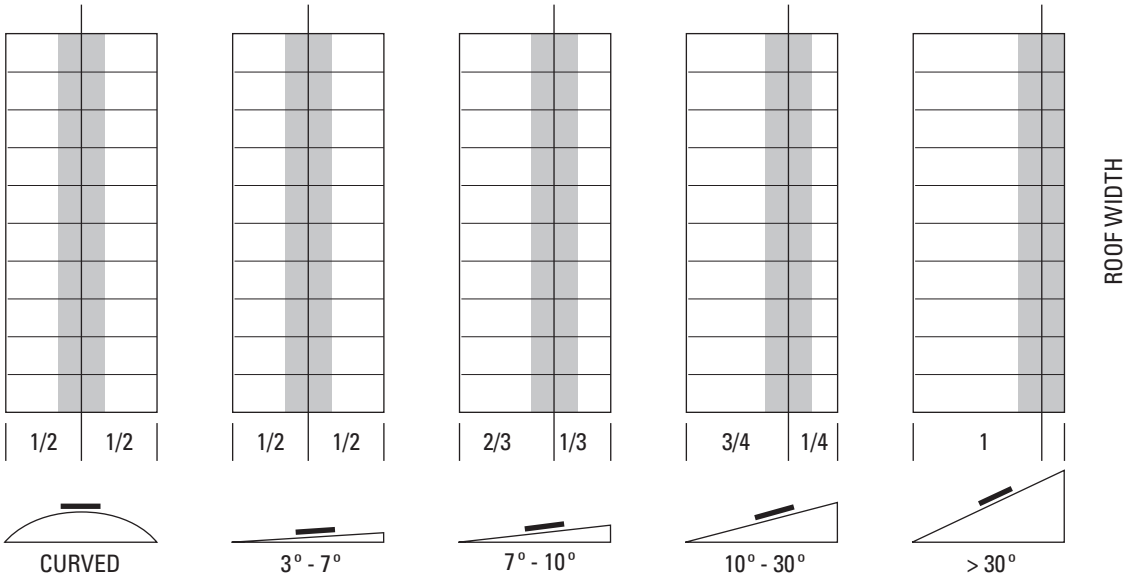
Underlay

A breather type underlay is recommended over the top of the plywood substrate. A self supporting grade is recommended due to its heavier weight providing greater tear resistance and separation qualities. Thermakraft 407 is the recommended underlay.

Curving

Refer to Roofing Industries for specific advice.

The following diagram illustrates the positioning of sliding clips



Shaded areas are Fixed Clip area and the latter diagrams indicate the roof pitch.
Fixed clip longitudinal dimension 1-3 metres dependent on expansion of material and sheet length.The greater the material is subject to expansion the shorter the longitudinal fixed clip area is required to be.

PRIMARY FIXING CHART

Eurostyle profiles should be clip fixed in accordance with the following chart (with 2 screws per clip) through the plywood, and into the primary structure (every purlin/nogg/girt) where possible. Where fixing into plywood substrate only, minimum 17mm thickness structural grade plywood must be used. Specific clip fixing spacings should be derived from the Wind Load Design Section. An indicative spacing is shown in the chart but this can vary dependent on loadings.

Product	Material	Clip material	Screw/Nail Type Approved Timber Type	Indicative Fixing Spacings 1.2kPa Wind Load to body of roof/cladding (Standard pan widths) Periphary (mm)	 Remainder (mm)	Max Sheet Length Before Sliding Clips Required (metres)
Double Standing and Angle Seam	Steel Based	Zam	2 x 8gx25mm Class 4 C/S Sq Drive	250	800	5
	Copper	Stainless Steel	2 x 8gx25mm Stainless Steel C/S Sq Drive †	250	800	3
	Aluminium	Stainless Steel	2 x 8gx25mm Stainless Steel C/S Sq Drive †	250	800	3
	Titanium Zinc	Stainless Steel	2 x 8gx25mm Stainless Steel C/S Sq Drive †	250	800	3
			(† Or 2 x 25mm Stainless Steel Full Shank Annular Grooved Flat Head Nails)			
Roll Cap and Roll Seam	Steel Based	Zam	2 x 12gx25mm Class 4 Timbertek	250	800	5 *
	Copper	Stainless Steel	2 x 12gx25mm Stainless Steel Timbertek	250	800	3 *
	Aluminium	Stainless Steel	2 x 12gx25mm Stainless Steel Timbertek	250	800	3 *
	Titanium Zinc	Stainless Steel	2 x 12gx25mm Stainless Steel Timbertek	250	800	3 *
Snap Lock	Steel Based	N/A	8gx25mm Class 4 Pan Head Sq Drive	125	300	N/A
	Copper	N/A	8gx25mm Stainless Steel Pan Head Sq Dr #	125	300	N/A
	Aluminium	N/A	8gx25mm Stainless Steel Pan Head Sq Dr #	125	300	N/A
	Titanium Zinc	N/A	8gx25mm Stainless Steel Pan Head Sq Dr # or 8gx25mm Class 4 Pan Head Sq Drive	125 125	300 300	N/A N/A
			(# Or 25mm Stainless Steel Full Shank Annular Grooved Flat Head Nails)			

* Denotes that it is not required for rollcap N/A= Not Applicable

CANNING

Canning is the visible waviness or undulations in the flat areas of metal roof cladding, wall cladding or wide flat panel flashings. This phenomenon occurs due to differential stresses which build up in the material, and as these stresses are relieved, undulations form leading to the characteristic waviness associated with canning.

The apparentness of these undulations can be affected by several factors such as the angle of viewing, direction and clarity of the light, sheet length, colour, temperature and the thickness of the material; some degree of distortion is inevitable in thinner gauge materials. In addition, the high gloss levels of brand-new sheets can highlight these undulations but with time natural weathering reduces reflectivity which in turn reduces the visible effect of canning.

The property/building owner, builder and specifier must be aware that these undulations can occur in the flat areas of profiles. Please note canning is aesthetic in nature only and in general does not pose any structural issue or affect the performance or material warranty of the cladding.

To following material factors can assist in reducing the apparentness of canning,

- Use of thicker gauge materials
- Inclusion of stiffening swages
- Limiting the width of flat elements

Attention to detail during installation is also key to reducing canning, and it is important to inspect the alignment of the structure (deviation of no more than 5mm is allowed in the roof or wall framing plane), check sheeting for straightness prior to installing, and ensure sheeting is fastened to Roofing Industries recommendations and industry standards.

LIMITATIONS

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