Metalcraft Roofing

espan®

ESPAN® HAS BEEN DESIGNED FOR STYLE AND PERFORMANCE IN MIND. THE HIGH RIBS CREATE STRONG DEFINED SHADOW LINES AND COMBINED WITH CONCEALED FIXINGS PROVIDE FOR SUPERIOR WEATHER PERFORMANCE.

ABOUT METALCRAFT

Metalcraft Roofing has more than 50 years experience in the roofing industry and has 12 branches nationwide, we pride ourselves on being New Zealand's largest and most established privately owned building product rollformer and installer with an extensive range of longrun roofing profiles, lightweight metal tiles, metal fencing, rainwater system solutions and a variety of solar generation solutions. We also have a structural steel and insulated panel division.

COLOURS

espan® is available in 20 standard colours from New Zealand Steel in trusted brands: COLORSTEEL® ENDURA® and COLORSTEEL® MAXX®.
Colour brochures and steel swatches are available on request.

PRODUCT APPLICATION

The correct application of each grade of material is critical to product performance and life expectancy. Before commencing a project the user must refer to the COLORSTEEL® environmental guide and Metalcraft espan® product data.

COLORSTEEL®

INNOVATIVE CLIP SYSTEM

espan® clips are manufactured out of zincalume® and are fixed directly onto the purlins at recommended spans depending on thickness and wind loadings.

When using espan® 470 in aluminium the espan® clips need to be powder coated as a precautionary measure. Clips are available to order from Metalcraft.

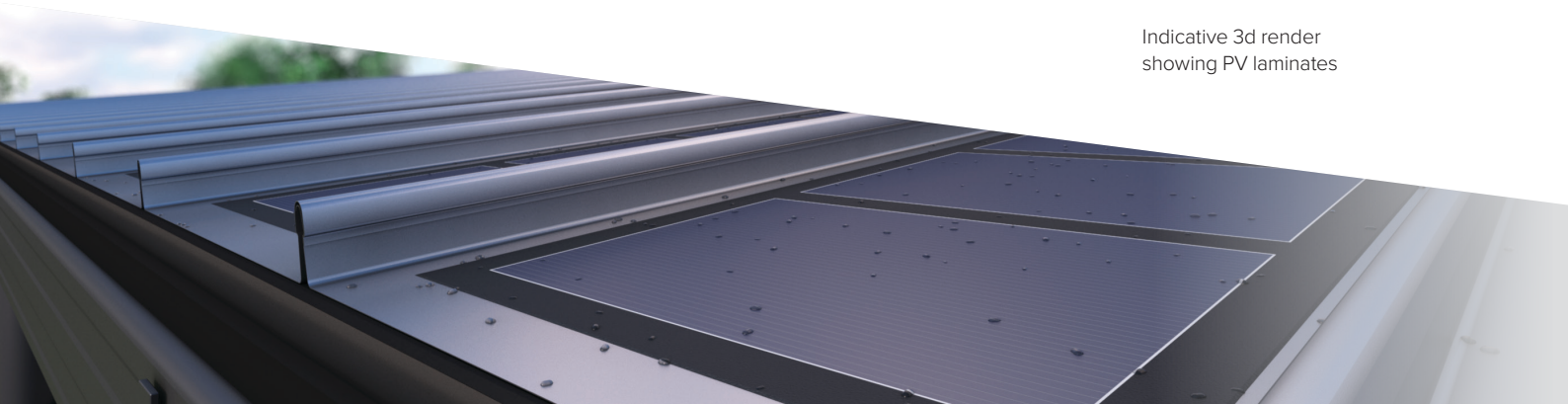
The espan® clip comes standard with a 4mm coreflute cushion. Please refer to Metalcraft Roofing for more information.

espan® clip showing 4mm coreflute cushion.

SOLAR ENERGY

espan® 470 can accommodate either PV solar laminates or clip on solar panels.
espan® 340 can accommodate clip on solar panels and allows for optimum solar energy generation.

For more information please refer to www.metalcraftgroup.co.nz.



Indicative 3d render showing PV laminates

espan® PRODUCT SELECTOR GUIDE

WIND ZONE NZS 3604 (ULS) Design Load	espan® 340				espan® 470				
	SWAGES IN PAN		FLAT PAN		SWAGES IN PAN		FLAT PAN		
	VERTICAL CLADDING	ROOFING	VERTICAL CLADDING	ROOFING	VERTICAL CLADDING	ROOFING	VERTICAL CLADDING	*SOLAR LAMINATE ROOFING ONLY	ROOFING
LOW 0.98kPa	YES	YES	YES	YES	YES	YES	YES	YES	**APPROVAL REQUIRED**
Maximum span (mm)	VERTICAL CLADDING - 1200mm centres. ROOFING - 900mm intermediate spans &600mm end spans.								
MEDIUM 1.32kPa	YES	YES	YES	YES	YES	YES	YES	YES	**APPROVAL REQUIRED**
Maximum span (mm)	VERTICAL CLADDING - 1200mm centres. ROOFING - 900mm intermediate spans & 600mm end spans.				VERTICAL CLADDING - 1000mm centres. ROOFING - 900mm intermediate spans & 600mm end spans.				
HIGH 1.88kPa	YES	YES	YES	YES	YES	YES	YES	YES	**NOT SUITABLE**
Maximum span (mm)	VERTICAL CLADDING - 900mm centres. ROOFING - 900mm intermediate spans & 600mm end spans.				VERTICAL CLADDING - 800mm centres. ROOFING - 800mm intermediate spans & 520mm end spans.				
VERY HIGH 2.44kPa	YES	YES	YES	YES	YES	YES	YES	YES	**NOT SUITABLE**
Maximum span (mm)	VERTICAL CLADDING - 800mm centres. ROOFING - 800mm intermediate spans & 550mm end spans.				VERTICAL CLADDING - 700mm centres. ROOFING - 700mm intermediate spans & 450mm end spans.				
EXTRA HIGH 2.96kPa	YES	YES	YES	YES	YES	YES	YES	YES	**NOT SUITABLE**
Maximum span (mm)	VERTICAL CLADDING - 700mm centres. ROOFING - 700mm intermediate spans & 450mm end spans.				VERTICAL CLADDING - 600mm centres. ROOFING - 600mm intermediate spans & 390mm end spans.				
**(SED)	**APPROVAL REQUIRED**				**APPROVAL REQUIRED**				**NOT SUITABLE**

*FLAT PAN ONLY ALLOWED FOR ROOFING IF SOLAR LAMINATES ARE INSTALLED AT SAME TIME WITH THE ROOFING INSTALL.

**(SED) FOR SPECIFIC ENGINEERING DESIGN PROJECTS, THE ENGINEER MUST PREPARE A ROOF MAP SHOWING PURLIN SPANS AND LOCAL PRESSURE FACTORS FOR EACH SECTION OF THE ROOFING AND CLADDING. DESIGN LOADS NEED TO BE FULLY FACTORISED AND INCLUDE LOCAL PRESSURE FACTOR + INTERNAL AND EXTERNAL PRESSURE CO-EFFICIENTS.

GUIDANCE NOTES

If an architect or engineer is designing a building in full accordance with E2/AS1 then it is necessary for the design spans and fixings to comply with those of E2/AS1.

If the architect or designer wishes to use the spans and Fastener patterns as provided by Metalcraft Roofing then they must consider the load on a purlin and a purlin/rafter connection is determined by the wind load and the area of roof the load is acting upon. Roof fasteners transfer wind uplift-loads to the purlins, which in turn transfer them to the primary structure.

Fastening to every second purlin may be within the roof's load/span range, but will double the load acting on the fastened purlins.

All purlins must be fastened to unless alternate purlins are specifically designed to take the additional loads.

For espan® cladding the nogs and cavity battens are laid horizontally.

Refer to espan® Installation guide for more information.

DESIGN LOAD PARAMETERS:

espan® must resist a Uniformly Distributed Load (UDL) strength load. For roofing end spans have been calculated by multiplying the Intermediate span by 0.66. Spans are based on unrestricted access and allow for a concentrated load of 1.32kN.

In all wind zones, up to Extra High as defined in Table 5.4 NZS3604:2011, the Ultimate KPa loads for Low, Medium, High, Very High, Extra High have been derived from:

Pressure coefficients Cpe+Cpi = 1.1
Local pressure factor kl = 1.5
Ultimate load factor = 1.0

Projects that are specific engineered design (SED) will use different factors than above and these should be calculated by the project engineer. For SED projects use the graph to AS/NZS 1170 to determine maximum spans and fastener requirements.

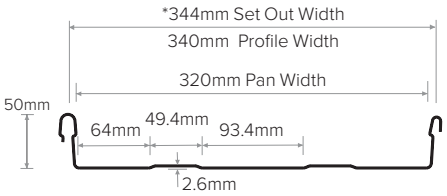
Classification of Wind Zones in NZS 3604 are specific to the site. Because the buildings covered by this standard are limited in size, design tables (but not design wind speed) include a local pressure factor of 1.5 kPa over the entire structure, rather than varying factors according to the position on the roof as required by AS/NZS 1170.

espan® 340

Minimum Pitch:	3 degrees after deflection
Applications:	Commercial and residential.
Orientation:	Roofs and vertical wall cladding.
Material Options:	0.55mm BMT G300 steel, espan® 340 is not available in aluminium.
Solar Compatibility:	espan® 340 can accommodate clip on solar panels.
Swage Requirements:	espan® 340 is available with or without swages.
Swage Considerations:	The swages are discreet and provides for extra rigidity and strength, this is important in reducing the prospect of wind driven roof noise. The swages also assist with reducing oil canning.
Availability:	Nationwide. Sheet length restrictions might apply depending on project location.

espan® 340 - FLAT

espan® 340 - SWAGES

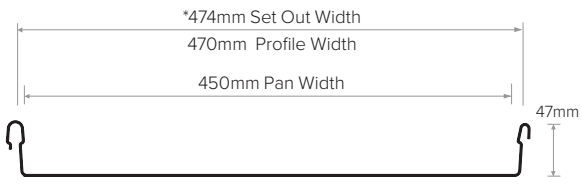


Profile dimensions are nominal and may vary depending on material.
Profile dimensions are not set out dimensions. If a specific set out is required please liaise with Metalcraft Roofing.

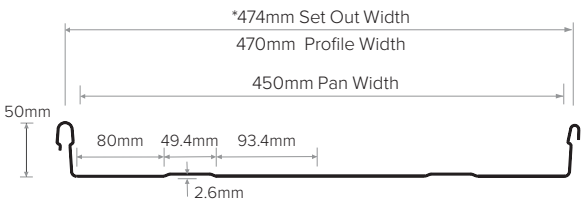
espan® 470

Minimum Pitch:	3 degrees after deflection
Applications:	Commercial and residential.
Orientation:	Roofs and vertical wall cladding.
Material Options:	0.55mm BMT G300 steel or 0.9mm BMT aluminium.
Solar Compatibility:	espan® 470 can accommodate clip on solar panels.
PV Laminate Compatibility:	espan® 470 can accommodate PV solar laminates, refer to PV Laminate information for scope and limitations and use.
Swage Requirements:	Roofing: espan® 470 is manufactured standard with 2 swages, in the pan. The swages are discreet and provide for extra rigidity and strength; this is important in reducing the prospect of wind driven roof noise. The swages also assist with making oil canning less evident. espan® 470 roofing installed with Metalcraft Solaflex Laminates does not require swages. espan® 470 wall cladding does not require swages.
Swage Removal:	Metalcraft Roofing will consider removing swages on espan® 470 roofing on a case by case basis but only in wind zones upto Very High. Please consult with your local Metalcraft Roofing branch.
Availability:	Nationwide. Sheet length restrictions might apply depending on project location.

espan® 470 - FLAT



espan® 470 - SWAGES



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Profile dimensions are not set out dimensions. If a specific set out is required please liaise with Metalcraft Roofing.

WARRANTIES

Material warranties are closely linked to environmental categories. The COLORSTEEL® Environmental Guide classifies the environmental categories and the associated warranties that the various material finishes are given. Please contact your local Metalcraft Roofing branch to request a brochure if you have any questions relating to which product to use in a particular location.

AVAILABILITY

espan® is available for purchase from all Metalcraft branch locations.

RECOMMENDED FIXINGS

Please refer to loadspan and fixing tables for recommended fixings of espan. This is available to download from www.metalcraftgroup.co.nz

ENVIRONMENTAL

The correct grade of material for use in various environments is given in the COLORSTEEL® Environmental Guide.

SUSTAINABILITY

Steel is a recyclable product, so you can be confident in the knowledge that it does not have to be disposed of in landfill. Instead it can easily be recycled and reused, thereby minimising resource use and reducing impact on our environment. As well as this, New Zealand Steel has devoted considerable effort and resources to ensure that their manufacturing processes consider and minimise environmental impacts and adhere to the concepts of sustainability. This is evident in the range of environmental certifications that they have secured such as the International Environmental Management Standard, ISO14001.

FASTENERS

The selection of the appropriate fastener is essential to performance of the roof. The durability of the fastener should be, as a minimum requirement, equal to that of the roofing or cladding. If in doubt, refer to your nearest Metalcraft Roofing branch.

MINIMUM PITCHES

The minimum pitch is determined by the ability of the roof cladding to discharge maximum rainfall without water penetration through the side laps, end laps or flashings. The minimum pitch for espan® is: 3° for sheet lengths of 40m.
4° for sheet lengths exceeding 40m but less than 60m
The above minimum requirement has been calculated assuming peak rainfall to be less or equal to 100mm/hr.

OIL CANNING

Oil canning is an inherent characteristic of cold formed metal products, particularly products with broad flat areas like espan®. It is seen as waviness or distortion in the flat surfaces.

Oil canning does not affect the products strength or performance. The architect, builder and homeowner needs to be aware that oil canning may affect the overall aesthetic outcome. Oil canning may occur during the roll-forming process and or during installation and where thermal expansion occurs. A degree of oil canning is unavoidable.

Please refer to NZMRM Metal Roof and Wall Cladding Code Of Practice - Section 12.3 for more information. (www.metalroofing.org.nz). The end result of the profile is dependent upon the quality of the timber sub-structure that supports it so it is critical that the roof purlins be square and flush for optimum results. Refer espan® installation guide.

ROOF NOISE

The homeowner should be aware that temperatures of dark colours are higher than those of lighter colours.
Darker colours will thermally expand more. Thermal expansion of metal roofs is covered in the NZMRM Code of Practice.
The MBIE document on roof cladding advises that noise from thermal expansion is normal and should be expected. Refer to MBIE -Guide to tolerances, materials and workmanship in new residential construction 2015.

HANDLING AND STORAGE

Handling and storage of espan® is as per the NZMRM Code of Practice. www.metalroofing.org.nz.
Some important considerations are as follows:

- Site Storage which ensures that sheets are kept dry and ventilated.
- Reducing risk of surface damage to surface coatings during handling, installation and by other trades.
- Ensuring that spans and pitches used are not outside those recommended by Metalcraft Roofing
- Ensuring that correct and sufficient fasteners are used.
- Installation in contact with incompatible materials is avoided.

DISCLAIMER

As part of Metalcraft Roofing's policy of continued improvement, final specifications may vary from those contained in this publication. The company reserves the right at any time and without notice to change the design, materials or features and withdraw products from the market without incurring any liability whatsoever. This publication is issued as a general guide only and should not be treated as a substitute for technical advice. Contact with your nearest Metalcraft branch is recommended to confirm current specifications and availability.

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MEMBER OF ROOFING ASSOCIATION N.Z.

MRM NZ METAL ROOFING MANUFACTURERS INC.

Metalcraft Roofing are members of the Roofing Association, New Zealand and the New Zealand Metal Roofing Manufacturers Incorporated.

Metalcraft Roofing

For more information on Metalcraft Roofing visit: www.metalcraftgroup.co.nz.
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