





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 colours from New Zealand Steel in COLORSTEEL® MAXAM® and COLORSTEEL® ALTIMATE®.

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® Residential Warranty, Environmental Categories & Product Maintenance Guide and Metalcraft espan® product literature, these can be downloaded from: [www.metalcraftroofing.co.nz](http://www.metalcraftroofing.co.nz)

COLORSTEEL® literature can be downloaded from: [www.colorsteel.co.nz](http://www.colorsteel.co.nz)



## SOLAR ENERGY

espan® 340 and espan® 470 can accommodate clip on solar panels for optimum solar energy generation.

For more information please refer to: [www.metalcraftroofing.co.nz](http://www.metalcraftroofing.co.nz).

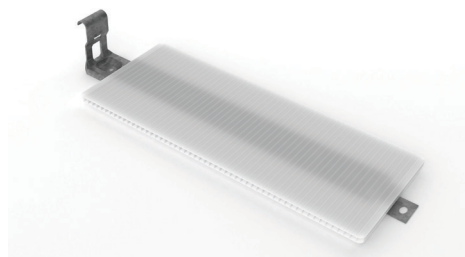
## INNOVATIVE CLIP SYSTEM

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

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

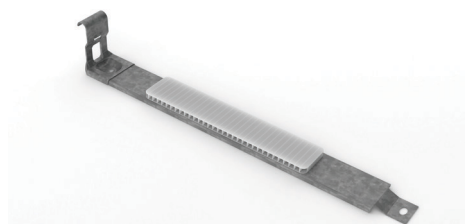
## ESPAN® STANDARD CLIP

Suitable for all roofing applications.  
Suitable for wall applications that allow greater than 5% coreflute cushioning tape.



## ESPAN® C3 CLIP

Suitable for wall applications that require less than 5% coreflute cushioning tape.



## ESPAN® AUTHORISED INSTALLER

Metalcraft Roofing has appointed espan® Authorised Installers, to companies that have undertaken espan® product and installation training and have satisfied the requirements of Metalcraft Roofing to be recognised as an espan® Authorised Installer.

An Authorised Installer is awarded to a roofing company and it remains the sole responsibility of the roofing company to ensure espan® installation is done under the supervision of an espan® Authorised Installer.

All espan projects must be installed by a company recognised as an espan® Authorised Installers and a directory of those companies can be downloaded from: [www.metalcraftroofing.co.nz](http://www.metalcraftroofing.co.nz)



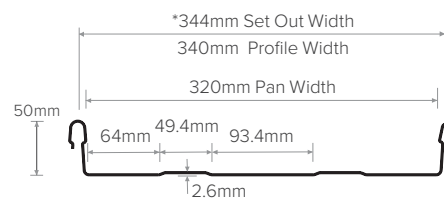
## espan® 340

|                       |                                                                                                                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Minimum Pitch:        | 3 degrees after deflection                                                                                                                                                                    |
| Applications:         | Commercial and residential.                                                                                                                                                                   |
| Orientation:          | Roofs and vertical wall cladding.                                                                                                                                                             |
| Material Options:     | 0.55mm BMT G300 steel or 0.9mm BMT 5052 H36 aluminium.<br>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 5052 H36 BMT aluminium.                                                                                                                                                                                                                                                                               |
| Solar Compatibility: | espan® 470 can accommodate clip on solar panels.                                                                                                                                                                                                                                                                                         |
| 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.<br><br>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 up to Medium. Please consult with your local Metalcraft Roofing branch.                                                                                                                                           |
| Availability:        | Nationwide. Sheet length restrictions might apply depending on project location.                                                                                                                                                                                                                                                         |

### espan® 470 - FLAT

REFER PRODUCT SELECTION GUIDE FOR  
SUITABILITY OF USE.



### espan® 470 - SWAGES

STANDARD



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® 340 & 470

## MAXIMUM SPANS FOR NZ3604:2011

| espan® PRODUCT SELECTOR GUIDE                                |                                                                                             |         |                   |         |                                                                                             |         |                   |                          |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------|-------------------|---------|---------------------------------------------------------------------------------------------|---------|-------------------|--------------------------|
| WIND ZONE<br><br>NZS 3604 (ULS)<br>Design Load               | espan® 340<br>0.55MM BMT G300 STEEL<br>0.9MM ALUMINIUM 5052 H36                             |         |                   |         | espan® 470<br>0.55MM BMT G300 STEEL<br>0.9MM ALUMINIUM 5052 H36                             |         |                   |                          |
|                                                              | SWAGES IN PAN                                                                               |         | FLAT PAN          |         | SWAGES IN PAN                                                                               |         | FLAT PAN          |                          |
|                                                              | VERTICAL CLADDING                                                                           | ROOFING | VERTICAL CLADDING | ROOFING | VERTICAL CLADDING                                                                           | ROOFING | VERTICAL CLADDING | ROOFING                  |
| <b>LOW</b><br><b>0.98kPa</b><br><br>Maximum span (mm)        | YES                                                                                         | YES     | YES               | YES     | YES                                                                                         | YES     | YES               | <b>APPROVAL REQUIRED</b> |
|                                                              | VERTICAL CLADDING - 900mm centres.<br>ROOFING - 900mm intermediate spans & 450mm end spans. |         |                   |         |                                                                                             |         |                   |                          |
| <b>MEDIUM</b><br><b>1.32kPa</b><br><br>Maximum span (mm)     | YES                                                                                         | YES     | YES               | YES     | YES                                                                                         | YES     | YES               | <b>APPROVAL REQUIRED</b> |
|                                                              | VERTICAL CLADDING - 900mm centres.<br>ROOFING - 900mm intermediate spans & 450mm end spans. |         |                   |         | VERTICAL CLADDING - 900mm centres.<br>ROOFING - 900mm intermediate spans & 450mm end spans. |         |                   |                          |
| <b>HIGH</b><br><b>1.88kPa</b><br><br>Maximum span (mm)       | YES                                                                                         | YES     | YES               | YES     | YES                                                                                         | YES     | YES               | <b>NOT SUITABLE</b>      |
|                                                              | VERTICAL CLADDING - 900mm centres.<br>ROOFING - 900mm intermediate spans & 450mm end spans. |         |                   |         | VERTICAL CLADDING - 800mm centres.<br>ROOFING - 800mm intermediate spans & 450mm end spans. |         |                   |                          |
| <b>VERY HIGH</b><br><b>2.44kPa</b><br><br>Maximum span (mm)  | YES                                                                                         | YES     | YES               | YES     | YES                                                                                         | YES     | YES               | <b>NOT SUITABLE</b>      |
|                                                              | VERTICAL CLADDING - 800mm centres.<br>ROOFING - 800mm intermediate spans & 450mm end spans. |         |                   |         | VERTICAL CLADDING - 700mm centres.<br>ROOFING - 700mm intermediate spans & 450mm end spans. |         |                   |                          |
| <b>EXTRA HIGH</b><br><b>2.96kPa</b><br><br>Maximum span (mm) | YES                                                                                         | YES     | YES               | YES     | YES                                                                                         | YES     | YES               | <b>NOT SUITABLE</b>      |
|                                                              | VERTICAL CLADDING - 700mm centres.<br>ROOFING - 700mm intermediate spans & 450mm end spans. |         |                   |         | VERTICAL CLADDING - 600mm centres.<br>ROOFING - 600mm intermediate spans & 390mm end spans. |         |                   |                          |
| <b>** (SED)</b>                                              | <b>APPROVAL REQUIRED</b>                                                                    |         |                   |         | <b>APPROVAL REQUIRED</b>                                                                    |         |                   | <b>NOT SUITABLE</b>      |

\*\* (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 COEFFICIENT.

### 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.

### 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  $C_{pe} + C_{pi} = 1.1$   
Local pressure factor  $k_l = 1.5$   
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.

## WARRANTIES

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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

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

## RECOMMENDED FIXINGS

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Please refer to loadspan and fixing tables for recommended fixings of espan. This is available to download from [www.metalcraftroofing.co.nz](http://www.metalcraftroofing.co.nz)

## ENVIRONMENTAL

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

## SUSTAINABILITY

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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

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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

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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°, the capacity of espan® should be checked after a run of 60m, as per NZMRM Code of Practice.

Minimum pitch refers to espan® pitch and not the building design roof pitch.

## OIL CANNING

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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](http://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. Refer to MBIE -Guide to tolerances, materials and workmanship in new residential construction 2015.

## CLIP MARKING

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Clip markings from espan® clips are anticipated and deemed acceptable according to the MBIE Guide to Tolerances, Materials, and Workmanship in New Residential Construction 2015.

## ROOF NOISE

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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

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Handling and storage of espan® is as per the NZMRM Code of Practice. [www.metalroofing.org.nz](http://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

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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.

# BRANCHES

## WHANGAREI

42-44 Rewa Rewa Road, Whangarei  
09 470 0870  
[sales.whangarei@metalcraftroofing.co.nz](mailto:sales.whangarei@metalcraftroofing.co.nz)

## AUCKLAND HOBSONVILLE

25 -27 Westpoint Drive, Hobsonville, Auckland  
09 444 1813  
[orders.ns@metalcraftroofing.co.nz](mailto:orders.ns@metalcraftroofing.co.nz)

## AUCKLAND EAST TAMAKI

24-26 Trugood Drive East Tamaki, Auckland  
09 273 2820  
[orders.akl@metalcraftroofing.co.nz](mailto:orders.akl@metalcraftroofing.co.nz)

## HAMILTON

9 Earthmover Cres, Burbush, Hamilton  
07 849 3807  
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## TAURANGA

42 Poturi St, Tauriko, Tauranga  
07 575 7032  
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## ROTORUA

15 Monokia Street, Rotorua  
07 350 1138  
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## NEW PLYMOUTH

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06 755 2113  
[sales.newplymouth@metalcraftroofing.co.nz](mailto:sales.newplymouth@metalcraftroofing.co.nz)

## PALMERSTON NORTH

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06 358 9149  
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04 566 2253  
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## CHRISTCHURCH

85 Columbia Ave, Hornby, Christchurch  
03 349 7350  
[sales.christchurch@metalcraftroofing.co.nz](mailto:sales.christchurch@metalcraftroofing.co.nz)

## CROMWELL

20 McNulty Road, Cromwell  
03 445 4180  
[sales.cromwell@metalcraftroofing.co.nz](mailto:sales.cromwell@metalcraftroofing.co.nz)



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

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**Metalcraft**  
Roofing

For more information on Metalcraft Roofing visit:  
[www.metalcraftroofing.co.nz](http://www.metalcraftroofing.co.nz) .  
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[www.unitedindustries.co.nz](http://www.unitedindustries.co.nz).