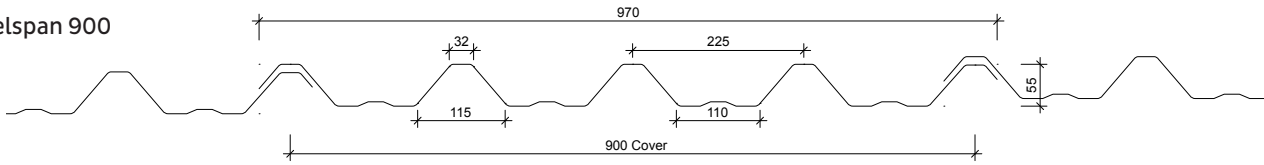
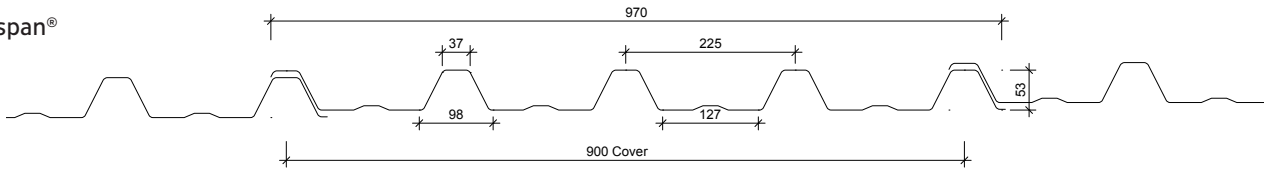


## DIMOND STEELSPAN 900 AND TOPSPAN® PROFILE PERFORMANCE

Steelspan 900



Topspan®



Cover (mm)	900
Sheet width (mm)	970
Minimum Pitch	3° (approx. 1:20)

All dimensions given are nominal

### Sheet Tolerances

Sheet width: ±5mm

Sheet width for aluminium +0, -15. If sheet cover widths are critical, advise Dimond at time of order.

Sheet length: +10mm, -0mm. For horizontal wall cladding where notified at time of order of intended use, tighter tolerances can be achieved +3mm, -0mm.

Material Options Profile	Steel			Aluminium*		Duraclad®
	Topspan®	Both	Both	Both	Both	Both
Thickness (BMT) mm	0.4*	0.55	0.75*	0.7	0.9	1.7 (total thickness)
Nominal weight/lineal metre (kg/m)	4.12	5.55	7.47	2.31	2.96	2.70
Drape curved roof - min. radius (m)	n/r	120	120	n/r	120	30
Purlin spacings for drape curved roof (m) (1)	n/r	2.4	2.4	n/r	2.4	1.5
Machine crimp curved - roof min. radius (mm)	n/a	n/a	n/a	n/a	n/a	n/a
Unsupported overhang (2) (mm)	250	450	600	250	350	250

\*Available only on request, subject to minimum order quantities. Check availability with Dimond.

(1) 0.4mm BMT not recommended for internal ceiling applications.

(2) Recommended maximum purlin spacing at minimum radius.

(3) Based on 1.1kN point load support, but not intended for roof access.

n/r - not recommended

n/a - not available

Roll-forming facility at:

Hamilton - Steelspan 900

Christchurch - Topspan®

Manufacturing location for Duraclad®:

Auckland

Sheet lengths:

Steelspan 900 and Topspan® are custom run to order.

Where long sheets are used consideration must be given to:

- Special transportation licences for sheet lengths over 25m
- Site access for special lifting equipment
- Fixing techniques to accommodate thermal expansion.

# STEELSPAN 900 AND TOPSPAN® LIMIT STATE LOAD / SPAN CAPACITY CHART

(span in mm, distributed serviceability loads in kPa)

## Serviceability Category

		Unrestricted-Access Roof		Restricted-Access Roof			Non-Access Roof or Wall	
G550 Steel 0.40mm*	End Span	1200	1300	1500	1800	2000	2200	2300
	Internal Span	1800	2000	2200	2700	3000	3300	3500
Topspan® only	Serviceability	3.4	2.7	2.6	2.0	1.6	1.5	1.3
G550 Steel 0.55mm	End Span		2000	2300	2400	2900	3300	3400
	Internal Span		3000	3500	3600	4300	5000	5100
	Serviceability		2.3	1.8	1.7	1.3	1.0	0.9
G550 Steel 0.75mm*	End Span		2800	2900	3400	4000	4100	4300
	Internal Span		4200	4400	5200	6000	6200	6600
	Serviceability		2.3	2.2	1.8	1.5	1.3	1.1
5052, H36* Aluminium 0.70mm	End Span		1100	1200	1400	1600	1700	
	Internal Span		1700	1800	2100	2500	2600	
	Serviceability		2.6	2.4	2.0	1.6	1.4	
5052, H36 Aluminium 0.90mm	End Span		1700	1800	2100	2500	2600	
	Internal Span		2600	2700	3200	3800	3900	
	Serviceability		2.2	2.0	1.5	1.2	1.0	
Duraclad® 1.7mm (note 4)	End Span				900	1000	1100	1300
	Internal Span					1500	1600	1900
	Serviceability Ultimate	N/R	N/R			-	-	-
						4.4	3.6	2.4

\*Available only on request, subject to minimum order quantities. Check availability with Dimond.

### Notes

- In any category, spans above the maximum shown should not be used. Category 1 and 2 maximum spans are based on static point load testing as a guide, and further limited by practical experience of roof performance under dynamic foot traffic loads. Category 3 maximum spans are limited as a guide to achieving satisfactory appearance for wall cladding.
- Loads given are based on 4 screw fasteners/sheet/purlin.
- Loads given are limited to a maximum of 4.5 kPa. If design requirements exceed this limit, contact Dimond for specific advice.
- Duraclad®
  - Serviceability Limit State loads are not applicable to the Duraclad® material, as it does not experience permanent deformation.
  - System must include Safety Mesh if intended for use as a Restricted-Access roof. Refer Section 2.2.1.8.
- N/R = not recommended.
- End span capacities given in this table are based on the end span being  $\frac{2}{3}$  of the internal span.
- Design Criteria for Limit State Capacities**
  - Serviceability Limit State**  
No deflection or permanent distortion that would cause unacceptable appearance, side lap leakage or water ponding, due to foot traffic point loads, inward or outward wind loads or snow loads.
  - Ultimate Limit State**  
No pull through of fixings or fastener withdrawal resulting in sheet detachment due to wind up-lift (outward) loads.
- System Design**  
The span capacity of Steelspan 900 and Topspan® are determined from the Steelspan 900 and Topspan® Limit State Load/Span Capacity Chart using the section of the chart appropriate to the grade and type of material, and to the category of serviceability selected from the three categories below. Serviceability loads have been derived by test to the NZMRM testing procedures. To obtain an ultimate limit state load we recommend factoring the serviceability load up by 1.4 in-line with NZMRM guidelines. The capacities given do not apply for cyclonic wind conditions.
 

**Serviceability Requirements**  
While these categories are given for design guidance to meet the serviceability limit state criteria, foot traffic point load damage may still occur if there is careless placement of these point loads.

Service Category	Description
1. Unrestricted-access roof	Expect regular foot traffic to access the roof for maintenance work and able to walk anywhere on the roof. No congregation of foot traffic expected.
2. Restricted-access roof	Expect occasional foot traffic educated to walk only on the purlin lines, in the profile pans, or carefully across two profile ribs. Walkways installed where regular traffic is expected, and "Restricted Access" signs placed at access points.
3. Non-access roof or wall	Walls or roofs where no foot traffic access is possible or permitted. If necessary, "No Roof Access" signs used.
- Wind Pressure Guide**  
As a guide for non-specific design the following S.L.S. design loads in accordance with the MRM Roofing Code of Practice can be used for buildings less than 10m high, otherwise AS/NZS 1170.2 should be used  
Low wind zone = 0.68kPa, Medium wind zone = 0.93kPa, High wind zone = 1.32kPa, Very high wind zone = 1.72kPa and Extra high wind zone = 2.09kPa.

## Fastener Design

Steelspan 900 and Topspan® should be screw fixed to either timber or steel purlins. The use of the appropriate length of 14g roofing screw will ensure failure by screw pull out will not occur under loads within the scope of the Limit State Load / Roofing Span Capacity Chart.

Purlin Type	Screw Fastener			
	Roofing Rib		Wall Cladding Pan	
	Screw Length* (mm)	Designation	Screw Length* (mm)	Designation
Timber	100	T17 - 14 - 10 x 100	50	Roofzip M6 x 50 HG-Z4
Steel	95	Tek - 14 - 10 x 95	20	Tek - 12 - 14 x 20

\*If sarking or insulation is used over the purlins or for wall cladding fixing onto a cavity batten, into the stud, the screw length will need to be increased.

For screw size range and fastener / washer assembly refer Section 2.2.3.1.

The Limit State Load / Span Capacity Chart is based on 4 screw fasteners/sheet/purlin without the use of load spreading washers (except for 0.4mm steel, 0.7mm aluminium and Duraclad® material, which must be fitted with profiled metal washers and 36mm EPDM seals).

Profiled metal washers are recommended for use:

1. On end spans, or large internal spans where the Ultimate Limit State distributed load is limiting. Contact Dimond for specific advice in these design cases.
2. When required to enable the fixing system to accommodate the thermal movement of long sheets – see Section 2.1.3.4 Thermal Movement.
3. Wherever the designer wishes to ensure the risk of fastener over-tightening will not cause dishing of the crest of the profile rib.

Use in serviceability categories (1) or (2) can allow the reduction of fasteners to 2 screw fasteners/sheet/purlin by using 2 fasteners/sheet/purlin. If this is done, the distributed load capacities given in the chart should be reduced using a multiplying factor of 0.5.

Long spans may require the specification and use of side lap stitching screws – see Section 2.3.2C Installation Information: Layout and Fastening.

## Design Example

Restricted access roof, 0.55mm G550 steel Steelspan 900 has a maximum end span of 2900mm and a maximum internal span of 4300mm. The following distributed load capacities apply.

	4 fasteners/sheet	2 fasteners/sheet
End Span	2900mm	2900mm
Internal Span	4300mm	4300mm
Serviceability	1.3 kPa	0.6 kPa

Continued on next page...

# DIMOND STEELSPAN 900 AND TOPSPAN® FASTENER LAYOUT OPTIONS

