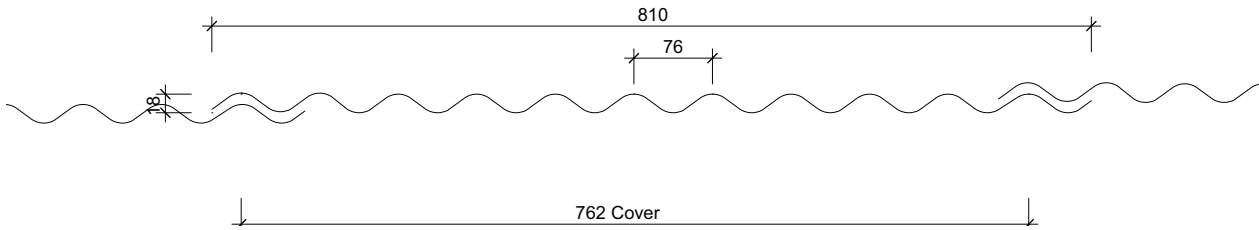


DIMOND CORRUGATE PROFILE PERFORMANCE



Cover (mm)	762
Sheet width (mm)	810
Minimum Pitch	8° (approx. 1:7)

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®
Thickness (BMT) mm	0.4	0.55	0.7	0.9	1.7 (total thickness)
Nominal weight/lineal metre (kg/m)	3.17	4.27	1.78	2.28	2.21
Drape curved roof - min. radius (m)	12	10	12	10	8
Purlin spacings for drape curved roof (m)(1)	800	1100	800	1100	900
Machine crimp curved - roof min. radius (mm)	450	450	450	450	n/a
Unsupported overhang (2)(mm)	100	150	75	150	100

(1) Recommended maximum purlin spacing at minimum radius

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

n/a – not available

Roll-forming facilities at: Whangarei, Auckland, Hamilton, Wellington, Christchurch, Dunedin, Invercargill

Roll-curving facilities at: Hamilton, Christchurch, Dunedin, Invercargill

Manufacturing location for Duraclad®: Auckland

Sheet lengths: Corrugate is 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.

CORRUGATE 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			400	500	700	800	900	1000	
	Internal Span			600	800	1000	1200	1400	1500	
	Serviceability			4.0	3.2	2.5	2.0	1.6	1.4	
G550 Steel 0.55mm	End Span		600	600	700	900	1000	1100	1200	1300
	Internal Span		900	1000	1100	1300	1500	1600	1800	1900
	Serviceability		4.4	4.0	3.7	3.2	2.8	2.6	2.2	2.0
5052 H36 Aluminium 0.70mm	End Span						500	600	800	1000
	Internal Span						800	900	1200	1500
	Serviceability						1.4	1.3	1.1	0.8
5052 H36 Aluminium 0.90mm	End Span		500			600	800	900	1000	1200
	Internal Span		800			900	1200	1300	1500	1800
	Serviceability		3.5			3.2	2.2	2.0	1.7	1.3
Duraclad® 1.7mm (Note 4)	End Span						600	700	800	900
	Internal Span						900	1000	1200	1400
	Serviceability Ultimate	N/R	N/R				-	-	-	-
							4.5	4.1	2.3	1.6

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 5 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 Corrugate is determined from the Corrugate 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 cyclone 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

Corrugate should be screw fixed to either timber or steel purlins. The use of the appropriate length of 12g screw, or when fixing aluminium roof or wall cladding to timber, the use of a 12g or 14g Alutite, on both a non cavity and cavity system will ensure failure by screw pull out will not occur under loads within the scope of the Limit State Load / Span Capacity Chart.

Corrugate Fastener Designation

Purlin or frame material	Roof - rib fixed		Wall - pan fixed		
	Steel based sheet	Aluminium based sheet	Steel based sheet		Aluminium based sheet
Timber	T17 x 12 - 11 x 50 M6 x 50 HG-Z4 Roofzip	14g x 55mm Alutite with a 12mm dia. clearance hole, alum. profiled washer & 36mm dia EPDM seal	Non cavity	M6 x 50mm HG-Z4 Roofzip	12g x 35mm Alutite
			Cavity	M6 x 50mm HG-Z4 Roofzip	14g x 55mm Alutite
Steel up to 1.5mm thick	M6 x 50 HG-Z4 Roofzip or Tek 12g - 14 x 35 Class 4	Stainless steel grade 304 14g x 50mm with a 12mm dia clearance hole, alum. profiled washer & 36mm dia EPDM seal	Non cavity	Tek 12g - 14 x 20 Class 4	Stainless steel grade 304 14g x 20mm with a 15mm dia bonded washer, through an 10mm dia. clearance hole
			Cavity	Tek 12g - 14 x 35 Class 4	Stainless steel grade 304 14g x 50mm with a 15mm dia bonded washer, through an 10mm dia. clearance hole
Steel 1.5mm to 4.5mm thick	Tek 12g - 14 x 35 Class 4	Stainless steel grade 304 14g x 50mm with a 12mm dia clearance hole, alum. profiled washer & 36mm dia EPDM seal	Non cavity	Tek 12g - 14 x 20 Class 4	Stainless steel grade 304 14g x 20mm with a 15mm dia bonded washer, through an 10mm dia. clearance hole
			Cavity	Tek 12g - 14 x 35 Class 4	Stainless steel grade 304 14g x 50mm with a 15mm dia bonded washer, through an 10mm dia. clearance hole

*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 5 screw fasteners/sheet/purlin without the use of load spreading washers (except for 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 3 screw fasteners/sheet/purlin.

If this is done, the distributed load capacities given in the chart should be reduced using a multiplying factor of 0.6.

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 Corrugate has a maximum end span of 1000mm and a maximum internal span of 1500mm. The following distributed load capacities apply.

	5 fasteners/sheet	3 fasteners/sheet
End Span	1000mm	1000mm
Internal Span	1500mm	1500mm
Serviceability	2.8 kPa	1.7 kPa

Continued on next page...

DIMOND CORRUGATE FASTENER LAYOUT OPTIONS

