## **RHINO GRATING**

## The Professional Choice







# **A Unique Product**

#### Product range designed for the International Market

Our manufacturing factory boasts an extensive product range with a simplified key range of options packaged specifically for the International Market.

RHINO GRATING product groups:

 Load bar centres: 30mm load bar centres for high foot traffic.

40mm load bar centres for low foot traffic.

Important Please note: we can supply 60mm centres but this size does not meet AS/NZ standards for elevated platforms.

# Long-term cost savings

Multi-purpose utility and diversity in application are some of the best attributes a product can offer, and the RHINO GRATING products certainly offer these. Grating has many uses – not only in industry as walkway flooring but also as screens, drain covers and stairways.

## Better still, RHINO GRATING is unique!

Similar to a steel 'I Beam' where the strength is in the flanges, the bar profile gives around 25% weight reduction while retaining strength.

This design saves not only weight, but also material cost and galvanising cost. Savings are also made in the design of the supporting structure for the grate, as the product is so much lighter and stress is reduced.



#### **Pitch of Cross Bar**

The centre distance between two cross bars adjacent to each other is called pitch of cross bar. Standard pitch is 100mm.

#### **Pitch of Bearing Bar**

The centre distance between two bearing bars adjacent to each other is called pitch of bearing bar. Standard pitch is 30mm (Series 1), 40mm (Series 2).



# **Grating Types**

#### I Bar or Flat Bar Grating

The bearing bar comes in the form of an I-Section. This type of grating is used where high strength is required and light weight is critical. Commonly used for platforms and walkways.





Please note: •Load bar sizes range from 20mm to 100mm depth •Load bars are available in both FLAT BAR and IBAR

## Serrated Type I Bar Grating

The bearing bar comes in the form of an I-Section with the top surface formed by a series of notches. In addition to its high strength and light weight, this type of grating also has non-slip characteristics. Serrations are rolled on to meet strict health and safety requirements and contain sharp edges. Hot rolled serrations helps stop lacerations if someone falls on the grating.





Sydney Tower Tourist Walk





# How to order Rhino Grating

#### Stock Panels ready to use off the shelf

We carry a full range of off the shelf stock panel sizes. All panels are  $5.8 \times 1000$  (Nominal) sizes range from 20mm load bar to 75mm load bar and come in both series I and series II. Please contact us for sizes and availability of the quantity you require.

### Made to order

Rhino Grating provides tailored solutions to meet your construction requirements.

What we require from the client:

•Type of load bar required

•Load bar centres (ie. 30mm, 40mm)

Load bar directions

•Cutouts fully diamentioned

•Kick plate detail if any

•Clip requirements



Container Loading Dock







Platform Top View



# **International Standards Guaranteed**

When quality is the cornerstone of all operations, standards must follow international benchmarks.

Supplied throughout Australasia RHINO GRATING is made to international standards and the factory is accredited to **ISO 9001:2000.** 

The ISO 9001:2000 is an international quality management system involving external audits and stringent quality management criteria.

Our factory has high manufacturing tolerances. This is shown in the unique vertical alignment of the load bars resulting in a stronger, better-looking product for our customers.

The standard applicable for galvanising is **AS/NZS 4680** – **Hot Dip Galvanized (zinc) coatings on fabricated ferrous articles.** 

## **Manufacturing Tolerances**



W and W<sup>1</sup> are overall lengths of cross bars at opposite ends of panel. D and D<sup>1</sup> are overall diagonal dimensions

#### Transverse Bow



#### Longitudinal Bow



## Cross Bar Location and Bearing Bar







## Moulded FRP Grating

Fibre Reinforced Plastic (FRP) gratings are widely used as trench covers, grills, flooring, platforms, ramps, pet covers, tower packing supports, walkways, stairs, battery racks, screens, bridges, railings, machinery guards, wash racks, etc. in the industries of chemical, petroleum, electronics, paper, printing & dyeing, water treatment, pollution control,

offshore, power, brewing, etc.

- Sheet sizes are 1220 x 3660
- Cut to order or standard stock panels
- 25mm Depth
- 38mm Depth
- 50mm Depth
- Available in both isopthalic or vinylester resin
- anti slip grit top standard



Full size off shelf panel





**FRP SPAN TABLE** 



		Load			S	pan (mr	n)		
Product Code	Load Bar (mm)	Bar Space (mm)	S Kpa	450	600	750	900	1200	4 Kpa 5mm Def. Span
					Defl	ections (	mm)		
FRP25	25 x 6	38	2.5	0.27	1.03	2.58	6.15	15.51	
			3	0.33	1.25	3.1	7.6	18.61	
			4	0.44	1.67	4.48	9.64		
			5	0.55	2.37	5.17	11.97		750mm
			7.5	0.94	3.11	7.76	17.48		
			10	1.1	4.15	10.34			
			15	1.74	6.23	15.52			
FRP38	38 x 6	38	2.5	0.1	0.27	0.98	1.68	4.7	
			3	0.12	0.32	1.4	2.03	5.64	
			4	0.17	0.43	1.71	2.7	7.52	
			5	0.21	0.53	2.02	3.38	9.4	1050mm
			7.5	0.31	0.8	2.81	5.06	14.1	
			10	0.41	1.06	3.59	6.75	18.8	
			15	0.63	1.6	5.16	10.13		

Note: 'S': Distributed Load in Kpa uniformly



# **Stair Treads**

## Made to Order

<b>T1</b> Welded Banded only	<b>T2</b> Bolted end plates	
<b>T3</b> Welded Banded only with checker plate nosing	<b>T4</b> Bolted plates with with checker plate nosing	
<b>T5</b> Welded Banded only abrasive nosing	<b>T6</b> Bolted end plates abrasive nosing	

#### Made to Order Stair Treads or Off the Shelf Stair Treads

Rhino Grating has a range of off the shelf stair treads. This saves time and cost.

RECOMMENDE	O MAX. SPA	NS FOR G	RATING PA	TTERNS
LOAD BAR SIZE	25 X 3	25 X 5	32 X 5	40 X 5
SERIES I 30mm	550	900	1300	1600
SERIES II 40mm	450	750	1200	1500

STAIRTREADS, THE GRATING SIZE MUST BE NOMINATED.



Length	Width	Bolted or Welded	Checker plate nosing	32x5 I Bar 30mm Centres
600	30.5	~	<ul> <li>✓</li> </ul>	~
650	30.5	~	<ul> <li>✓</li> </ul>	~
700	30.5	~	<ul> <li>✓</li> </ul>	~
750	30.5	~	~	<ul> <li>✓</li> </ul>
800	30.5	~	<ul> <li>✓</li> </ul>	~
850	30.5	~	~	<ul> <li>✓</li> </ul>
900	30.5	~	~	<ul> <li>✓</li> </ul>
950	30.5	~	<ul> <li>✓</li> </ul>	~
1050	30.5	<ul> <li>✓</li> </ul>	<ul> <li>✓</li> </ul>	<b>v</b>









Pohokura Oil Platform

7

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## **Standard Stanchions**



• ALL STANCHIONS AVAILABLE DRILLED ONE SIDE ONLY (D.O.S.O.)





Sydney Tower Tourist Walk

\* BEFORE ORDERING: Check suitability of this dimension to match adjoining horizontal rail and adjust if necessary.



# Hand Rail and Grating Accessories

## **Closure and Rail Bends**



#### Important note:

A minimum of four clips per panel must be used to restrain floor panels. Where larger panels are to be fixed, it is advisable to use extra clips on any available intermediate supports.

#### 1. Field welding

Recommended for all permanently installed gratings, and for gratings that are to be removed only at infrequent intervals.



#### 2. Fixing Clip

This can be secured quickly and safely by one man, working from the floor surface



3-50CLIP-GA







## Light and medium duty (maximum recommended spans)

Load bar size	Maintena No pul	nce floors blic use	Pedestria Public, residenti	an traffic al and light use	Pedestria Public, commerci	an traffic al and crowd use	
	2.5 Deflectio	Kpa n = 5mm	3.0l Deflectio	(pa n = 5mm	4.0 Deflectio	Kpa n = 5mm	
	Series 1	Series 2	Series 1	Series 2	Series 1	Series 2	
RG 253	1410	1310	1350	1250	1250	1170	
RG 323	1700	1580	1620	1510	1510	1400	
RG 255	1590 1480		1520	1420	1420	1320	
RG 3253	1910	1780	1820	1700	1700	1580	
RG 4453	2420	2250	2310	2150	2150	2000	
RG 5053	Not ap	plicable	Not ap	olicable	Not applicable		
RG 6574	Not ap	plicable	Not ap	olicable	Not ap	plicable	
RG 7574	Not ap	plicable	Not ap	olicable	Not ap	plicable	

## Heavy duty (maximum recommended spans)

Load bar size	General	factories and w wheel	orkshops, mot trolleys	or rooms,	General	heavy loading a heavy equip	areas, boiler eq oment areas	uipment,	
		5.0	Кра			7.5	Кра		
	Deflectio	on = 5mm	Deflection	1 = 10mm	Deflectio	on = 5mm	Deflection	= 10mm	
	Series 1	Series 2	Series 1	Series 2	Series 1	Series 2	Series 1	Series 2	
RG 253		Not ap	plicable			Not ap	plicable		
RG 323		Not ap	plicable			Not ap	plicable		
RG 255	1340	1250	1590	1480	1210 1130 1440 1340				
RG 3253	1610	1500	1910	1780	1450	1350	1730	1610	
RG 4453	2040	1890	2420	2250	1840	1710	2190	2040	
RG 5053	2220	2070	2650	2460	2010	1870	2390	2230	
RG 6574	2940	2730	3500	3250	2650	2470	3160	2940	
RG 7574	3260	3040	3890	3620	2950	2750	3510	3270	



Pohokura Oil Project

This table is theoretical and is based on a uniformly distributed load of 300 kg/m<sup>2</sup> (3kPa)

LOAD AND DEFLECTION TABLE - SERIES I (LOAD BAR PITCH 30MM)

MESH SIZE	Load Bar Size (mm)	Serrated Factors	d Bar	Spa	in (mr	<b>n</b> )															
		S	D		600	750	006	1050	1200	1350	1500	1650	1800	1950 i	2100	2250 2	2400 2	2550 i	2700	2850	3000
RG 193/30	19X3			s	3.73	4.66	5.59	6.85	8.95												
				٥	0.7	1.38	2.38	3.97	6.77												
RG 253/30	25X3	0.88	1.21	S	2.16	2.70	3.23	3.96	5.18	6.55	8.09										
				۵	0.31	0.60	1.04	1.73	2.96	4.74	7.23										
RG 255/30	25X3	0.82	1.30	s	1.39	1.74	2.09	2.56	3.35	4.24	4.71	6.33									
				٥	0.12	0.29	0.61	1.12	1.91	3.06	4.67	6.84									
RG 323/30	32X3	10.0	1.16	S	1.32	1.65	1.98	2.24	3.16	4.00	4.94	5.98	7.12								
				D	0.15	0.29	0.50	0.83	1.41	2.26	3.45	5.05	7.15								
RG 3253/30	32X5	0.84	1.25	s	0.86	1.08	1.29	1.59	2.07	2.62	3.24	3.92	4.66	5.47	6.34						
				۵	0.10	0.19	0.33	0.54	0.93	1.48	2.26	3.31	4.68	6.45	8.68						
RG 4453/30	44×5	0.89	1.16	S	0.46	o.58	0.69	o.85	11.1	1.40	1.73	2.09	2.49	2.92	3.39	3.89	4.43	5.00	5.60	6.24	
				٥	0.04	0.07	0.13	0.21	0.36	0.58	0.88	1.28	1.82	2.51	3.37	4.44	5.75	7.32	9.20	11.43	
RG 5053/30	50x5	0.92	1.12	s	0.37	o.46	o.55	0.67	0.88	11.11	1.37	1.66	1.98	2.32	2.69	3.09	3.51	3.97	4.45	4.96	5.49
				۵	0.03	0.05	0.09	0.15	0.25	0.40	0.61	0.90	1.27	1.75	2.00	3.10	4.02	5.12	6.43	7.99	9.81
RG 6574/35	65x7			S	0.18	0.23	0.28	0.34	0.44	0.56	0.69	0.84	1.00	71.1	1.36	1.56	1.78	2.00	2.25	2.50	2.77
35.3 Pitch				۵	0.01	0.02	0.034	0.057	0.098	0.156	0.24	o.35	0.49	0.68	0.91	1.21	1.56	1.99	2.50	3.10	3.81
RG 7574/35	75×7			S	0.14	0.17	0.21	0.26	0.33	0.42	0.52	0.63	o.75	0.88	1.03	1.17	1.37	1.51	1.69	1.88	2.09
35.3 Pitch				۵	0.007	0.013	0.022	0.037	0.064	0.102	0.155	0.228	0.322	0.444	0.597	0.787	610.1	1.30	1.63	2.03	2.49

• For uniformly distributed loads other than 300kg/m<sup>2</sup> (3kPa) grating stress and deflection can be calculated using the factor shown in the following table

The shaded area of the table indicates grating with deflection less than span/300mm.
 If serrated bar grating is selected, use the factors S and D to calculate stress and deflection.

S = Stress in kg/mm<sup>2</sup> D = Deflection in mm Allowable Stress: 18kg/mm<sup>2</sup> (180MPa) Allowable Deflection: L(Span)/300mm

Stress and Deflection Fa	ctor					
Uniform Load kg/m <sup>2</sup>	200	250	300	400	500	750
Factor (i)	0.67	0.83	L	1.33	1.67	2.5

# Sample Calculation

Uniform Load: 500kg/m2 (5kPa) → factor (i) of 1.67 Grating code: PG 305/1 Span: 1500mm Stress (S) = 3.24 x 1.67 = 5.41kg/mm<sup>2</sup> Deflection (D) = 2.26 x 1.67 = 3.77mm

# Load Charts Series I



LOAD AND DEFLECTION TABLE - SERIES II (LOAD BAR PITCH 40MM) This table is theoretical and is based on a uniformly distributed load of 300 kg/m<sup>2</sup> (3kPa)

Grating Code	Load Bar Size	Serrated Factors	l Bar		Span (m	(m															
	(mm)				600	750	006	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000
RG 253/40	25X3	0.88	1.21	S	2.88	3.59	4.31	5.28	6.90	8.73	10.78					L					
				D	0.41	0.80	1.39	2.31	3.95	6.32	9.63										
RG 2553/40	25X5	0.82	1.30	S	1.86	2.32	2.79	3.42	4.46	5.65	6.97	8.44									
				D	0.266	0.519	o.897	1.495	2.55	4.08	6.23	9.12									
RG 323/40	32X3	16.0	1.16	S	1.76	2.20	2.64	3.23	4.22	5.34	6.59	7.98									
				D	0.20	0.38	0.66	1.10	1.88	3.02	4.60	6.73									
RG 3253/40	32X5	0.84	1.25	S	1.15	1.44	1.73	2.11	2.76	3.50	4.32	5.22	6.21	7.29	8.46						
				D	0.128	0.25	0.43	0.72	1.23	1.98	3.01	4.41	6.24	8.60	11.57						
RG 4453/40	44x5	0.89	1.16	S	0.61	0.77	0.92	1.13	1.48	1.87	2.31	2.79	3.32	3.90	4.52	5.19	5.90	6.66	7.47		
				D	0.050	0.09	0.16	0.28	0.48	o.77	7١.١	۲.71	2.42	3.34	4.49	5.92	7.66	9.77	12.28		
RG 5053/40	50x5	0.92	1.12	S	0.49	0.61	0.73	0.90	۲.۱	1.48	1.83	2.21	2.64	3.09	3.59	4.12	4.69	5.29	5.93	6.61	
				Δ	0.035	0.068	0.118	0.196	o.335	o.536	0.82	1.20	1.70	2.33	3.14	4.14	5.36	6.83	8.58	10.65	
RG 6574/40	65x7			S	0.21	0.26	0.31	0.39	0.50	0.64	o.79	o.95	1.13	1.33	1.54	1.77	2.01	2.27	2.55	2.84	3.14
				D	0.012	0.023	0.039	0.065	111.0	0.117	0.270	o.395	o.56	o.77	1.04	1.37	1.77	2.25	2.83	3.52	4.32
RG 7574/40	75×7			S	0.16	0.20	0.24	0.29	0.38	0.48	0.59	0.72	0.85	1.00	1.16	1.33	1.51	۲.7.۱	1.92	2.14	2.37
					0.008	0.015	0.025	0.042	0.072	0.116	0.176	0.258	0.365	0.503	0.68	0.89	1.15	1.47	1.85	2.30	2.82

The shaded area of the table indicates grating with deflection less than span/300mm.

If serrated bar grating is selected, use the factors S and D to calculate stress and deflection.
 For uniformly distributed loads other than 300kg/m<sup>2</sup> (3kPa) grating stress and deflection can be calculated using the factor shown in the following table

Allowable Stress: 18kg/mm<sup>2</sup> (180MPa) Allowable Deflection: L(Span)/300mm D = Deflection in mm  $S = Stress in kg/mm^2$ 

# Load Charts Series II



Uniform Load: 5ookg/m2 (5kPa)  $\rightarrow$  factor (i) of 1.67

Sample Calculation

Span: 1500mm

Stress (S) =  $4.32X1.67=7.21kg/mm^2$ Deflection (D) = 3.01X1.67=5.03mm

Grating code: PG 305/2

750 2:5

500 1.67

400 1.33

300 -

250 0.83

200

Uniform Load kg/m<sup>2</sup>

Stress and Deflection Factor

0.67

Factor (i)



## **Raised Expanded Metal**



#### **EXPANDED METAL PATTERN TABLE**

Product Code	SWM (mm)	LWM (mm)	Strand Width (mm)	Thickness (mm)	Height (mm)
RG 50080	45	135	8	5	16
RG 50110	45	135	11	5	22
RG 50075	30	75	7.5	5	15
RG 50105	30	75	10.5	5	21

#### **EXPANDED METAL SPAN TABLE**

Broduct		Strand	Thicknoss	Mass	5		Span (mm)		Product
Code	SWMXLWM	(mm)	(mm)	kg/m <sup>2</sup>	Кра	600	900	1200	Code
PC roolo	45 V 125	8	F	14	S	4.7	2.2	1.2	775
KG 50080	45 * 135	0	5	14	D	3	4.5	6	//5
RC rollo	4F V 12F	11	r.	10	S	6.3	2.85	1.7	860
KG SOLIO	42 ^ '22	11	)	19	D	3	4.5	6	000
PC FOOT	20 X 75	7 5	-	22	S	5.6	2.65	1.5	700
10 300/3	30 * 75	7.5	5	22	D	3	4.5	6	/90
RC rolor	20 X 75	10.5	F	28	S	8	3.6	2	020
	30 * /5	10.5	)	20	D	3	4.5	6	920

Note: 'S': Distributed Load in Kpa uniformly

#### INSTALLATION TOLERANCES



#### **Expanded Metal**

Expanded metal is an economical and versatile material which can be used for enclosure, protection, support and decoration.

In the expanding process, expanded metal is made from a solid single sheet metal which is slit and stretched longitudinally. There is no weld or join in it, therefore loads are evenly distributed over a wide area.

The strands and knuckles form a uniform angle, which adds more strength and rigidity, even if one or more points are cut, the intersections of strand still can support the loads.

Expanded metal plates are not perfectly square. Maximum out of a square along edge is 5mm per 1000mm of length or 10mm on diagonals per square meter. Sheet must be resquared by shearing each side of the edge.

#### MINIMUM SUPPORT DIMENSION 25mm





# **Architectural Projects and Solutions**

## Architectural

Rhino grating offers opportunities for cost effect, but highly innovative site platforms. Unique products such as Rhino Heel Guard give the Architect a system for providing safe non-intrusive, public access to environmentally or heritage sensitive sites. These products come in a range of materials from hot dipped galvanised steel to 316 stainless steel.



Heelgaurd Mild Steel for Public Areas



Kirrabilli Harbour Walk Mild Steel Walk Way



Heelguard Stainless Steel



National Parks Track for Wheel Chair Access and Protection of Fauna



Winner of Architectural Award (Agna)



Disable Wheel Chair Access Walk



Viewing Platform Sydney Harbour

For further information on the products please contact RHINO GRATING for full specification and free design service.





Industrial floor grating and handrail stanchions. The complete package of manufacture, galvanising and delivery. For quotations or general enquiries, contact Rhino Grating.

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