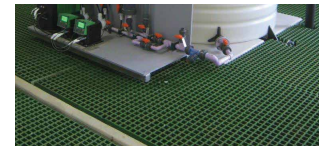
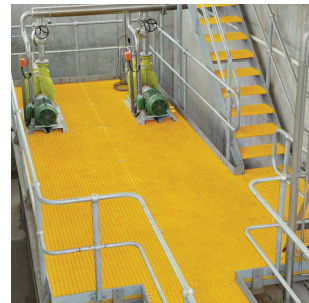
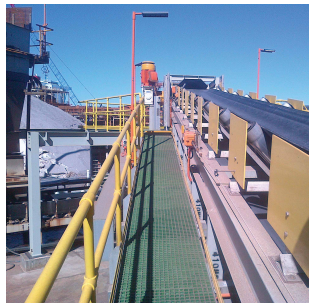


EX-Series[®]

GratEX[®]
GridEX[®]

Grating Product Guide

World leaders in the design and supply
of Fibreglass Reinforced Plastic (FRP)
Access Systems for industry.



We are delighted to bring to you the latest collection of Treadwell FRP Grating Products.

As you will notice, we are pleased to introduce many new products to the Treadwell Access Systems range, including a brand new range of Elevated Support and Conveyor Guarding products. We have also expanded our product choice in the GratEX Moulded Grating range.

With warehouses and distribution centres throughout Australia, Treadwell Group and the brand names, EX-Series, GratEX and GridEX are the names you can rely on.

A BRIEF HISTORY

Treadwell Group is one of the most established names in the supply of Access Systems throughout Australia.

Our centrally located Adelaide fabrication facility, coupled with our second to none distribution network across Australia and our commitment to quality and testing, allows our technical staff to provide engineering and design assistance for any project.

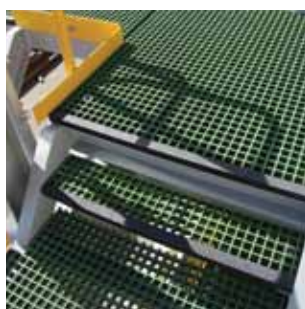
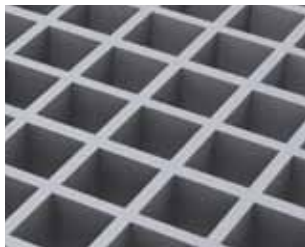
With a broad history of installation in a wide range of challenging applications, including industrial process plants, mining applications, marine and costal environments as well as public infrastructure, Treadwell has the experience to help you specify the right resin systems and products every time.

If you have any unique design problems, chances are we've encountered something similar before. Get in contact today - Freecall 1800 246 800.

Treadwell Group Pty Ltd

P 1800 246 800
F 1300 763 521
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treadwellgroup.com.au





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Quality Policy

Quality is at the forefront of Treadwell Access Systems' working practices. With over 15 years of manufacturing to the highest quality standards, Treadwell Access Systems prides itself on its reputation for implementing strict quality control measures, and strives to supply products that surpass customers expectations. The company works on a policy of 'continuous improvement'.



Environmental Policy

Treadwell Access Systems is conscious of the impact it has on the environment and its associated responsibilities. The company is committed to ensuring its operations satisfy both legal obligations and moral duties. Treadwell has been committed to sustainability for many years and is not just responding to current trends.

FRP Grating Selection Guide

GratEX® Moulded Grating vs GridEX® Pultruded Grating

Treadwell offers both Moulded and Pultruded Fibreglass (FRP) Grating products – the following table outlines the suitability of the different product styles to different applications –

Characteristic/Application	GratEX® Moulded Grating	GridEX® Pultruded Grating
Chemical Resistance	● ● ● ● ●	● ● ●
Bi-directional Strength	● ● ● ● ●	–
Uni-directional Strength	● ● ● ●	● ● ● ● ●
Impact Resistance	● ● ● ● ●	● ●
Weight Savings versus Metal	● ● ● ● ●	● ● ● ● ●
Open Area (air flow, light penetration)	● ● ● ● ● (70% to 80%)	● ● ● (40% to 60%)
Panel Sizes Available	● ● ● ● ●	● ● ● ● ●
Pipe Penetrations	● ● ● ● ●	● ●
Safety	● ● ● ● ●	● ● ● ● ●

FAQ's

Spans achievable with FRP – call us on freecall 1800 246 800

Q: We have always thought that to utilise FRP grating in our designs, additional structural supports were required to ensure normal spans could be achieved – is that the case?

A: Not necessarily. GridEX® has an excellent span capability – quite comparable to metal alternatives. Typically GratEX® moulded grating is unable to span as far as a similar depth GridEX® pultruded grating system, in both directions and hence this perception.

We can offer you any colour you want!

Q: We have never specified fibreglass mesh as the councils and national park authorities we typically work with aren't particularly eager to use brightly coloured grating on their public boat ramps – is it the case that only green and yellow are available?

A: Definitely not – Treadwell offers a full range of custom colours. We can offer a completely customised colour solution if required, while still offering the standard Industrial Green and Safety Yellow products. Call us about colour matching your grating – 1800 246 800.

The extent of the Treadwell range... experience the benefit!

Q: We have areas in the plant we are currently operating where checkerplate should have been used, but because of the chemicals, stainless steel needed to be utilised – it proved a very costly exercise. Is there anything similar to checkerplate offered in fibreglass?

A: Treadwell offers a range of solid surface grating products that are structural flooring systems. These products are available with a number of surfaces – please refer to page 12 for further information.

Treadwell FRP Design Life – we've got the proof... ask us about it

Q: We know that fibreglass grating has been widely used in industry for a long time, but have never really been given any information about the breakdown and failure of the product – does Treadwell have any data on this?

A: Treadwell has been in the flooring industry for 20 years. We have done extensive research and development which has established that fibreglass grating will not give way without warning. Fibreglass, if it is going to fail, will firstly show signs of failure, just like any metal grating system. Typically the exposure of glass signifies the resin laminate is being broken down. This will result in failure of the grating product unless repair is undertaken. Likewise, impact may result in the exposure of the glass fibres, necessitating replacement, or at least repair, as would be the case for metal grating if damaged.

In-house drafting – another Treadwell advantage

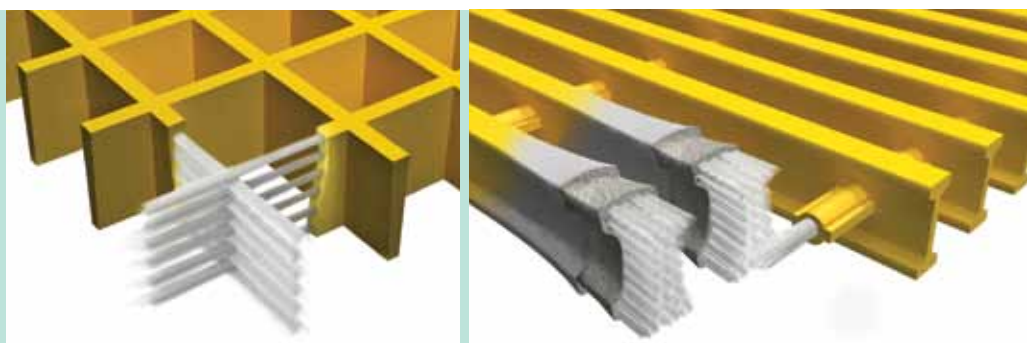
Q: We have always outsourced the grating work for any plants we have designed and typically the grating supplier has offered a drafting service, but when fibreglass grating is called for we have always done the drafting in-house and the grating costs end up very high. Is there some reason why?

A: Treadwell specialises in the supply of FRP products and have in-house drafting personnel experienced in producing panel layouts for grating projects. This can make a huge difference to cost, especially with GratEX® moulded grating products. These products are produced in a mould meaning that if panel layouts are not done in an effective manner, by an experienced designer, a lot of wastage can be created very quickly.

Not all FRP Grating is the same!

Materials of Construction

EX-Series® FRP gratings are constructed from fibreglass rovings combined with a blend of thermosetting resin systems. All of the resins used in the production of EX-Series® products contain UV inhibitors and fire retardant additives.



EX-Series® FRP Grating Key Selection Considerations

What span do you require?

GratEX® Moulded Grating will typically span up to 1400 mm depending on loading.

GridEX® Pultruded Grating will typically span between 1400 mm and 1800 mm.

This can be affected by a number of factors, and it is important to realise that there are many types of fibreglass grating available. Please also consider that the spans we mention here may not take into account the loads you need to consider – consult safe load and deflection charts for each individual product.

What thickness grating do you prefer, or do you need to work in with?

GratEX® Moulded Grating is available in depths of 15 mm, 25 mm, 32 mm, 38 mm and 50 mm for greater flexibility in new and replacement applications, as well as being available with covered solid surfaces, 3 mm or 5 mm thick.

GridEX® Pultruded Grating is available in conventional 25 mm (1"), 38 mm (1½") and 50 mm (2") profiles, as well as being available with covered solid surfaces, 3 mm or 5 mm thick.

Do you require a non-standard surface on your grating for example, something similar to checkerplate?

GratEX® Moulded Grating is available with a vast number of surface options including an extremely popular Anti-Slip surface – refer to pages 6, 7 and 12.

GridEX® Pultruded Grating is available with numerous surface options, including options often utilised in sanitary applications where product cannot catch on a sharp surface – refer to page 21.

Do you require consistent strength in both directions or not?

If yes, go **GratEX® Moulded Grating** – this product has excellent bi-directional grating, and far exceeds the performance of metal alternatives where this feature is required.

If not, go **GridEX® Pultruded Grating** – an ideal option for walkways and areas where structural support members can be easily set up to support the system.

Is the area you are flooring with grating very complex, ie are cut-outs etc required?

If so, go **GratEX® Moulded Grating** – this system doesn't require edge-banding at all when trimmed for penetrations*, and performs as self-supporting due to its unique bi-directional properties.
* Sealing of cut edges is recommended.

If not, go **GridEX® Pultruded Grating** – this is the ideal solution for those applications where high strength grating is required for large floor areas and walkways, and high use maintenance platforms.

If you require a specific resin system, or resistance to harsh chemicals... Treadwell can help!

The resin system you will need to utilise will be dictated by the chemicals present in the environment, and the fire and smoke performance required. For resin system information refer to page 6.

We also have an extensive corrosion resistance guide featured on pages 34-35. If you can't find the chemical, or the resin system you require performance data for, please give us a call on 1800 246 800.



GratEX® Moulded Grating – The perfect solution for areas where plenty of pipe penetrations make the use of unidirectional alternatives a nightmare.



GridEX® Pultruded Grating – Ultimate choice for areas where very high loading – including wave zone loading – present a challenge.

EX-Series® Resin Systems



When choosing a resin type for your application, we highly recommend you consult with us in relation to the application to ensure the correct resin is specified. Considerations such as corrosion, environment, temperature, fire resistance, smoke and smoke toxicity requirements must be taken into account, and will dictate which resin system should be utilised for optimum performance over time. Below is an overview of the resin systems offered in the Access Systems range.

Options Overview

O-Series™ is an architectural grade Polyester Resin System with a moderate chemical resistance. O-Series is a good choice for commercial or light industrial applications, especially in areas where moisture is prevalent. O-Series is often utilised for public infrastructure applications where it has been proven to outperform traditional timber decking products.

I-Series™ is a premium Isophthalic Resin System. This system provides an intermediate level of chemical resistance and is the correct choice for areas subjected to splash and spill contact with harsh chemicals. This system is an excellent general-purpose resin and is a more favourably priced alternative to the vinyl ester system. This system has a flame spread of 25 or less.

V-Series™ Vinyl Ester Resin System is a high quality and is the most chemical resistant system offered in the industry and has been developed for use in environments where fibreglass/FRP products are subject to frequent and direct contact with the harshest of chemicals: including a broad range of acids and caustics. This system has a flame spread of 25 or less.

P-Series™ Phenolic Resin System is a system designed specifically for use where fire resistance, low smoke and low toxic fumes are critical. P-Series is typically used in offshore applications and confined spaces where such criteria are an absolute necessity. This system is tested in accordance with ASTM E-84. Various products also conforming to US Coast Guard Approvals, Level 2 and 3, are also offered by Treadwell. This particular Resin System has a flame spread rating of 5 and a smoke density rating of 5.

Standard Resin Systems Comparison Chart

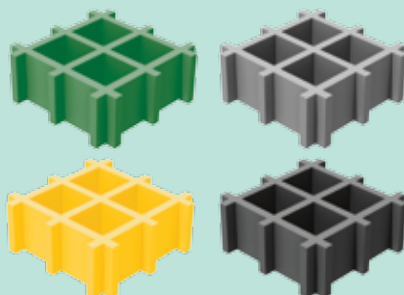
	Chemical Resistance	Fire Retardance	Low Smoke	Halogen Free	Temperature Performance
O-Series Polyester	● ● ●	● ● ● ● ●	–	–	● ● ●
I-Series Isophthalic	● ● ● ● ●	● ● ● ● ●	–	–	● ● ● ● ●
V-Series Vinyl Ester	● ● ● ● ●	● ● ● ● ●	–	–	● ● ● ● ●
P-Series Phenolic	● ● ● ●	● ● ● ● ●	● ● ● ● ●	● ● ● ● ●	● ● ● ● ●

Non-Standard Resin Systems, including Conductive and Modar Systems are available upon request.

EX-Series® Standard Colours

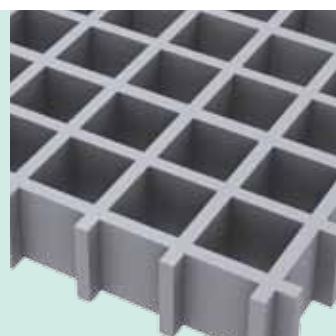
Treadwell's Standard Colours are Industrial Green, Safety Yellow, Light Grey and Dark Grey.

Contact Customer Service for custom requirements – custom colours are available upon request.



GratEX® Surface Options

Plain Surface. This surface is a non-stock option and is very often utilised for architectural features in commercial applications. Whilst the aesthetics of the product are better, the anti-slip properties of this option are not as good as either of the other options available.



What is GratEX® Moulded Fibreglass Grating

Treadwell's GratEX® Moulded FRP grating is a high strength, single piece construction mesh panel product. Treadwell offers both standard panel sizes as well as the option of custom panels made to order from your drawings, or alternatively, drawings provided by Treadwell's drafting department.

Cost effective GratEX® panels allow for effective on-site fabrication/trimming whilst ensuring that wastage is minimised. Load bearing bars in both directions, likewise, allow for use without continuous side support and so contribute to cost effectiveness. GratEX® offers all the benefits available with grating made from other materials plus a host of superior benefits unequalled by steel or other metal alternatives; and hence has over time become the first choice in chemical resistant flooring for many industrial applications.

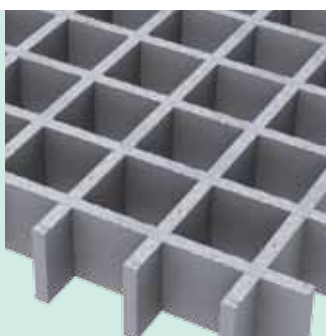


GratEX® Features and Benefits vs. Traditional Alternatives

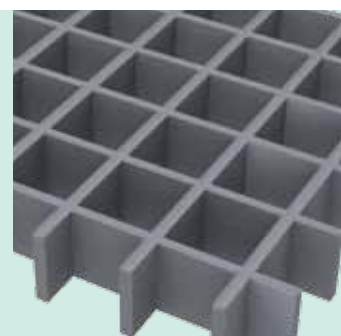
	GratEX®	Stainless Steel	Galvanised Steel	Aluminium	Polyurethane
Chemical Resistance	•••••	••••	•	•••	••••
Strength	•••••	••••••	••••••	•••••	•••
Lightweight	•••••	•	•	•••••	•••
Electrical Resistance	•••••	•	•	•••••	•••••

Anti-Slip Surface (Standard).

This surface is most commonly used in industrial applications. It is very hard-wearing and has an extremely good coefficient of friction (NATA laboratory test report available). Unlike serrated steel grating, the anti-slip surface does not impact on load carrying capacity.



Concave Surface. This is the preferred surface for environments where by-products are commonly caught by serrations, and is hence very often utilised in the food industry. This surface option can also be utilised for guarding options to allow safe handling/contact.



GratEX® Square Mesh



This range of high strength, lightweight grating is virtually an international standard on all major resource projects.

Ideal applications include coastal and marine applications, SX and EW buildings, mineral process plants and conveyor walkways, especially in food and beverage plants where a high level of hygiene and chemical resistance is called for.

GratEX® Square Mesh panels can be supplied with a range of surfaces, in a range of colours. Treadwell hold a large stockholding of this range in several locations around Australia. Standard/Square Mesh is supplied standard with an Anti-Slip Surface.

Note: Stair Tread Products suitable for use in conjunction with GratEX® Square Mesh are available. Refer to pages 16-17 for further details.

MG25S		TOP VIEW	ELEVATION
	Standard Panels: 920 mm x 3055 mm 1225 mm x 3665 mm		
MG32S		TOP VIEW	ELEVATION
	Standard Panels: 920 mm x 3055 mm 1225 mm x 3665 mm		
MG38S		TOP VIEW	ELEVATION
	Standard Panels: 920 mm x 3055 mm 1225 mm x 3665 mm 1255 mm x 4040 mm (non-stock) 1525 mm x 4040 mm (non-stock)		
MG50S		TOP VIEW	ELEVATION
	Standard Panels: 920 mm x 3055 mm 1225 mm x 3665 mm		

38 x 38 Mesh Grid Load Bar Chart

50 x 50 Mesh Grid Load Bar Chart

No. of Bars	mm														
2	44	14	501	26	958	38	1416	50	1876	62	2332	74	2789	86	3246
3	82	15	539	27	997	39	1454	51	1913	63	2370	75	2827	87	3284
4	120	16	577	28	1035	40	1492	52	1951	64	2409	76	2865	88	3322
5	158	17	616	29	1073	41	1530	53	1990	65	2443	77	2902	89	3360
6	196	18	654	30	1111	42	1570	54	2028	66	2480	78	2940	90	3399
7	235	19	692	31	1149	43	1608	55	2066	67	2522	79	2979	91	3437
8	273	20	730	32	1187	44	1647	56	2104	68	2559	80	3017	92	3474
9	311	21	768	33	1225	45	1684	57	2141	69	2598	81	3055	93	3512
10	349	22	806	34	1263	46	1722	58	2180	70	2632	82	3093	94	3551
11	387	23	844	35	1301	47	1761	59	2218	71	2674	83	3131	95	3588
12	425	24	882	36	1339	48	1800	60	2256	72	2712	84	3169	96	3626
13	463	25	920	37	1378	49	1837	61	2294	73	2750	85	3208	97	3665

No. of Bars	mm										
2	60	14	668	26	1277	38	1885	50	2494	62	3104
3	110	15	719	27	1328	39	1936	51	2545	63	3154
4	160	16	770	28	1378	40	1987	52	2596	64	3205
5	210	17	820	29	1429	41	2038	53	2647	65	3256
6	262	18	870	30	1480	42	2088	54	2698	66	3306
7	312	19	921	31	1530	43	2139	55	2749	67	3357
8	363	20	971	32	1581	44	2190	56	2799	68	3408
9	414	21	1023	33	1632	45	2241	57	2851	69	3459
10	464	22	1074	34	1683	46	2291	58	2901	70	3510
11	515	23	1125	35	1734	47	2341	59	2952	71	3561
12	566	24	1175	36	1784	48	2393	60	3002	72	3612
13	617	25	1225	37	1835	49	2444	61	3053	73	3665

Safe Load & Deflection Charts (mm) - Uniform and Concentrated Line Load

Mesh Grid	Load Bar Details	Span (mm)	Load (kN/m²) – Deflection (mm)														Maximum Recommended kN	Ultimate Capacity kN		
			3	5	8	10	15	20	25	30	40	50	60	80	90	100				
MG25S																				
38 x 38	25 x 6	400	ΔU	0.32	0.55	0.87	1.12	1.67	2.23	2.79	3.35	4.46	5.58	6.69	8.93	10.04	11.15	47	236	
			ΔC	1.22	2.05	3.27	4.12	6.17	8.23	10.29	12.35	16.46							8	40
		600	ΔU	1.28	2.15	3.43	4.31	6.47	8.63	10.79	12.95	17.26							22	111
			ΔC	3.50	5.85	9.35	11.72	17.57											6	31
		800	ΔU	4.15	6.94	11.09	13.88												11	56
			ΔC	8.30	13.85														5	26
MG32S																				
38 x 38	32 x 6	400	ΔU	0.24	0.42	0.65	0.85	1.26	1.69	2.11	2.54	3.38	4.23	5.07	6.77	7.60	8.44	53.24	267.39	
			ΔC	0.99	1.67	2.67	3.37	5.04	6.73	8.41	10.10	13.46							12.04	61.11
		600	ΔU	0.99	1.67	2.66	3.35	5.02	6.70	8.36	10.04	13.38							31.48	158.80
			ΔC	2.72	4.56	7.28	9.13	13.68											9.26	47.69
		800	ΔU	3.15	5.28	8.43	10.56												17.59	89.35
			ΔC	6.25	10.44														7.41	38.43
MG38S																				
38 x 38	38 x 6	400	ΔU	0.12	0.22	0.34	0.45	0.67	0.9	1.12	1.35	1.79	2.25	2.69	3.6	4.04	4.48	68	342	
			ΔC	0.62	1.05	1.67	2.12	3.17	4.23	5.29	6.35	8.46	10.58	12.69	16.93	19.04			18	92
		600	ΔU	0.55	0.94	1.49	1.88	2.82	3.77	4.7	5.65	7.52	9.42	11.29	15.07	16.94	18.81		46	232
			ΔC	1.54	2.59	4.13	5.18	7.77	10.37	12.95	15.55								14	72
		800	ΔU	1.69	2.84	4.53	5.68	8.52	11.37	14.2	17.05								27	137
			ΔC	3.28	5.49	8.77	10.98	16.47											11	57
		1000	ΔU	4.16	6.95	11.11	13.92												17	87
			ΔC	6.78	11.32	18.1													8	42
		1200	ΔU	8.76	14.62														10	52
			ΔC	11.58	19.32														6	32
		MG50S																		
		50 x 50	50 x 6	400	ΔU	0.08	0.15	0.23	0.32	0.47	0.63	0.79	0.95	1.26	1.58	1.89	2.53	2.84	3.15	72
ΔC	0.31				0.34	0.85	1.08	1.62	2.17	2.7	3.25	4.32	5.42	6.49	8.67	9.74	11.91		29	146
600	ΔU			0.28	0.49	0.77	0.98	1.47	1.97	2.45	2.95	3.92	4.92	6.49	8.67	8.84	9.81		52	259
	ΔC			0.88	1.49	2.37	2.98	4.47	5.97	7.45	8.95	11.92	14.92	17.89					16	78
800	ΔU			0.09	0.17	0.25	0.34	0.51	0.69	0.85	1.03	1.36	1.72	2.05	2.75	3.08	3.41		36	181
	ΔC			1.82	3.05	4.87	6.12	9.17	12.23	15.29	18.35								13	66
1000	ΔU			2.18	3.65	5.83	7.32	10.97	14.63	18.29									16	81
	ΔC			3.62	6.05	9.67	12.12	18.17											11	56
1200	ΔU			4.56	7.62	12.18	15.25												15	76
	ΔC			6.05	10.1	16.15													9	46
1400	ΔU			8.2	13.69														9	46
	ΔC			9.68	16.15														6	31

GratEX® Mini-Mesh



This lightweight and economical grating meets the requirements of the relevant code for fixed platforms, walkways and stairways and is ideally suited for public walkways – whether in parks or reserves, for jetties or boardwalks.

Mini-Mesh pedestrian walkways and boardwalks allow for safe disabled access as well as allowing excellent light penetration for vegetation growth to thrive underneath.

Mini-Mesh has also been selected as the product of choice for numerous industrial applications where larger debris falling through apertures is a hazard.

Panels can be supplied in a range of surfaces, and in a wide range of custom colours. Treadwell holds a large stockholding of this range in Australia. Standard Mini-Mesh is available in Dark Grey with an Anti-Slip surface.

		TOP VIEW	ELEVATION
MG32M	Standard Panels: 920 mm x 3055 mm 1220 mm x 3665 mm		
MG38M	Standard Panels: 920 mm x 3055 mm 1220 mm x 3665 mm		
MG50M	Standard Panels: 920 mm x 3055 mm 1220 mm x 3665 mm		

Mini-Mesh Installation Methods

Options	Type - M	Type-MJ	Type - G
		 <p>Bolt/Fixing Detail: M6</p> <p>Hole: Standard</p> <p>For attaching grating to supports where drilling is permitted</p>	 <p>Bolt/Fixing Detail: M6</p> <p>Hole: Standard</p> <p>For attaching grating to supports where drilling is not permitted</p>

Mini-Mesh Load Bar Chart

No. of Bars	mm																								
2	46	16	326	30	606	44	886	58	1166	72	1446	86	1726	100	2006	114	2286	128	2566	142	2846	156	3126	170	3406
3	66	17	346	31	626	45	906	59	1186	73	1466	87	1746	101	2026	115	2306	129	2586	143	2866	157	3146	171	3426
4	86	18	366	32	646	46	926	60	1206	74	1486	88	1766	102	2046	116	2326	130	2606	144	2886	158	3166	172	3446
5	106	19	386	33	666	47	946	61	1226	75	1506	89	1786	103	2066	117	2346	131	2626	145	2906	159	3186	173	3466
6	126	20	406	34	686	48	966	62	1246	76	1526	90	1806	104	2086	118	2366	132	2646	146	2926	160	3206	174	3486
7	146	21	426	35	706	49	986	63	1266	77	1546	91	1826	105	2106	119	2386	133	2666	147	2946	161	3226	175	3506
8	166	22	446	36	726	50	1006	64	1286	78	1566	92	1846	106	2126	120	2406	134	2686	148	2966	162	3246	176	3526
9	186	23	466	37	746	51	1026	65	1306	79	1586	93	1866	107	2146	121	2426	135	2706	149	2986	163	3266	177	3546
10	206	24	486	38	766	52	1046	66	1326	80	1606	94	1886	108	2166	122	2446	136	2726	150	3006	164	3286	178	3566
11	226	25	506	39	786	53	1066	67	1346	81	1626	95	1906	109	2186	123	2466	137	2746	151	3026	165	3306	179	3586
12	246	26	526	40	806	54	1086	68	1366	82	1646	96	1926	110	2206	124	2486	138	2766	152	3046	166	3326	180	3606
13	266	27	546	41	826	55	1106	69	1386	83	1666	97	1946	111	2226	125	2506	139	2786	153	3066	167	3346	181	3626
14	286	28	566	42	846	56	1126	70	1406	84	1686	98	1966	112	2246	126	2526	140	2806	154	3086	168	3366	182	3646
15	306	29	586	43	866	57	1146	71	1426	85	1706	99	1986	113	2266	127	2546	141	2826	155	3106	169	3386	183	3666

Safe Load & Deflection Charts (mm) - Uniform and Concentrated Line Load

Mesh Grid	Load Bar Details	Span (mm)	Load (kN/m ²) – Deflection (mm)														Maximum Recommended kN	Ultimate Capacity kN		
			3	5	8	10	15	20	25	30	40	50	60	80	90	100				
MG32M																				
38 x 38/ 19 x 19	32 /12.5 x 7	400	ΔU	0.19	0.33	0.52	0.68	1.01	1.35	1.69	2.03	3.38	3.38	4.05	5.41	6.08	6.75	66.55	334.49	
			ΔC	0.79	1.34	2.13	2.70	4.03	5.38	6.73	8.08	10.77							15.05	76.39
		600	ΔU	0.79	1.33	2.13	2.68	4.01	5.36	6.69	8.04	10.70							39.35	198.50
			ΔC	2.18	3.65	5.82	7.30	10.95											11.57	59.61
	800	ΔU	2.52	4.22	6.75	8.45												21.99	111.69	
		ΔC	5.00	8.35														9.26	48.03	
	MG38M																			
	38 x 38/ 19 x 19	38/9 x 7	400	ΔU	0.096	0.176	0.272	0.360	0.536	0.720	0.896	1.080	1.432	1.800	2.152	2.880	3.232	3.584	115	575
ΔC				0.496	0.840	1.336	1.696	2.536	3.384	4.232	5.080	6.768	8.464	10.152	13.544	15.232		23	115	
600			ΔU	0.440	0.752	1.192	1.504	6.216	3.016	3.760	4.520	6.016	7.536	9.032	12.056	13.552	15.048		58	290
			ΔC	1.232	2.072	3.304	4.144	6.816	8.296	10.360	12.440								18	90
800			ΔU	1.352	2.272	3.624	4.544	13.176	9.096	11.360	13.640								34	171
			ΔC	2.624	4.392	7.016	8.784												14	71
1200		ΔU	3.328	5.560	8.888	11.136												21	109	
		ΔC	5.424	9.056	14.480													10	53	
1400		ΔU	7.008	11.696														13	65	
		ΔC	9.264	15.456														8	40	
MG50M																				
50 x 50/ 25 x 25		50 x 9/ 12 x 7	400	ΔU	0.064	0.432	0.184	0.256	0.376	0.504	0.632	0.760	1.008	1.264	1.512	2.024	2.272	2.520	90.00	451.25
	ΔC			0.248	0.432	0.68	0.864	1.296	1.736	2.160	2.600	3.456	4.336	5.192	6.936	7.792	9.528		36.25	182.50
	600		ΔU	0.224	0.392	0.616	0.784	1.176	1.576	1.960	2.360	3.136	3.936	4.712	6.296	7.072	7.848		93.75	470.00
			ΔC	0.704	1.192	1.896	2.384	3.576	4.776	5.960	7.160	9.536	11.936	14.312					27.50	138.75
	800		ΔU	0.720	0.136	0.200	0.272	0.408	0.552	0.680	0.824	1.088	1.376	1.640	2.200	2.464	2.728		45.00	226.25
			ΔC	1.456	2.440	3.896	4.896	7.336	9.784	12.232	14.680								16.25	82.50
	1000		ΔU	1.744	2.920	4.664	5.856	8.776	11.704	14.632									20.00	101.00
			ΔC	2.896	4.840	7.736	9.696	14.536											13.75	70.00
	1200	ΔU	3.648	6.096	9.744	12.200												18.75	95.00	
		ΔC	4.840	8.080	12.920													11.25	57.50	
	1400	ΔU	6.560	10.952														11.25	57.50	
		ΔC	7.744	12.920														7.50	38.75	

ArchitEX™ Associated Products

Treadwell's range of ArchitEX™ panel planks offer easy installation, are lightweight, and most importantly, are easily used in conjunction with Mini-Mesh – call us on 1800 246 800 for more information.



GratEX® Solid Surface Mesh



Developed initially for maintenance platforms where a solid surface is required to prevent pollution of work areas beneath, this range offers a strong level surface for foot and light, wheeled traffic.

Ideal applications include industrial walkways, food processing applications, such as access ways over tanks and vats, and in-ground pump wells and pits.

GratEX® Solid Surface Mesh can be supplied with a range of different surfaces, including Anti-Slip and Checkerplate, and is available in a number of standard panel sizes. Solid Surface Mesh is also available in a range of colours, including numerous custom colour options. Whilst ample stocks of common products are normally maintained, it is recommended availability be confirmed for project requirements.

The integral cover bonded to the top surface is available in 3 mm and 5 mm thicknesses. Please refer to technical details below for further information.

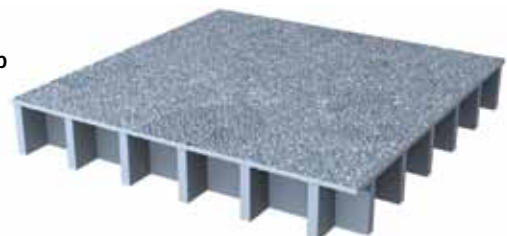
MG25(3)F, MG25(5)F*		TOP VIEW	ELEVATION
	Standard Panels: 920 mm x 3055 mm 1225 mm x 3665 mm		
MG38(3)F, MG38(5)F*		TOP VIEW	ELEVATION
	Standard Panels: 920 mm x 3055 mm 1225 mm x 3665 mm		
MG50(3)F, MG50(5)F*		TOP VIEW	ELEVATION
	Standard Panels: 920 mm x 3055 mm 1225 mm x 3665 mm		

Surface Options

Checkerplate



Anti-Slip



*(3) or (5) refers to the option of a 3 mm or 5 mm solid top.

Safe Load & Deflection Charts (mm) - Uniform and Concentrated Line Load

Mesh Grid	Load Bar Details	Span (mm)	Load (kN/m ²) – Deflection (mm)																
			3	5	8	10	15	20	25	30	40	50	60	80	90	100			
MG25(3)F, MG25(5)F																			
38 x 38	25 x 6	400	Δ U	0.26	0.44	0.70	0.90	1.34	1.78	2.23	2.68	3.57	4.46	5.35	7.14	8.03	8.92		
			Δ C	0.98	1.64	2.616	3.30	4.94	6.58	8.23	9.88	13.17							
		600	Δ U	1.02	1.72	2.74	3.46	5.18	6.90	8.63	10.36	13.81							
			Δ C	2.80	4.68	7.48	9.38	14.06											
		800	Δ U	3.32	5.55	8.87	11.10												
			Δ C	6.64	11.08														
MG38(3)F, MG38(5)F																			
38 x 38	38 x 6	400	Δ U	0.96	0.18	0.27	0.36	0.54	0.72	0.90	1.08	1.43	1.80	2.15	2.88	3.23	3.58		
			Δ C	0.50	0.84	1.34	1.70	2.54	3.38	4.23	5.08	6.77	8.46	10.15	13.54	15.23			
		600	Δ U	0.44	0.75	1.19	1.50	2.26	3.02	3.76	4.52	6.02	7.54	9.03	12.06	13.55	15.05		
			Δ C	1.23	2.07	3.30	4.14	6.22	8.30	10.36	12.44								
		800	Δ U	1.35	2.27	3.62	4.54	6.82	9.10	11.36	13.64								
			Δ C	2.62	4.39	7.02	8.78	13.18											
		1200	Δ U	3.54	5.91	9.44	11.83												
			Δ C	5.76	9.62	15.39													
		1400	Δ U	7.45	12.43														
			Δ C	9.84	16.42														
		MG50(3)F, MG50(5)F																	
		38 x 38	50 x 6	400	Δ U	0.06	0.12	0.18	0.26	0.38	0.50	0.63	0.76	1.01	1.26	1.51	2.02	2.27	2.52
Δ C	0.25				0.27	0.68	0.86	1.30	1.74	2.16	2.60	3.46	4.34	5.19	6.94	7.79	9.53		
600	Δ U			0.22	0.39	0.62	0.78	1.18	1.58	1.96	2.36	3.14	3.94	4.71	6.30	7.07	7.85		
	Δ C			0.70	1.19	1.90	2.38	3.58	4.78	5.96	7.16	9.54	11.94	14.31					
800	Δ U			0.07	0.14	0.20	0.27	0.41	0.55	0.68	1.03*8	1.09	1.38	1.64	2.20	2.46	2.73		
	Δ C			1.46	2.44	3.90	4.90	7.34	9.78	12.23	14.68								
1000	Δ U			1.74	2.92	4.66	5.86	8.78	11.70	14.63									
	Δ C			2.90	4.84	7.74	9.70	14.54											
1200	Δ U			3.88	6.48	10.35	12.96												
	Δ C			5.14	8.59	13.73													
1400	Δ U			6.97	11.64														
	Δ C			8.23	13.73														

Tailoring your GratEX® Solid Surface Mesh

Treadwell’s range of Solid Surface Mesh can be utilised simply to provide extremely robust, anti-corrosive pit and man-hole covers, which, whilst being ideally suited for use in wastewater and marine application, are very easily custom designed and fabricated to provide just the solution sought after.

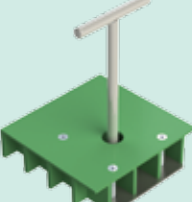
Treadwell can custom design pretty well any type of cover or hatch using GratEX® Solid Surface Mesh and can simply and effectively make these lockable, removable and even hinged through the use of standard and custom ancillary products such as handles, hinges, frames and cam locks.

If you should have a unique application, please don’t hesitate to contact us – there is a good chance we’ve encountered something similar in the past.

Ancillary Products



GratEX® Eyelet Lift Kit
The eyelet lifting system, which is constructed completely from 316 grade Stainless Steel, has been developed specifically for use in areas where manual handling is not simply achieved and removal of grating, or covers, must be undertaken with a mechanical aid, i.e. a crane. Further details and drawings can be provided by Treadwell on this system – contact us on freecall 1800 246 800



GratEX® Keyhole Life Kit
This heavy duty lifting system has been developed for use in numerous industrial applications and provides a very effective means of allowing easy access whilst not creating a trip hazard. All metal components are 316 grade Stainless Steel.

Refer also to page 33, EX-Series Embedment (Kerb/Curb) Angle.

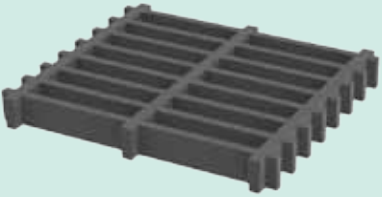
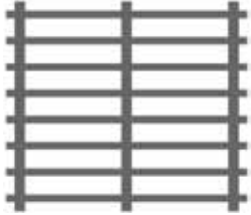
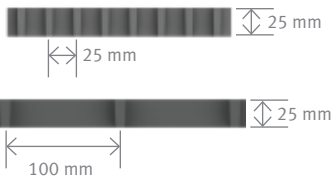
GratEX® Rectangular Mesh



GratEX® Rectangular Mesh offers you all the benefits of Square and Mini-Mesh Moulded Grating, but with an increased open area, whether it be required for additional light penetration or for overflow product to fall through.

Applications include marine environments, mineral processing, access ways in urban and public infrastructure applications and even, where required, floor mounted guarding.

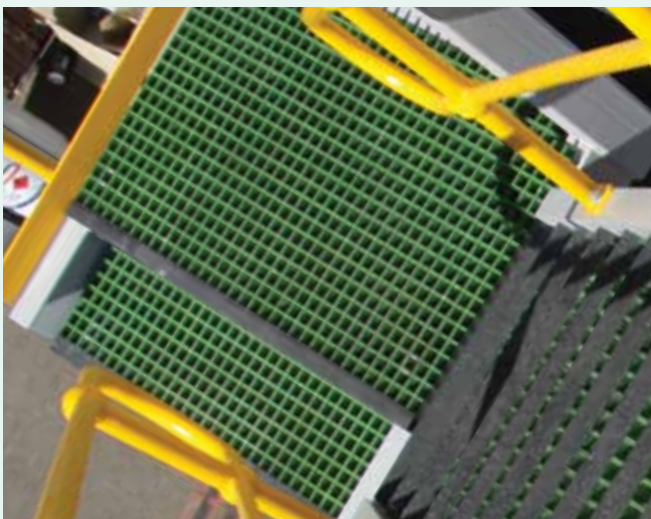
Rectangular mesh is available with any surface option, in a range of colours, including a range of custom colours.

MG100/25R		TOP VIEW	ELEVATIONS
			
Standard Panels: 1200 mm x 3000 mm			

Safe Load & Deflection Charts (mm) - Uniform and Concentrated Line Load

Mesh Grid	Load Bar Details	Span (mm)	Load (kN/m ²) – Deflection (mm)														Maximum Recommended kN	Ultimate Capacity kN		
			3	5	8	10	15	20	25	30	40	50	60	80	90	100				
MG100/25R																				
100 x 25	25 x 6	400	Δ U	0.42	0.72	1.14	1.45	2.17	2.9	3.62	4.35	5.79	7.25	8.69	11.6	13.04	14.48	46	231	
			Δ C	1.64	2.75	4.39	5.52	8.27	11.03	13.79	16.55	22.06							9	46
		600	Δ U	1.72	2.89	4.61	5.78	8.67	11.57	14.45	17.35								21	106
			Δ C	4.6	7.69	12.29	15.38												7	36
		800	Δ U	5.58	9.32	14.9	18.65												10	51
			Δ C	10.88	18.15														4	21

GratEX® Landing



GratEX® landings are also available as a part of Treadwell's extensive range.

GratEX® Landings combine the lasting non-slip properties, the resilience to corrosion and the proven long term cost advantages of GratEX® stair treads with the durable nature of GratEX® grating.

These landings are custom made for each and every application, greatly enhance visibility and reduce the wear commonly seen on landings immensely.

Contact Treadwell's technical assistance team for further details on 1800 246 800.

GratEX® Screen Guard

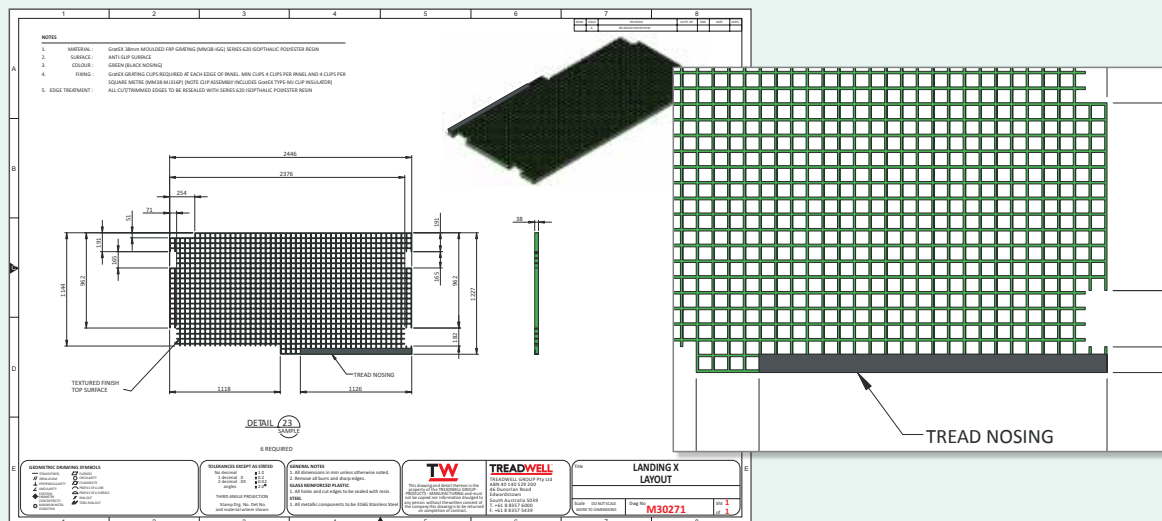


This GratEX® product has been developed especially for screening and guarding around conveyors, air intakes and other hazardous areas in commercial and industrial applications.

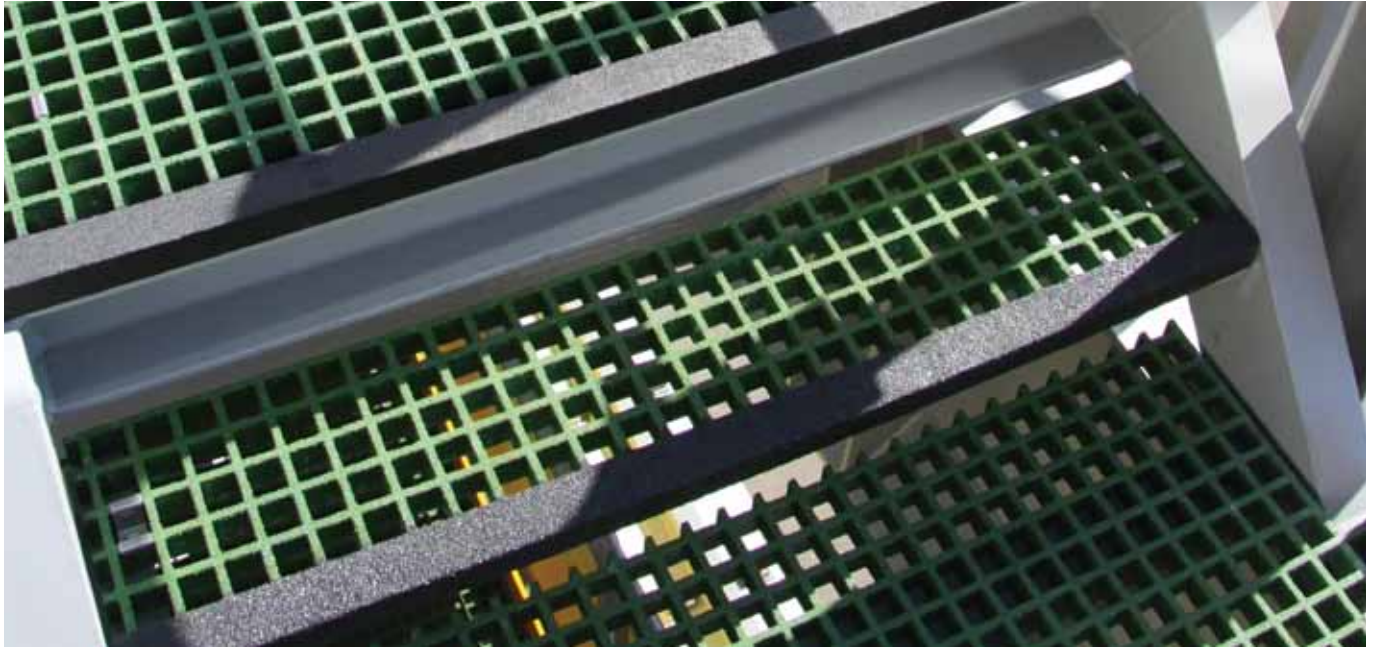
Screen Guard is often used as a barrier in the prevention of contact with fan screens and various types of moving materials-loading equipment, electrical equipment and pumps.

Supplied standard with either a 15 mm or 25 mm thick profile and a range of support frames, GratEX® Screen Guard can be completely constructed from FRP and so offers excellent chemical and corrosion resistance and conduction resistance.

MG15SG		TOP VIEW	ELEVATION
	<p>Standard Panels: 3055 mm x 920 mm 3665 mm x 1225 mm or Custom</p>		
MG25SG		TOP VIEW	ELEVATION
	<p>Standard Panels: 3055 mm x 920 mm 3665 mm x 1225 mm or Custom</p>		



GratEX® Stair Treads



Selecting a tread with lasting non-slip properties, resilience to corrosion and proven long term cost advantages can help you enhance safety in the workplace by reducing the chance of slips, trips and falls.

Treadwell's range of GratEX® Stair Treads includes both open surface and closed surface options and a range of surface pattern, colour and leading edge nosing options. Overall tread length can be made to any dimension.

All GratEX® Premium Stair Tread options are moulded with the Solid Leading Edge Nosing in an integrated single stage operation, increasing the rigidity and durability of the tread section subjected to the most wear and tear.

All GratEX® Treads with abrasive Leading Edge Nosings are designed to AS-1657:1992. Standard nosings are only available in a contrasting colour to the rest of the tread (generally Black or Yellow), thus enhancing visual awareness whether ascending or descending the stairway.

Treadwell's recommendation is for Leading Edge Nosing to be specified. Without this feature, stair treads can become hazardous with no clear visual indication of the stair treads edge.

It is also important to consider that stair treads, and in particular, the leading edge, tend to wear quicker than grating due to continual concentrated loads.

GratEX® 50 mm and Solid Surface Stair Treads are available made to order. Contact Treadwell's technical assistance team for further details on 1800 246 800.

Notes: A bearing surface of at least 40 mm is recommended at the ends of GratEX® Stair Treads (and Panels). Compliance with AS1657:1992 requires Tread width > 215 mm.

GratEX® Typical Stair Tread Dimension Recommendations

Load Bar Depth	25	32	38	50
Recommended Lengths (mm)	577	654	730	971
Maximum Length (mm)	577	692	882	1074
Recommended Width (mm)	320 or 358	247 to 358	247 to 358	247 to 358

Custom lengths available - contact Treadwell on 1800 246 800.

Installation Notes: Ideally GratEX® Stair Treads should be supported on at least 2 sides and attached to the support frame with an appropriate Fixing Method. It is also recommended that standard size treads be installed with 4 clips.

FRP Stair Treads VS Steel Treads

IMPACT RESISTANCE

The reinforcement of GratEX® treads distributes impact loads, meaning treads won't permanently deform and will remain flat whilst in operation.

Traditional steel treads will permanently deform under impact. 'Dishing' of treads can often be seen due to constant impact loading.

SAFETY



GratEX® is available with an impregnated anti-slip surface which has a very high coefficient of friction and has been tested by NATA accredited laboratories for performance.

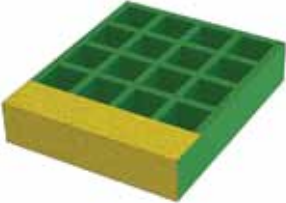
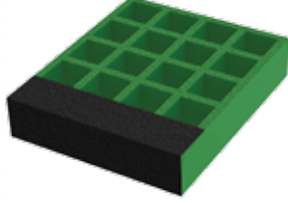
Traditional steel treads without serrations are extremely slippery, especially if no anti-slip nosing is fitted and serrated bars are only slip resistant in one direction.

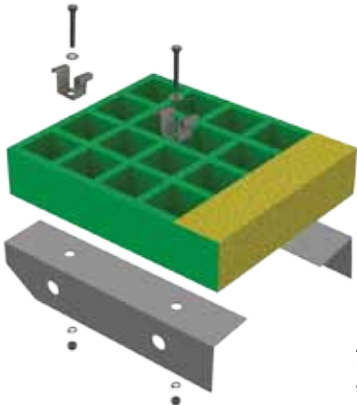
VERSATILITY

GratEX® stair treads are totally nonmetallic and are available in various standard colours and custom colours – eliminating the need for painting.

Steel treads need to be painted for colour and then repainted to maintain colour and corrosion resistance.

STE - GratEX® Economy Stair Tread	
	
Square Mesh	All depths > 25 mm
Rectangular Mesh	All depths
Availability	Not all items stocked. Confirm availability pending requirements
Surface Options	Anti-slip only
Grip	●●●●●●●●●●●●●●●●
Wear	●●●●●●●●●●●●●●●●
Visibility	●●●●●●●●●●●●●●●●

STP - GratEX® Premium Stair Tread	
	
Square Mesh	All depths > 25 mm
Nosing Colour (Solid)	Standard (Black or Yellow), Hazard (Yellow & Black) or Custom
Mini-Mesh	All depths
Nosing Colour (Solid)	Standard (Black or White) or Custom
Solid Surface Mesh	25 mm, 30 mm, 32 mm, 37 mm, 38 mm, 43 mm, 50 mm, 55 mm
Nosing Colour (Solid)	Standard (Black or Yellow) or Custom
Rectangular Mesh	All depths
Nosing Colour (Solid)	Standard (Black or Yellow) or Custom
Availability	Not all items stocked. Confirm availability pending requirements
Surface Options	All
Grip	●●●●●●●●●●●●●●●●
Wear	●●●●●●●●●●●●●●●●
Visibility	●●●●●●●●●●●●●●●●

STK - GratEX® Stair Tread Kit	
	<p>GratEX® Stair Tread Kits have been developed to allow maintenance personnel and plant operators ease of 'change-out' when tread replacement is required. Stringer mounting brackets are very often amongst the first items to corrode as they are typically drilled after having been coated, and generally are of thinner wall material than such items as stringers. These kits have also been adopted on numerous new plants as they offer huge benefits to designers as far as design life and save huge downtime with installation of treads, as brackets can be pre-mounted on treads.</p> <p>Tread Kits are available in all resin systems and are supplied standard with 4 Type-M Clips. Treads can be supplied assembled ready for installation or ready for assembly by others. Likewise, stringer support brackets/angles can be supplied with mounting holes if required – if mounting holes are required, please contact Treadwell on 1800 246 800 for a Stair Tread Kit design worksheet.</p> <p>All brackets can be supplied with 35° typ. Brackets can be supplied with or without holes.</p>

Treadwell does not recommend the use of stair treads with a depth less than 25 mm.

How to order GratEX® Stair Treads

1. Nominate the type of stair tread required (STE, STP or STK)
 2. Choose the type of mesh (S, M, F or R) and depth required (refer to previous pages for more detailed information)
 3. Select Resin (refer page 6) and Surface
 4. Select the tread and nosing colour required
 5. Nominate the required quantity and dimensions (refer to previous page for dimension recommendations)
- See specification information on page 20 for more information.

What to include:

- Standard Tread Type:** STE, STP or STK
- Standard Mesh:** MG38S
- Standard Lengths:** 730 mm or 768 mm
- Standard Widths:** 245 mm or 287 mm
- Example:** MG38S-IGG-STP (Yellow nosing) 38 mm Square I-Series Isophthalic. Green Premium Stair Tread with Yellow Solid Nosing.

GratEX® Installation Methods & Accessories


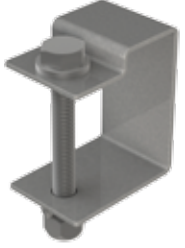





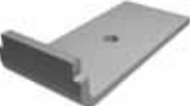



Installation Accessories


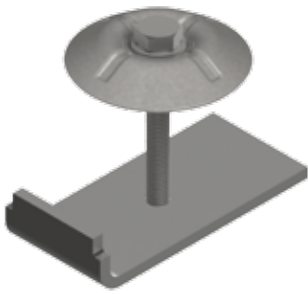




Treadwell's GratEX® Moulded FRP Grating can be securely fixed to support members in a number of ways thanks to our extensive range of installation systems; all of which are available with fixings to suit. All GratEX® installation clip sets are tested and proven to function in the harshest of applications offering you total peace of mind. The system you specify can be delivered in a kit ready to be installed.

All of the GratEX® installation systems available are supplied standard as 316 grade Stainless Steel. Super duplex and 304 grade options are available on request, as are lesser grade zinc and galvanized options, meaning whatever your application, or whatever the chemicals presents in the application you are working in, GratEX® holds the solution for you.

GratEX® offers conventional GratEX® tops and undersides, which are either universal or available to suit all types of GratEX®, as well as an exclusive fixing system designed for ease of installation and longevity in extreme conditions – refer to 'StormChief' on page 28.

Clip Tops	Type-M  Bolt/Fixing Detail: M8 Hole: Standard For attaching grating to supports where drilling is permitted	Type-C  Bolt/Fixing Detail: M6 Hole: Threaded For joining two adjoining unsupported edge	Type-L  Bolt/Fixing Detail: M6 Hole: Standard For attaching grating to supports for moderate loads where drilling is permitted
	Type-D  Bolt/Fixing Detail: M8 Hole: Standard For superior grip on the top surface of grating, in minimal spillage areas	Type-E  Bolt/Fixing Detail: M8 Hole: Standard For superior grip on the top surface of grating, screens and grating	Type-S  Bolt/Fixing Detail: M8 Hole: Standard For superior grip on the top surface of grating, especially offshore
	Type-J  Bolt/Fixing Detail: M8 Hole: Threaded For ease of installation where drilling is not permissible	Type-H  Bolt/Fixing Detail: M8 Hole: Threaded For ease of installation where no flange is present	Type-G  Bolt/Fixing Detail: M6 Hole: Threaded For applications where fixing to a flange is a challenge. Note: This item should not be used where damage to surface coating could present issues.

These ancillary clip underside clamps are specifically designed for those applications where drilling the sub-structure is not allowed. These undersides are multi combination and are easily coupled with various tops. They are not supplied with fixings.

Common Clip Assemblies	Type-MJ		Type-SH		Type-DG	
						
Special Assembly	Type-MF		Fixing A (M8)		Fixing B (M6)	
						
	<p>Hole: Standard</p> <p>Typically utilised where permanent, but easily removable (for access) fixing to masonry is required</p>		<p>Comprises M8 bolt, washer, spring washer and nyloc nut</p>		<p>Comprises M6 bolt, washer, spring washer and nyloc nut</p>	

Standard Clip Set Details

Clip Set Code	Pattern	Description	Comprises	Available for usage with			
				Square Mesh	Mini Mesh	Solid Surface Mesh	Rectangular Mesh
MG**-M316	Rectangular / Square	GratEX® ** mm 316G (Grade) Stainless Steel Type-M Clip incl Standard M8 Fixings	Top M, Fixing A	•	•		•
MG**-C316	Rectangular / Square / Mini-Mesh	GratEX® ** mm 316G (Grade) Stainless Steel Type-C Clip incl Standard M6 Fixings	Top C, Fixing B	•	•		•
MG**-L316	Rectangular / Square / Mini-Mesh	GratEX® ** mm 316G (Grade) Stainless Steel Type-L Clip incl Standard M8 Fixings	Top L, Fixing B	•	•		•
MG**-D316	Square (38 x 38)	GratEX® ** mm 316G (Grade) Stainless Steel Type-D Clip incl Standard M8 Fixings	Top D, Fixing A	•			
MG**-E316	Square (38 x 38 & 50 x 50)	GratEX® ** mm 316G (Grade) Stainless Steel Type-E Clip incl Standard M8 Fixings	Top E, Fixing A	•			
MG**-S316	Rectangular / Square / Solid Surface	GratEX® ** mm 316G (Grade) Stainless Steel Type-S Clip incl Standard M8 Fixings	Top S, Fixing A	•		•	
MG**-F316	Solid Surface	GratEX® ** mm 316G (Grade) Stainless Steel Type-F Clip	Unique	•		•	

** Insert grating depth (eg 25, 38, etc)

UNDERSIDES (ADDITIONS)

Add Type-J underside – all other items included remain (only suitable for use in conjunction with Tops with Fixing A)
 Add Type-H underside – Fixings alter (nut and washers eliminated)
 Add Type-G underside – designed for use in conjunction with Tops with Fixing B (if using a Top that normally uses Fixing A, an extra washer will be required)

Note: Different configurations utilising other Tops and Undersides are available – contact Treadwell on 1800 246 800.

Clip Set Frequency Recommendation:

Treadwell recommends that at least 4 GratEX® clip sets be installed per panel, regardless of size, or approximately 4 per m² for areas exceeding 1 m². If you have a unique requirement, chances are good we have encountered something similar before – contact Treadwell on 1800 246 800.

GratEX® Specifications Guide

General

This specification guide is general only and should only be used in conjunction with relevant company, site and standard relevant to the site within which the grating is to be used.

1.0 Scope

1.1 The grating shall conform to the material and fabrication requirements as per this specification.

2.0 Standards/Related documents

- 2.1 The grating system shall conform to the applicable sections of:
- 2.1.1 ASTM E 84 Surface Burning Characteristics of Building Materials.
 - 2.1.2 ASTM D 635 Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.

3.0 Design Criteria

- 3.1 The design criteria of the fibreglass products (FRP) shall be in accordance with governing building codes and generally accepted standards in the FRP industry.
- 3.2 Design live loads shall be of ... kN/m² uniformly distributed load (or as per building code if more stringent) with a maximum deflection of ... mm at the centre of a simple span.

4.0 Submittals

- 4.1 Shop drawings of all fabricated grating panels shall be submitted by Treadwell (unless provided by the client) displaying clearly material sizes, types, styles, product codes and including types and sizes of fasteners as well as a layout if required.
- 4.2 Technical data and sample pieces can also be submitted if required.

5.0 Quality Assurance

6.0 Product Delivery and Storage

- 6.1 All grating and components or ancillary items shall be fabricated as per the design and piece marked to design drawings.
- 6.2 All manufactured materials shall be delivered in unbroken packages.

Product System

7.0 Manufacturing Process

- 7.1 All fibreglass (FRP) items listed under this section shall be constructed from fibreglass reinforcement and resin of the quality necessary to meet the design requirements and dimensions as specified.
- 7.2 Fibreglass reinforcement shall be continuous roving and shall be in sufficient quantities as required for the application.
- 7.3 Resins shall be ... (refer to page 6) with chemical formulations as necessary to provide the corrosion resistance, strength and any other physical properties as required.
- 7.4 All finished surfaces to be smooth, resin-rich, free of voids and without dry spots, cracks or unreinforced areas and all fibreglass reinforcement shall be well covered with resin to protect against exposure due to weather or wear.

- 7.5 All fibreglass (FRP) items shall be EITHER non-fire retardant OR have a tested flame spread rating of 25 or less when tested in accordance with the ASTM E-84 Tunnel Test.
- 7.6 Contact Treadwell regarding specification data relative to products conforming to ASTM D635.
- 7.7 All metal accessories shall be manufactured from (316 OR 304 Stainless Steel OR Galvanised Steel OR Monel, refer to pages 18 & 19)
- 7.8 Moulded grating shall be of one piece moulded construction with tops and bottoms of bearing bar and cross bars in the same plane. Grating shall be (either Square, Mini, Rectangular or Solid Surface – choose one)
- 7.9 The fibreglass reinforcement content shall be maintained at 40% (by weight) so as to achieve maximum corrosion resistance.
- 7.10 All fibreglass material shall have an ultraviolet light inhibiting chemical additive to resist UV degradation.
- 7.11 Grating shall be manufactured with a concave profile on top of each bar OR an anti-slip quartz surface to provide optimum slip resistance.
- 7.12 Colour shall be one of the standard Treadwell standard colours (Industrial Green, Safety Yellow, Light Grey or Dark Grey) unless specified as Custom.

8.0 Acceptable Manufacturer

The fibreglass underfoot moulded grating system shall be manufactured by Treadwell Group Pty Ltd of Australia.

Ordering Information

Ordering Information	Codes
1. Nominate the type of grating required	MG = GratEX® Moulded Grating
2. Choose the depth (mm) required	15, 25, 30, 32, 38, 41, 43, 50, 53 and 55
3. Select the mesh type required	S = Square Mesh M = Mini-Mesh F = Solid Surface (Flat) R = Rectangular
4. Select the resin, material or type (see page 6)	O = Orthophthalic I = Isophthalic V = Vinyl Esther P = Phenolic
5. Choose the colour required <small>* In which instance a code and name of the selected colour must be mentioned within the description.</small>	G = Industrial Green Y = Safety Yellow LG = Light Grey DG = Dark Grey C = Custom*
6. Select the surface style required	G = (Grit) Anti-Slip C = Concave P = Plain CH = Checkerplate
7. Choose the panel size required	1 = 920 mm x 3055 mm 2 = 1225 mm x 3665 mm

Note: The next section of coding is separated by a slash (/), it isn't required for custom jobs as GratEX is available in a variety of size panels to suit applications.

What is GridEX[®] Pultruded Fibreglass Grating

Treadwell's GridEX[®] pultruded FRP grating systems are designed for specific applications where a standard fibreglass grating system cannot be effectively be utilised. GridEX[®] offers you options such as selection of open space, bar shape, cross-rod placement, custom fabrication, custom resin or colour.

A wide variety of bearing bar shapes along with various bearing bar and cross-rod spacings are available depending on the design requirements. Refer to the safe load and deflection charts for our standard selection, and please do not hesitate to contact us 1800 246 800 for details relating to our custom options.

The traditional "I" bar shape provides maximum flexibility in design.

The "T" bar shape provides a more solid walking surface and prevents objects catching between load bars.

Most common GridEX[®] options are available in 25 mm, 38 mm and 50 mm depths.



GridEX[®] Cross Rod Systems

Treadwell is the only company to offer numerous cross rod systems allowing you the flexibility to achieve what is required for your application.

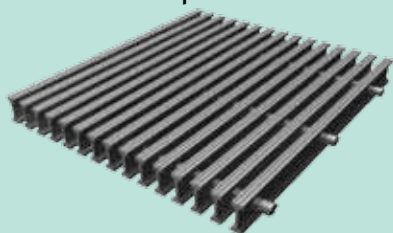


Standard (Two Part)



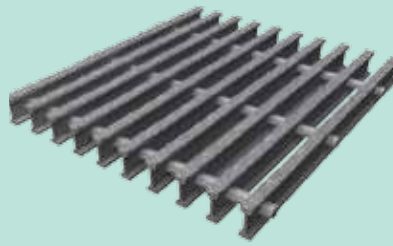
Heavy Duty (Three Part)

GridEX[®] Surface Options



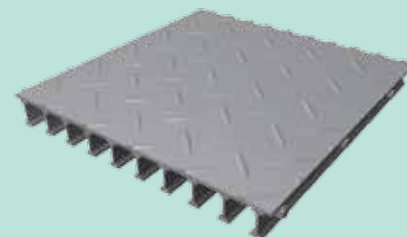
Ribbed Surface

This is the preferred surface for environments where by-products are commonly caught by serrations, and is hence very often utilised in the food industry. This surface option can also be utilised for wet areas and wash down applications.



Anti-Slip Surface (Standard)

A very hard-wearing surface with an extremely good coefficient of friction (NATA laboratory test report available) – commonly used in industrial applications. Unlike serrated steel grating, the anti-slip surface does not impact on load carrying capacity.



Covered Surface

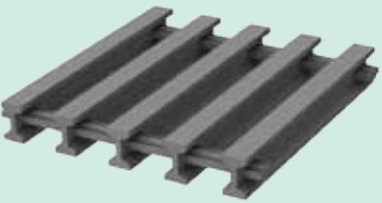


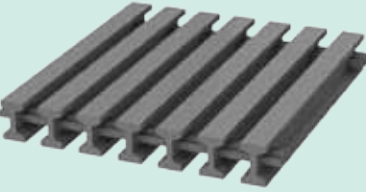


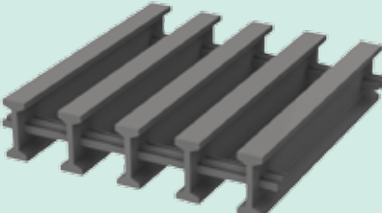


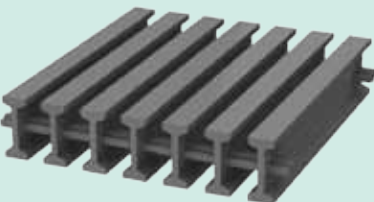
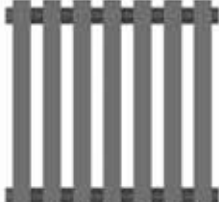

This non-stock option is very often utilised for applications where high strength covered floors are required. The system is supplied with Checkerplate or Anti-Slip surface bonded to every load bar to ensure performance is maintained in harsh environments.

GridEX® I Type Grating



This high strength grating system is designed and manufactured with a structural integrity commonly associated with metal grating systems, but without their corrosion problems. It is highly resistant to creep, fatigue or permanent deformation.

The pultrusion manufacturing process utilised in production of GridEX® results in high glass content and consistent reinforcement location. These are critical factors for consistent performance and the achievement of the necessary physical properties. The highly efficient I-Beam load carrying members are mechanically locked together, yielding a highly stable and high strength grating panel. The inner core of unidirectional glass reinforcement provides the high strength and stiffness required by the load bar. Due to the engineered shape of the GridEX® load bar, the system offers the maximum resistance to deflection and an ability to support greater loads than other composite systems.

PG2511		TOP VIEW	ELEVATION
	Standard Panels 1524 mm x 5791 mm		
PG2512		TOP VIEW	ELEVATION
	Standard Panels 1524 mm x 5791 mm		
PG3811		TOP VIEW	ELEVATION
	Standard Panels 1524 mm x 5791 mm		
PG3812		TOP VIEW	ELEVATION
	Standard Panels 1524 mm x 5791 mm		

Safe Load & Deflection Charts (mm) - Uniform and Concentrated Line Load

Grid			Span	Load (kN/m ²) – Deflection (mm)														Safe Load kN			
Open	Closed	Depth		3	5	8	10	13	15	20	25	39	50	100	150	200	250				
PG2511																					
60%	40%	25 mm	400	Δ U	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.8	1.2	1.6	3.2	4.8	6.4	8.0	298		
				Δ C	0.4	0.6	1.0	1.3	1.7	1.9	2.6	3.2	5.0	6.4	12.8	59					
			600	Δ U	0.4	0.7	1.0	1.3	1.7	2.0	2.6	3.3	5.1	6.6	13.1	143					
				Δ C	1.0	1.7	2.8	3.5	4.5	5.2	7.0	8.7	13.6	43							
			800	Δ U	1.2	1.9	3.1	3.9	5.0	5.8	7.7	9.6	15.1	82							
				Δ C	2.3	3.9	6.2	7.7	10.0	11.6	15.4	33									
		1000	Δ U	2.8	4.6	7.3	9.2	11.9	13.8	53											
			Δ C	4.4	7.3	11.7	14.7	26													
		1200	Δ U	5.6	9.3	14.9	35														
			Δ C	7.5	12.4	22															
		PG2512																			
		40%	60%	25 mm	400	Δ U	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.8	1.1	2.1	3.2	4.3	5.3	446
Δ C	0.3					0.4	0.7	0.9	1.1	1.3	1.7	2.1	3.3	4.3	8.5	12.8	89				
600	Δ U				0.3	0.4	0.7	0.9	1.1	1.3	1.8	2.2	3.4	4.4	8.8	13.1	214				
	Δ C				0.7	1.2	1.9	2.3	3.0	3.5	4.7	5.8	9.1	11.7	65						
800	Δ U				0.8	1.3	2.1	2.6	3.4	3.9	5.2	6.4	10.1	12.9	124						
	Δ C				1.5	2.6	4.1	5.2	6.7	7.7	10.3	12.9	49								
1000	Δ U			1.8	3.1	4.9	6.1	8.0	9.2	12.3	15.3	79									
	Δ C			2.9	4.9	7.8	9.8	12.7	14.7	39											
1200	Δ U			3.7	6.2	9.9	12.4	53													
	Δ C			5.0	8.3	13.3	32														
PG3811																					
60%	40%			38 mm	400	Δ U	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.7	1.4	2.1	2.8	3.5	504
		Δ C	0.2			0.3	0.5	0.6	0.7	0.8	1.1	1.4	2.2	2.8	5.6	8.4	11.3	14.1	100		
		600	Δ U		0.2	0.3	0.4	0.5	0.7	0.8	1.0	1.3	2.0	2.6	5.2	7.8	10.4	13.0	217		
			Δ C		0.4	0.7	1.1	1.4	1.8	2.1	2.8	3.5	5.4	7.0	13.9	66					
		800	Δ U		0.4	0.7	1.2	1.5	1.9	2.2	2.9	3.7	5.7	7.4	14.7	124					
			Δ C		0.9	1.5	2.4	2.9	3.8	4.4	5.9	7.4	11.5	14.7	49						
		1000	Δ U	1.0	1.7	2.7	3.4	4.4	5.1	6.8	8.6	13.3	78								
			Δ C	1.6	2.7	4.4	5.5	7.1	8.2	10.9	13.7	38									
		1200	Δ U	2.1	3.5	5.6	7.0	9.1	10.5	14.0	50										
			Δ C	2.8	4.7	7.5	9.3	12.1	14.0	30											
		1400	Δ U	3.9	6.5	10.4	12.9	36													
			Δ C	4.4	7.4	11.8	14.8	25													
		1600	Δ U	6.6	11.0	27															
			Δ C	6.6	11.0	21															
		PG3812																			
		40%	60%	38 mm	400	Δ U	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.5	0.9	1.4	1.9	2.3	756
						Δ C	0.1	0.2	0.3	0.4	0.5	0.6	0.8	0.9	1.5	1.9	3.8	5.6	7.5	9.4	150
					600	Δ U	0.1	0.2	0.3	0.3	0.5	0.5	0.7	0.9	1.4	1.7	3.5	5.2	7.0	8.7	325
Δ C	0.3					0.5	0.7	0.9	1.2	1.4	1.9	2.3	3.6	4.6	9.3	13.9	99				
800	Δ U				0.3	0.5	0.8	1.0	1.3	1.5	2.0	2.5	3.8	4.9	9.8	14.7	185				
	Δ C				0.6	1.0	1.6	2.0	2.6	2.9	3.9	4.9	7.7	9.8	74						
1000	Δ U			0.7	1.1	1.8	2.3	3.0	3.4	4.6	5.7	8.9	11.4	116							
	Δ C			1.1	1.8	2.9	3.7	4.7	5.5	7.3	9.1	14.2	58								
1200	Δ U			1.4	2.3	3.7	4.7	6.1	7.0	9.3	11.7	75									
	Δ C			1.9	3.1	5.0	6.2	8.1	9.3	12.5	15.6	45									
1400	Δ U			2.6	4.3	6.9	8.6	11.2	13.0	55											
	Δ C			3.0	4.9	7.9	9.9	12.8	14.8	38											
1600	Δ U			4.4	7.3	11.7	14.7	40													
	Δ C			4.4	7.3	11.7	14.7	32													

GridEX® T Type Grating



Developed for areas where minimum open is required, this high strength grating system is designed and manufactured with a structural integrity commonly associated with metal grating systems, but without their corrosion problems.

It is highly resistant to creep, fatigue or permanent deformation. The highly efficient T-Beam load carrying members are mechanically locked together, yielding a highly stable and high strength grating panel. The inner core of unidirectional glass reinforcement provides the high strength and stiffness required by the load bar. The engineered shape of the GridEX® load bar offers the maximum resistance to deflection and an ability to support greater loads than other composite systems.

The pultruded composite used in GridEX® is around 75% lighter than steel and only 35% of the weight of aluminium which considerably simplifies installation and handling. Unlike metal grating, GridEX® grating can be easily cut on site using only hand tools, and no 'hot-work' tools such as torches or grinders.

PG25T1		TOP VIEW	ELEVATION
	Standard Panels 1524 mm x 5791 mm		
PG25T2		TOP VIEW	ELEVATION
	Standard Panels 1524 mm x 5791 mm		
PG50T1		TOP VIEW	ELEVATION
	Standard Panels 1524 mm x 5791 mm		
PG50T2		TOP VIEW	ELEVATION
	Standard Panels 1524 mm x 5791 mm		

Safe Load & Deflection Charts (mm) - Uniform and Concentrated Line Load

Grid			Span (mm)	Load (kN/m ²) – Deflection (mm)														Safe Load kN				
Open	Closed	Depth		3	5	8	10	13	15	20	25	39	50	100	150	200	250					
PG25T1																						
18%	82%	25 mm	400	Δ U	0.1	0.2	0.3	0.3	0.5	0.6	0.7	0.9	1.3	1.7	3.3	4.9	6.6	8.2	305			
				Δ C	0.4	0.6	1.0	1.4	1.8	2.1	2.8	3.3	5.2	6.6	13.1	61						
			600	Δ U	0.4	0.7	1.0	1.3	1.7	2.0	2.6	3.3	5.1	6.6	13.1	131						
				Δ C	1.0	1.7	2.8	3.7	4.6	5.4	7.2	8.9	13.9	39								
			800	Δ U	1.2	1.9	3.3	4.1	5.2	5.9	7.9	9.8	75									
				Δ C	2.3	3.9	6.2	7.9	10.2	11.9	15.9	24										
			1000	Δ U	2.8	4.6	7.5	9.4	12.2	14.1	47											
				Δ C	4.4	7.5	12.0	14.9	24													
			1200	Δ U	5.6	9.5	14.9	30														
				Δ C	7.5	12.4	19															
			PG25T2																			
			0%	100%	25 mm	400	Δ U	0.1	0.2	0.2	0.2	0.4	0.5	0.6	0.7	1.1	1.4	2.7	4.0	5.4	6.7	305
Δ C	0.3	0.5					0.8	1.1	1.5	1.7	2.3	2.7	4.2	5.4	10.7	61						
600	Δ U	0.3				0.6	0.8	1.1	1.4	1.6	2.1	2.7	4.1	5.4	10.7	131						
	Δ C	0.8				1.4	2.3	3.0	3.7	4.4	5.9	7.2	11.3	39								
800	Δ U	1.0				1.5	2.7	3.3	4.2	4.8	6.4	8.0	75									
	Δ C	1.9				3.2	5.0	6.4	8.3	9.7	12.9	24										
1000	Δ U	2.3				3.7	6.1	7.6	9.9	11.5	47											
	Δ C	3.6				6.1	9.8	12.1	24													
1200	Δ U	4.6				7.7	12.1	30														
	Δ C	6.1				10.1	19															
PG50T1																						
50%	50%	50 mm				400	Δ U	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.5	1.0	1.6	2.1	2.6	279
			Δ C	0.1	0.2		0.3	0.4	0.5	0.6	0.8	1.0	1.6	2.1	4.1	6.2	8.3	10.3	84			
			600	Δ U	0.1	0.2	0.3	0.3	0.4	0.5	0.7	0.9	1.3	1.7	3.4	5.2	6.9	8.6	162			
				Δ C	0.3	0.5	0.7	0.9	1.2	1.4	1.8	2.3	3.6	4.6	9.2	13.8	65					
			800	Δ U	0.3	0.5	0.7	0.9	1.2	1.4	1.8	2.3	3.6	4.5	9.0	13.6	103					
				Δ C	0.5	0.9	1.4	1.8	2.4	2.7	3.6	4.5	7.1	9.0	52							
			1000	Δ U	0.6	1.0	1.7	2.1	2.7	3.1	4.2	5.2	8.1	10.4	69							
				Δ C	1.0	1.7	2.7	3.3	4.3	5.0	6.6	8.3	13.0	42								
			1200	Δ U	1.2	2.1	3.3	4.1	5.4	6.2	8.3	10.3	53									
				Δ C	1.7	2.8	4.4	5.5	7.2	8.3	11.0	13.8	37									
			1400	Δ U	2.2	3.7	6.0	7.4	9.7	11.2	14.9	40										
				Δ C	2.6	4.3	6.8	8.5	11.1	12.8	32											
			1600	Δ U	3.8	6.3	10.1	12.6	32													
				Δ C	3.8	6.3	10.1	12.6	28													
			PG50T2																			
			33%	66%	50 mm	400	Δ U	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.5	1.0	1.6	2.1	2.6	372
							Δ C	0.1	0.2	0.3	0.4	0.5	0.8	0.8	1.0	1.6	2.1	4.1	6.2	8.3	10.3	112
						600	Δ U	0.1	0.2	0.3	0.3	0.4	0.5	0.7	0.9	1.3	1.7	3.4	5.2	6.9	8.6	215
Δ C	0.3	0.5					0.7	0.9	1.2	1.4	1.8	2.3	3.6	4.6	9.2	13.8	87					
800	Δ U	0.3				0.5	0.7	0.9	1.2	1.4	1.8	2.3	3.5	4.5	9.0	13.6	137					
	Δ C	0.5				0.9	1.4	1.8	2.4	2.7	3.6	4.5	7.1	9.0	69							
1000	Δ U	0.6				1.0	1.7	2.1	2.7	3.1	4.2	5.2	8.1	10.4	92							
	Δ C	1.0				1.7	2.7	3.3	4.3	5.0	6.6	8.3	13.0	57								
1200	Δ U	1.2				2.1	3.3	4.1	5.4	6.2	8.3	10.3	70									
	Δ C	1.7				2.8	4.4	5.5	7.2	8.3	11.0	13.8	49									
1400	Δ U	2.2				3.7	6.0	7.4	9.7	11.2	14.9	54										
	Δ C	2.6				4.3	6.8	8.5	11.1	12.8	42											
1600	Δ U	3.8				6.3	10.1	12.6	42													
	Δ C	3.8				6.3	10.1	12.6	37													

GridEX® Stair Treads and Landings






Incorporating nosings that give added strength and rigidity to the area that takes the most impact and abuse for Stair Treads and Landings is a possibility with GridEX® pultruded grating. These nosings provide more surface area for slip resistance, wear and better visibility.

GridEX® treads are constructed from the same high strength load bars as used in the construction of GridEX® grating, and nosings are achieved with the attachment of an extremely hardy tubular pultrusion finished with a highly visible anti-slip surface promoting pedestrian safety.

Available Depths (I Type and T Type)	25 mm, 38 mm, 50 mm
Colour Availability	All
Nosing	Yellow, Black, White, Hazard and Custom
Availability	Made to order
Surface options	All

GridEX® Installation Methods and Accessories

Clip Types	Type-M	Type-S	Type-SG
	 <p>Bolt/Fixing Detail: M8</p> <p>Hole: Standard</p> <p>For attaching grating to supports where drilling is permitted</p>	 <p>Bolt/Fixing Detail: M8</p> <p>Hole: Standard</p> <p>For superior grip on the top surface of grating, especially offshore</p>	 <p>Bolt/Fixing Detail: M6 M8 Hole in Type S Top, so extra washer required to ensure seal</p> <p>Hole: Threaded</p> <p>For applications where fixing to a flange is a challenge</p>

Standard Installation Clip Set Details

Type	Clip Set Code	Pattern	Description	Comprises
M	PG**-M316	Type I and T	GridEX® ** mm 316G (Grade) Stainless Steel Type-M Clip including Standard M8 Fixings	Top M, Fixing A
S	PG**-S316	Type I and T	GridEX® ** mm 316G (Grade) Stainless Steel Type-S Clip including Standard M8 Fixings	Top S, Fixing A
SG	PG**-SG316	Type I and T	GridEX® ** mm 316G (Grade) Stainless Steel Type-SG Clip including Standard M6 Fixings	Top S, Underside G, Fixing B

** Insert required depth (25, 38 or 50)

GridEX® Specifications

General

1.0 Scope

1.1 The grating shall conform to the material and fabrication requirements as per this specification.

2.0 Standards/Related documents

- 2.1 The grating system shall conform to the applicable sections of:
- 2.1.1 ASTM E 84 Surface Burning Characteristics of Building Materials
 - 2.1.2 ASTM D 635 Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.

3.0 Design Criteria

- 3.1 The design criteria of the fibreglass products (FRP) shall be in accordance with governing building codes and generally accepted standards in the FRP industry.
- 3.2 Design live loads shall be of ... kPa uniformly distributed load (or as per building code if more stringent) with a maximum deflection of ... mm at the centre of a simple span.

4.0 Submittals

- 4.1 Shop drawings of all fabricated grating panels shall be submitted by Treadwell (unless provided by the client) displaying clearly material sizes, types, styles, product codes and including types and sizes of fasteners as well as a layout if required.
- 4.2 Technical data and sample pieces can also be submitted if required.

5.0 Quality Assurance

6.0 Product Delivery and Storage

- 6.1 All grating and components or ancillary items shall be fabricated as per the design and piece marked to design drawings.
- 6.2 All manufactured materials shall be delivered in unbroken packages.

Product System

7.0 Manufacturing Process

- 7.1 All fibreglass (FRP) items listed under this section shall be constructed from fibreglass reinforcement and resin of the quality necessary to meet the design requirements and dimensions as specified.
- 7.2 Fibreglass reinforcement shall be continuous roving and shall be in sufficient quantities as required for the application.
- 7.3 Resins shall be ... (refer to page 6) with chemical formulations as necessary to provide the corrosion resistance, strength and any other physical properties as required.
- 7.4 All finished surfaces to be smooth, resin-rich, free of voids and without dry spots, cracks or unreinforced areas and all fibreglass reinforcement shall be well covered with resin to protect against exposure due to weather or wear.
- 7.5 All fibreglass (FRP) items shall be EITHER non-fire retardant OR have a tested flame spread rating of 25 or less when tested in accordance with the ASTM E-84 Tunnel Test.

- 7.6 Contact Treadwell regarding specification data relative to products conforming to ASTM D635
- 7.7 All metal accessories shall be manufactured from (316 OR 304 Stainless Steel OR Galvanised Steel OR Monel (refer pages 18 & 19)).
- 7.8 Pultruded grating components, which will be of pultruded construction shall be high strength and will be constructed utilising continuous roving and continuous strand mat fibreglass reinforcement. A surface veil will be utilised to ensure a resin rich surface is created for superior corrosion and resistance and ultraviolet degradation. Grating shall be either Type T or Type I (choose one).
- 7.9 Load bars shall be joined with notched cross bars by interlocking and the use of chemical bonding.
- 7.10 The fibreglass reinforcement content shall be maintained at 65% (by weight) so as to achieve maximum loading capacity.
- 7.11 All fibreglass material shall have an ultraviolet light inhibiting chemical additive to resist UV degradation.
- 7.12 Grating shall be manufactured with a concave profile on top of each bar OR an anti-slip quartz surface to provide optimum slip resistance.
- 7.13 Colour shall be either of the standard Treadwell standard colours (Industrial Green, Safety Yellow, Light Grey or Dark Grey).

8.0 Acceptable Manufacturer

The fibreglass underfoot moulded grating system shall be manufactured by Treadwell Group Pty Ltd of Australia.

Ordering Information

Code

1. Nominate the type of grating required **PG = GridEX Pultruded Grating**

2. Choose the depth (mm) of mesh required **25 and 38**

3. Select the mesh type required **I = I Type
T = T Type**

Note: this section of the coding is typically separated from the next section of the coding by a dash (-)

4. Select the resin, material or type **O = Orthophthalic
I = Isophthalic
V = Vinyl Esther
P = Phenolic**

5. Choose the colour required **G = Industrial Green
Y = Safety Yellow
LG = Light Grey
DG = Dark Grey
C = Custom***

6. Select the surface style required **G = (Grit) Anti-Slip
C = Concave
P = Plain
CH = Checkerplate**

EX-Series® Phenolic Grating



**US COAST GUARD
APPROVED**

EX-Series® Phenolic grating is the ultimate solution for applications where the risk of fire is prevalent and where smoke is not allowed to develop.

Treadwell, through the employment of only the most advanced production equipment and the use of the highest quality raw materials, has developed this unique range of leading offshore composite grating products. EX-Series® Phenolic Grating, which boasts US Coast Guard approval, is acceptable for use in areas and applications as outlined in the US Coast Guard Safety Manual Vol III.

Composite grating with the strength of metal grating

EX-Series® Phenolic Grating can span up to 70% more than that of equivalent size standard steel grating. Furthermore, Phenolic will not yield and so will return to its original shape if design loads are exceeded.

Ease of installation

EX-Series® Phenolic Grating is only 65% of the weight of steel bar grating and often, can be manually installed with ease.

Safety enhancing Anti-Slip surface

This system unique to EX-Series® Grating Systems means that load bars are broader than those of metal grating and are hence far less fatiguing than conventional steel bar grating and not dangerously sharp like serrated surface grating.

Extreme fire and impact resistance

The high glass reinforcement content in EX-Series® Phenolic Grating systems, which is laminated by an outer layer of resin rich Phenolic providing ultimate fire resistance, ensures extreme strength is maintained.

Typical Applications

- Jetties, wharfs & marine structures
- Offshore production platforms
- Offshore drilling platforms
- Refineries
- Industrial/processing plants
- Shipboard applications

Standard Panel Sizes

GratEX®	1225 mm x 3665 mm
	920 mm x 3055 mm
GridEX®	1524 mm x 6096 mm

Other custom panels sizes are achievable and readily available.

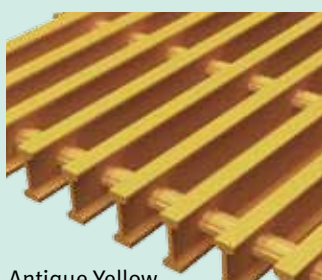
Installation Methods

Treadwell offers a range of Installation fixing systems designed for offshore wave zone environments as well as for standard industrial applications – refer to pages 18, 19 and 26, and to page 30 for the StormChief system which has a long-standing history of outstanding performance in the offshore industry.

Standard Colours



Antique Brown



Antique Yellow

Ancillary Product

EX-Series® Grating Penetration Collar



GratEX® Phenolic Grating
Safe Load & Deflection Charts (mm) - Uniform and Concentrated Line Load

Mesh Grid	Load Bar Details	Span (mm)	Load (kN/m²) – Deflection (mm)														Maximum Recommended kN	Ultimate Capacity kN	
			3	5	8	10	13	15	20	25	39	50	100	150	200	250			
MG25S-P																			
	400	Δ U	0.46	0.78	1.24	1.58	2.36	3.15	3.93	4.73	6.29	7.88	9.45	12.61	14.17	15.74	42	213	
		Δ C	1.78	2.99	4.77	6	8.99	11.99	14.99	17.99	23.98							8	42
	600	Δ U	1.87	3.14	5.01	6.28	9.42	12.58	15.71	18.86								19	98
		Δ C	5	8.36	13.36	16.72												6	33
	800	Δ U	6.07	10.13	16.20	20.27												9	47
		Δ C	11.83	19.73														4	19
	MG38S-P																		
		400	Δ U	0.13	0.239	0.37	0.489	0.728	0.978	1.217	1.467	1.948	2.446	2.924	3.913	4.391	4.87	90	452
Δ C			0.674	1.141	1.815	2.304	3.446	4.598	5.75	6.902	9.196	11.5	13.793	18.402	20.696	17	842		
600		Δ U	0.598	1.022	1.62	2.043	3.065	4.098	5.109	6.141	8.174	10.239	12.272	16.38	18.413	20.446	42	213	
		Δ C	1.674	2.815	4.489	5.63	8.446	11.272	14.076	16.902								13	65
800		Δ U	1.837	3.087	4.924	6.174	9.261	12.359	15.435	18.533								25	125
		Δ C	3.565	5.967	9.533	11.935	17.902											10	52
1000		Δ U	4.522	7.554	12.076	15.13												6	33
		Δ C	7.37	12.304	19.674													7	38
1200		Δ U	9.522	15.891														9	47
		Δ C	12.587	21														6	29

GridEX® Phenolic Grating
Safe Load & Deflection Charts (mm) - Uniform and Concentrated Line Load

Grid			Span (mm)	Load (kN/m²) – Deflection (mm)																
Open	Closed	Depth		3	5	8	10	13	15	20	25	39	50	100	150	200	250			
PG25I2-P																				
40%	60%	25 mm	400	Δ U	0.109	0.109	0.217	0.217	0.326	0.326	0.435	0.543	0.870	1.196	2.283	3.478	4.674	5.761		
				Δ C	0.326	0.435	0.761	0.978	1.196	1.413	1.848	2.283	3.587	4.674	9.239	13.913				
			600	Δ U	0.326	0.435	0.761	0.978	1.196	1.413	1.957	2.391	3.696	4.783	9.565	14.239				
				Δ C	0.761	1.304	2.065	2.500	3.261	3.804	5.109	6.304	9.891	12.717						
			800	Δ U	0.870	1.413	2.283	2.826	3.696	4.239	5.652	6.957	10.978	14.022						
				Δ C	1.630	2.826	4.457	5.652	7.283	8.370	11.196	14.022								
		1000	Δ U	1.957	3.370	5.326	6.630	8.696	10.000	13.370	16.630									
			Δ C	3.152	5.326	8.478	10.652	13.804	15.978											
		1200	Δ U	4.022	6.739	10.761	13.478													
			Δ C	5.435	9.022	14.457														
		PG38I2-P																		
		40%	60%	38 mm	400	Δ U	0.000	0.000	0.109	0.109	0.109	0.217	0.217	0.217	0.435	0.544	0.978	1.522	2.065	2.500
Δ C	0.109					0.217	0.326	0.435	0.544	0.652	0.870	0.978	1.630	2.065	4.130	6.087	8.152	10.217		
600	Δ U				0.109	0.217	0.326	0.326	0.544	0.761	0.761	0.978	1.522	1.848	3.804	5.652	7.609	9.457		
	Δ C				0.326	0.544	0.761	0.978	1.304	1.522	2.065	2.500	3.913	5.000	10.109	15.109				
800	Δ U				0.326	0.544	0.870	1.087	1.413	2.174	2.174	2.717	4.130	5.326	10.652	15.978				
	Δ C				0.652	1.087	1.739	2.174	2.826	3.152	4.239	5.326	8.370	10.652						
1000	Δ U			0.761	1.196	1.957	2.500	3.261	5.000	5.000	6.196	9.674	12.391							
	Δ C			1.196	1.957	3.152	4.022	5.109	5.978	7.935	9.891	15.435								
1200	Δ U			1.522	2.500	4.022	5.109	6.630	7.609	10.109	12.717									
	Δ C			2.065	3.370	5.435	6.739	8.804	10.109	13.587	16.957									
1400	Δ U			2.826	4.674	7.500	9.348	12.174	14.130											
	Δ C			3.261	5.326	8.587	10.761	13.913	16.087											
1600	Δ U			4.783	7.935	12.717	15.978													
	Δ C			4.783	7.935	12.717	15.978													

StormChief

The GratEX® StormChief system is the perfect maritime grating fixing system, offering wave zone loadings and the ease of installation carried out completely from above the surface of the grating.

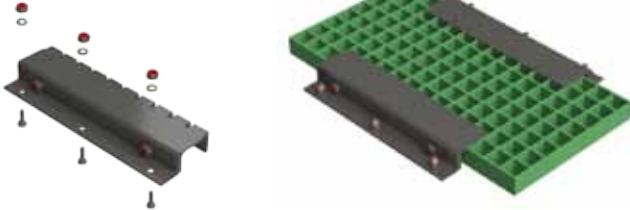
Developed to compliment the Treadwell's range of grating products, which have an outstanding performance history in offshore applications, StormChief has proved to be the ideal solution for fixing grating to structural members in destructive wave zone areas. Being a hybrid GratEX®/Hilti design, the system also allows installation following finalisation of sub-structure coating and will not impinge on the integrity of the coating.

StormChief eliminates the hassle of doing up nuts on the underside of grating and also any chance of corrosion through a uniquely designed fixing system that means the substructure need not be penetrated* on the underside. The incorporation of a unique seal eliminates the possibility of the raw metal, exposed for initial installation, ever being exposed again after installation of the stud.

*provided the sub-structure is over 10 mm thick (to be confirmed by supplier)

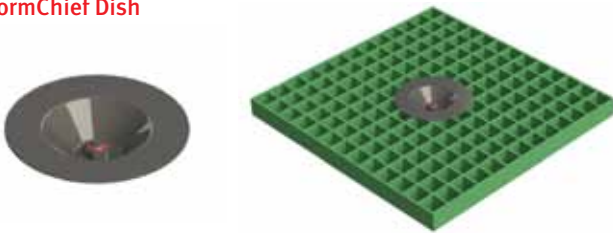


StormChief Claw



The Claw, as the name suggests, is an extremely effective solution to the harshest of offshore applications due to the sturdy design of the 316 Stainless Steel fingers which protrude down into the grating aperture. This system is very easily installed utilising the Hilti stud system and is perfect for securing walkway grating to sub-structures.

StormChief Dish



The Dish has been developed for use in areas where grating exceeds a width of 1200 mm and where the layout of grating at awkward angles does not allow for the use of the claw. The top surface of the grating must be recessed to allow for installation of the Dish system to ensure trip hazards are avoided, but this system does incorporate the use of the Hilti stud system, ensuring ease of installation.

StormChief HILTI XBT System



Designed by Hilti, and offered by Treadwell in order to satisfy the demands of our clientele, the XBT system offers extreme ease of installation, with no recessing of top surfaces required and still ensures the guarantee of not having to impact on the integrity of the structural coating by attaching to the Hilti stud. As for all StormChief products, the XBT system is produced using all 316 Stainless Steel to ensure corrosion is reduced.

StormChief HILTI Stud/GratEX Hybrid



This stud, which has been incorporated in all of Treadwell's StormChief range, is able to be used in conjunction with any of the standard GratEX® Clip Tops featured on page 18 to form an extremely hardy, corrosion resistant clip system that can be installed 100% from on top of the grating – no need for time consuming, risky installations. Ensure that your grating panels are placed correctly and fixed temporarily before beginning. This system has been endorsed by numerous corrosive mineral processing plants, with extreme reductions in downtime due to grid mesh replacement being experienced.

EX-Series® Grating Ancillary Items

Treadwell offers a range of ancillary product systems to compliment the EX-Series® grating range.

These include fixed and adjustable pedestal systems for elevated flooring, where such flooring is required within bunds and dosing areas; sealer kits for ensuring that the integrity of

grating that is trimmed is maintained and not impacted upon by the set-up of osmosis within the fibreglass part; and a range of embedment or curb angle products for cast in drains and sumps.

Contact Treadwell for more details and any unique application requirements, or should you require fabrication worksheets – free call 1800 246 800.

GratEX® Adjustable FRP Elevated Floor System		GratEX® FRP Elevated Floor System			
	GratEX® Adjustable FRP Elevated Floor System		GratEX® FRP Elevated Floor System		
	Code	MG-AEFS		Code	MG-EFS
	UOM	Unit/Each		UOM	Unit/Each
<p>This adjustable pedestal, constructed completely from FRP, is designed specifically for GratEX®. It provides excellent support for elevated flooring and has a long-standing history of outstanding performance in corrosive applications. Pedestals are available in polyester and vinyl ester resin systems. Standard colours are grey and black. Contact us about your application – 1800 246 800</p>		<p>This fixed pedestal, which is also constructed from FRP, is designed for the support of elevated walkways and access-ways in dosing rooms and other areas where items on floors make access difficult. Pedestals are available in polyester and vinyl ester resin systems. Standard colours are grey and yellow. Contact Treadwell with regard to your requirements – 1800 246 800.</p>			
GratEX® Buzon Non-Metallic Elevated Floor System		EX-Series® FRP Sealer Kit			
	GratEX® Non-Metallic Elevated Floor System		EX-Series® Polyester Sealer Kit, 500 g		
	Code	MG-EFS		Code	F-EXSK500I
	UOM	Unit/Each		UOM	Unit/Each
<p>This unique non-metallic adjustable elevated flooring system can raise the height of your floor from anywhere between 170 mm and 620 mm and also allows for the correction of slopes of up to 5%. The system is available as either components or as a complete system, in either polypropylene or polycarbonate. Contact Treadwell about this system – 1800 246 800</p>					
<p>This unique non-metallic adjustable elevated flooring system can raise the height of your floor from anywhere between 170 mm and 620 mm and also allows for the correction of slopes of up to 5%. The system is available as either components or as a complete system, in either polypropylene or polycarbonate. Contact Treadwell about this system – 1800 246 800</p>		EX-Series Vinyl Ester Sealer Kit, 500 g			
		Code	F-EXSK500V		
		UOM	Unit/Each		
		<p>Ideal for sealing exposed fibres after any field cutting. These kits, which includes resin (standard 500 g) and catalyst (standard 15 ml), are available in polyester and vinyl ester.</p>			
EX-Series® FRP Grating Embedment (Kerb/Curb) Angle					
	EX-Series® FRP Grating Embedment (Kerb/Curb) Angle				
	Profile	Code	Depth	Width	Weight
	25 mm	P-EA25	25 mm	38 mm	1.34 kg/m
	38 mm	P-EA38	38 mm	39 mm	1.52 kg/m
	50 mm	P-EA560	50 mm	40 mm	1.64 kg/m
	100 mm	P-EA100	100 mm	57 mm	2.71 kg/m
<p>Treadwell's EX-Series® FRP embedment angle provides a very sturdy base for bearing bars and has a built-in, continuous angle that locks into concrete, eliminating the need for individual anchors.</p> <p>FRP embedment angle is engineered using a surfacing veil and fire retardant vinyl ester resin system. This unique combination produces the superior strength, stiffness, wear protection and long-term corrosion resistance required for longevity in industrial applications. The FRP embedment angle is suitable for use with both GratEX® and GridEX® products and is typically available in grey 3 m or 6 m lengths.</p>					

Drafting Information



Save on detailed drafting

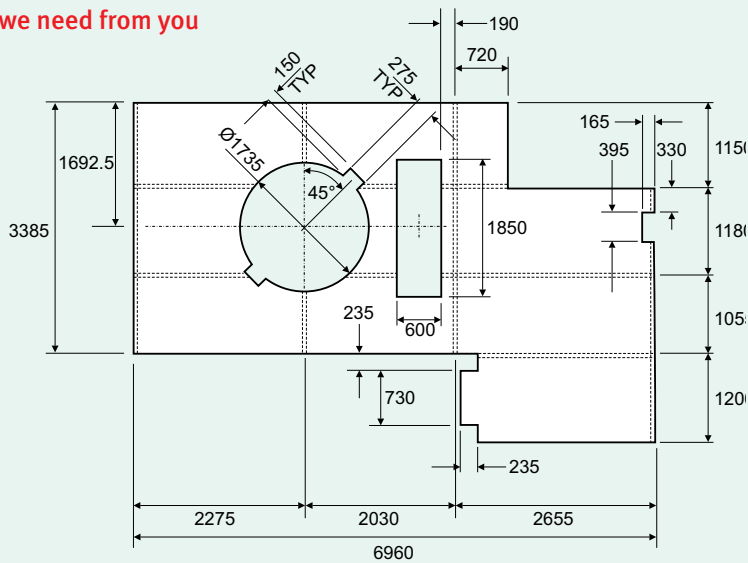
When providing Treadwell with grating drawings, please ensure that only the outline of the actual grating to be supplied along with all penetrations and cut-outs are displayed.

No need to detail panels

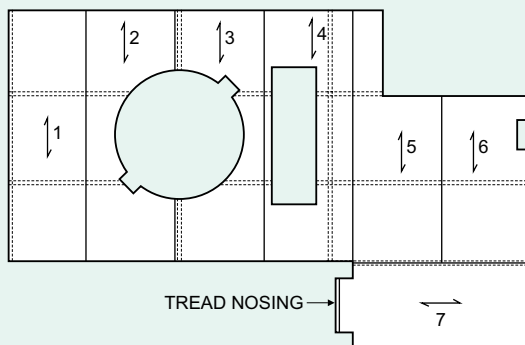
Treadwell will recommend the most economical breakdown of panels to suit your floor layout — this is because our forte is FRP products which means we stock more standard size panels. Save yourself the cost and let us take the pain out of it for you.

Treadwell utilises up to date CAD technology to create panel details and erection marking plans. Further, we can then have these drawings sent via email, fax, post or courier to any location for speedy approval or mark-up — a service many of our clients agree saves a lot of time and hassle!

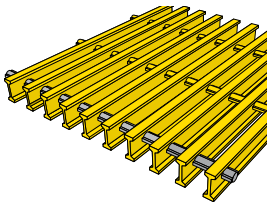
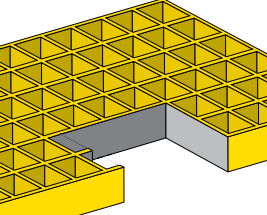
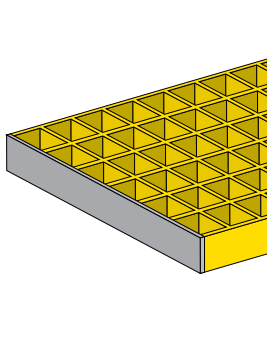
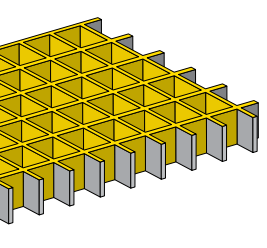
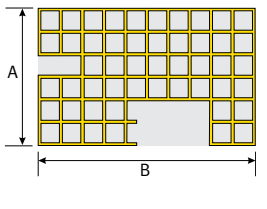
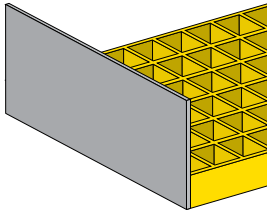
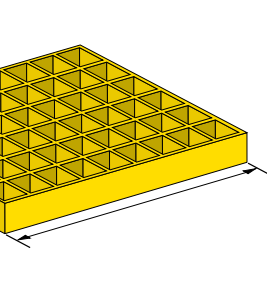
What we need from you

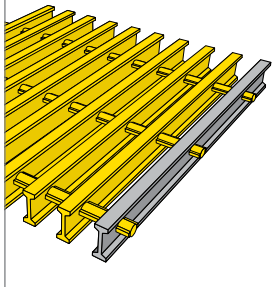
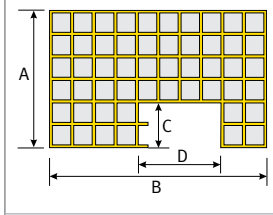
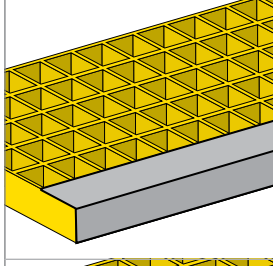
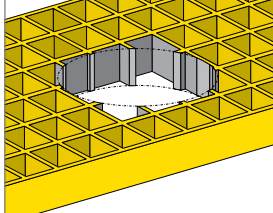
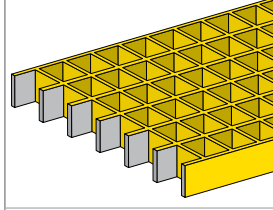
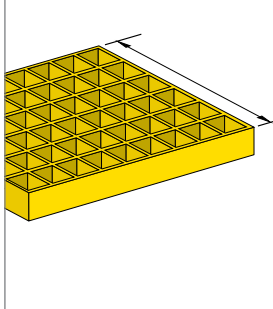


What we will provide you with



Terminology

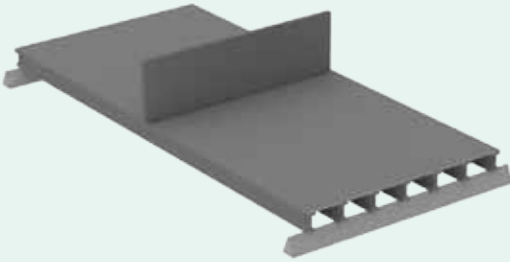
	<p>Cross Bar A section fixed at right angles to the Load Bar designed to provide lateral strength — GridEX® pultruded grating is constructed using such members.</p>
	<p>Cut Out Grating area removed from panels to permit passage of columns, handrail, pipes and structural items.</p>
	<p>Edge Bar Banding The process of chemically bonding Load Bars (non-load bearing) to the cross bars after trimming to size, to provide a uniform appearance on all sides of a grating panel. Available on GratEX® products; contact technical assistance for further details. Free Call: 1800 246 800.</p>
	<p>Exact Size Refers to the requirement to manufacture the panels to an exact dimension and not to be adjusted to the nearest width across the standard pattern of the load bars.</p>
	<p>Gross Area Total area including areas cut to waste (A x B).</p>
	<p>Kick Plate A large flat section chemically bonded to side or end of panel and around cut-outs, where specified. Nominal height is 100 mm above working surface.</p>
	<p>Length of Span Overall dimension of a panel measured parallel with load bar typically indicated by this symbol "↔". In the case of GratEX® (due to load bars being bi-directional) this is either the span or the longest dimension.</p>

	<p>Load Bar A load carrying section from which grating is constructed spanning between two supports. GratEX® moulded grating consists of Load Bars in both directions, hence the product's exceptional bi-directional strength.</p>
	<p>Net Area The area of panel remaining after deducting areas cut to waste [AxB]-[CxD].</p>
	<p>Nosing The section on the leading edge of a stair tread or (top stair) loading panel to assist slip resistance and to give a clear visual indication of the edge of stair treads and loadings.</p>
	<p>Penetrations As for cut out but within the grating panel as opposed to being on the edge.</p>
	<p>Prongs In the case of GratEX®, this describes a panel cut that does not run adjacent to a load bar.</p>
	<p>Width The overall dimension of a panel – in the case of GratEX®, this is the opposite dimension to the span, or the smaller dimension and in the case of GridEX®, this is the dimension measured at right angles to the load bars, even if greater than the length.</p>

Testing

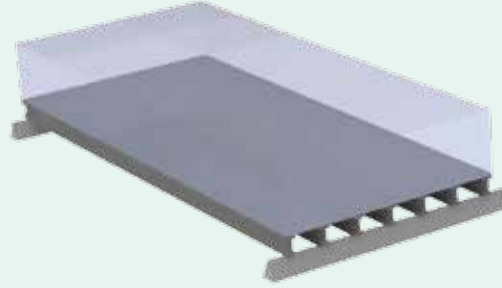
Our commitment to testing

Structural integrity is paramount with underfoot grating systems. With this in mind, Treadwell has subjected the EX-Series system to a stringent series of tests by approved international testing agencies.



C = Concentrated line load – kg/m of width
ΔC = Concentrated line load deflection – mm

This stringent testing and test data allows engineers to review how the performance of this system excess the high standards demanded.



U = Uniform load – kg/m of width
ΔU = Uniform load deflection – mm

Chemical Resistance Guide

Information contained in this guide is based on data collected from several years of actual industrial applications. Recommendations are based on conservative evaluations of the changes which occur in certain properties of replicate laminates after exposures of one year or longer, both in the laboratory and the field.

Temperatures are neither the minimum nor the maximum but represent standard test conditions (Room Temperature & 70°C). The products may be suitable at higher temperatures but individual

test data should be required to establish such suitability. Contact Treadwell for any special applications that you may have.

The recommendations (•: resistant: -:not resistant) contained in this specification sheet are made without guarantee or representation as to results. We suggest that you evaluate these recommendations and suggestions in your own laboratory or actual field trial prior to use. Our responsibility for claims arising from breach of warranty, negligence, or otherwise is **limited to the purchase price of the material.**

Chemical	I-Series		V-Series	
	Room Temp	70°C	Room Temp	70°C
Acetaldehyde	-	-	-	-
Acetic Acid 0-25%	•	•	•	•
Acetic Acid 25-50%	•	-	•	•
Acetic Anhydride	-	-	-	-
Acetone	-	-	-	-
Acrylonitrile	-	-	-	-
Alcohol ,Butyl	-	-	•	-
Alcohol, Ethyl 10%	-	-	•	66
Alcohol, Ethyl 100%	-	-	•	-
Alcohol, Isopropyl 10%	-	-	•	66
Alcohol, Isopropyl 100%	-	-	•	-
Alcohol, Methyl 10%	-	-	•	66
Alcohol, Methyl 100%	-	-	-	-
Alcohol, Methyl Isobutyl	-	-	•	66
Alcohol, Secondary Butyl	-	-	•	66
Alum	•	•	•	•
Aluminium Chloride	•	•	•	•
Aluminium Hydroxide	•	-	•	49
Aluminium Nitrate	•	•	•	•

Chemical	I-Series		V-Series	
	Room Temp	70°C	Room Temp	70°C
Aluminium Potassium Sulfate	•	•	•	•
Ammonia, Aqueous 0-10%	-	-	•	38
Ammonia, Gas	-	-	•	38
Ammonium Bicarbonate	•	-	•	49
Ammonium Bisulfite	-	-	•	49
Ammonium Carbonate	-	-	•	49
Ammonium Citrate	•	-	•	49
Ammonium Fluoride	-	-	•	49
Ammonium Hydroxide 5%	•	-	•	49
Ammonium Hydroxide 10%	•	-	•	49
Ammonium Hydroxide 20%	-	-	•	49
Ammonium Nitrate	•	•	•	49
Ammonium Persulfate	-	-	•	49
Ammonium Phosphate	-	-	•	49
Ammonium Sulfate	•	•	•	•
Arsenious Acid	•	-	•	•
O-Benzoyl Benzoic Acid	-	-	•	•
Barium Carbonate	•	-	•	•
Barium Chloride	•	-	•	•

Chemical Resistance Guide (cont)

Chemical	I-Series		V-Series	
	Room Temp	70°C	Room Temp	70°C
Barium Hydroxide	–	–	•	49
Barium Sulfate	•	•	•	•
Barium Sulfide	–	–	•	•
Beer	•	–	•	49
Benzene	–	–	–	–
5% Benzene in Kerosene	•	–	•	•
Benzene Sulfonic Acid	•	•	•	•
Benzoic Acid	•	–	•	•
Benzyl Alcohol	–	–	•	–
Benzyl Chloride	–	–	–	–
Brass Plating Solution:				
– 3% Copper Cyanide	–	–	•	•
– 6% Sodium Cyanide	–	–	•	•
– 1% Zinc Cyanide	–	–	•	•
– 3% Sodium Carbonate	–	–	•	•
Butyl Acetate	–	–	–	–
Butyric Acid 0-50%	•	–	•	•
Butylene Glycol	•	•	•	•
Cadmium Chloride	•	–	•	•
Cadmium Cyanide Plating Soln:				
– 3% Cadmium Oxide	–	–	•	49
– 6% Sodium Cyanide	–	–	•	49
– 1% Caustic Soda	–	–	•	49
Calcium Bisulfate	•	•	•	•
Calcium Carbonate	•	–	•	•
Calcium Chlorate	•	•	•	•
Calcium Chloride	•	•	•	•
Calcium Hydroxide	•	–	•	49
Calcium Hypochlorite	•	–	•	49
Calcium Nitrate	•	•	•	•
Calcium Sulfate	•	•	•	•
Calcium Sulfite	•	•	•	•
Caprylic Acid	•	–	•	•
Carbon Dioxide	•	•	•	•
Carbon Disulfide	–	–	–	–
Carbon Monoxide	•	•	•	•
Carbon Tetrachloride	–	–	•	38
Carbon Acid	•	–	•	•
Castor Oil	•	•	•	•
Carbon Methyl Cellulose	–	–	•	49
Chlorinated Wax	–	–	•	•
Chlorine Dioxide/Air	•	–	•	•
Chlorine Dioxide, Wet Gas	–	–	•	•
Chlorine, Dry Gas	–	–	•	•
Chlorine, Wet Gas	–	–	•	•
Chlorine, Liquid	–	–	–	–

Chemical	I-Series		V-Series	
	Room Temp	70°C	Room Temp	70°C
Chlorine, Water	–	–	•	•
Chloroacetic Acid 0-50%	–	–	•	38
Chlorobenzene	–	–	–	–
Chloroform	–	–	–	–
Chlorosulfonic Acid	–	–	–	–
Chromic Acid 20%	–	–	•	49
Chromic Acid 30%	–	–	–	–
Chromium Sulfate	•	•	•	•
Citric Acid	•	•	•	•
Coconut Oil	•	–	•	•
Copper Chloride	•	•	•	•
Copper Cyanide	–	–	•	•
Copper Fluoride	–	–	•	•
Copper Nitrate	•	•	•	•
Copper Plating Solution:				
– Copper Cyanide	–	–	•	•
– 10.5% Copper	–	–	•	•
– 4% Copper Cyanide	–	–	•	•
– 6% Rochelle Salts	–	–	•	•
Copper Brite Plating:				
– Caustic Cyanide	–	–	•	38
Copper Plating Solution:				
– 45% Copper Fluoroborate	–	–	•	•
– 19% Copper Sulfate	–	–	•	•
– 8% Sulfuric Acid	–	–	•	•
Copper Matte Dipping Bath:				
– 30% Ferric Chloride	–	–	•	•
– 19% Hydrochloric	–	–	•	•
Copper Pickling Bath:				
– 10% Ferric Sulfate	–	–	•	•
– 10% Sulfuric Acid	–	–	•	•
Copper Sulfate	•	•	•	•
Corn Oil	•	–	•	•
Corn Starch-Slurry	•	–	•	•
Corn Sugar	•	–	•	•
Cottonseed Oil	•	–	•	•
Crude Oil, Sour	•	–	•	•
Crude Oil, Sweet	•	–	•	•
Cyclohexane	•	–	•	49
Detergents, Sulfonated	•	–	•	•
Di-Ammonium Phosphate	–	–	•	•
Dibromophenol	–	–	–	–
Dibutyl Ether	–	–	•	49
Dichloro Benzene	–	–	–	–
Dichloroethylene	–	–	–	–
Diesel Fuel	•	–	•	•

Chemical Resistance Guide (cont)

Chemical	I-Series		V-Series	
	Room Temp	70°C	Room Temp	70°C
Diethylene Glycol	•	–	•	•
Dimethyl Phthalate	–	–	•	•
Diocetyl Phthalate	–	–	•	•
Dipropylene Glycol	•	–	•	•
Dodecyl Alcohol	–	–	•	•
Esters, Fatty Acids	•	•	•	•
Ethyl Acetate	–	–	–	–
Ethyl Benzene	–	–	–	–
Ethyl Ether	–	–	–	–
Ethylene Glycol	•	•	•	•
Ethylene Dichloride	–	–	–	–
Fatty Acids	•	•	•	•
Ferric Chloride	•	•	•	•
Ferric Nitrate	•	•	•	•
Ferric Sulfate	•	•	•	•
Ferrous Chloride	•	•	•	•
Ferrous Nitrate	•	•	•	•
Ferrous Sulfate	•	•	•	•
8-8-8 Fertiliser	•	–	•	49
Fertiliser:				
– Urea Ammonium Nitrate	–	–	•	49
Fuel Gas	–	–	•	•
Fluoboric Acid	–	–	•	49
Fluosilicic Acid 0-20%	–	–	•	•
Formaldehyde	•	–	•	•
Formic Acid	•	–	•	•
Fuel Oil	•	–	•	•
Gas Natural	•	–	•	•
Gasoline, Auto	•	–	•	•
Gasoline, Aviation	•	–	•	•
Gasoline, Ethyl	•	–	•	•
Gluconic Acid	•	–	•	•
Gasoline, Sour	•	–	•	•
Glucose	•	•	•	•
Glycerine	•	•	•	•
Glycol, Ethylene	•	•	•	•
Glycol, Propylene	•	•	•	•
Glycolic Acid	•	–	•	•
Gold Plating Solution:				
– 63% Potassium Ferrocyanide	–	–	•	•
– 2% Potassium Gold Cyanide	–	–	•	•
– 8% Sodium Cyanide	–	–	•	•
Heptane	•	–	•	•
Hexane	•	–	•	•
Hexylene Glycol	•	•	•	•
Hydraulic Fluid	•	–	•	•

Chemical	I-Series		V-Series	
	Room Temp	70°C	Room Temp	70°C
Hydrobromic Acid 0-25%	•	–	•	•
Hydrochloric Acid 0-37%	•	–	•	•
Hydrocyanic Acid	•	–	•	•
Hydrofluoric Acid 10%	–	–	•	–
Hydrofluosilicic Acid, 10%	–	–	•	•
Hydrogen Bromide, Wet Gas	–	–	•	•
Hydrogen Chloride, Dry Gas	–	–	•	•
Hydrogen Chloride, Wet Gas	–	–	•	•
Hydrogen Peroxide	–	–	•	49
Hydrogen Sulfide, Dry	•	–	•	•
Hydrogen Sulfide, Aqueous	•	–	•	•
Hydrogen Fluoride, Vapour	–	–	•	•
Hydrosulfite Bleach	–	–	•	49
Hydrochlorus Acid 0-10%				
Iron Plating Solution:				
– 45% Fecl: 15% Cacl	–	–	•	•
– 20% Fecl: 11% (Nh4)2 So4	–	–	•	•
Iron And Steel Cleaning Bath:				
– 9% Hydrochloric: 23% Sulfuric	–	–	•	•
Isopropyl Amine	–	–	•	38
Isopropyl Palmitate	•	•	•	•
Jet Fuel	•	–	•	•
Kerosene	•	–	•	•
Lactic Acid	•	–	•	•
Lauroyl Chloride	–	–	•	•
Lauric Acid	•	–	•	•
Lead Acetate	•	–	•	•
Lead Chloride	•	–	•	•
Lead Nitrate	•	–	•	•
Lead Plating Solution:				
– .8% Fluoboric, 0.4% Boric Acid	–	–	•	•
Levulinic Acid	•	–	•	•
Linseed Oil	•	•	•	•
Lithium Bromide	•	•	•	•
Lithium Sulfate	•	•	•	•
Magnesium Bisulfite	•	–	•	•
Magnesium Carbonate	•	–	•	•
Magnesium Chloride	•	•	•	•
Magnesium Hydroxide	–	–	•	60
Magnesium Nitrate	•	–	•	•
Magnesium Sulfate	•	•	•	•
Maleic Acid	•	•	•	•
Mercuric Chloride	•	–	•	•
Mercurous Chloride	•	–	•	•
Methylene Chloride	–	–	–	–
Methyl Ethyl Ketone	–	–	–	–

Chemical Resistance Guide (cont)

Chemical	I-Series		V-Series	
	Room Temp	70°C	Room Temp	70°C
Methyl Isobutyl Carbitol	–	–	–	–
Methanol (See Alcohol)	•	–	•	•
Methyl Isobutyl Ketone	–	–	–	–
Methyl Styrene	–	–	–	–
Mineral Oils	•	•	•	•
Molybdenum Disulfide	•	–	•	•
Monochloro Acetic Acid	–	–	–	–
Monoethanolamine	–	–	–	–
Motor Oil	•	•	•	•
Myristic Acid	–	–	•	•
Naptha	•	•	•	•
Napthalene	•	–	•	•
Nickel Chloride	•	•	•	•
Nickel Nitrate	•	•	•	•
Nickel Plating:				
– 8% Lead, 0.8% Fluoboric Acid	–	–	•	•
– 0.4% Boric Acid	–	–	•	•
Nickel Plating:				
– 11% Nickel Sulfate	•	–	•	•
– 2% Nickel Chloride	•	–	•	•
– 1% Boric Acid	•	–	•	•
Nickel Plating:				
– 44% Nickel Sulfate	•	–	•	•
– 4% Ammonium Chloride	•	–	•	•
– 4% Boric Acid	•	–	•	•
Nickel Sulfate	•	•	•	•
Nitric Acid 0-5%	•	•	•	•
Nitric Acid 20%	–	–	•	49
Nitric Acid Fumes	–	–	–	–
Nitrobenzene	–	–	–	–
Octanoci Acid	•	–	•	•
Oil, Sour Crude	•	•	•	•
Oil, Sweet Crude	•	•	•	•
Oleic Acid	•	•	•	•
Oleum (Fuming Sulfuric)	–	–	–	–
Olive Oil	•	•	•	•
Oxalic Acid	•	•	•	•
Peroxide Bleach:				
– 25 Sodium Peroxide 95%	•	•	•	•
– 0.025% Epsom Salts	•	•	•	•
– 5% Sodium Silicate 42.Be	•	•	•	•
– 1.4% Sulfuric Acid 66.Be	•	•	•	•
Phenol	–	–	–	–
Phenol Sulfonic Acid	–	–	–	–
Phosphoric Acid	•	•	•	•
Phosphoric Acid Fumes	•	•	•	•

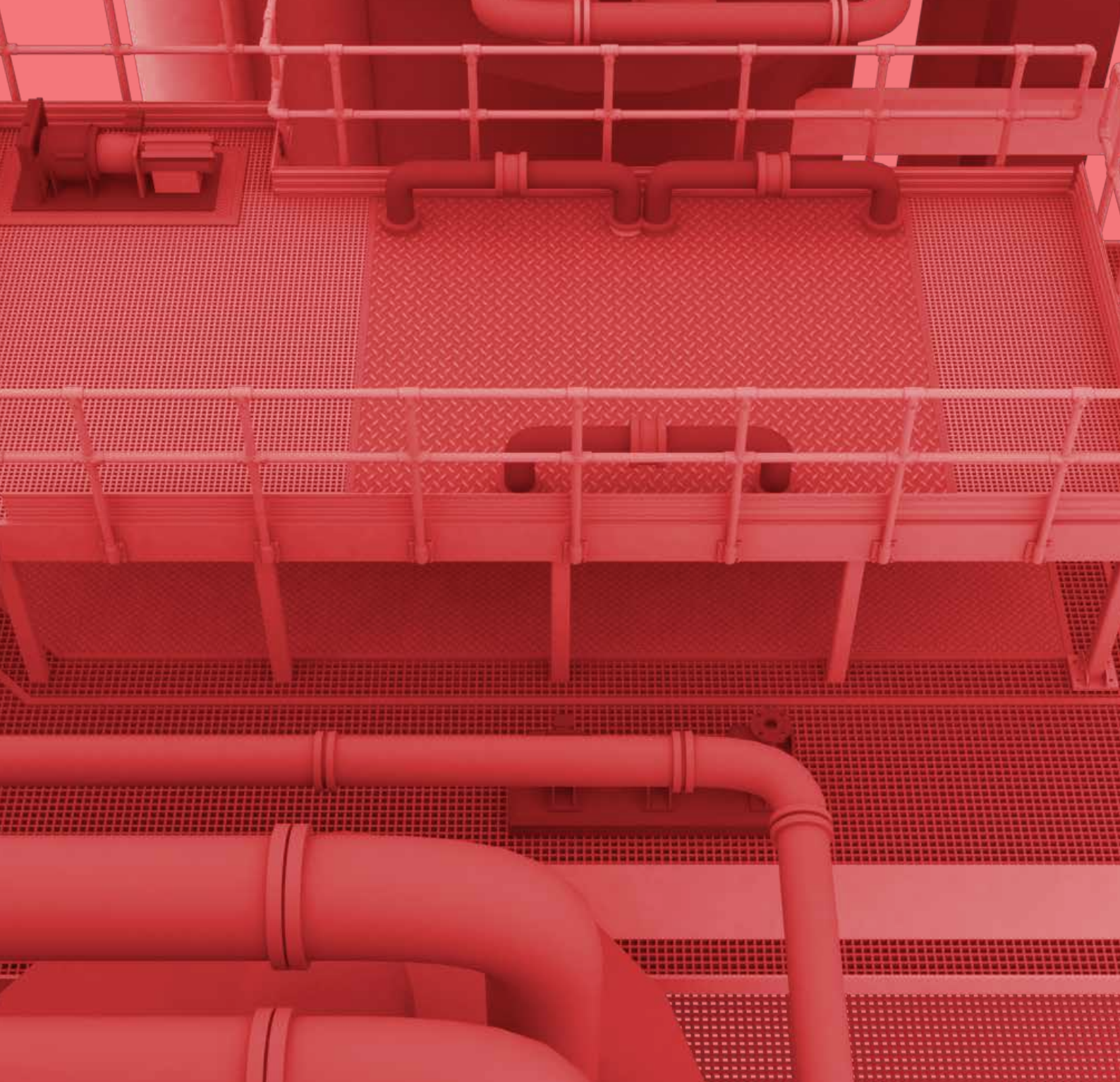
Chemical	I-Series		V-Series	
	Room Temp	70°C	Room Temp	70°C
Phosphorous Pentoxide	•	•	•	•
Phosphorous Trichloride	–	–	–	–
Phthalic Acid	•	•	•	•
Pickling Acids (Sulfuric & Hydrochloric)	•	•	•	•
Picric Acid, Alcoholic				
Polyvinyl Acetate Latex	•	–	•	•
Polyvinyl Alcohol	•	–	•	38
Polyvinyl Chloride Latex W/35 (Parts Dop)	–	–	•	49
Potassium Aluminium Sulfate	•	•	•	•
Potassium Bicarbonate	•	–	•	60
Potassium Bromide	•	–	•	38
Potassium Carbonate	•	–	•	60
Potassium Chloride	•	•	•	•
Potassium Dichromate	•	–	•	60
Potassium Ferricyanide	•	•	•	•
Potassium Ferrocyanide	•	•	•	•
Potassium Hydroxide	–	–	•	66
Potassium Nitrate	•	•	•	•
Potassium Permanganate	•	–	•	60
Potassium Persulfate	•	–	•	•
Potassium Sulfate	•	•	•	•
Propionic Acid 1-50%	–	–	•	49
Propionic Acid 50-100%	–	–	–	–
Propylene Glycol	•	•	•	•
Pulp Paper Mill Effluent	•	–	•	•
Pyridine	–	–	–	–
Salicylic Acid	–	–	•	60
Sebacic Acid	–	–	•	•
Selenious Acid	–	–	•	•
Silver Nitrate	•	•	•	•
Silver Plating Solution:				
– 4% Silver Cyanide	–	–	•	•
– 7% Potassium Cyanide	–	–	•	•
– 5% Sodium Cyanide	–	–	•	•
– 2% Potassium Carbonate	–	–	•	•
Soaps	•	–	•	•
Sodium Acetate	•	–	•	•
Sodium Benzoate	•	–	•	•
Sodium Bicarbonate	•	•	•	•
Sodium Bifluoride	•	–	•	49
Sodium Bisulfate	•	•	•	•
Sodium Bisulfite	•	•	•	•
Sodium Bromate	•	•	•	60
Sodium Bromide	•	•	•	•
Sodium Carbonate 0-25%	•	–	•	•

Chemical Resistance Guide (cont)

Chemical	I-Series		V-Series	
	Room Temp	70°C	Room Temp	70°C
Sodium Chlorate	•	–	•	•
Sodium Chloride	•	•	•	•
Sodium Chlorite	•	–	•	•
Sodium Chromite	•	•	•	•
Sodium Cyanide	•	–	•	•
Sodium Dichromate	•	•	•	•
Sodium Di-Phosphate	•	•	•	•
Sodium Ferricyanide	•	•	•	•
Sodium Fluoride	–	–	•	49
Sodium Fluoro Silicate	–	–	•	49
Sodium Hexametaphosphates	–	–	•	38
Sodium Hydroxide 0-5%	–	–	•	66
Sodium Hydroxide 5-25%	–	–	•	66
Sodium Hydroxide 50%	–	–	•	66
Sodium Hydrosulfide	•	–	•	•
Sodium Hypochlorite	•	–	•	66
Sodium Lauryl Sulfate	•	•	•	•
Sodium Mono-Phosphate	•	•	•	•
Sodium Nitrate	•	•	•	•
Sodium Silicate	•	–	•	•
Sodium Sulfate	•	•	•	•
Sodium Sulfide	•	–	•	•
Sodium Sulfite	•	–	•	•
Sodium Tetra Borate	•	•	•	•
Sodium Thiocyanate	–	–	•	•
Sodium Thiosulfate	•	–	•	•
Sodium Tripolyphosphate	•	–	•	•
Sodium Xylene Sulfonate	•	–	•	•
Sodium Solutions	•	–	•	•
Sodium Crude Oil	•	•	•	•
Soya Oil	•	•	•	•
Stannic Chloride	•	•	•	•
Stannous Chloride	•	•	•	•
Stearic Acid	•	•	•	•
Styrene	–	–	–	–
Sugar, Beet And Cane Liquor	•	–	•	•
Sugar, Sucrose	•	•	•	•
Sulfamic Acid	•	–	•	•
Sulfanilic Acid	•	–	•	•
Sulfated Detergents	•	–	•	•
Sulfur Dioxide, Dry Or Wet	–	–	•	•
Sulfur Trioxide/Air	–	–	•	•
Sulfuric Acid 0-30%	•	•	•	•
Sulfuric Acid 30-50%	–	–	•	•
Sulfuric Acid 50-70%	–	–	•	49
Sulfurous Acid	–	–	•	38

Chemical	I-Series		V-Series	
	Room Temp	70°C	Room Temp	70°C
Superphosphoric Acid (76% P2 O5)	•	–	•	•
Tall Oil	•	–	•	60
Tannic Acid	•	–	•	66
Tartaric Acid	•	•	•	•
Thionyl Chloride	–	–	–	–
Tin Plating:				
– 18% Stannous Fluorborate	–	–	•	•
– 7% Tin	–	–	•	•
– 9% Fluoroboric Acid	–	–	•	•
– 2% Boric Acid	–	–	•	•
Toluene	–	–	–	–
Toluene Sulfonic Acid	–	–	•	•
Transformer Oils:				
– Mineral Oil Types	•	•	•	•
– Chloro-Phenyl Types)	•	•	•	•
Trichlor Acetic Acid	•	–	•	•
Trichlorethylene	–	–	–	–
Trichloropenol	–	–	–	–
Tricresyl Phosphate	–	–	•	49
Tridecylbenzene Sulfonate	•	–	•	•
Trisodium Phosphate	•	–	•	•
Turpentine	–	–	•	38
Urea	–	–	•	38
Vegetable Oils	•	•	•	•
Vinegar	•	•	•	•
Vinyl Acetate	–	–	–	–
Water:				
– Deionised				
– Demineralised	•	•	•	•
– Distilled	•	•	•	•
– Fresh	•	•	•	•
– Salt	•	•	•	•
– Sea	•	•	•	•
White Liquor (Pulp Mill)	•	–	•	•
Xylene	–	–	–	–
Zinc Chlorate	•	•	•	•
Zinc Nitrate	•	•	•	•
Zinc Plating Solution:				
– 9% Zinc Cyanide	–	–	•	49
– 4% Sodium Cyanide	–	–	•	49
– 9% Sodium Hydroxide	–	–	•	49
Zinc Plating Solution:				
– (49% Zinc Fluoroborate	•	–	•	•
– 5% Ammonium Chloride	•	–	•	•
– 6% Ammonium Fluoroborate	•	–	•	•
Zinc Sulfate	•	•	•	•





TREADWELL™

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