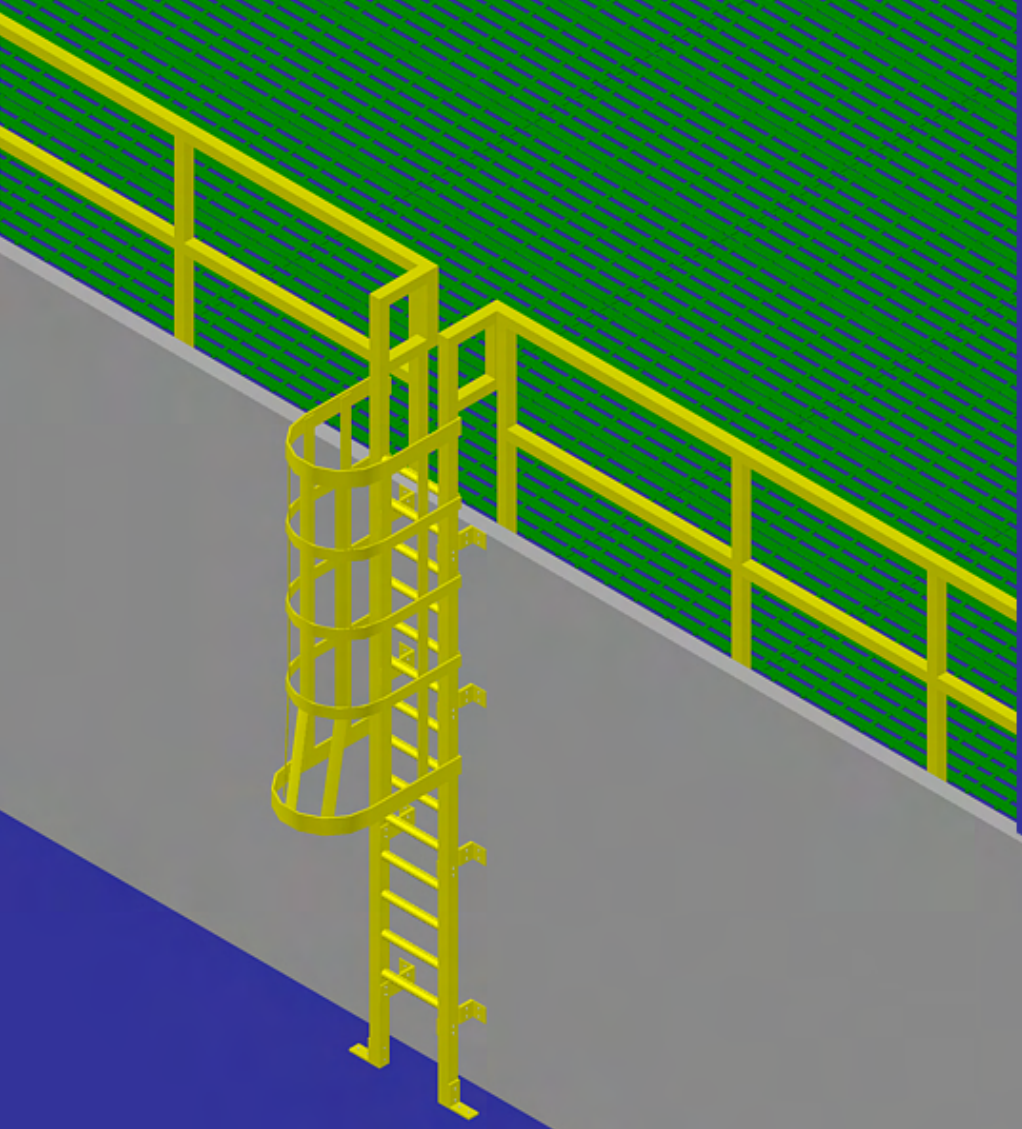
Fiberglass Molded & Pultruded Gratings

Fiberglass Handrails

Fiberglass Cat Ladders

MinGrate
MinRail
MinLadder



CHUNWIN
BUILDING MATERIALS LTD
Tel: 25464006 info@chunwincom
https://gentleglory.com

FIBERGLASS SYSTEMS

Power Plastic Rubber Co Ltd (PPR) designs, engineers, and fabricates complete fiberglass structures that incorporate several fiberglass products. PPR has the capability to engineer and fabricate structures that range from tank loading and walkway platforms to handrails and ladders. Designs fully utilize the unique strengths and economies of fiberglass reinforced polymer (FRP) structural shapes. Combining advanced design concepts, automated fabrication, and specialized technical assistance MinGrate provides corrosion resistant FRP structures with life cycle cost advantages over protected metal structures.

AII MinGrate®, MinRail & MinLadder fiberglass products are available as individual components or incomplete systems fabricated and designed on state-of-the-art CAD equipment. Buyers and specifiers also receive the benefits of assistance from Mins' highly competent and experienced sales and service personnel.

Application for FRP materials

MinGrate® FRP products deliver values to various industries including:

Chemical	Food & Beverage
Pulp & Paper	Water & Wastewater Treatment
Refining	Metal Treatment
Mining	Electronics
Marine & Offshore	Fertilizer

Typical Uses for MinGrate@ Grating

Walkways	Catwalks
Stairs	Platforms
Trench covers	Ramps
Assembly lines	Flooring

Resin Systems / Corrosion Protection

PPR'S fiberglass gratings and products are furnished in four, fire retardant resin systems, each providing a different level of corrosion protection.

Vinyl ester (V) products provide the highest level of corrosion protection and demonstrate better reten-tion of structural properties at elevated temperatures.

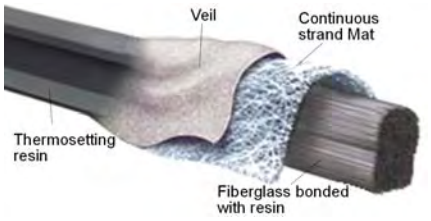
Isophthalic polyester (I) is a premium grade resin providing outstanding corrosion resistance for splash and spill exposures in moderate temperature conditions. Polyester materials are typically lower in cost than vinyl ester products.

Phenolic (P) materials offering superior resistance to high temperature with low smoke and toxic fume emission. The non-flammable nature of phenolic enable phenolic grating to withstand higher temperatures than traditional FRP products for extended periods of time without major structural damage.

Orthophthalic polyester (O) materials have fair corrosion resistance and are the lowest cost, but are the least recommended for extremely corrosive conditions

Resin Type	Resin base	Description	Corrosion Resistance	Flame Spread Rating ASTM E84	Standard Colors
VEFR-25	Vinyl Ester	Superior Corrosion Resistance and Fire Retardant	Excellent	Class 1, 25 or less	Dark Gray, Orange
VEFR-10	Vinyl Ester	Superior Corrosion Resistance and Enhanced Fire Retardant	Excellent	Class 1, 10 or less	Dark Gray
IFR-25	Isophthalic Polyesater	Industrial Grade Corrosion Resistance and Fire Retardant	Very Good	Class 1, 25 or less	Dark Gray, Green
IFR-10	Isophthalic Polyesater	Industrial Grade Corrosion Resistance and Extra Fire Retardant	Very Good	Class 1, 10 or less	Custom
IFGR-30	Isophthalic Polyesater	Food Grade Corrosion Resistance and Fire Retardant	Very Good	Class 1, 30 or less	Light Gray and Light Green
OFR-25	Orthophthalic polyester	Moderate Corrosion Resistance and Fire Retardant	Moderate	Class 1, 25 or less	Green, Yellow, Light Gray, Dark Gray
MP-5	Phenolic	Low Smoke and Superior Fire Resis-tance	Very Good	Class 1, 5 or less	Reddish Brown, Phenolic Painting of the grating can be performed to obtain a gray or red finish
O-CR	Orthophthalic polyester	Moderate Corrosion Resistance	Moderate	No.	Green, Yellow Light Gray, Dark Gray

Pultruded profiles for grating, handrail and ladder produced by the pultrusion process are a composite of fiberglass reinforcements (fiberglass roving and strand mat) and a thermosetting resin system as well as a synthetic surface veil to enhance protection against ultraviolet ray exposure and corrosion resistance. It also provides unequaled strength and corrosion resistance.



The densely packed core of fiberglass roving gives the profiles strength and stiffness in the longitudinal direction while the continuous strand mat provides strength in the transverse direction and prevents chipping, cracking and lineal fracturing.

Fire Resistance

MinGrate® fiberglass grating & other FRP products — A Class 1 flame spread rating of 25 or less when tested in accordance with ASTM E-84.

Slip Resistance

For molded grating the concave shaped top surface provides very good and durable slip resis-tance. Incorporating grit particles in the top surfaces of MinGrate® grating develops enhanced slip resistant surfaces particularly in oily environments. For conditions with unusually high abrasion, a gritted top surface is available for pultruded MinGrate® sections and molded gratings. The slip resistant benefit of fiber-glass grating offers excellent protection against slips and falls.

Impact Resistance

No permanent deformation on MinGrate® gratings. Once the object is removed, gratings will fully recover to the original state but metallic gratings which may remain deformation and need to replace.

Non-Conductive

FRP grating is ideally suitable for electrical hazardous areas for platform, flooring, fence, etc. due to the non-conductive properties.

UV Protection

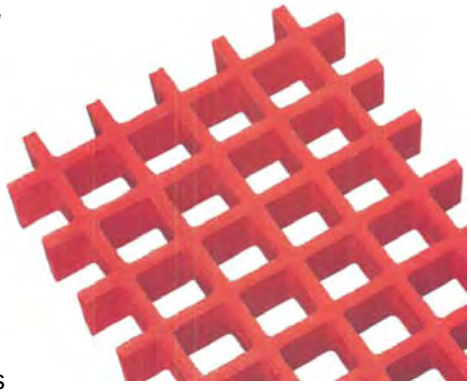
For extended service life in exterior applications, both molded, pultruded grating and profiles are manufactured with UV inhibitors in the resin system.

In-Use Maintenance (Cleaning)

MinGrate® FRP grating is generally maintenance free. Periodic cleaning to remove build up of debris and foreign materials is recommended and can be accomplished usually with water, detergents and high pressure sprays. For food grade applications, MinGrate® can handle the abuse from frequent cleanings required by the process, Attachments connecting grating to supports should be periodically checked and tightened as needed.

MinGrate® Range

Molded Grating

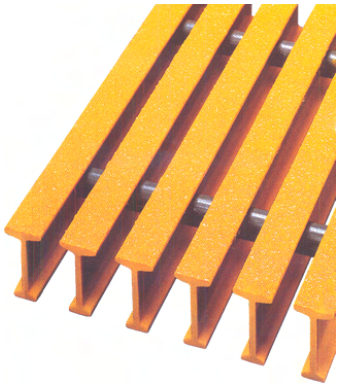


The interwoven square mesh construction for MinGrate® molded grating results in bi-directional strength. This design, in some cases, eliminates the need for extra structural supports at cut edges that can be required for rectangular mesh construction.

This can be particularly important in complex process areas that have a large number of openings and penetrations.

Pultruded Grating

A thermosetting resin system is produced by the pultrusion process, manufacturing many of the outstanding characteristics of the gratings.



The higher glass to resin ratio of pultruded grating results in sections with higher structural properties than molded sections of similar depth and weight. Because of longer span capability, support structures can be reduced, resulting in lower total cost when using pultruded grating instead of molded. To significantly reduce scrap and thereby lower cost, pultruded gratings can be manufactured in custom lengths and widths for large projects.

Molded or Pultruded Grating

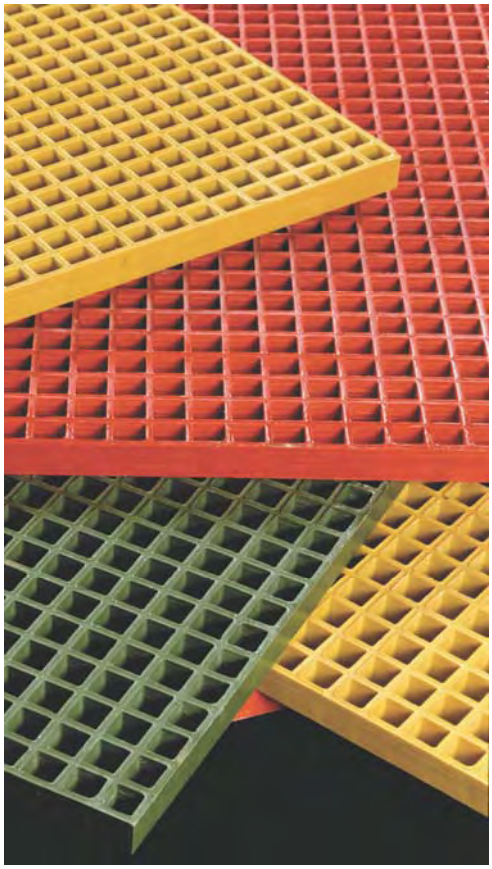
	Molded 1",1.5",2"	Pultruded 1",1.5", 2"
Corrosion Protection	Excellent	Good
Light weight VS. steel	Excellent	Excellent
Load/Span Capacity	Good	Excellent
Unidirectional loads	Good	Excellent
Bidirectional loads	Excellent	Fair
Impact resistance	Excellent	Good
Range of sizes	Good	Excellent
Ease of layout & installation	Excellent	Good
Open area flooring	Excellent	Excellent

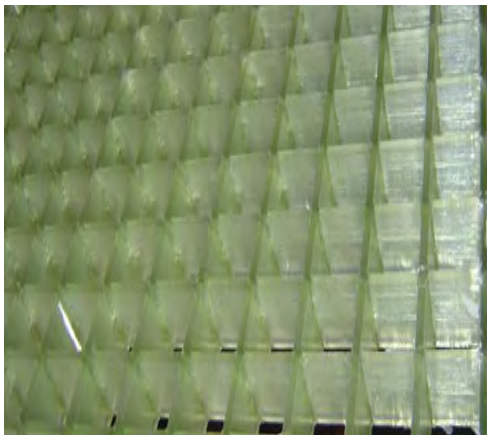
These comparisons are for general guidelines only. Please contact Gentle Glory discuss regarding specific applications

MinGrate® Molded Grating

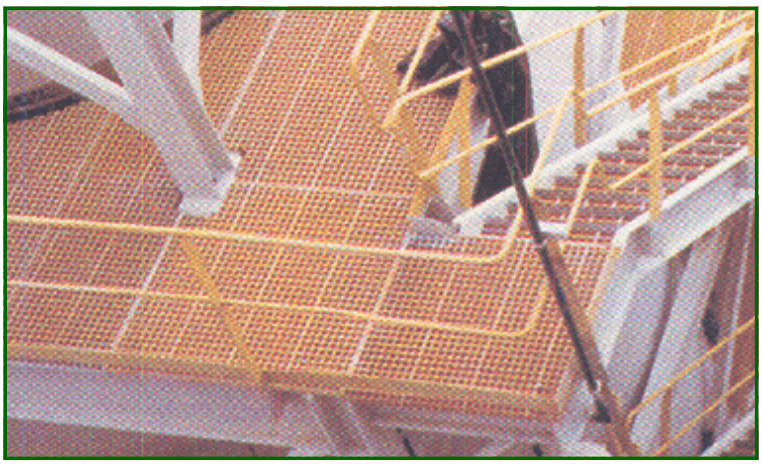
MinGrate® molded fiberglass grating is a one-piece, reinforced FRP grating, available in various meshes and manufactured by interweaving continuous, thoroughly wetted, fiberglass strand with thermosetting resin systems. Standard panels are available in four resin systems, Isophthalic Polyester (I), Vinyl Ester (V), Orthophthalic (O), Phenolic (P).

MinGrate® molded grating is widely used for floor systems, walkways, work platforms, stairs, ramps, trench covers & catwalks and has been successfully used in many industries – including food processing, beverage, chemical processing, water & wastewater treatment, metal finishing, pulp/paper, transportation, pharmaceutical, textile, oil / gas & mining / smelting, refining.



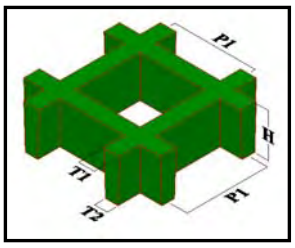


Features and Advantages	
CORROSION RESISTANCE	For highly aggressive environments, MinGrate vinyl-ester resin system (VEFR) is recommended. Unlike metal grating, it does not rust and never needs painting. Combined with superior corrosion resistance, mean that MinGrate is a long-lasting, maintenance-free product.
SAFETY	The top surface of MinGrate Molded Grating is meniscus (concave) to provide outstanding skid resistant, with optional grit top surface to have betterment in anti-skid, especially for wet environment.
FIRE RETARDANCY	MinGrate Molded Grating is available in eight standard resin systems, in which six of them meet the Class 1 flame spread rating of 25 or less, per ASTM E-84.
LOW MAINTENANCE	Never rusts – never needs painting. And it's very easy to clean
EASE OF FABRICATION	It is easy to cut with ordinary hand tools, using a masonry, carbide tip blade or diamond edge. (it is similar to working with wood or plastic.)

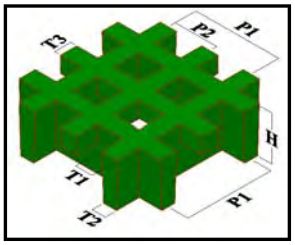


MinGrate® Molded Grating

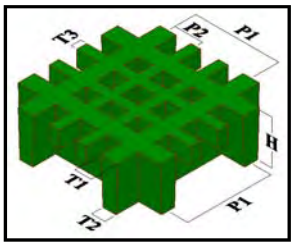
Specification of Molded Grating



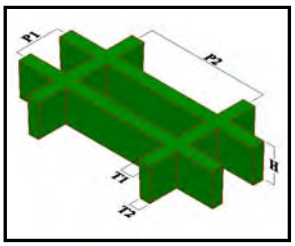
Type	Height	Mesh		Bar Thickness (mm)			Max. Panel		Open Area	lb/ft²
		P1	P2	T1	T2	T3	Width	Length		
MS-05015	1/2"	1-1/2"		5.8	5.0		4'	13'	78%	1.23
MS-05020	1/2"	2		7.0	6.0		4'	12'	82%	1.19
MS-08015	13/16"	1-1/2"		6.0	5.0		4'	13'	65%	2.00
MS-10015	1"	1-1/2"		6.4	5.0		4'	13'	68%	2.51
MS-10020	1"	2"		7.5	6.0		4'	12'	80%	2.39
MS-11815	1-3/16"	1-1/2"		6.5	5.0		4'	13'	68%	2.98
MS-11815H	1-3/16"	1-1/2"		10.5	9.0		4'	12'	58%	5.11
MS-15015	1-1/2"	1-1/2"		7.0	5.0		5'	13'	68%	3.99
MS-20015	2"	1-1/2"		11.0	9.0		4'	13'	56%	8.58
MS-20020	2"	2"		8.0	6.0		5'	13'	78%	4.84
MS-23815	2-3/8"	1-1/2"		11.5	9.0		4'	13'	54%	10.30



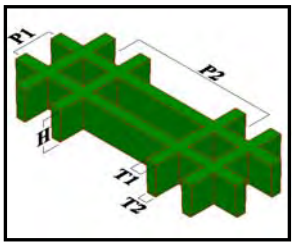
Type	Height	Mesh		Bar Thickness (mm)			Max. Panel		Open Area	lb/ft²
		P1	P2	T1	T2	T3	Width	Length		
MD-10015	1"	1-1/2"	3/4"	6.5	5.0	6.5	4'	13'	40%	3.43
MD-118157	1-3/16"	1-5/9"	7/9"	6.5	5.0	6.5	4'	13'	42%	3.68
MD-15015	1-1/2"	1-1/2"	3/4"	7.0	5.0	7.0	5'	13'	40%	4.80
MD-20020	2"	2"	1"	8.0	6.0	8.0	5'	13'	55%	5.82



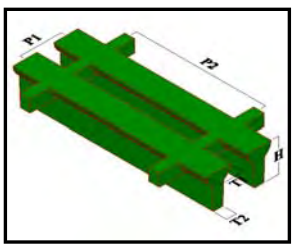
Type	Height	Mesh		Bar Thickness (mm)			Max. Panel		Open Area	lb/ft²
		P1	P2	T1	T2	T3	Width	Length		
MT-11815	1-3/16"	1-1/2"	1/2"	7.5	6.0	4.5	4'	13'	30%	4.5



Type	Height	Mesh		Bar Thickness (mm)			Max. Panel		Open Area	lb/ft²
		P1	P2	T1	T2	T3	Width	Length		
MR-1001040-1	1"	1"	4"	7.0	5.5		3'	10'	67%	2.66
MR-1001040-2	1"	1"	4"	9.5	8.0		4'	12'	52%	3.99
MR-1181040	1-3/16"	1"	4"	7.0	5.5		3'	10'	67%	3.19
MR-1501020	1-1/2"	1"	2'	11.0	9.0		4'	12'	48%	6.19
MR-1501040	1-1/2"	1"	4"	8.0	6.0		4'	12'	62%	4.60
MR-1501060	1-1/2"	1"	6"	8.5	6.0		4'	12'	63%	4.60
MR-1501540	1-1/2"	1-1/2"	4"	8.0	6.0		4'	12'	65%	3.35
MR-1501560	1-1/2"	1-1/2"	6"	8.0	6.0		4'	12'	67%	3.25
MR-2001020	2"	1"	2"	12.2	9.0		4'	12'	48%	8.38



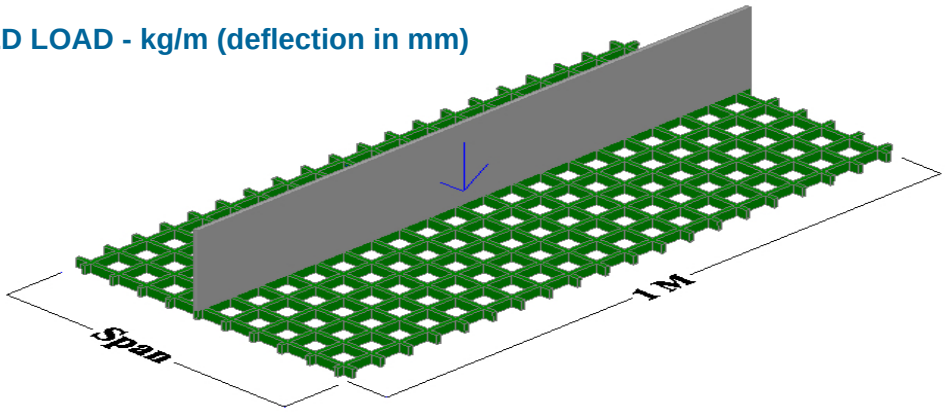
Type	Height	Mesh		Bar Thickness (mm)			Max. Panel		Open Area	lb/ft²
		P1	P2	T1	T2	T3	Width	Length		
MRT-1501060	1-1/2"	1"	6"	7.0	5.0		1' 10"	10'	56%	4.70
MRT-1501560	1-1/2"	1-1/2"	6"	7.0	5.0		1' 11"	12'	56%	3.47



Type	Height	Mesh		Bar Thickness (mm)			Max. Panel		Open Area	lb/ft²
		P1	P2	T1	T2	T3	Width	Length		
MRP-1501040	1-1/2"	1"	4"	15.0	5.0		4'	12'	46%	4.29
MRP-1501560	1-1/2"	1.5"	6"	15.0	8.0		4'	12'	60%	3.80
MRP-2001540	2"	1-1/2"	4"	8.0	5.0		4'	12'	62%	3.13

MinGrate® Molded Grating

CONCENTRATED LOAD - kg/m (deflection in mm)



MS-10015

SPAN \ Def	kg/m					
	75	150	300	450	600	750
450	0.559	1.146	2.159	3.073	4.115	4.75
600	0.864	1.702	3.505	5.156	6.706	8.179
900	2.896	5.918	12.116	18.44	--	--
1200	5.715	11.633	--	--	--	--

MS-15015

SPAN \ Def	kg/m					
	75	150	300	450	600	750
300	0.279	0.356	0.483	0.61	0.762	0.889
600	0.356	0.66	1.245	1.85	2.464	3.073
900	0.864	1.803	3.683	5.563	7.417	9.296
1200	2.261	4.749	9.677	14.63	19.583	--

MS-20020

SPAN \ Def	kg/m					
	75	150	300	450	600	750
300	0.279	0.305	0.406	0.483	0.636	1.041
600	0.356	0.508	0.813	1.128	1.753	3.327
900	0.508	1.118	2.235	3.2	5.156	10.058
1200	0.914	1.93	3.937	5.918	9.957	--

MR-1001040-1

SPAN \ Def	kg/m					
	75	150	300	450	600	750
300	0.33	0.483	0.737	0.991	1.27	1.52
600	0.864	1.727	3.454	5.182	6.909	8.636
750	1.397	2.718	5.105	7.163	9.55	11.938
900	2.413	4.724	8.814	12.369	16.51	20.625

MS-11815

SPAN \ Def	kg/m					
	75	150	300	450	750	1500
300	<0.254	<0.254	0.254	0.508	0.762	1.524
450	0.254	0.508	1.016	1.524	2.54	--
600	0.508	1.27	2.286	3.556	5.842	--
750	1.27	2.54	4.826	7.366	12.446	--
900	1.778	3.81	7.62	11.43	--	--

MS-08015

SPAN \ Def	kg/m				
	75	150	300	450	750
300	0.254	0.508	1.016	1.524	2.54
450	0.762	1.524	3.302	4.826	8.128
600	1.778	3.81	7.62	11.176	--
750	2.794	5588	11.43	--	--
900	5.334	10.668	--	--	--

MR-1501020

SPAN \ Def	kg/m					
	300	750	1500	3000	4500	6000
300	<.25	<.25	0.254	0.762	1.016	1.524
450	<.25	0.508	1.016	1.778	2.794	3.81
600	0.508	1.016	2.286	4.318	6.604	8.636
750	0.762	2.032	4.318	8.636	--	--
900	1.524	3.556	7.112	--	--	--
1050	2.286	5.588	11.176	--	--	--

MR-2001020

SPAN \ Def	kg/m					
	300	750	1500	3000	4500	6000
300	<.25	<.25	0.254	0.508	0.508	0.762
450	<.25	0.254	0.508	1.016	1.524	2.032
600	0.254	0.508	1.27	2.286	3.556	4.826
750	0.508	1.27	2.286	4.572	7.112	9.398
900	0.762	20.32	4.064	8.128	12.912	--
1050	1.27	3.302	6.35	12.7	--	--

MR-1001040-2

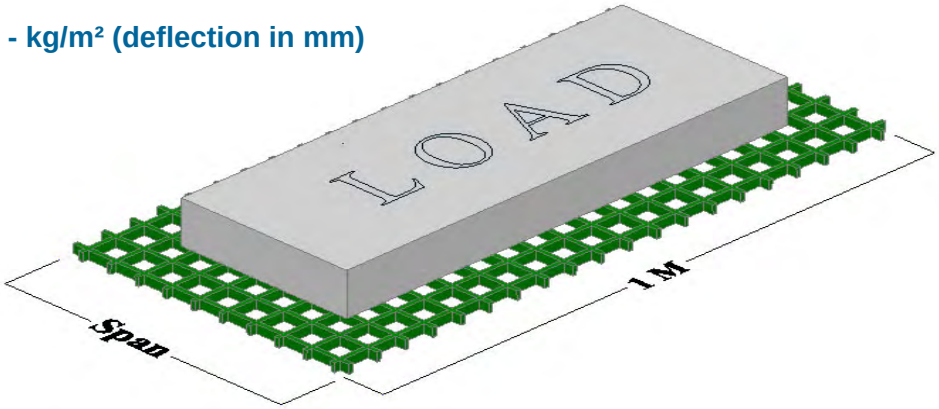
SPAN \ Def	kg/m					
	75	150	300	450	600	750
300	<0.254	0.254	0.762	1.016	1.27	1.524
450	0.508	0.762	1.778	2.54	3.302	4.318
600	0.762	1.778	3.556	5.08	6.858	--
750	1.524	3.048	6.096	9.144	11.938	--
900	2.286	4.826	9.65	--	--	--
1050	3.556	7.112	--	--	--	--
1200	5.08	10.16	--	--	--	--

MR-1501060

SPAN \ Def	kg/m					
	150	300	450	750	1000	1500
300	0.33	0.6096	0.889	1.4224	1.9812	2.4638
450	0.5588	0.9652	1.3208	1.9812	2.7178	3.3528
600	0.7874	1.3208	1.8034	2.794	4.0132	5.1054
750	1.0668	1.9558	2.8194	4.572	6.5532	8.4328
900	2.0828	2.8956	4.6228	6.477	9.3218	12.09
1050	2.4384	4.3434	6.477	10.744	--	--
1200	2.9464	5.7658	8.5598	--	--	--

MinGrate® Molded Grating

UNIFORM LOAD - kg/m² (deflection in mm)



MS-10015

SPAN \ Def	kg/m²					
	240	480	980	1450	2450	3650
450	0.66	1.092	1.93	2.769	4.47	6.579
600	1.118	2.108	4.14	6.172	10.211	15.265
750	2.667	5.387	10.82	16.28	--	--
900	5.537	11.176	21.717	--	--	--

MS-15015

SPAN \ Def	kg/m²					
	240	480	980	1450	2450	3650
300	0.254	0.305	0.381	0.457	0.635	0.838
600	0.432	0.813	1.549	2.311	3.8354	5.74
900	1.702	3.454	6.959	10.465	17.475	--
1200	5.969	12.167	24.511	--	--	--

MS-20020

SPAN \ Def	kg/m²					
	240	480	980	1450	2450	3650
300	0.254	0.279	0.33	0.381	0.483	0.737
600	0.381	0.584	0.965	1.372	2.134	4.115
900	1.194	2.108	3.937	5.766	9.449	18.593
1200	2.413	4.928	9.957	14.961	--	--

MR-1001040-1

SPAN \ Def	kg/m²					
	240	480	980	1450	2450	3650
300	0.279	0.381	0.533	0.711	1.041	--
600	0.914	1.854	3.683	5.537	9.22	--
900	3.632	6.6	12.572	18.542	--	--
1050	8.007	14.884	--	--	--	--

MS-11815

SPAN \ Def	kg/m²					
	350	500	750	1000	1500	2500
300	<.254	<.254	<.254	<.254	<.254	0.508
450	0.254	0.508	0.762	1.016	1.524	2.286
600	1.016	1.524	2.286	2.794	4.318	7.366
750	2.54	3.81	5.842	7.62	11.684	--
900	4.572	7.112	10.668	--	--	--

MS-08015

SPAN \ Def	kg/m²					
	350	500	750	1000	1050	2500
300	<0.254	0.254	0.508	0.508	1.016	1.524
450	1.016	1.524	2.286	3.048	4.572	7.62
600	3.084	4.572	7.112	9.398	--	--
750	5.842	8.89	--	--	--	--
900	--	--	--	--	--	--

MR-1501020

SPAN \ Def	kg/m²					
	1000	2000	2500	3000	3500	4000
300	<.25	<.25	<.25	<.25	<.25	<.25
450	<.25	0.254	0.508	0.508	0.508	0.762
600	0.508	1.016	1.27	1.524	2.032	2.286
750	1.27	2.794	3.302	4.064	4572	5.334
900	2.54	5.334	6.604	7.874	9.398	10.66
1050	4.826	9.906	12.192	--	--	--

MR-2001020

SPAN \ Def	kg/m²					
	1000	2000	2500	3000	3500	4000
300	<.25	<.25	<.25	<.25	<.25	<.25
450	<.25	0.254	0.254	0.254	0.254	0.208
600	0.254	0.508	0.762	1.016	1.016	1.27
750	0.762	1.524	1.778	2.286	2.54	2.794
900	1.524	3.048	3.81	4.572	5.33	6.096
1050	2.794	5.588	7.112	8.382	9.906	11.176

MR-1001040-2

SPAN \ Def	kg/m²					
	250	350	500	750	1000	1500
300	<0.254	<0.254	<0.254	0.254	0.508	0.508
450	0.508	0.508	0.752	1.27	1.524	2.286
600	1.016	1.27	2.032	3.302	4.318	6.35
750	2.286	3.048	4.572	7.112	9.398	--
900	4.572	5.842	8.89	--	--	--
1050	7.874	10.16	--	--	--	--
1200	12.7	--	--	--	--	--

MR-1501060

SPAN \ Def	kg/m²					
	250	350	500	750	1500	2500
300	0.0762	0.127	0.1524	0.2286	0.4826	0.7874
450	0.1778	0.254	0.33	0.508	0.9906	1.651
600	0.33	0.508	0.6858	1.016	2.032	3.3782
750	0.685	1.016	1.3716	2.0574	4.0894	7.3406
900	1.2192	1.8288	2.4384	3.6322	7.2898	12.141
1050	2.3622	3.556	4.9784	7.0612	--	--
1200	3.6068	5.4356	7.239	10.846	--	--

MinGrate® Pultruded Grating

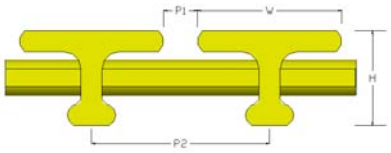
MinGrate® Pultruded Grating are in three types - **T-Sections, I-Sections & HD Series** available are resin systems Isophthalic Polyester (I), Vinyl Ester (V), Orthophthalic (O), Phenolic (P).

T-sections provide maximum surface area underfoot thus the most comfortable walking surface to prevent catching high heels and an excellent surface for two wheel moving equipment. These designs are excellent for areas with high traffic and light hand trucks or wheeled carts.

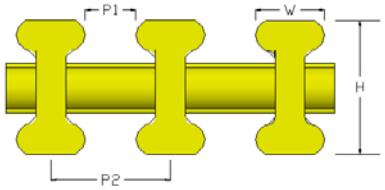
I-Sections are provided for applications where a close match to a steel or aluminum profile or to an existing installation is needed I–Section with bonded rod crossbars (without locking assembly) are suitable for use in low pedestrian traffic areas.

Heavy Duty (HD) solid bar grating is designed to take heavy wheel traffic such as forklifts, tow motors and truck traffic.

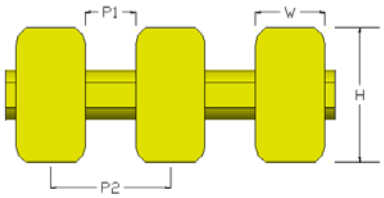
Maximum panel size: 5ft x 20ft
Standard colors: Light Gray, Dark Gray, Yellow, Green.
Standard cross bar spacing: 6” on center or optional 12”.
Custom lengths, colors, bar spacing, and finishes are available.



Type	Height	W	P1	P2	Open Area	3 cores Interlocking Rod lb/ft²
T-1018	1"	1.625"	0.375"	2.0"	18%	2.82
T-1033	1"	1.625"	0.775"	2.4"	33%	2.29
T-1012	1"	1.5"	0.20"	1.70"	12%	2.96
T-1025	1"	1.5"	0.5"	2.0"	25%	2.51
T-1038	1"	1.5"	0.9"	2.4"	38%	2.08
T-1512	1-1/2 "	1.5"	0.2"	1.7"	12%	4.01
T-1525	1-1/2 "	1.5"	0.5"	2.0"	25%	3.41
T-1538	1-1/2 "	1.5"	0.9"	2.4"	38%	2.90
T-1550	1-1/2 "	1.0"	1.0"	2.0"	50%	2.11
T-2033	2"	1.0"	0.5"	1.5"	33%	4.14
T-2050	2"	1.0"	1.0"	2.0"	50%	3.20



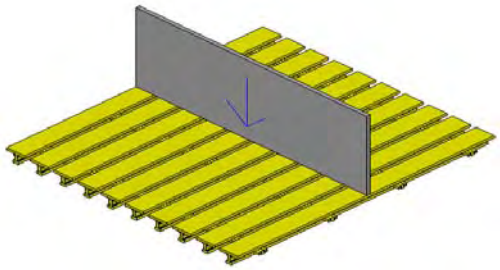
Type	Height	W	P1	P2	Open Area	CD Interlocking Rod lb/ft²	3 cores Interlocking Rod lb/ft²
I-1040	1"	0.6"	0.4"	1.0"	40%	3.19	3.49
I-1050	1"	0.6"	0.6"	1.2"	50%	2.60	2.90
I-1060	1"	0.6"	0.9"	1.5"	60%	1.98	2.29
I-12540	1-1/4 "	0.6"	0.4"	1.0"	40%	3.75	4.05
I-12550	1-1/4 "	0.6"	0.6"	1.2"	50%	3.25	3.56
I-12560	1-1/4 "	0.6"	0.9"	1.5"	60%	2.45	2.76
I-12540	1-1/2 "	0.6"	0.4"	1.0"	40%	4.29	4.50
I-1540	1-1/2 "	0.6"	0.4"	1.0"	40%	4.30	4.50
I-1550	1-1/2 "	0.6"	0.6"	1.2"	50%	3.70	3.90
I-1560	1-1/2 "	0.6"	0.9"	1.5"	60%	3.17	3.29



Type	Height	W	P1	P2	Open Area	3 cores Interlocking Rod lb/ft²
HD-2040	2"	0.6"	0.4"	1.0"	40%	14.38
HD-2050	2"	0.6"	0.6"	1.2"	50%	10.68
HD-2060	2"	0.6"	0.9"	1.5"	60%	8.89

MinGrate® Pultruded Grating

CONCENTRATED LOAD - kg/m (deflection in mm)



T-1018

Span \ Def	kg/m					
	300	500	800	1500	2000	2500
400	0.4	0.67	1.07	2	2.67	3.34
600	1.24	2.06	3.3	8.25	--	--
800	2.76	4.59	7.35	13.78	--	--
1000	5.16	8.6	13.76	--	--	--

T-1012

Span \ Def	kg/m					
	150	300	450	750	1500	3000
450	0.254	0.508	0.762	1.27	2.286	4.826
600	0.508	1.016	1.524	2.286	4.826	9.652
900	1.524	3.048	4.826	7.874	--	--
1200	3.556	7.366	10.92	--	--	--

T-1038

Span \ Def	kg/m					
	300	450	750	1500	3000	5950
450	0.711	1.02	1.727	3.454	6.91	--
600	1.549	2.34	3.886	7.747	--	--
900	4.826	7.21	--	--	--	--
1200	10.77	--	--	--	--	--

T-1525

Span \ Def	kg/m					
	150	300	450	750	1500	3000
450	<0.254	0.254	0.254	0.508	1.016	2.286
600	0.254	0.508	0.508	1.016	2.032	4.064
900	0.508	1.27	1.778	3.048	6.35	12.45
1200	1.524	2.794	4.318	7.112	--	--

T-2033

Span \ Def	kg/m					
	300	450	750	1500	3000	5950
600	--	0.25	0.51	1.02	1.78	3.3
900	0.51	0.76	1.27	2.29	4.57	9.4
1200	1.02	1.52	2.29	4.83	9.91	19.56
1500	1.78	2.79	4.57	9.14	18.3	36.58

T-3310

Span \ Def	kg/m					
	300	450	750	1500	3000	5950
450	0.584	0.86	1.448	2.87	5.74	--
600	1.27	1.93	3.226	6.452	--	--
900	4.013	5.99	10.06	--	--	--
1200	8.992	--	--	--	--	--

T-1025

Span \ Def	kg/m					
	150	300	450	750	1500	3000
450	0.254	0.508	0.762	1.27	2.794	5.588
600	0.508	1.016	1.778	2.794	5.588	11.43
900	1.778	3.556	5.588	9.144	--	--
1200	2.032	4.318	8.382	12.7	--	--

T-1512

Span \ Def	kg/m					
	150	300	450	750	1500	3000
450	<0.254	0.254	0.254	0.508	1.016	1.778
600	<0.254	0.254	0.508	0.762	1.778	3.556
900	0.508	1.016	1.524	2.794	5.334	10.67
1200	1.27	2.54	3.555	6.096	12.19	--

T-1538

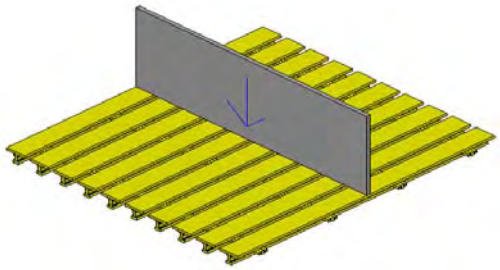
Span \ Def	kg/m					
	150	300	450	750	1500	3000
450	0.254	0.254	0.508	0.762	1.27	2.54
600	0.254	0.508	0.762	1.27	2.286	4.826
900	0.762	1524	2.286	3.81	7.62	--
1200	1.778	3.302	5.08	8.382	--	--

T-2050

Span \ Def	kg/m					
	300	450	750	1500	3000	5950
600	0.25	0.51	0.76	1.27	2.29	4.57
900	0.76	1.27	1.78	3.3	6.1	12.19
1200	1.52	2.29	3.56	6.6	13.5	27.18
1500	2.54	3.81	6.35	12.45	24.6	49.53

MinGrate® Pultruded Grating

CONCENTRATED LOAD - kg/m (deflection in mm)



I-1040

Span \ Def	kg/m					
	300	450	750	1500	3000	5950
450	--	--	1.02	2.03	4.06	7.62
600	--	--	2.54	4.57	8.89	17.53
900	2.8	4.06	6.6	13.46	26.9	53.85
1200	5.84	8.89	14.73	29.46	59.2	118.1

I-1050

Span \ Def	kg/m					
	300	450	750	1500	3000	5950
450	--	--	1.02	2.03	4.06	7.62
600	--	--	2.54	4.83	9.4	18.8
900	2.54	4.06	6.86	13.46	27.2	54.1
1200	7.37	10.9	18.92	36.58	73.2	146.1

I-1060

Span \ Def	kg/m					
	300	450	750	1500	3000	5950
450	--	--	1.52	2.54	4.83	9.65
600	--	--	3.05	5.59	11.2	22.1
900	3.3	4.83	7.87	15.75	31.5	62.99
1200	7.87	11.7	19.3	38.61	77.5	154.7

I-12540

Span \ Def	kg/m					
	300	450	750	1500	3000	5950
450	--	--	1.02	2.03	4.06	7.62
600	--	--	2.54	4.83	9.4	18.8
900	2.54	4.06	6.86	13.46	27.2	54.1
1200	7.37	10.9	18.92	36.58	73.2	146.05

I-1540

Span \ Def	kg/m					
	300	450	750	1500	3000	5950
450	--	0.25	0.51	0.76	1.52	2.79
600	0.51	0.51	1.02	1.78	3.05	5.84
900	1.02	1.27	2.29	4.32	8.38	16.76
1200	2.03	2.79	4.57	9.4	19.1	37.85

I-1550

Span \ Def	kg/m					
	300	450	750	1500	3000	5950
450	--	0.25	0.51	1.02	1.78	3.3
600	0.51	0.51	1.02	1.78	3.56	6.86
900	1.02	1.52	2.54	5.08	9.91	20.07
1200	2.29	3.56	5.84	11.94	23.4	46.99

I-1560

Span \ Def	kg/m					
	300	450	750	1500	3000	5950
450	--	0.25	0.51	0.76	2.03	3.81
600	0.51	0.76	1.02	2.29	4.32	8.38
900	1.27	2.03	3.3	6.1	12.5	25.15
1200	2.79	4.32	7.11	14.22	28.5	56.90

HD-2040

Span \ Def	kg/m								
	150	300	450	750	1500	3000	4500	6000	7500
600	0.034	0.068	0.085	0.153	0.306	0.596	0.902	1.191	1.498
750	0.051	0.102	0.170	0.272	0.545	1.089	1.634	2.195	2.740
900	0.085	0.187	0.272	0.460	0.919	1.838	2.740	3.659	4.578
1200	0.221	0.426	0.772	1.072	2.144	4.289	6.433	8.577	10.721

HD-2050

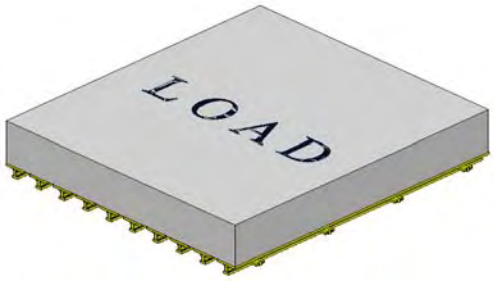
Span \ Def	kg/m								
	150	300	450	750	1500	3000	4500	6000	7500
600	0.041	0.081	0.102	0.183	0.366	0.711	1.077	1.423	1.788
750	0.061	0.122	0.203	0.325	0.650	1.301	1.951	2.621	3.272
900	0.102	0.224	0.325	0.549	1.097	2.195	3.272	4.369	5.466
1200	0.264	0.508	0.772	1.280	2.560	5.121	7.681	10.241	12.802

HD-2060

Span \ Def	kg/m								
	150	300	450	750	1500	3000	4500	6000	7500
600	0.051	0.102	0.127	0.229	0.457	0.889	1.346	1.779	2.235
750	0.076	0.152	0.254	0.405	0.813	1.626	2.438	3.277	4.090
900	0.127	0.279	0.406	0.686	1.372	2.743	4.089	5.462	6.833
1200	0.330	0.635	0.965	1.600	3.200	6.401	9.601	12.802	16.003

MinGrate® Pultruded Grating

UNIFORM LOAD - kg/m² (deflection in mm)



T-1018

Def / Span	kg/m²					
	300	500	800	1500	2000	2500
400	0.1	0.17	0.27	0.5	0.67	0.83
600	0.46	0.77	1.24	2.32	3.1	3.87
800	1.38	2.3	3.67	6.89	9.18	11.48
1000	3.22	5.37	8.6	--	--	--

T-1033

Def / Span	kg/m²					
	1000	1900	3900	7000	9500	19500
450	0.56	1.069	2.134	4.039	5.23	--
600	1.63	3.226	6.542	12.12	--	--
900	7.52	15.04	--	--	--	--
1200	--	--	--	--	--	--

T-1012

Def / Span	kg/m²					
	450	950	1450	2400	4850	9500
450	<0.254	0.254	0.762	1.016	2.286	4.572
600	0.508	1.27	1.778	3.048	6.096	12.92
900	2.794	5.842	8.89	--	--	--
1200	9.144	--	--	--	--	--

T-1025

Def / Span	kg/m²					
	450	950	1450	2400	4850	9500
450	0.254	0.508	762	1.27	2.54	5.08
600	0.762	1.524	2.032	3.556	7.112	--
900	3.556	6.858	10.41	--	--	--
1200	10.67	--	--	--	--	--

T-1038

Def / Span	kg/m²					
	1000	1900	3900	7000	9500	19500
450	0.66	1.295	2.616	5.004	6.53	--
600	1.96	3.886	7.772	--	--	--
900	9.02	--	--	--	--	--

T-1512

Def / Span	kg/m²					
	450	950	1450	2400	4850	9500
450	<0.254	0.254	0.254	0.508	1.016	1.778
600	0.254	0.508	0.762	1.016	2.286	4.318
900	1.016	2.032	3.048	5.08	10.16	--
1200	3.048	6.096	9.144	--	--	--

T-1525

Def / Span	kg/m²					
	450	950	1450	2400	4850	9500
450	<0.254	0.254	0.254	0.508	1.016	2.032
600	0.254	0.508	0.762	1.27	2.54	5.08
900	1.27	2.286	3.556	5.842	11.68	--
1200	3.556	7.112	10.67	--	--	--

T-1538

Def / Span	kg/m²					
	450	950	1450	2400	4850	9500
450	<0.254	0.254	0.254	0.508	1.27	2.54
600	0.254	0.508	1.01	1.524	3.048	6.096
900	1.524	2.794	4.318	7.112	--	--
1200	4.318	8.382	12.7	--	--	--

T-2033

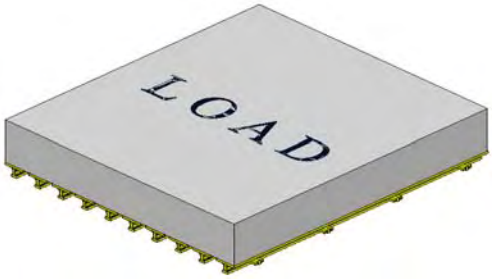
Def / Span	kg/m²					
	1000	1900	3900	7000	9500	19500
600	0.25	0.51	0.76	1.52	2.03	4.06
900	0.76	1.52	3.05	5.59	7.73	14.99
1200	2.29	4.57	9.4	--	--	--
1500	5	9.91	--	--	--	--

T-2050

Def / Span	kg/m²					
	1000	1900	3900	7000	9500	19500
600	0.51	0.76	1.27	2.29	3.05	6.35
900	1.02	2.03	3.81	6.86	9.4	--
1200	3.3	6.35	12.45	--	--	--
1500	6.86	13.46	--	--	--	--

MinGrate® Pultruded Grating

UNIFORM LOAD - kg/m² (deflection in mm)



I-1040

Def / Span	kg/m²					
	1000	1900	3900	7000	9500	19500
450	0.25	0.76	1.27	2.29	3.05	6.1
600	1.01	1.27	3.56	6.86	8.89	--
900	4.57	8.38	16.26	--	--	--
1200	14.48	--	--	--	--	--

I-1050

Def / Span	kg/m²					
	1000	1900	3900	7000	9500	19500
450	0.51	0.76	1.27	2.54	3.302	6.6
600	1.27	2.29	4.06	5.08	7.26	15.24
900	4.83	8.89	17.27	--	--	--
1200	16.51	--	--	--	--	--

I-1060

Def / Span	kg/m²					
	1000	1900	3900	7000	9500	19500
450	0.51	0.76	1.52	2.79	3.81	7.37
600	1.27	2.29	4.57	8.38	11.18	--
900	5.84	10.92	--	--	--	--
1200	17.78	--	--	--	--	--

I-12540

Def / Span	kg/m ²					
	1000	1500	2500	5000	10000	15000
600	0.550	0.820	1.370	2.730	5.470	8.200
800	1.630	2.450	4.080	8.170	--	--
1000	3.860	5.790	9.640	--	--	--
1200	7.740	11.620	--	--	--	--

I-1540

Def / Span	kg/m ²					
	1000	1900	3900	7000	9500	19500
450	0.51	0.76	1.52	2.79	3.81	7.37
600	1.27	2.29	4.57	8.38	11.18	--
900	5.84	10.92	--	--	--	--
1200	17.78	--	--	--	--	--

I-1550

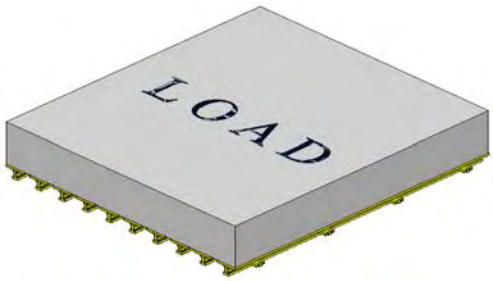
Def / Span	kg/m ²					
	1000	1900	3900	7000	9500	19500
450	0.25	0.51	0.76	1.27	1.778	3.56
600	0.51	0.76	1.52	3.05	4.06	8.13
900	1.78	3.3	6.1	11.7	15.49	--
1200	5.59	10.69	--	--	--	--

I-1560

Def / Span	kg/m ²					
	1000	1900	3900	7000	9500	19500
450	0.25	0.25	0.76	1.27	1.78	3.56
600	0.51	1.02	1.789	3.3	4.57	8.89
900	2.29	4.06	7.87	14.7	--	--
1200	6.6	12.95	--	--	--	--

MinGrate® Pultruded Grating

UNIFORM LOAD - kg/m² (deflection in mm)



HD-2040

Def / Span	kg/m²								
	450	950	1450	2450	4850	9800	14500	19500	24400
600	0.034	0.068	0.119	0.187	0.374	0.749	1.123	1.498	1.855
750	0.085	0.170	0.255	0.426	0.851	1.702	2.570	3.421	4.272
900	0.170	0.340	0.511	0.851	1.719	3.438	5.139	6.858	8.577
1200	0.545	1.072	1.617	2.689	5.361	10.721	--	--	--

HD-2050

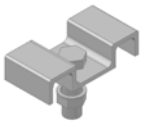
Def / Span	kg/m²								
	450	950	1450	2450	4850	9800	14500	19500	24400
600	0.041	0.081	0.142	0.224	0.447	0.894	1.341	1.788	2.215
750	0.102	0.203	0.305	0.508	1.016	2.033	3.068	4.084	5.100
900	0.203	0.406	0.610	1.016	2.052	4.105	6.137	8.189	10.241
1200	0.650	1.280	1.930	3.211	6.401	12.802	--	--	--

HD-2060

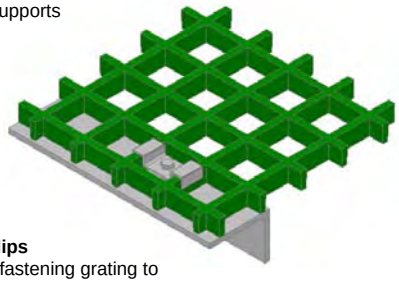
Def / Span	kg/m²								
	450	950	1450	2450	4850	9800	14500	19500	24400
600	0.051	0.102	0.178	0.279	0.559	1.118	1.676	2.235	2.769
750	0.127	0.254	0.381	0.635	1.270	2.550	3.835	5.105	6.375
900	0.254	0.508	0.762	1.270	2.565	5.131	7.671	10.236	12.802
1200	0.813	1.600	2.413	4.013	8.001	16.003	--	--	--

Fixing Accessories

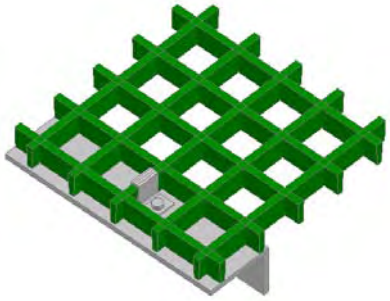
Molded Grating



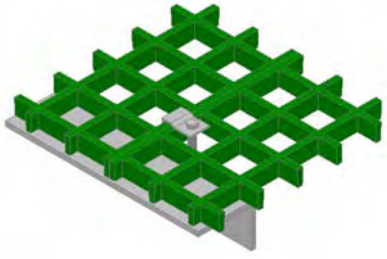
M Clips
For attaching grating to supports



L Clips
For fastening grating to supports

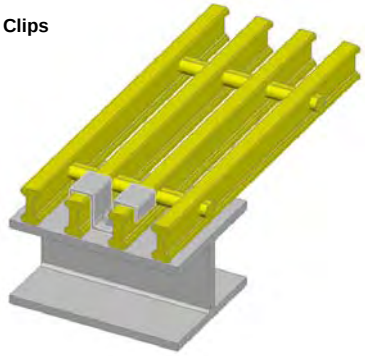


C Clips
For joining two unsupported edges if needed.

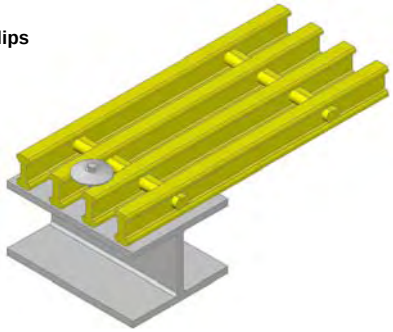


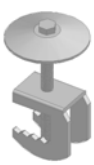
Pultruded Grating

M Clips

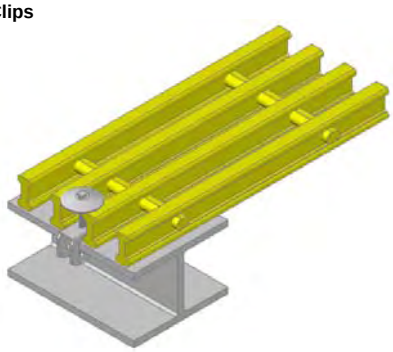


W Clips





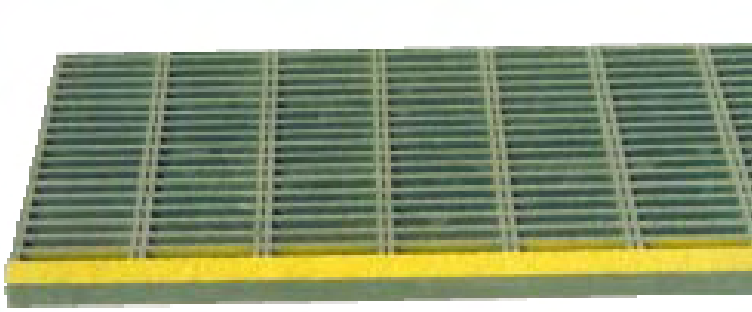
GW Clips

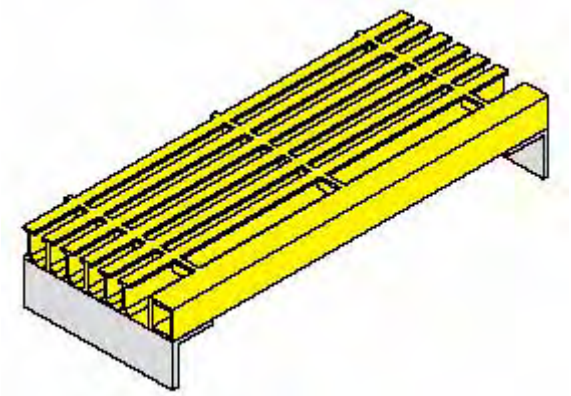


MinTread®

MinTread® fiberglass stair treads deliver safety and long lasting durability. Manufactured with premium polyester or Vinyl Ester (V) resin, MinTreads® provide outstanding protection against corrosion and reliable structural performance. The important safety benefits are addressed with slip resistant surfaces, non-conductivity, and low flame spread.

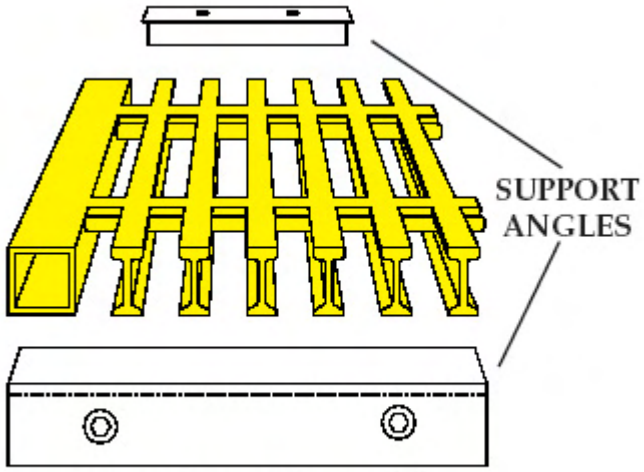
The most vulnerable point of a stair tread is the nosing. For greater durability, MinTread® nosings are high strength, heavy bars with slip resistant, gritted surface. With high structural properties, the heavy bar nosing provides greater stiffness and is more durable than a molded nosing.





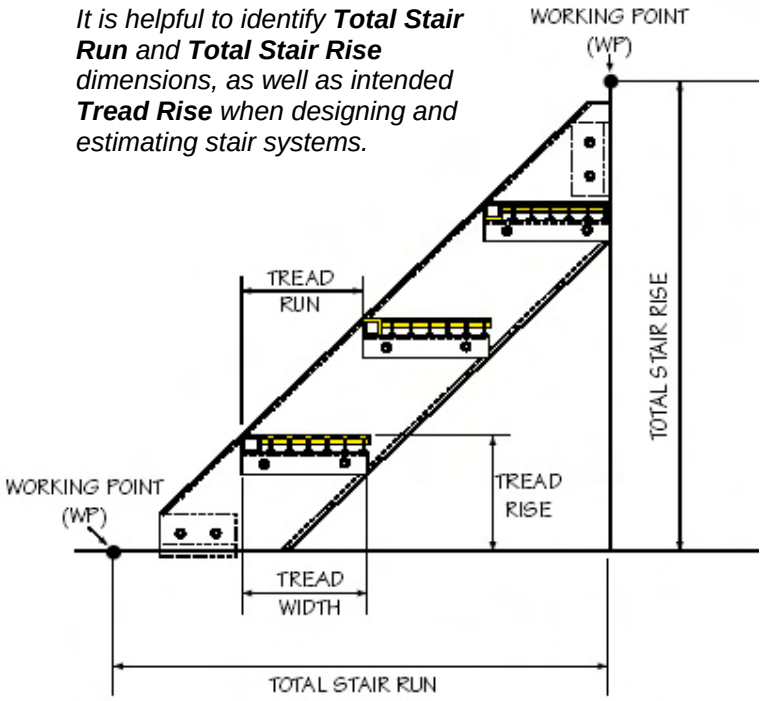
MinTreads are offered in pultruded and molded sections, each with the heavy bar nosing. The pultruded parts are stronger with greater span capability Both sections provide outstanding protection against corrosion

Stair Tread Assembly



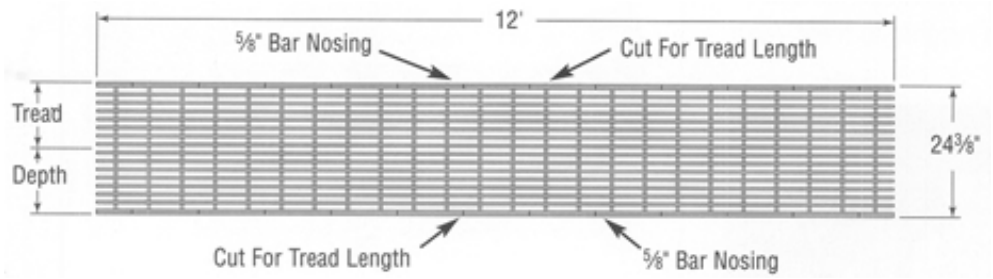
Stair treads are available with optional support angles

*It is helpful to identify **Total Stair Run** and **Total Stair Rise** dimensions, as well as intended **Tread Rise** when designing and estimating stair systems.*



Pultruded Stair Treads

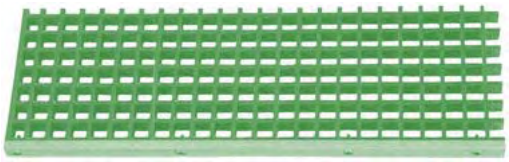
.Up to 48" clear spans
.Skid resistant yellow bar nosings
.Skid resistant, gritted entire top surface



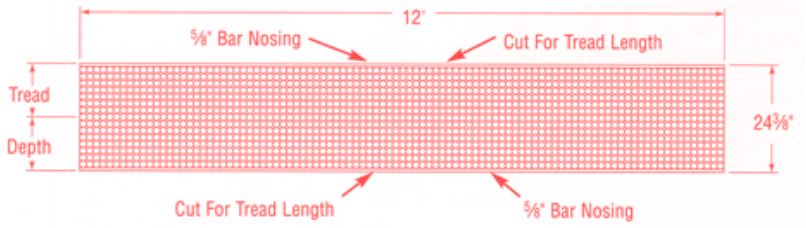
Panel Cutting Options	
Qty	**Tread Length**
12	2'0"
8	2'6"
2	2'0"
8	3'0"
6	3'6"
6	4'0"

	 I-1060		 I-1560		 T-1538	
SPAN	**250 lbs.**	**500 lbs.**	**250 lbs.**	**500 lbs.**	**250 lbs.**	**500 lbs.**
18"	0.029	0.069	0.010	0.019	0.009	0.018
24"	0.078	0.147	0.019	0.038	0.018	0.036
30"	0.137		0.038	0.076	0.027	0.054
36"	0.216		0.057	0.105	0.036	0.081
42"			0.086	0.171	0.054	0.108
48"			0.124	0.247	0.081	0.162

Molded Stair Treads



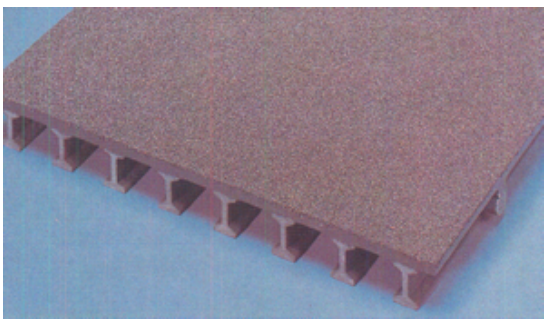
MinTreads are also in molded sections, each with the heavy bar nosing.



MinTread MS-1515 *Molded Stair Treads*

MinPlate / Covered Grating

MinPlate is a premium quality FRP flat sheet provided in 1/8", 1/4" and 3/8" thicknesses. The top surface can be smooth or have a gritted slip resistant surface. For covered grating applications, 1/8" or 1/4". Min-Plate is laminated to MinGrate molded and pultruded gratings to form a flat and corrosion resistant working surface. These materials are used for applications, where free passage of light and air is not desired nor drainage a requirement as in pit covers where reduction of corrosive vapors is needed.



FRP Pultruded Profile

The many inherent features of fiberglass can be used to an engineer's advantange in fabricated structures. Today, fiberglass fabricated structures are solving problems in a wide variety of markets and applications. Some of these features include:

- Corrosion Resistant
- Nonconductive—Thermally and Electrically
- Nonmagnetic—Electromagnetic Transparency
- Lightweight — Weighs 80% less than Steel
- High Strength
- Dimensional Stability
- Low Maintenance
- Easy Assembly

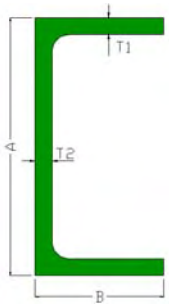
Equal Angle

Round Tube

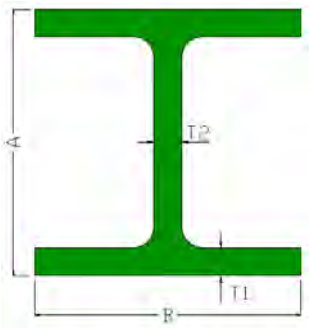
Wide Flange Beam

Channel

Square Tube

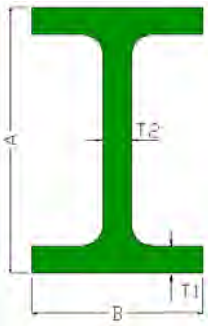


CHANNEL	Dimension				
Type	B	A	T1	T2	lb/ft
C25-29-64	1"	1-1/8"	1/4"	1/4"	1.09
C32-38-24	1-1/4"	1-1/2"	3/32"	3/32"	0.28
C38-25-48	1-1/2"	1"	3/16"	3/16"	0.46
C59-25-40	2-5/16"	1"	5/32"	5/32"	0.44
C64-19-24	2-1/2"	3/4"	3/32"	3/32"	0.24
C50-14-32	2"	9/16"	1/8"	1/8"	0.24
C67-25-40	2-5/8"	1"	5/32"	5/32"	0.48
C71-25-32	2-13/16"	1"	1/8"	1/8"	0.4
C76-22-64	3"	7/8"	1/4"	1/4"	0.76
C76-25-64	3"	1"	3/16"	3/16"	0.67
C76-38-64	3"	1-1/2"	1/4"	1/4"	1.01
C102-27-32	4"	1-1/16"	1/8"	1/8"	0.57
C102-44-48	4"	1-3/4"	3/16"	3/16"	1.14
C127-44-48	5"	1-3/8"	1/4"	1/4"	1.38
C152-41-64	6"	1-5/8"	1/4"	1/4"	1.65
C152-43-95	6"	1-11/16"	3/8"	3/8"	2.51
C178-44-48	7"	1-3/4"	3/16"	3/16"	1.34
C178-50-64	7"	2"	1/4"	1/4"	1.97
C203-56-64	8"	2-3/16"	1/4"	1/4"	2.28
C203-56-95	8"	2-3/16"	3/8"	3/8"	3.35
C254-57-24	10"	2-1/4"	3/32"	3/32"	1.04
C254-70-32	10"	2-3/4"	1/8"	1/8"	1.4
C254-70-127	10"	2-3/4"	1/2"	1/2"	5.41
C610-76-64	24"	3"	1/4"	1/4"	5.52
C610-102-127	24"	4"	1/2"	1/2"	10.71

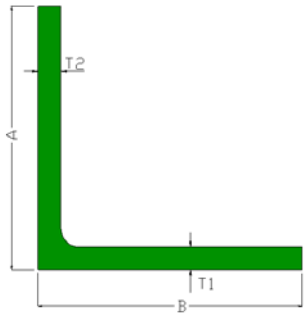


H BEAM	Dimension				
Type	A	B	T1	T2	lb/ft
HB76-64	3"	3"	1/4"	1/4"	1.66
HB102-64	4"	4"	1/4"	1/4"	2.18
HB152-64	6"	6"	1/4"	1/4"	3.47
HB152-95	6"	6"	3/8"	3/8"	5.04
HB203-95	8"	8"	3/8"	3/8"	6.86
HB203-127	8"	8"	1/2"	1/2"	9.08
HB254-95	10"	10"	3/8"	3/8"	8.63
HB254-127	10"	10"	1/2"	1/2"	11.45
HB305-127	12"	12"	1/2"	1/2"	13.45

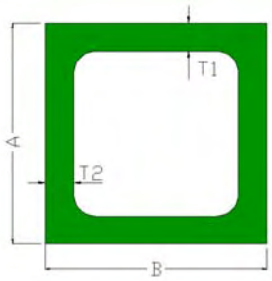
FRP Pultruded Profile



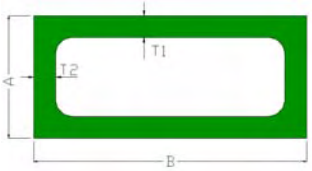
I BEAM	Dimension				
Type	A	B	T1	T2	lb/ft
IB76-38-64	1-1/2"	3"	1/4"	1/4"	1.09
IB102-50-64	2"	4"	1/4"	1/4"	1.46
IB152-76-64	3"	6"	1/4"	1/4"	2.27
IB152-76-95	3"	6"	3/8"	3/8"	3.33
IB203-102-95	4"	8"	3/8"	3/8"	4.53
IB203-102-127	4"	8"	1/2"	1/2"	5.93
IB152-125-95	4-15/16"	6"	1/2"	1/2"	4.86
IB254-127-95	5"	10"	3/8"	3/8"	5.68
IB254-127-127	5"	10"	1/2"	1/2"	7.45
IB305-152-127	6"	12"	1/2"	1/2"	9.09



ANGLE	Dimension				
Type	A	B	T1	T2	lb/ft
AGL25-32	1"	1"	1/8 "	1/8 "	0.17
AGL25-64	1"	1"	1/4 "	1/4 "	0.32
AGL29-32	1-1/8"	1-1/8"	1/8 "	1/8 "	0.18
AGL38-32	1-1/2 "	1-1/2 "	1/8 "	1/8 "	0.28
AGL38-48	1-1/2 "	1-1/2 "	3/16"	3/16"	0.4
AGL38-64	1-1/2 "	1-1/2 "	1/4 "	1/4 "	0.5
AGL50-32	2"	2"	1/8 "	1/8 "	0.36
AGL50-48	2"	2"	3/16"	3/16"	0.55
AGL50-64	2"	2"	1/4 "	1/4 "	0.72
AGL76-32	3"	3"	1/8 "	1/8 "	0.51
AGL76-48	3"	3"	3/16"	3/16"	0.77
AGL76-64	3"	3"	1/4 "	1/4 "	1.11
AGL76-95	3"	3"	3/8 "	3/8 "	1.63
AGL102-64	4"	4"	1/4 "	1/4 "	1.52
AGL102-95	4"	4"	3/8 "	3/8 "	2.27
AGL102-127	4"	4"	1/2 "	1/2 "	2.81
AGL152-64	6"	6"	1/4 "	1/4 "	2.31
AGL152-95	6"	6"	3/8 "	3/8 "	3.39
AGL152-127	6"	6"	1/2 "	1/2 "	4.56

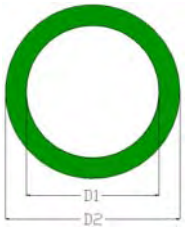


SQUARE TUBE	Dimension				
Type	B	A	T1	T2	lb/ft
SHS25-28	1"	1"	7/64"	7/64"	0.28
SHS25-32	1"	1"	1/8"	1/8"	0.32
SHS32-64	1-1/4"	1-2/8"	1/4"	1/4"	0.67
SHS38-32	1-1/2"	1-1/2"	1/8"	1/8"	0.5
SHS38-64	1-1/2"	1-1/2"	1/4"	1/4"	0.96
SHS44-32	1-3/4"	1-3/4"	1/8"	1/8"	0.63
SHS44-64	1-3/4"	2"	1/4"	1/4"	1.17
SHS50-32	2"	2"	1/8"	1/8"	0.73
SHS50-64	2"	2"	1/4"	1/4"	1.38
SHS54-48	2-1/8"	2-1/8"	3/16"	3/16"	1.12
SHS64-64	2-1/2"	2-1/2"	1/4"	1/4"	1.76
SHS76-64	3"	3"	1/4"	1/4"	2.17
SHS102-64	4"	4"	1/4"	1/4"	3.03



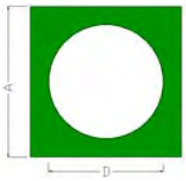
FLAT TUBE	Dimension				
Type	A	B	T1	T2	lb/ft
FHS32-14-30	9/16"	1-1/4"	1/8"	1/8"	0.31
FHS40-25-30	1"	1-9/16"	1/8"	1/8"	0.46
FHS50-25-30	1"	2"	1/8"	1/8"	0.51
FHS52-32-50	1-1/4"	2-1/16"	13/64"	13/64"	0.95
FHS52-32-35	1-1/4"	2-1/16"	9/64"	9/64"	0.67
FHS65-30-31	1-3/16"	2-9/16"	1/8"	1/8"	0.72
FHS80-36-5080	1-7/16"	3-2/16"	13/64"	5/16"	1.58
FHS100-22-5550	7/8"	3-15/16"	7/32"	13/64"	1.62
FHS150-75-47	2-15/16"	5-7/8"	3/16"	3/16"	2.63
FHS180-70-55	2-3/4"	7-1/16"	7/32"	7/32"	3.01

FRP Pultruded Profile

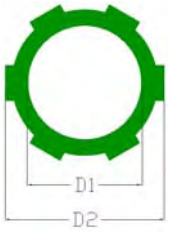


ROUND TUBE Type	Dimension D1	D2	lb/ft
RHS19-5	9/16"	3/4"	0.18
RHS25-6	3/4"	1"	0.24
RHS32-5	1-1/16"	1-1/4"	0.26
RHS32-7	1"	1-1/4"	0.32
RHS32-10	7/8"	1-1/4"	0.46
RHS38-16	1-1/4"	1-1/2"	0.44
RHS38-13	1"	1-1/2"	0.78
RHS42-6	1-3/8"	1-5/8"	0.46
RHS42-10	1-1/4"	1-5/8"	0.92
RHS50-6	1-3/4"	2"	0.59
RHS50-12	1-1/2"	2"	1.1
RHS64-7	2-1/4"	2-1/2"	0.7
RHS64-14	2"	2-1/2"	1.41
RHS76-64	2-1/2"	3"	1.67
RHS101-13	3-7/16"	4"	2.57

Items of FRP Profile listed in the tables are our main standard profiles, which are generally stocked in 6.1M length, except if those stipulated. We also can produce tailor-made in mould making and profile manufacture.



SQUAR TUBE W/ ROUND HOLE Type	Dimension A	D	lb/ft
SRHS	1"	3/4"	0.36



ROUND TUBE Type	Dimension D1	D2	T
CRT32-25-35	1"	1-1/4"	9/64"
CRT45-28-85	1-1/8"	1-3/4"	5/16"
CRT42-32-50	1-2/8"	1-3/4"	13/64"

SQUARE BAR Type	Dimension Side	Side	lb/ft
SB25	1"	1"	0.86
SB32	1-1/4"	1-1/4"	1.29
SB38	1-1/2"	1-1/2"	1.8

ROD Type	Diameter	lb/ft
ROD64	1/4"	0.04
ROD79	5/16"	0.06
ROD95	3/8"	0.1
ROD127	1/2"	0.17
ROD159	5/8"	0.26
ROD190	3/4"	0.38
ROD206	13/16"	0.44
ROD222	7/8"	0.52
ROD254	1"	0.58
ROD318	1-1/4"	1.08
ROD381	1-1/2"	1.49
ROD508	2"	2.51
ROD635	2-1/2"	3.87

STRIP Type	Dimension W	T	lb/ft
STP64-32	2-1/2"	1/8"	0.22
STP102-32	4"	1/8"	0.36
STP64-48	2-1/2"	3/16"	0.34
STP102-48	4"	3/16"	0.54
STP102-64	4"	1/4"	0.72
STP152-64	6"	1/4"	1.08
STP229-64	9"	1/4"	1.61
STP76-95	3"	3/8"	0.81
STP152-95	6"	3/8"	1.61
STP50-127	2"	1/2"	0.72

SHEET Type	Dimension W	L	T	lb/ft
SHT32	4'	8'	1/8"	1.39
SHT48	4'	8'	3/16"	1.68
SHT64	4'	8'	1/4"	2.3
SHT95	4'	8'	3/8"	3.48
SHT127	4'	8'	1/2"	4.6
SHT159	4'	8'	5/8"	5.7
SHT190	4'	8'	3/4"	6.83
SHT250	4'	8'	1"	9.12

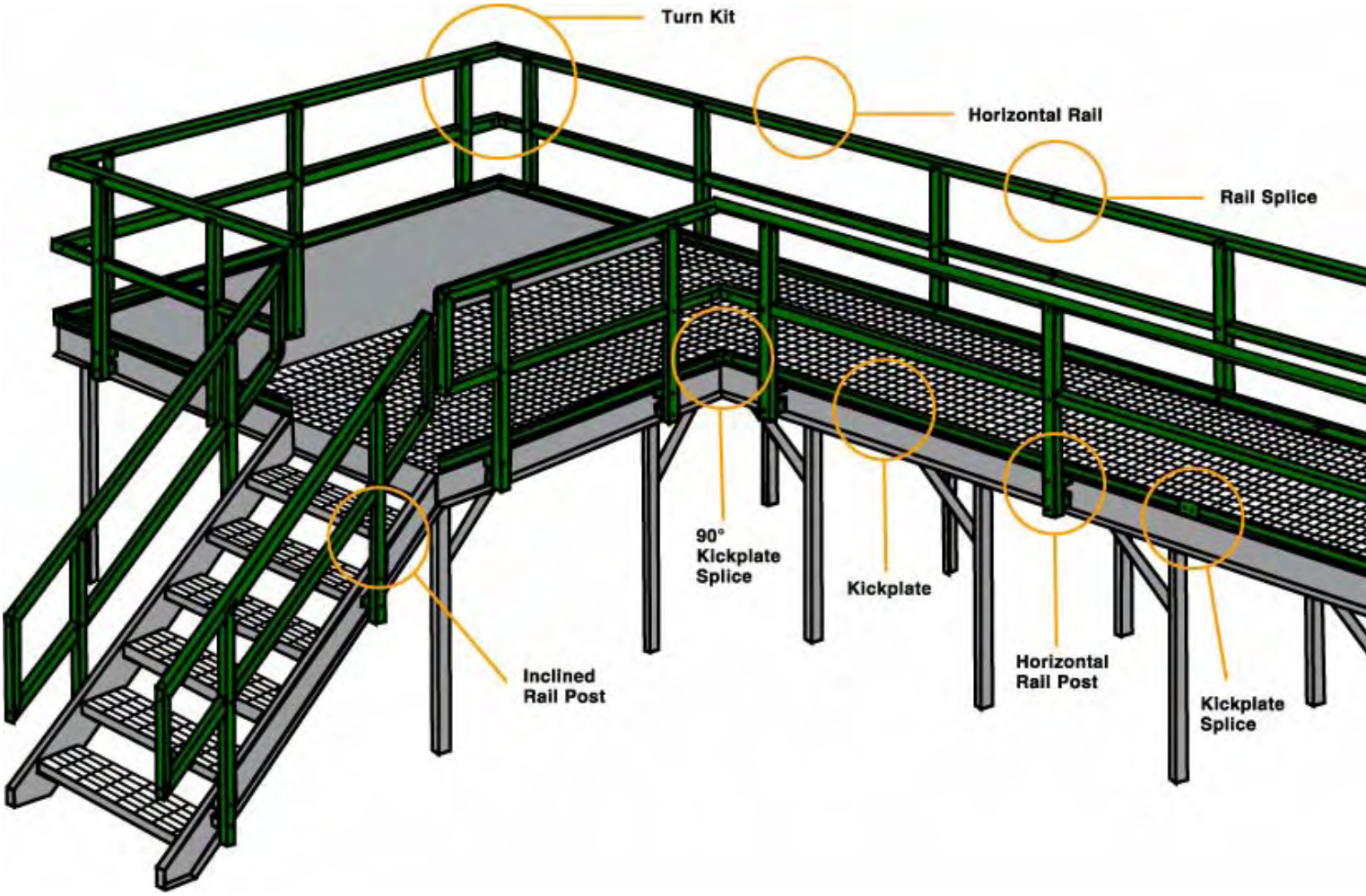
MinRail

MinRail FRP handrails are for stair rails, platform/walkway handrails and guardrails. MinRail system is assembled from pultruded fiberglass profiles and connectors. The railing systems are particularly suitable for corrosive environments like those found in industrial, chemical and wastewater treatment plants as well as commercial structures with urban and salt air corrosion.

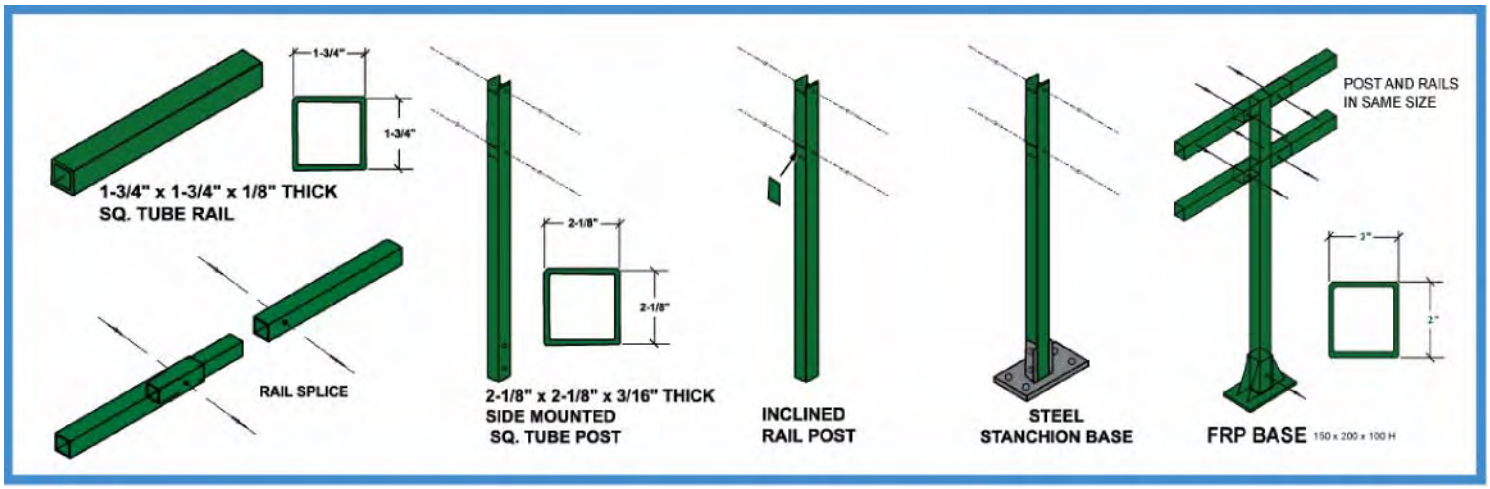
Simple Assembly — MinRail are produced in lightweight standard profiles that include both post and rail. Systems can be fabricated and installed on site with simple tools.

Internal Jointing — All jointing fit flush, resulting in a pleasing and streamlined appearance. The internal connections allow the construction of continuous handrail systems without special fittings.

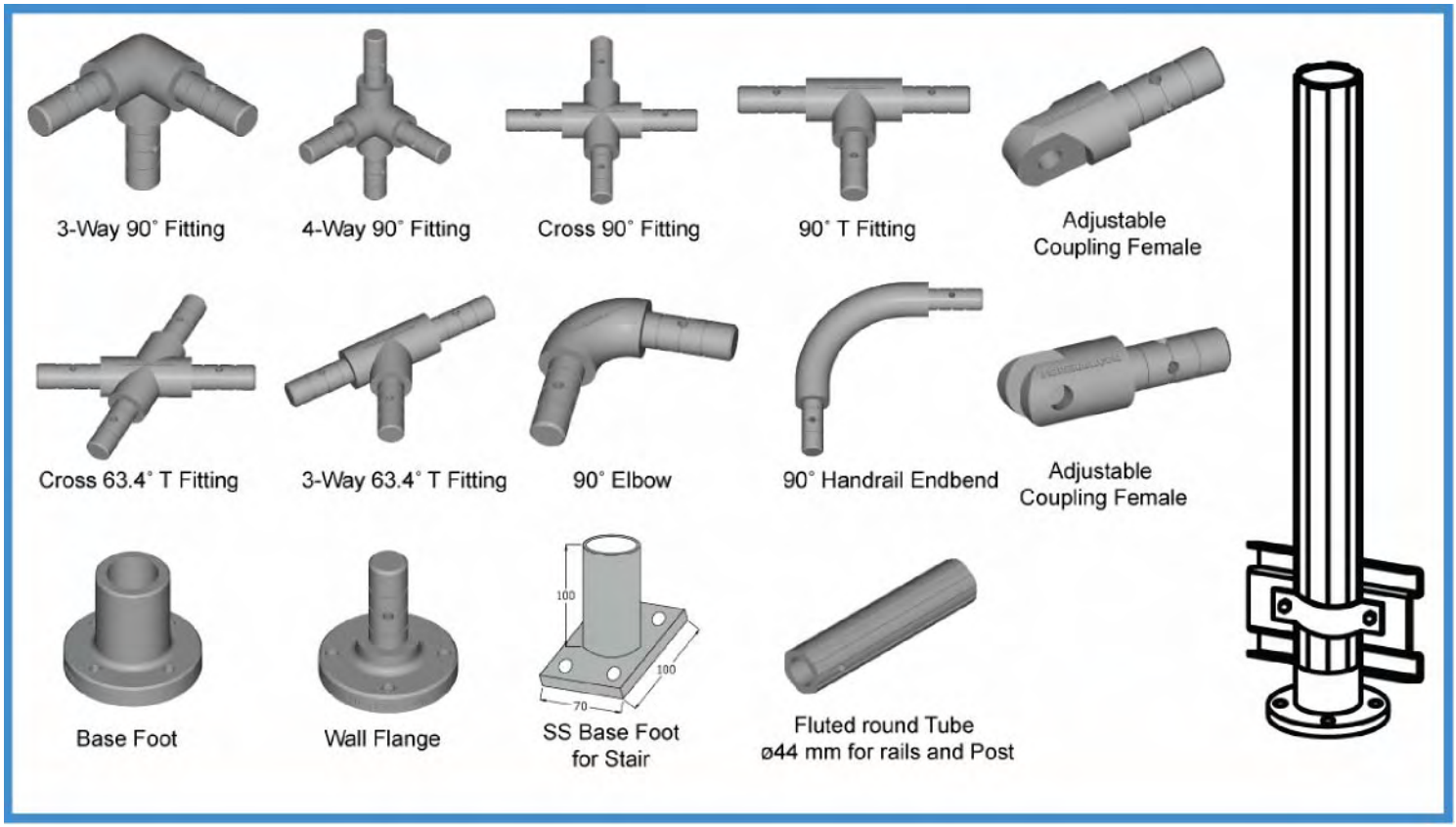
Cost Effective — Fiberglass components are designed as easy-to-assemble to lower the cost for labor and maintenance.



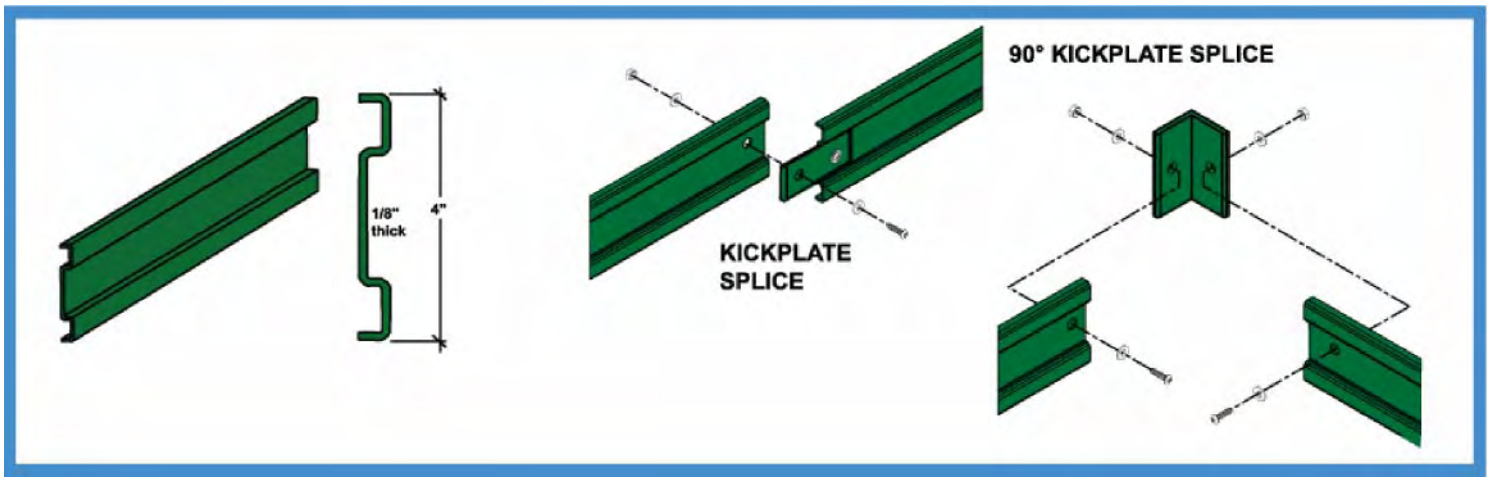
MinRail Square Rails Components



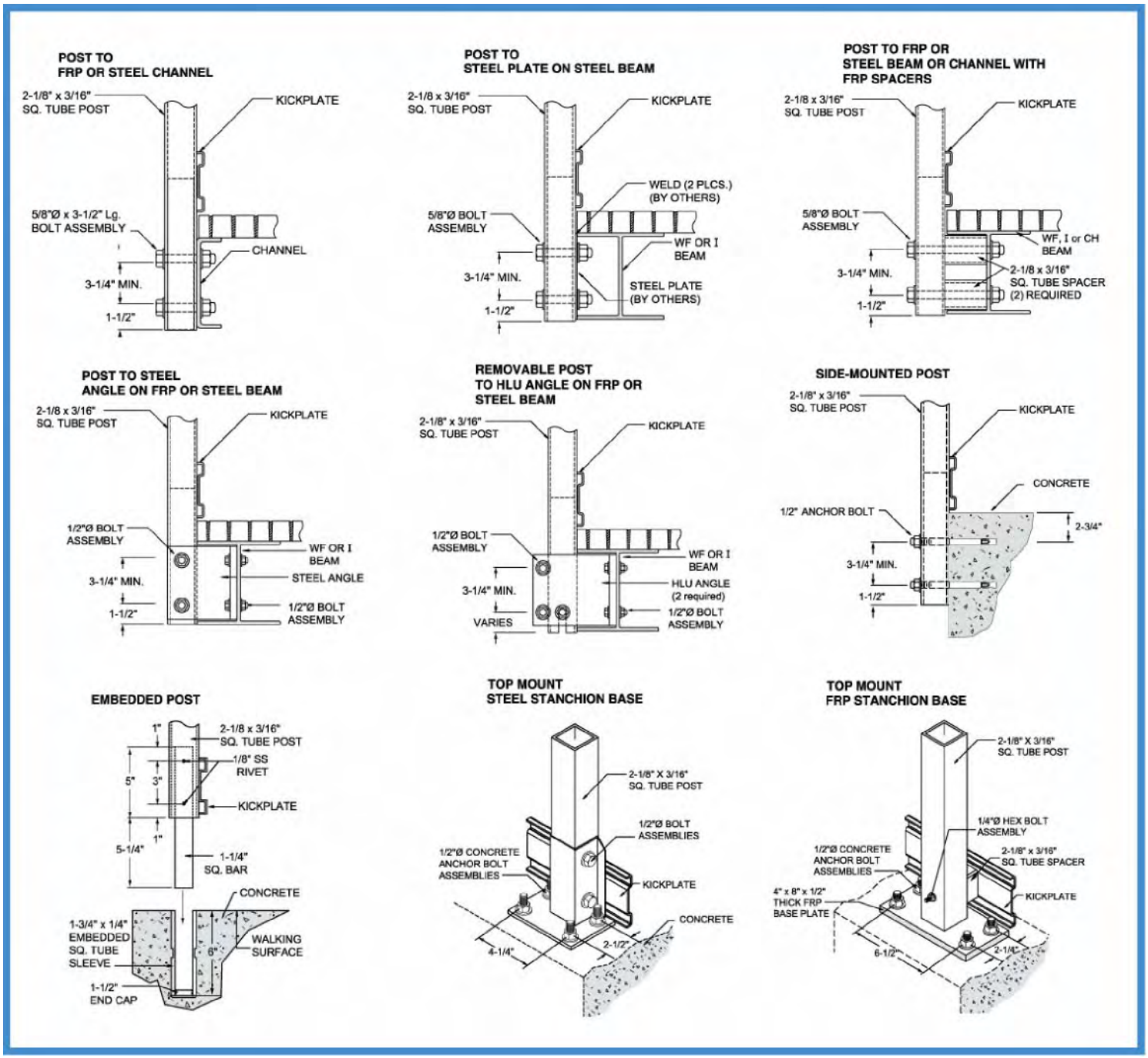
MinRail Square Rails Components



Kick Plate and Splice

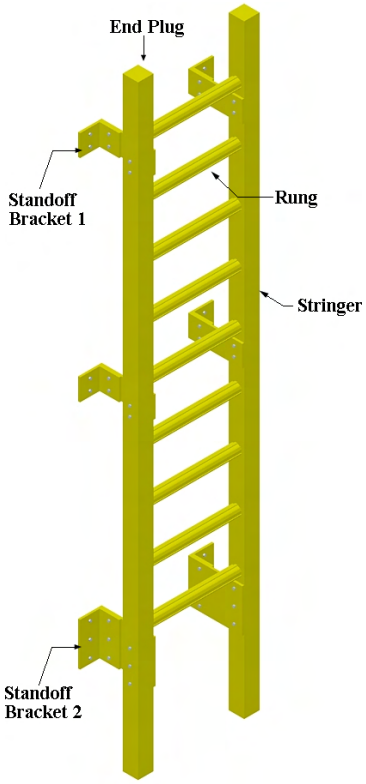


Post Installation Methods



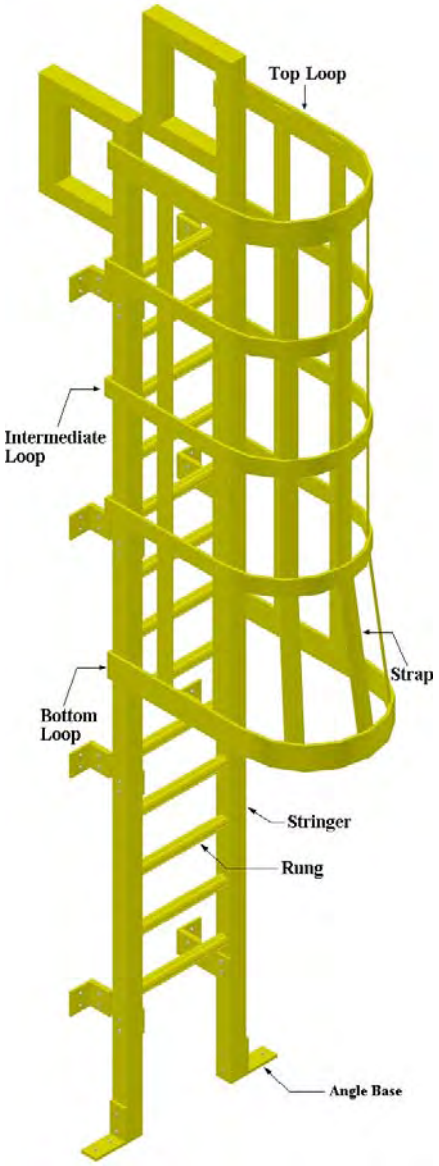
MinLadder

Ladder and Cage Systems



Specification

Stringer	2” x 1/4” SHS
Rung	1-1/4” Flute Tube
Intermediate Loop	2” x 1/4” Strip
Top and Bottom Loop	3” x 1/4” Strip
Strap	2” x 3/16” Strip
Standoff Bracket 1	4” x 3/8”(T) x 4”(L) Angle 4” x 10” x 3/8” (T) Plate
Standoff Bracket 2	4” x 3/8”(T) x 8”(L) Angle 8” x 10” x 3/8” (T) Plate
Base Angle	3” x 1/2” x 2” Angle
End Plug	Molded End Cap



Standard Designs

Type: FM
(Floor Mount)

Type: WM
(Wall Mount)

Type: WMR
(Wall Mount w/Return)

Type: CWR
(Cage w/Return)

Type: CSW
(Side Walk Cage)

Remark: Any combination of the above designs and tailor-made per the drawings provided are available.

Chemical Resistance Guide

This chemical resistance guide is based on extensive experience and knowledge of composites in chemical service. Since actual in-use conditions can differ from referenced conditions and can vary during the usable life of the grating, this guide is intended for general reference use only. The end user is responsible for testing and determining final product suitability.

Chemical Environment	Operating Temperature, ˚F					Chemical Environment	Operating Temperature, ˚F				
	Molded MinGrate®			Pultruded MinGrate®			Molded MinGrate®			Pultruded MinGrate®	
	Vinyl Ester (V)	Isophthalic Polyester (I)	Orthophthalic Polyester (O)	Vinyl Ester (V)	Isophthalic Polyester (I)		Vinyl Ester (V)	Isophthalic Polyester (I)	Orthophthalic Polyester (O)	Vinyl Ester (V)	Isophthalic Polyester (I)
Acetic Acid, 50%	180	150	140	180	150	Lithium Chloride	180	150	140	180	150
Acetone	Amb(1)	Amb(2)	NR	Amb(2)	NR	Magnesium Carbonate	160	120		160	Amb
Alcohol	120	120(2)		120(2)	120(2)	Magnesium Chloride	180	150	140	180	150
Aluminum Chloride	180	150	140	180	150	Magnesium Hydroxide	180	NR	NR	140	NR
Aluminum Hydroxide	120	Amb	NR	120	Amb	Magnesium Nitrate	180	120		160	Amb
Aluminum Nitrate	140	120		140	100	Magnesium Sulfate	160	150		160	120
Aluminum Sulfate	160	150		160	120	Mercuric Chloride	180	150		180	150
Ammonium Chloride	180	150		160	120	Methyl Ethyl Ketone	NR	NR	NR	NR	NR
Ammonium Hydroxide, 5%	180	NR	NR	140	NR	Mineral Oil	180	150		180	150
Ammonium Nitrate, 50%	180	120		160	120	Nickel Chloride	180	140		180	120
Ammonium Nitrate, Saturated	180	100		160	100	Nitric Acid, 5%	120	100	NR	120	100
Ammonium Persulfate, 25%	120	NR	NR	120	NR	Phenol,10%	Amb(1)	NR	NR	Amb(2)	NR
Ammonium Phosphate	180	120	NR	150	Amb	Phosphoric Acid, 85%	t80	140		180	140(1)
Ammonium Sulfate	180	120		160	120	Phosphoric Acid, Vapor	160	120		160	120
Barium Chloride	180	150	120	180	150	Potassium Aluminum Sulfate	180	150		180	150
Barium Sulfate	180	150		180	150	Potassium 8icarbonate	120	Amb		110	Amb(1)
Benzene	140(2)	120(2)		Amb(2)	NR	Potassium Carbonate, 10%	110	Amb(2)	NR	110	NR
8iack Liquor (Pulp Process)	180	120(2)	NR	160(2)	NR	Potassium Chloride	180	150	140	180	150
Bleach Liquor (Pulp Process)	180	Amb(2)	NR	160(2)	NR	Potassium Hydroxide, 10%	120	Amb(2)	NR	120(1)	NR
Brine (Sodium Chloride)	180	150	140	180	150	Potassium Nitrate	180	150		180	150
Calcium Carbonate	180	120		160	120	Potassium Sulfate	180	150		180	150
Calcium Hydroxide, 25%	180	150(1)		180(1)	150(2)	Propylene Glycol	180	150		180	150
Calcium Hypocholrite	180	150(2)	NR	180(2)	NR	Sodium Acetate	180	150		180	150
Calcium Nitrate	180	150		180	150	Sodium Benzoate	140	120		120	Amb
Calcium Sulfate	180	150		180	150	Sodium Bisulfate	180	150		180	150
Carbonic Acid	150	Amb		120	Amb	Sodium Borate	180	150		180	150
Carbon Tetrachloride	Amb	Amb(2)	NR	Amb(2)	NR	Sodium Bromide	180	150		180	150
Chlorine Dioxide	140	Amb	NR	120	NR	Sodium Carbonate, 10%	140	Amb(2)		120	NR
Chlorine, Wet Gas	180	NR	NR	NR	NR	Sodium Chloride	180	150	140	180	150
Chlorine Water	120	120(2)	NR	120(2)	NR	Sodium Cyanide	180	Amb		160	Amb(2)
Chromic Acid, 10%	120	Amb(2)	NR	Amb(2)	NR	Sodium Dichromate	180	120		160	Amb
Chromium Sulfate	140	Amb		140(2)	Amb	Sodium Diphosphate	180	150		160	120
Citric Acid	180	150	140	180	150	Sodium Hydroxide, 10%	180	NR	NR	NR	NR
Copper Chloride	180	150	140	180	150	Sodium Hypocholorite, 51/4%	120	100(1)		110(1)	Amb(1)
Copper Cyanide Plating	120	Amb(1)		120(1)	Amb(2))	Sodium Nitrate	180	150		180	150
Copper Nitrate	180	150		180	150	Sodium Sulfate	180	150		180	150
Crude Oil, Sour	180	150	Amb	180	150	Soy Oil	180	150		160	120
Ethylene Glycol	180	150		180	150	Stearic Acid	170	150		160	120
Fatty Acids	180	150		180	150	Styrene	NR	NR	NR	NR	NR
Ferric Chloride	180	150	Amb	180	150	Sulfite Liquor	160	100		160	Amb
Ferric Sulfate	180	150		180	150	Sulfur Dioxide, Gas - wet	180	150(1)		180	150(1)
Formaldehyde, 35%	150	150(2)	NR	150(1)	150(2)	Sulfur Trioxide, Gas - wet	120	NR	NR	Amb	NR
Formic Acid, 25%	100	100(1)	NR	100(1)	100(2)	Sulfuric Acid, 25%	180	150(1)		180(1)	150(2)
Fuel (Aviation, Diesel, Gasoline)	100	100		100	100	Tartaric Acid	180	150		160	120
Glycerine	180	150	140	180	150	Toluene	120(1)	120(2)	NR	120(2)	NR
Green Liquor (Pulp Process)	180	NR	NR	180(2)	NR	Trisodium Phosphate, 50%	180	150(2)		180(2)	NR
Hydraulic Fluid	140	NR	NR	140	NR	Urea, 35%	110	Amb	NR	110	NR
Hydrobromic Acid, 45%	180	150(1)		180(2)	NR	Vinegar	180	150		160	150
Hydrochloric Acid,15%	180	150(1)		180(1)	150(1)	Water, Fresh, Salt, Distilled	180	150	140	180	150
Hydrofluoric Acid, 20%	75(1)	NR	NR	NR	NR	White Liquor (Pulp Process)	180	150(2)	NR	180(1)	NR
Kerosene	180	140		160	120	Zinc Chloride (Plating)	75	75(1)	NR	75(1)	NR
Lactic Acid	180	130		160	120	Zinc Nitrate	180	150		180	150
Lead Acetate	180	Amb		160	Amb	Zinc Salt	180	150	140	180	150
lime	180	150	140	180	150	Zinc Sulfate	180	150		180	150
Linseed Oil	180	150		180	150						

(1) Splash and spill exposure only
(2) Infrequent splash and spill exposure with spills immediately cleaned up.

Amb -Ambient or room temperature exposure
NR -Not recommended for these conditions

Gentle Glory International Enterprise Ltd
Room 6B, Kingpower Commercial Building
409-413 Jaffe Road Causeway Bay, Hong Kong
Tel: (852) 2563 5129 Fax: (852) 2548 4098 E-mail:info@gentleglory.com