



DIRECT METALS®



FIBERGLASS GRATING

PRODUCT CATALOG

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FIBERGLASS

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**WE'LL CUT ANYTHING
IN OUR INVENTORY
TO YOUR SPECS!**

ISO 9001:2015 Certified

**"We manufacture to
ASTM Standards."**

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Please note that application photos reflected are typical of our types of products in use that can be supplied or have been supplied by DIRECT METALS. Some photos may depict uses designed, manufactured, fabricated or installed by others.



Fiberglass Grating Products

MOLDED FIBERGLASS GRATING

Molded fiberglass grating is a fiberglass-reinforced plastic (FRP) that combines fiberglass rovings with thermosetting resins to form a strong, one-piece molded panel. A 65%/35% resin to glass weight ratio provides high corrosion resistance. Meniscus surfaces or applied grit surfaces provide slip resistance when compared to other flooring products. This product is better suited for corrosive environments.

PULTRUDED FIBERGLASS GRATING

Pultruded fiberglass grating is made using premium grade isophthalic polyester, vinyl ester or phenolic resin systems with a synthetic surfacing veil, making it corrosion resistant, lightweight and durable. Pultruded fiberglass has a grit surface for safety and a greater strength to weight ratio than molded fiberglass grating. A 35%/65% resin to glass ratio provides greater strength and less corrosion resistance than molded fiberglass. This product is better suited for longer spans.

FIBERGLASS COVERED GRATING

Our fiberglass covered grating is a long-lasting, molded fiberglass floor product that combines smooth, gritted or checker plate and molded grating manufactured with any of our resin systems. It is the ideal choice when a 100% covered flooring surface is needed. Our fiberglass covered grating is often used in loading and storage areas with high foot and cart traffic, where a strong, level surface is ideal. It offers approximately 50% higher stiffness values than that of open mesh grating, and its standard grit-top cover assures secure footing.

BULLET RESISTANT FIBERGLASS PLATE

Our bullet resistant fiberglass plate offers superior ballistic resistance at a weight less than 25% that of a comparable steel panel. Now available for commercial security applications for your business, home or governmental facility, these fiberglass panels offer ballistic resistant security with the additional performance advantages of durability, corrosion resistance, electrical non-conductivity, low thermal conductivity and light weight.

HEAVY DUTY FIBERGLASS GRATING

Our heavy duty fiberglass grating is available in both molded and pultruded grating systems. Both are designed to carry forklift and tractor-trailer loads that traditional molded and pultruded FRP grating products are not designed to support. Heavy duty fiberglass grating provides greater durability for higher volume traffic areas as well. Additionally, Heavy Duty Fiberglass Grating can be used to free span longer distances than traditional fiberglass grating.

CUSTOM MATCHED COLORS AVAILABLE

Will match to any RAL color.

FIBERGLASS STAIR TREADS & STAIR TREAD COVERS

Lightweight and easy to install, fiberglass stair treads are available in both molded and pultruded types to match the fiberglass floor grating platforms. Fiberglass stair tread covers are made from a molded glass and resin system that is corrosion and impact resistant, fire retardant and non-conductive. They provide a cost effective, slip-resistant protective surface for concrete, metal and wood steps.

FIBERGLASS GRATING HANDRAILS AND LADDERS

Fiberglass handrail systems are fabricated from pultruded fiberglass components and molded thermoplastic connectors. Our modular fiberglass grating handrail systems are available in 2" square or 2" round configurations that are easy to grip, making them ideal for any high traffic area. Our fiberglass ladders and cages can be installed in a variety of applications from sumps to tanks, buildings, piers, portable equipment, etc., providing years of strength and dependability.

FIBERGLASS ATTACHMENTS AND CLIPS

Our fiberglass grating attachments and clips are specially designed to secure fiberglass grating or plates to the supporting structures. Additionally, they are used to fasten together adjacent grating panels, which minimizes load-induced differential deflection. All fiberglass attachments and clips are made of Type 316 stainless steel and are available in 1", 1-1/2" and 2" sizes.

FIBERGLASS PLATES

Fiberglass plates feature a non-conductive surface that makes them an economical and safe solution to walking surfaces. In caustic and/or acidic conditions, fiberglass plates provide a level of corrosion resistance that is unequalled and more cost effective than stainless steel. Fiberglass plate is available with a non-grit surface or with a grit surface where anti-slip traction is needed.

FIBERGLASS STRUCTURAL SHAPES

Our fiberglass structural shapes and pultruded fiberglass profiles are made from a combination of fiberglass and thermosetting resin systems. All shapes are lightweight, impact resistant, low maintenance, non-magnetic, low conductive and have dimensional stability, making them easy to install and ideal for several applications. Custom shapes are available upon request.



Our Pultruded grating inventory

Molded Grating Resin Systems

To meet the needs of your unique application requirements, our molded fiberglass grating is available in these resin systems:

IFR-10

Premium isophthalic polyester resin with a fire retardant class 1 flame spread rating of 10 or less per ASTM - E84. Provides a very good level of corrosion resistance for industrial applications and is extra fire retardant.

IFR-25

Premium isophthalic polyester resin with a fire retardant class 1 flame spread rating of 25 or less per ASTM - E84. Provides a very good level of chemical resistance for industrial applications and is fire retardant. Available in dark gray, green and yellow.

VFR-10

Premium vinyl ester resin with a fire retardant class 1 flame spread rating of 10 or less per ASTM - E84. Provides an excellent level of corrosion resistance and fire retardant. Available in dark gray and orange.

VFR-25

Premium vinyl ester resin with a fire retardant class 1 flame spread rating of 25 or less per ASTM - E84. Provides an excellent level of corrosion resistance and enhanced fire retardant. Available in dark gray and orange.

OFR-25

Orthophthalic polyester resin with a fire retardant class 1 flame spread rating of 25 or less per ASTM - E84. Provides moderate corrosion resistance and fire retardant. Perfect for use in water/wastewater, architectural and decorative and light industrial applications and in aquatic wave zone areas. Available in green, yellow and dark gray.

PHENOLIC

Flame-resistant resin with fire retardant class 1 flame spread rating of 5 or less per ASTM - E84 and a smoke index of 45 or less. Typically used for the offshore industry or for enclosed, confined area applications such as subways, tunnels and mine shafts. Available in reddish-brown, phenolic painting of the grating can be performed to obtain a gray or red finish.

FIBERGLASS GRATING CHARACTERISTICS

Rectangular mesh patterns as well as square mesh patterns benefit from integral one-piece construction. Smooth resin-rich vertical surfaces and tapered bars allow debris to fall through.

Angular grit particles are applied to the top of each panel to provide a long-lasting anti-slip top surface.

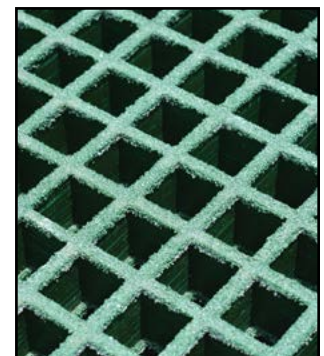
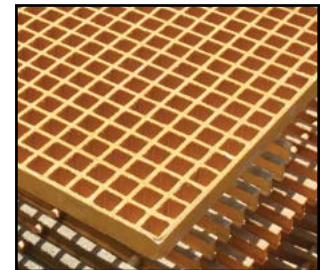
Continuous glass fiber strand in alternating layers thoroughly wetted with resin for excellent corrosion resistance.

Integral one-piece construction distributes loads to bearing bars and cross bars as well as to the support structure.

CUSTOMIZED HIGH CORROSION-RESISTANT RESIN SYSTEMS AVAILABLE UPON REQUEST

MOLDED FIBERGLASS GRATING SELECTION				
Depth	Mesh	Panel Sizes	Lbs/Sq. Ft.	Open Area
1/2"	1-1/2" x 1-1/2"	4' x 8' (non-load carrying product)	0.8 lb.	87%
1/2"	2" x 2" square	4' x 12' (must be fully supported)	1.0 lb.	82%
3/4"	1-1/2" x 1-1/2" square	3' x 10', 4' x 8', 4' x 12'	2.0 lbs.	70%
1"	1" x 4" rectangular	12' x 4', 10' x 3', 8' x 4'	2.6 lbs.	65%
1"	1-1/2" x 1-1/2" square	3' x 10', 4' x 8', 4' x 12'	2.5 lbs.	70%
1"	2" x 2" square	4' x 12'	1.7 lbs.	76%
1-1/4"	1-1/2" x 1-1/2" square	3' x 10', 4' x 8', 4' x 12', 5' x 10'	3.2 lbs.	70%
1-1/2"	1-1/2" x 1-1/2" square	3' x 10', 4' x 8', 4' x 12', 5' x 10'	3.7 lbs.	70%
2"	2" x 2" square	3' x 10', 4' x 8', 4' x 12', 5' x 10'	4.0 lbs.	72%
MOLDED MINI MESH FIBERGLASS GRATING SELECTION				
1"	Top 3/4" sq. - Bottom 1-1/2" sq.	4' x 12'	2.9 lbs.	44.4%
1-1/2"	Top 3/4" sq. - Bottom 1-1/2" sq.	4' x 12'	5.0 lbs.	44%
MOLDED HIGH LOAD CAPACITY FIBERGLASS GRATING SELECTION				
1-1/2"	1" x 2" rectangular	4' x 12'	6.2 lbs.	48%
2"	1" x 2" rectangular	4' x 12'	8.4 lbs.	48%

CUSTOM SIZES & COLORS AVAILABLE



VIEW / LOAD TABLES ONLINE
www.directmetals.com

Molded Grating Details

1-1/2" X 1-1/2" SQUARE

THICKNESS: 1 INCH

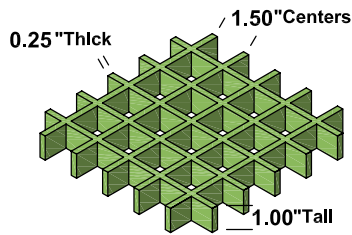
Mesh Pattern: 1-1/2" Square

Open Area: 68%

Weight: 2.5 Lbs/Sq. Foot

Bar Width: 1/4 Inch

Bars/Foot: 8



1-1/2" X 1-1/2" SQUARE

THICKNESS: 1-1/2 INCH

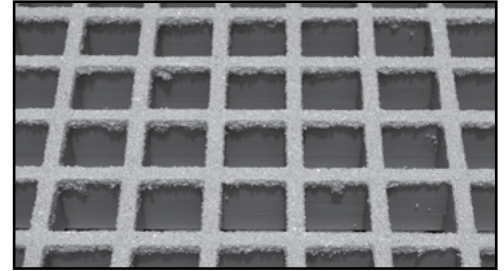
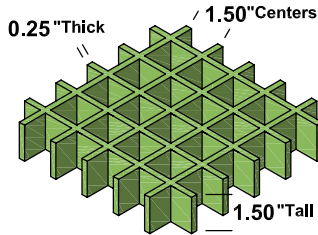
Mesh Pattern: 1-1/2" Square

Open Area: 68%

Weight: 3.8 Lbs/Sq. Foot

Bar Width: 1/4 Inch

Bars/Foot: 8



2" X 2" SQUARE

THICKNESS: 2 INCH

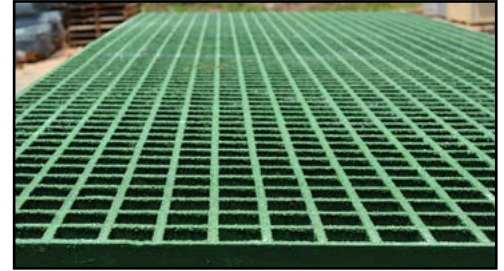
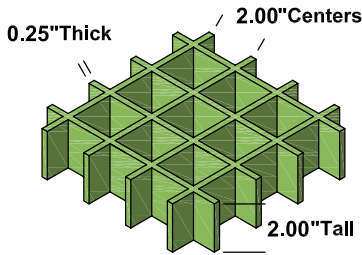
Mesh Pattern: 2" Square

Open Area: 71%

Weight: 4.0 Lbs/Sq. Foot

Bar Width: 1/4 Inch

Bars/Foot: 6



1" X 4" RECTANGULAR

THICKNESS: 1 INCH

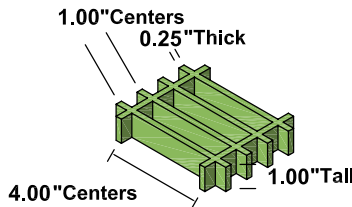
Mesh Pattern: 1" x 4" Rectangular

Open Area: 67%

Weight: 2.6 Lbs/Sq. Foot

Bar Width: 1/4 Inch

Bars/Foot: 12



1-1/2" X .75" SQUARE MINI MESH

THICKNESS: 1 INCH

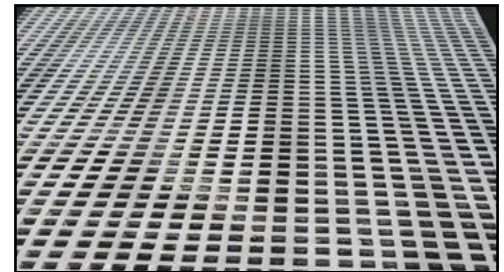
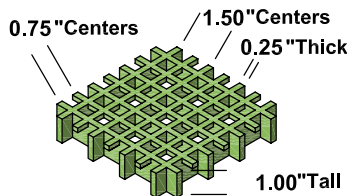
Mesh Pattern: 1-1/2" x .75" Square

Open Area: 43%

Weight: 2.9 Lbs/Sq. Foot

Bar Width: 1/4 Inch

Bars/Foot: 8



1-1/2" X .75" SQUARE MINI MESH

THICKNESS: 1-1/2 INCH

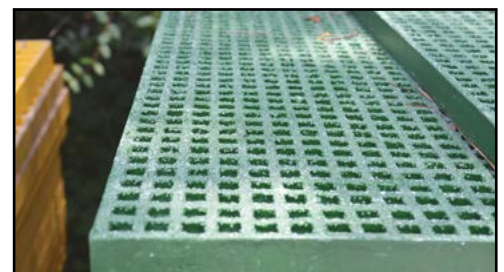
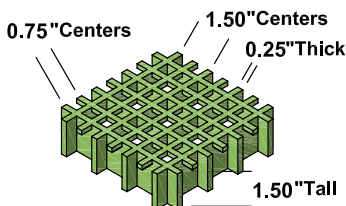
Mesh Pattern: 1-1/2" x .75" Square

Open Area: 43%

Weight: 4.5 Lbs/Sq. Foot

Bar Width: 1/4 Inch

Bars/Foot: 8



Pultruded Fiberglass Grating and Fiberglass Products

Combining corrosion resistance, long life and a maintenance-free design, our pultruded grating is superior to conventional metals. This advanced grating is also lightweight and easy to fabricate, making it less expensive to install. In fact, the savings on labor and equipment often make the total installed cost of our pultruded grating comparable to that of steel. Combining its low cost of installation with maintenance-free long-life, it is manufactured with a recessed tie bar configuration and an inherent resiliency which reduces back and leg strain and contributes to ergonomics and worker productivity.

FEATURES AND BENEFITS

CORROSION RESISTANCE - based on the use of premium grade, isophthalic polyester or vinyl ester resin systems and a synthetic surfacing veil.

LIGHTWEIGHT YET DURABLE - less than one-half the weight of steel grating allowing easy removal for access below floor level and installation with no heavy equipment and less manpower required.

ADDED SAFETY - durable grit surface, permanently bonded and baked to the grating surface, for a safe, slip-resistant walkway.

FIRE RETARDANT - flame spread rating of 25 or less, according to ASTM E-84; meets the self-extinguishing requirements of ASTM D-635.

MAINTENANCE FREE - corrosion resistant and requires no scraping, sandblasting or painting; install it and forget it.

UV PROTECTION - UV inhibitors included in the resin formulation, along with a surfacing veil and grit top surface for optimum protection from the effects of weathering.

EASILY FABRICATED - no need for lifting equipment or expensive tools; can be easily carried by two workers and cut using standard circular or saber saws fitted with carbide blades.

ELECTRICALLY AND THERMALLY NON-CONDUCTIVE - providing additional worker safety.

ELECTRONICALLY TRANSPARENT - does not affect electromagnetic or radio wave frequencies.

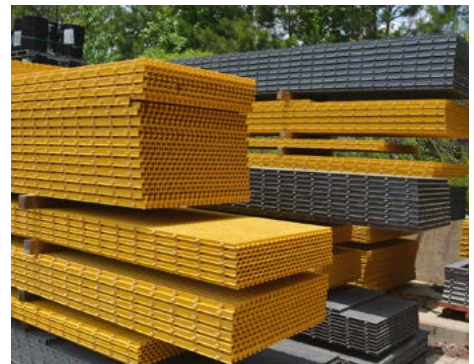
VIEW SPEC TABLES ONLINE
www.directmetals.com

To form a pultruded element, continuous fiber rovings and mat are mechanically drawn through a resin bath and shaped through a series of forming guides, then pulled through a heated die.

All of our pultruded gratings are manufactured with a high percentage of glass within the laminate, providing durability, extremely high unidirectional strength and stiffness. Due to its exceptional stiffness, it can be used with confidence in applications where wide support spans are required. For most applications where it is used to replace corroding steel grating, our pultruded grating rarely requires additional support.

Designed specifically for pedestrian walkways, our pedestrian floor grating is ideal

for any application where a corrosion-resistant, durable, lightweight surface material is required. Our pedestrian grating is available in 1" and 1-1/2" depths and in several configurations and panel sizes. 1" deep pedestrian grating is designed for access areas and walkways where pedestrian traffic is the heaviest load. 1-1/2" pedestrian grating is approximately three times stiffer than the 1" deep version and is used for applications where wider spans (up to 72") or lower deflection criteria are required.



SELECTION OF PULTRUDED INDUSTRIAL GRATING - 6" TIE BAR SPACING STANDARD

Series	Panel Depth	Load Bar Spacing Width	Sizes Length	Load Bars/Ft.	Wt./Sq. Ft.	Open Area
I-6010	1"	1-1/2"	2', 3', 4' 10', 12', 20', 24'	8	2.4 lbs.	60%
I-4010	1"	1"	2', 3', 4' 10', 12', 20', 24'	12	3.4 lbs.	40%
I-6015	1-1/2"	1-1/2"	2', 3', 4' 10', 12', 20', 24'	8	2.8 lbs.	60%
I-4015	1-1/2"	1"	2', 3', 4' 10', 12', 20', 24'	12	4.1 lbs.	40%
T-5020	2"	2"	2', 3', 4' 10', 12', 20', 24'	6	3.1 lbs.	50%
T-3320	2"	1-1/2"	2', 3', 4' 10', 12', 20', 24'	8	4.0 lbs.	33%

SELECTION OF PULTRUDED PEDESTRIAN GRATING - 6" TIE BAR SPACING STANDARD

Series	Panel Depth	Load Bar Spacing Width	Sizes Length	Load Bars/Ft.	Wt./Sq. Ft.	Open Area
T-3810	1"	2.4"	2', 3', 4' 10', 12', 20', 24'	5	1.9 lbs.	38%
T-2510	1"	2.0"	2', 3', 4' 10', 12', 20', 24'	6	2.3 lbs.	25%
T-1210	1"	1.7"	2', 3', 4' 10', 12', 20', 24'	7	2.7 lbs.	12%
T-3815	1-1/2"	2.4"	2', 3', 4' 10', 12', 20', 24'	5	2.7 lbs.	38%
T-2515	1-1/2"	2.0"	2', 3', 4' 10', 12', 20', 24'	6	3.2 lbs.	25%
T-1215	1-1/2"	1.7"	2', 3', 4' 10', 12', 20', 24'	7	3.6 lbs.	12%

Pultruded Fiberglass Grating Resin Systems

Our pultruded grating is available in two resin formulations for an accurate match of product characteristics with the application. Both resin systems provide corrosion resistance that is superior to that offered by metal grating.

IFR-25 - This isophthalic polyester resin formulation provides a low flame spread rating of 25 or less and is designed for applications where there is moderate exposure to corrosive elements.

VFR-25 - With a flame spread of 25 or less, this vinyl ester resin system provides dependable resistance to both acidic and alkaline environments.

RESIN	SERIES	STANDARD COLOR
IFR-25 & VFR-25	T3810, T2510, T3815, T2515	YELLOW & DARK GRAY
IFR-25 & VFR-25	T1210, T1215	LIGHT GRAY
IFR-25 & VFR-25	I6010, I6015, I4010, I4015, T3320, T5020	YELLOW & DARK GRAY
VFR-25	H4710, H4715, H4720, H4725, H4730	YELLOW & DARK GRAY

CLIP ASSEMBLIES FOR MOLDED GRATING

We offer specially-designed attachments and clips both to fasten panels together and to secure them to support structures. All types are made of Type 316 Stainless Steel and are available in 1", 1-1/2" and 2" sizes. Install clips a maximum of every 48" and use at least four clips per piece of grating (at least eight clips per 4' x 12' panel)



TYPE Z HOLD DOWN CLIPS:

Secure grating panels to support frames.



TYPE F END PANEL CLIPS:

Provide a simplified method for joining factory edges of adjacent abutting panels. (Not for use with some resins).



TYPE M HOLD DOWN CLIPS:

Secure panels to a support in the same manner as type Z Clips but designed to use two adjacent grating bars for a more secure fit. Similar in design to metal grating saddle clips.

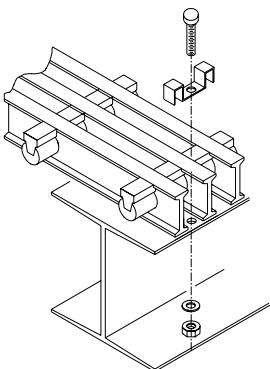


TYPE G HOLD DOWN CLIPS:

Attach grating to any structural member flange, 3/4" or smaller in thickness with no drilling required.

Field cutting of one bar required

CLIP ASSEMBLIES FOR PULTRUDED GRATING



TYPE P

We offer Hold Down Clip Assemblies for many pultruded grating types

CLIP TYPE

- P18 for 18% open area pultruded grating
- P25 for 25% open area pultruded grating
- P33 for 33% open area pultruded grating
- P40 for 40% open area pultruded grating
- P50 for 50% open area pultruded grating
- P60 for 60% open area pultruded grating

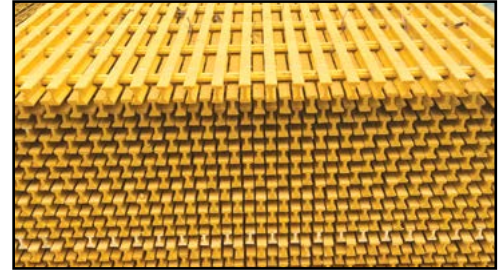
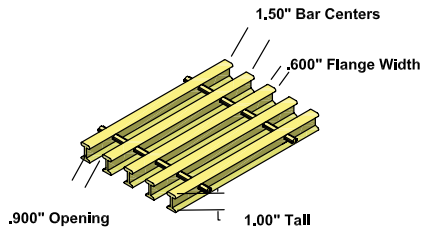
SEALING KITS

To maintain corrosion resistance and structural integrity, we offer standard resin sealing kits for protecting the exposed ends of cut panels and other components.

Pultruded Grating Details

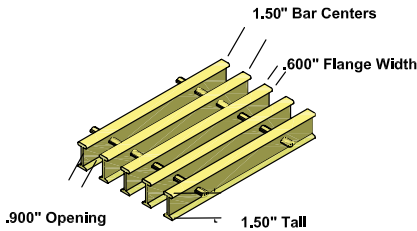
1" DEEP I-6010 GRATING

Bar Height: 1"
Open Area: 60%
Weight: 2.72 Lbs/Sq. Foot
Bar Width: 0.6"
Bars/Foot: 8
Cross Bars: 6" Centers Std. (12" Special Order)



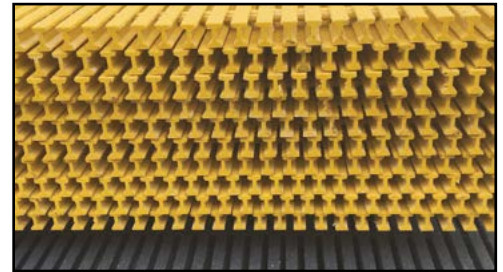
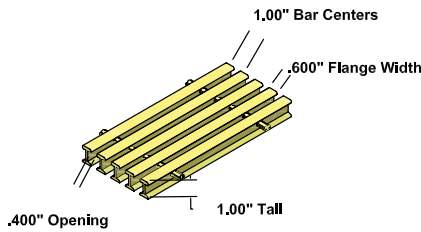
1-1/2" DEEP I-6015 GRATING

Bar Height: 1.50"
Open Area: 60%
Weight: 2.83 Lbs/Sq. Foot
Bar Width: .600"
Bars/Foot: 8
Cross Bars: 6" Centers Std.



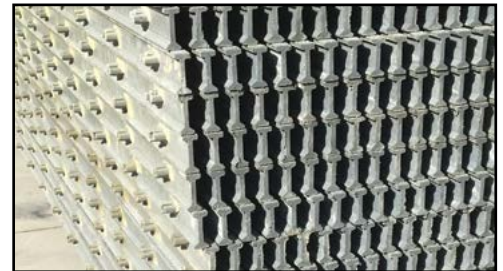
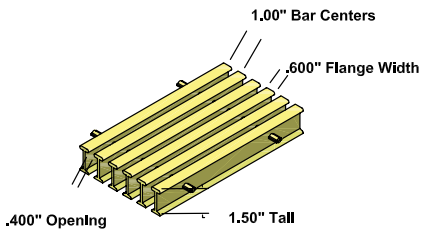
1" DEEP I-4010 GRATING

Bar Height: 1"
Open Area: 40%
Weight: 3.41 Lbs/Sq. Foot
Bar Width: .600"
Bars/Foot: 12
Cross Bars: 6" Centers Std.



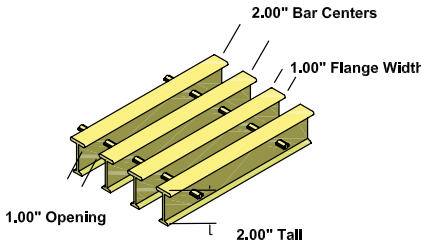
1-1/2" I-4015 GRATING

Bar Height: 1.50"
Open Area: 40%
Weight: 4.13 Lbs/Sq. Foot
Bar Width: .600"
Bars/Foot: 12
Cross Bars: 6" Centers Std.



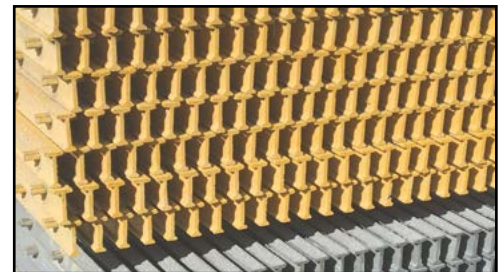
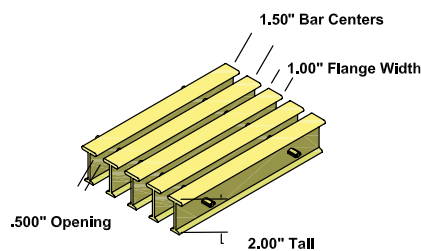
2" T-5020 GRATING

Bar Height: 2"
Open Area: 50%
Weight: 3.10 Lbs/Sq. Foot
Bar Width: 1"
Bars/Foot: 6
Cross Bars: 6" Centers Std.



2" T-3320 GRATING

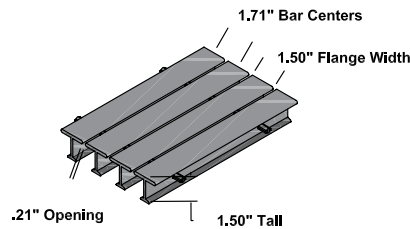
Bar Height: 2"
Open Area: 33%
Weight: 4.00 Lbs/Sq. Foot
Bar Width: 1.00"
Bars/Foot: 8
Cross Bars: 6" Centers Std.



Pultruded T-Bar Pedestrian Series Grating Details

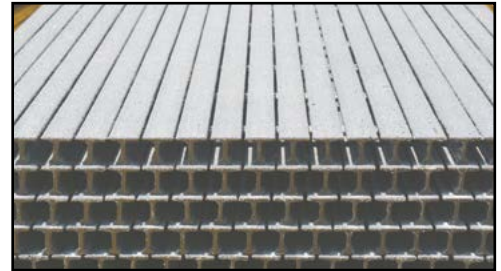
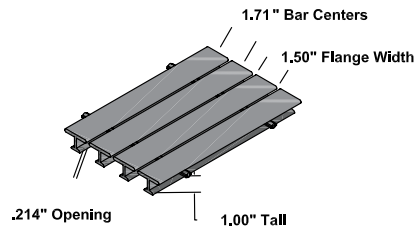
T1215 PEDESTRIAN GRATING

Thickness: 1-1/2"
Cross Bar: 6" Centers
Open Area: 12%
Weight: 3.6 Lbs/Sq. Foot
Bar Centers: 1.71"
Bars/Foot: 7



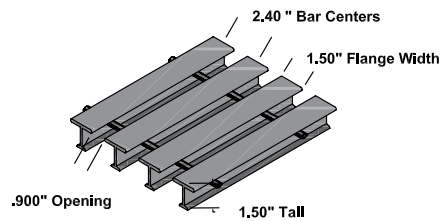
T1210 PEDESTRIAN GRATING

Thickness: 1"
Cross Bar: 6" Centers
Open Area: 12%
Weight: 2.6 Lbs/Sq. Foot
Bar Centers: 1.71"
Bars/Foot: 7



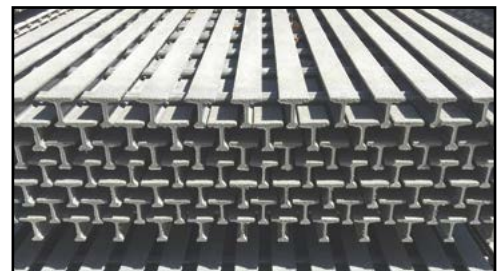
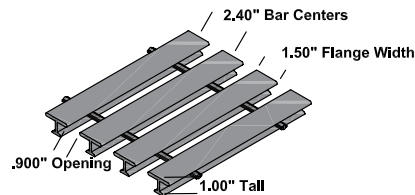
T3815 PEDESTRIAN GRATING

Thickness: 1-1/2"
Cross Bar: 6" Centers
Open Area: 38%
Weight: 2.7 Lbs/Sq. Foot
Bar Centers: 2.4"
Bars/Foot: 5

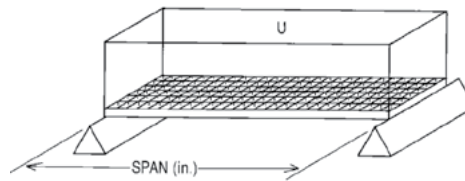


T3810 PEDESTRIAN GRATING

Thickness: 1"
Cross Bar: 6" Centers
Open Area: 38%
Weight: 1.9 Lbs/Sq. Foot
Bar Centers: 2.4"
Bars/Foot: 5



Molded Fiberglass Grating Uniform Load Chart



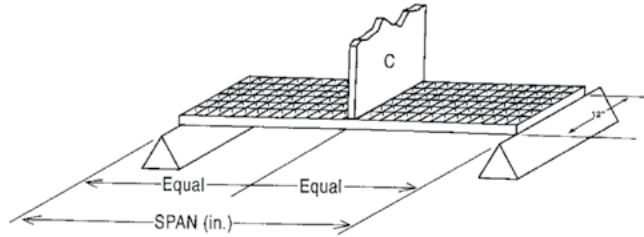
Molded Grating — Uniform Load (Deflection in Inches)

SPAN IN INCHES	STYLE	LOAD in LB / SQUARE FOOT (PSF)								MAXIMUM RECOMMENDED LOAD (PSF)	APPARENT EI (10 ⁶ LB-IN ²)/ FT OF WIDTH
		60	100	150	200	250	500	1000	2000		
12	1" x 1" x 4" RM	<0.01	0.01	0.01	0.01	0.02	0.04	0.07		1960	0.3
	1" x 1½" SM	<0.01	0.01	0.01	0.02	0.02	0.04	0.09		1360	0.3
	1½" x 1½" SM	<0.01	<0.01	<0.01	0.01	0.01	0.02	0.03	0.07	3120	0.7
	2" x 2" SM	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.02	0.04	3848	1.0
18	1" x 1" x 4" RM	0.02	0.03	0.05	0.06	0.08	0.15			950	0.4
	1" x 1½" SM	0.02	0.04	0.06	0.08	0.10				634	0.3
	1½" x 1½" SM	0.01	0.01	0.02	0.03	0.03	0.07	0.14		1386	0.8
	2" x 2" SM	0.00	0.01	0.01	0.02	0.02	0.04	0.08	0.17	1813	1.4
24	1" x 1" x 4" RM	0.06	0.09	0.14	0.19	0.23				534	0.4
	1" x 1½" SM	0.07	0.12	0.18	0.24	0.31				356	0.3
	1½" x 1½" SM	0.02	0.04	0.06	0.08	0.10	0.20			780	0.9
	2" x 2" SM	0.01	0.02	0.03	0.05	0.06	0.11	0.23		960	1.6
30	1" x 1" x 4" RM	0.13	0.22							336	0.4
	1" x 1½" SM	0.18	0.29							228	0.3
	1½" x 1½" SM	0.06	0.09	0.14	0.18	0.23				496	1.0
	2" x 2" SM	0.03	0.05	0.08	0.10	0.13	0.25			640	1.7
36	1" x 1" x 4" RM	0.27								236	0.4
	1" x 1½" SM	0.36								158	0.3
	1½" x 1½" SM	0.11	0.19	0.28						347	1.0
	2" x 2" SM	0.06	0.10	0.15	0.20	0.25				453	1.8
42	1½" x 1½" SM	0.20	0.35							251	1.0
	2" x 2" SM	0.11	0.19	0.28	0.37					331	1.8
48	1½" x 1½" SM	0.36								170	1.0
	2" x 2" SM	0.19	0.31	0.47						260	1.8
54	1½" x 1½" SM	0.56								158	1.0
	2" x 2" SM	0.31	0.50							204	1.9
60	2" x 2" SM	0.45								166	1.9

NOTES:

1. The designer should not exceed MAXIMUM RECOMMENDED load at any time. MAXIMUM LOAD represents a 5:1 factor of safety on ULTIMATE CAPACITY.
2. ULTIMATE CAPACITY represents a complete and total failure of the grating.
3. A 60 PSF live load is recommended for walkways per ASCE 7. Deflection is typically limited to a ¼" under full live load.
4. The allowable loads are for STATIC LOAD CONDITIONS at standard temperature 73°F ± 3.6°F (23°C ± 2°C).
5. For applications involving dynamic loads, long term loads that result in creep or elevated temperatures, please consult with Direct Metals.
6. The apparent EI values were calculated from Standard Test results. The apparent EI values change with span length because of shear deformation.
7. For rectangular mesh grating the load bars need to be oriented in the SPAN direction.

Molded Fiberglass Grating Concentrated Line Load



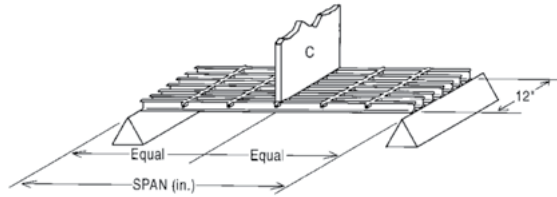
Molded Grating — Concentrated Line Load (Deflection in Inches)

SPAN IN INCHES	STYLE	LOAD in LB / FOOT of WIDTH								MAXIMUM RECOMMENDED LOAD (LB/FT)	APPARENT EI (10 ⁶ LB-IN ²)/ FT of WIDTH
		50	100	150	200	250	500	1000	2000		
12	1" x 1" x 4" RM	<0.01	0.01	0.02	0.02	0.03	0.06	0.12		980	0.3
	1" x 1½" SM	0.01	0.01	0.02	0.03	0.04	0.07			680	0.3
	1½" x 1½" SM	<0.01	<0.01	0.01	0.01	0.01	0.03	0.05	0.11	1560	0.7
	2" x 2" SM	<0.01	<0.01	<0.01	0.01	0.01	0.02	0.04	0.07	1924	1.0
18	1" x 1" x 4" RM	0.02	0.03	0.05	0.06	0.08	0.16			712	0.4
	1" x 1½" SM	0.02	0.04	0.07	0.09	0.11				474	0.3
	1½" x 1½" SM	0.01	0.01	0.02	0.03	0.04	0.07	0.15		1040	0.8
	2" x 2" SM	<0.01	0.01	0.01	0.02	0.02	0.04	0.09	0.18	1360	1.4
24	1" x 1" x 4" RM	0.04	0.07	0.11	0.15	0.19				534	0.4
	1" x 1½" SM	0.05	0.10	0.15	0.20	0.24				356	0.3
	1½" x 1½" SM	0.02	0.03	0.05	0.06	0.08	0.16			780	0.9
	2" x 2" SM	0.01	0.02	0.03	0.04	0.05	0.09	0.18		960	1.6
30	1" x 1" x 4" RM	0.07	0.14	0.21	0.28					420	0.4
	1" x 1½" SM	0.09	0.19	0.28						284	0.3
	1½" x 1½" SM	0.03	0.06	0.09	0.12	0.15	0.29			620	1.0
	2" x 2" SM	0.02	0.03	0.05	0.06	0.08	0.16			800	1.7
36	1" x 1" x 4" RM	0.12	0.24							356	0.4
	1" x 1½" SM	0.16	0.32							236	0.3
	1½" x 1½" SM	0.05	0.10	0.15	0.20	0.25				520	1.0
	2" x 2" SM	0.03	0.05	0.08	0.11	0.14	0.27			680	1.8
42	1" x 1" x 4" RM	0.19	0.39							304	0.4
	1" x 1½" SM	0.26								202	0.3
	1½" x 1½" SM	0.08	0.16	0.24	0.32	0.40				440	1.0
	2" x 2" SM	0.04	0.08	0.13	0.17	0.21				580	1.8
48	1½" x 1½" SM	0.12	0.24	0.36	0.47					340	1.0
	2" x 2" SM	0.06	0.13	0.19	0.25	0.31				520	1.8
54	1½" x 1½" SM	0.17	0.34							354	1.0
	2" x 2" SM	0.09	0.18	0.26	0.35	0.44				460	1.9
60	2" x 2" SM	0.12	0.24	0.36	0.48					418	1.9

NOTES:

1. The designer should not exceed MAXIMUM RECOMMENDED load at any time. MAXIMUM LOAD represents a 5:1 factor of safety on ULTIMATE CAPACITY.
2. ULTIMATE CAPACITY represents a complete and total failure of the grating.
3. A 60 PSF live load is recommended for walkways per ASCE 7. Deflection is typically limited to a ¼" under full live load.
4. The allowable loads are for STATIC LOAD CONDITIONS at standard temperature 73°F ± 3.6°F (23°C ± 2°C).
5. For applications involving dynamic loads, long term loads that result in creep or elevated temperatures, please consult with Direct Metals.
6. The apparent EI values were calculated from Standard Test results. The apparent EI values change with span length because of shear deformation.
7. For rectangular mesh grating the load bars need to be oriented in the SPAN direction.

Pultruded Fiberglass Grating Concentrated Line Load



Pultruded Grating — Concentrated Line Load (Deflection in Inches)

SPAN IN INCHES	STYLE	LOAD in LB / FOOT of WIDTH								MAXIMUM RECOMMENDED LOAD (LB/FT)	APPARENT EI (10 ⁶ LB-IN ²) / FT of WIDTH
		50	100	150	200	250	500	1000	2000		
12	1" I-60	<0.01	<0.01	<0.01	0.01	0.01	0.02	0.04	0.08	4000	1.0
	1" I-40	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.03	0.05	6000	1.4
	1½" I-60	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.04	6130	1.9
	1½" I-40	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.03	9200	2.9
	2" T-50	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.03	7510	2.3
	2" T-33	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	10010	3.1
18	1" I-60	<0.01	0.01	0.02	0.02	0.03	0.05	0.10		3350	1.2
	1" I-40	<0.01	0.01	0.01	0.01	0.02	0.03	0.07	0.14	5030	1.8
	1½" I-60	<0.01	<0.01	0.01	0.01	0.01	0.02	0.04	0.08	4600	2.9
	1½" I-40	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.03	0.06	6900	4.4
	2" T-50	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.03	0.06	6250	4.1
	2" T-33	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.02	0.04	8330	5.5
24	1" I-60	0.01	0.02	0.03	0.04	0.05	0.10	0.21		2800	1.4
	1" I-40	<0.01	0.01	0.02	0.03	0.03	0.07	0.14		4200	2.1
	1½" I-60	<0.01	0.01	0.01	0.02	0.02	0.04	0.08	0.17	3500	3.5
	1½" I-40	<0.01	<0.01	0.01	0.01	0.01	0.03	0.06	0.11	5250	5.2
	2" T-50	<0.01	<0.01	0.01	0.01	0.01	0.03	0.05	0.11	5350	5.3
	2" T-33	<0.01	<0.01	<0.01	0.01	0.01	0.02	0.04	0.08	7130	7.1
30	1" I-60	0.02	0.04	0.06	0.08	0.10	0.19	0.39		2350	1.5
	1" I-40	0.01	0.03	0.04	0.05	0.06	0.13	0.26		3530	2.2
	1½" I-60	0.01	0.01	0.02	0.03	0.04	0.07	0.15	0.30	2900	3.8
	1½" I-40	<0.01	0.01	0.01	0.02	0.02	0.05	0.10	0.20	4350	5.7
	2" T-50	<0.01	0.01	0.01	0.02	0.02	0.05	0.09	0.18	4570	6.2
	2" T-33	<0.01	<0.01	0.01	0.01	0.02	0.03	0.07	0.14	6090	8.3
36	1" I-60	0.03	0.07	0.10	0.13	0.16	0.33			2020	1.5
	1" I-40	0.02	0.04	0.07	0.09	0.11	0.22			3040	2.2
	1½" I-60	0.01	0.02	0.04	0.05	0.06	0.12	0.24		2480	4.0
	1½" I-40	0.01	0.02	0.02	0.03	0.04	0.08	0.16	0.32	3710	6.0
	2" T-50	0.01	0.01	0.02	0.03	0.04	0.07	0.15	0.30	3850	6.5
	2" T-33	0.01	0.01	0.02	0.02	0.03	0.06	0.11	0.22	5130	8.7
42	1" I-60	0.05	0.10	0.15	0.20	0.25				1650	1.5
	1" I-40	0.03	0.07	0.10	0.13	0.17	0.34			2480	2.3
	1½" I-60	0.02	0.04	0.06	0.08	0.09	0.19	0.38		2140	4.1
	1½" I-40	0.01	0.03	0.04	0.05	0.06	0.13	0.25		3220	6.1
	2" T-50	0.01	0.02	0.03	0.05	0.06	0.11	0.23		3250	6.8
	2" T-33	0.01	0.02	0.03	0.03	0.04	0.09	0.11	0.34	4330	9.1

Pultruded Fiberglass Grating Concentrated Line Load

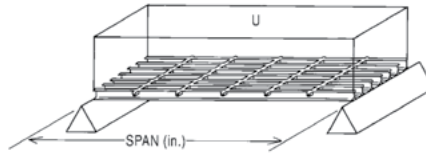
Pultruded Grating — Concentrated Line Load (Deflection in Inches) (continued)

SPAN IN INCHES	STYLE	LOAD in LB / FOOT of WIDTH								MAXIMUM RECOMMENDED LOAD (LB/FT)	APPARENT EI (10 ⁶ LB-IN ²)/ FT of WIDTH
		50	100	150	200	250	500	1000	2000		
48	1" I-60	0.07	0.15	0.22	0.30	0.37				1420	1.5
	1" I-40	0.05	0.10	0.15	0.20	0.25	0.50			2140	2.3
	1½" I-60	0.03	0.06	0.08	0.11	0.14	0.28			1780	4.1
	1½" I-40	0.02	0.04	0.06	0.07	0.09	0.19	0.37		2660	6.2
	2" T-50	0.02	0.03	0.05	0.07	0.08	0.17	0.33		2280	7.0
	2" T-33	0.01	0.02	0.04	0.05	0.06	0.12	0.25		3030	9.3
54	1" I-60	0.11	0.21	0.32	0.42					1100	1.6
	1" I-40	0.07	0.14	0.21	0.28	0.35				1650	2.3
	1½" I-60	0.04	0.08	0.12	0.16	0.20	0.40			1480	4.1
	1½" I-40	0.03	0.05	0.08	0.11	0.13	0.27			2220	6.2
	2" T-50	0.02	0.05	0.07	0.09	0.11	0.23	0.46		2340	7.1
	2" T-33	0.02	0.03	0.05	0.07	0.09	0.17	0.34		3110	9.5
60	1½" I-60	0.05	0.11	0.16	0.22					1260	4.1
	1½" I-40	0.04	0.07	0.11	0.15	0.18	0.36			1890	6.2
	2" T-50	0.03	0.06	0.09	0.13	0.16	0.31			2000	7.2
	2" T-33	0.02	0.05	0.07	0.09	0.12	0.23	0.47		2670	9.6
66	1½" I-60	0.07	0.15	0.22	0.29					1050	4.1
	1½" I-40	0.05	0.10	0.15	0.19	0.24	0.48			1580	6.2
	2" T-50	0.04	0.08	0.12	0.17	0.21	0.42			1750	7.2
	2" T-33	0.03	0.06	0.09	0.12	0.16	0.31			2330	9.6
72	2" T-50	0.05	0.11	0.16	0.22	0.27				1540	7.2
	2" T-33	0.04	0.08	0.12	0.16	0.20	0.40			2060	9.6
78	2" T-50	0.07	0.14	0.20	0.27	0.34				1360	7.2
	2" T-33	0.05	0.10	0.15	0.20	0.26				1810	9.7
84	2" T-50	0.09	0.17	0.26	0.34	0.43				1260	7.3
	2" T-33	0.06	0.13	0.19	0.26	0.32				1680	9.7

NOTES:

1. The designer should not exceed MAXIMUM RECOMMENDED load at any time. MAXIMUM LOAD represents a 2:1 factor of safety on ULTIMATE CAPACITY.
2. ULTIMATE CAPACITY represents a complete and total failure of the grating.
3. A 60 PSF live load is recommended for walkways per ASCE 7. Deflection is typically limited to a ¼" under full live load.
4. The allowable loads are for STATIC LOAD CONDITIONS at standard temperature 73°F ± 3.6°F (23°C ± 2°C).
5. For applications involving dynamic loads, long term loads that result in creep or elevated temperatures, please consult with Direct Metals.
6. The apparent EI values were calculated from Standard Test results. The apparent EI values change with span length because of shear deformation. Reference APPENDIX A for test description.
7. The load bars should be orientated in the SPAN direction.

Pultruded Fiberglass Grating Uniform Load Chart



Pultruded Grating — Uniform Load (Deflection in Inches)

SPAN IN INCHES	STYLE	LOAD in LB / SQUARE FOOT (PSF)								MAXIMUM RECOMMENDED LOAD (PSF)	APPARENT EI (10 ⁶ LB-IN ²)/ FT of WIDTH
		60	100	150	200	250	500	1000	2000		
12	1" I-60	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.05	8000	1.0
	1" I-40	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.03	12000	1.4
	1½" I-60	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.02	12270	1.9
	1½" I-40	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	18400	2.9
	2" T-50	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	15020	2.3
	2" T-33	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	20030	3.1
18	1" I-60	<0.01	<0.01	0.01	0.02	0.02	0.05	0.09	0.19	4470	1.2
	1" I-40	<0.01	<0.01	0.01	0.01	0.02	0.03	0.06	0.13	6700	1.8
	1½" I-60	<0.01	<0.01	0.01	0.01	0.01	0.02	0.04	0.08	6130	2.9
	1½" I-40	<0.01	<0.01	0.00	0.01	0.01	0.01	0.03	0.05	9200	4.4
	2" T-50	<0.01	<0.01	0.00	0.01	0.01	0.01	0.03	0.06	8330	4.1
	2" T-33	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.04	11110	5.5
24	1" I-60	0.01	0.03	0.04	0.05	0.07	0.13			2800	1.4
	1" I-40	0.01	0.02	0.03	0.03	0.04	0.09	0.17		4200	2.1
	1½" I-60	0.01	0.01	0.02	0.02	0.03	0.05	0.10	0.21	3500	3.5
	1½" I-40	<0.01	0.01	0.01	0.01	0.02	0.03	0.07	0.14	5250	5.2
	2" T-50	<0.01	0.01	0.01	0.01	0.02	0.03	0.07	0.14	5350	5.3
	2" T-33	<0.01	<0.01	0.01	0.01	0.01	0.03	0.05	0.10	7130	7.1
30	1" I-60	0.03	0.06	0.09	0.12	0.15				1880	1.5
	1" I-40	0.02	0.04	0.06	0.08	0.10	0.20			2820	2.2
	1½" I-60	0.01	0.02	0.03	0.05	0.06	0.12	0.23		2320	3.8
	1½" I-40	0.01	0.02	0.02	0.03	0.04	0.08	0.15		3480	5.7
	2" T-50	0.01	0.01	0.02	0.03	0.04	0.07	0.14	0.28	3660	6.2
	2" T-33	0.01	0.01	0.02	0.02	0.03	0.05	0.11	0.21	4880	8.3
36	1" I-60	0.07	0.12	0.18	0.24	0.31				1350	1.5
	1" I-40	0.05	0.08	0.12	0.16	0.20				2020	2.2
	1½" I-60	0.02	0.05	0.07	0.09	0.11	0.23			1650	4.0
	1½" I-40	0.02	0.03	0.05	0.06	0.08	0.15	0.30		2480	6.0
	2" T-50	0.01	0.03	0.04	0.06	0.07	0.14	0.28		2570	6.5
	2" T-33	0.01	0.02	0.03	0.04	0.05	0.11	0.21		3420	8.7
42	1" I-60	0.13	0.22	0.33	0.44					940	1.5
	1" I-40	0.08	0.15	0.22	0.29	0.37				1410	2.3
	1½" I-60	0.05	0.08	0.12	0.17	0.21	0.41			1220	4.1
	1½" I-40	0.03	0.06	0.08	0.11	0.14	0.18			1840	6.1
	2" T-50	0.02	0.05	0.07	0.10	0.12	0.25			1860	6.8
	2" T-33	0.02	0.04	0.06	0.07	0.09	0.19	0.37		2480	9.1

Pultruded Fiberglass Grating Uniform Load Chart

Pultruded Grating — Uniform Load (Deflection in Inches) *(continued)*

SPAN IN INCHES	STYLE	LOAD in LB / SQUARE FOOT (PSF)								MAXIMUM RECOMMENDED LOAD (PSF)	APPARENT EI (10 ⁶ LB-IN ²)/ FT of WIDTH
		60	100	150	200	250	500	1000	2000		
48	1" I-60	0.23	0.37							710	1.5
	1" I-40	0.14	0.25	0.37						1070	2.3
	1½" I-60	0.08	0.14	0.21	0.28	0.35				890	4.1
	1½" I-40	0.06	0.09	0.14	0.19	0.23	0.47			1330	6.2
	2" T-50	0.05	0.08	0.12	0.17	0.21	0.41			1140	7.0
	2" T-33	0.03	0.06	0.09	0.12	0.16	0.31			1520	9.3
54	1" I-60	0.43								490	1.6
	1" I-40	0.24	0.40							730	2.3
	1½" I-60	0.13	0.22	0.34	0.45					660	4.1
	1½" I-40	0.08	0.15	0.22	0.30	0.37				990	6.2
	2" T-50	0.07	0.13	0.19	0.26	0.32				1040	7.1
	2" T-33	0.06	0.10	0.15	0.19	0.24	0.48			1380	9.5
60	1½" I-60	0.20	0.34							500	4.1
	1½" I-40	0.13	0.23	0.34	0.46					750	6.2
	2" T-50	0.12	0.20	0.29	0.39	0.49				800	7.2
	2" T-33	0.08	0.15	0.22	0.29	0.37				1070	9.6
66	1½" I-60	0.30	0.50							380	4.1
	1½" I-40	0.20	0.33	0.50						570	6.2
	2" T-50	0.17	0.29	0.43						640	7.2
	2" T-33	0.13	0.21	0.32	0.43					850	9.6
72	2" T-50	0.24	0.40							510	7.2
	2" T-33	0.18	0.30	0.45						680	9.6
78	2" T-50	0.34								420	7.2
	2" T-33	0.25	0.42							560	9.7
84	2" T-50	0.44								360	7.3
	2" T-33	0.34								480	9.7

NOTES:

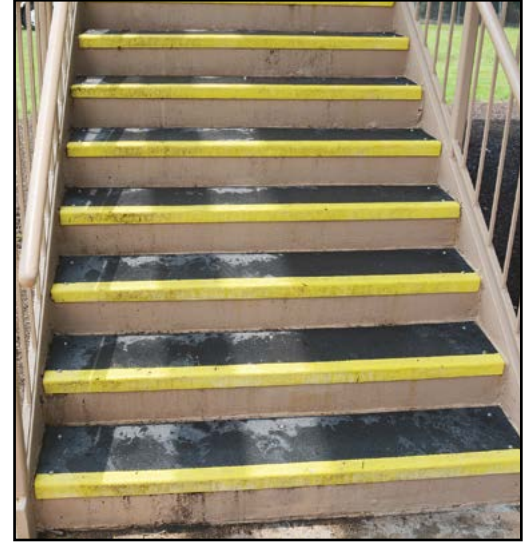
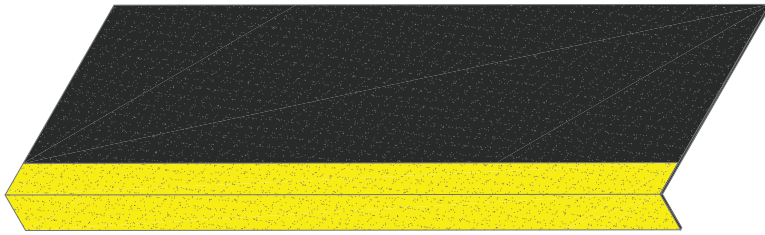
1. The designer should not exceed MAXIMUM RECOMMENDED load at any time. MAXIMUM LOAD represents a 2:1 factor of safety on ULTIMATE CAPACITY.
2. ULTIMATE CAPACITY represents a complete and total failure of the grating.
3. A 60 PSF live load is recommended for walkways per ASCE 7. Deflection is typically limited to a ¼" under full live load.
4. The allowable loads are for STATIC LOAD CONDITIONS at standard temperature 73°F ± 3.6°F (23°C ± 2°C).
5. For applications involving dynamic loads, long term loads that result in creep or elevated temperatures, please consult with Direct Metals.
6. The apparent EI values were calculated from Standard Test results. The apparent EI values change with span length because of shear deformation.
7. The load bars should be orientated in the SPAN direction.

Molded & Pultruded Fiberglass Grating Stair Treads & Covers

Safety and durability are just two of the outstanding features that make fiberglass stair treads and stair tread covers preferred components for stairs and landings. Maximum pedestrian safety is provided by the anti-slip walking surface. Fiberglass stair nosings form a highly visible and durable edge at the primary point of contact on stairs and landings. Fiberglass stair treads and stair tread covers provide a cost-effective slip-resistant protective surface for concrete, metal and wood steps.

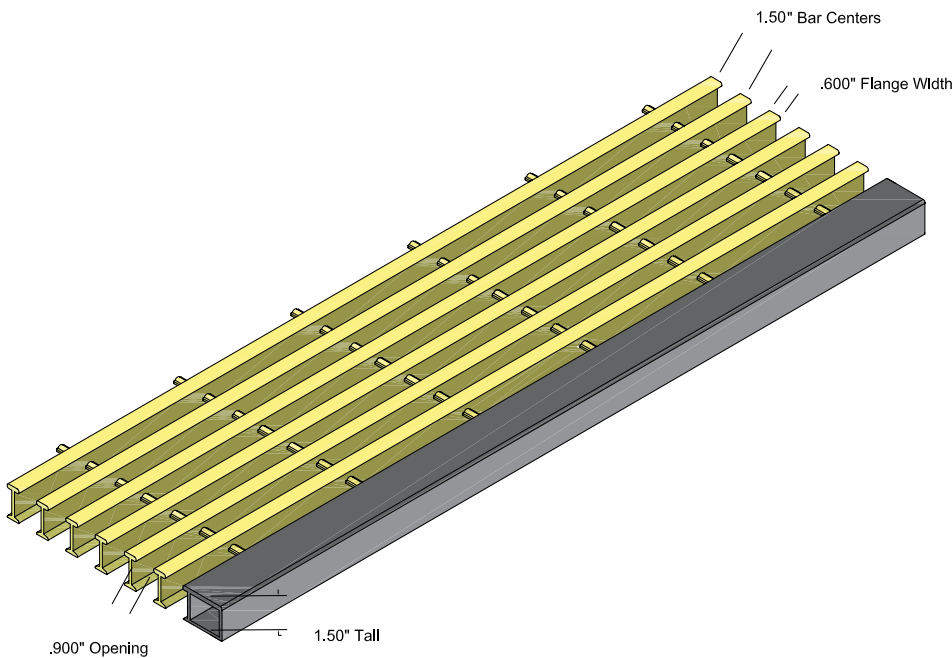
STAIR TREAD COVERS

Stair tread covers are made from a molded polyester mat that is corrosion and impact resistant, fire retardant and non-conductive. They come in 8", 9", 10", 11" and 12" depths, with a standard thickness of 1/8" with 1/4" thick covers available for heavy duty applications. Standard 12' panels are easily cut to size during installation or are available pre-cut to custom lengths. Fiberglass stair tread covers have a durable aluminum oxide grit surface, which increases the safety of stairways and protects exposed edges that are prone to chipping and cracking.



FIBERGLASS STAIR TREADS

Lightweight and easy to install, industrial grade fiberglass stair treads are available in both molded and pultruded options. Molded fiberglass stair treads are 1-1/2" deep while pultruded can be 1", 1-1/2" and 2" deep.



FIBERGLASS MOLDED STAIR TREADS	
Material	Molded Polyester or Vinyl Ester
Resin	IFR-25/VFR-25
Surface	Grit
Mesh	1-1/2" x 6"
% O/A	67%
Height	1-1/2"
Depths	7-5/8", 9-1/8", 10-5/8", 12-1/4"
Widths	Cut-to-size

IMPORTANT FEATURES OF STAIR TREADS & STAIR TREAD COVERS

- Corrosion resistant
- Slip resistant
- High impact resistant
- Durable
- Low maintenance
- Fire retardant
- Lightweight
- Easy to install
- Non-conductive

Pultruded Fiberglass Grating Stair Tread Load Table



I 6010 Profile (1" Tall, 60% Open Area)

TREAD TYPE	Load (lb)	SPAN (in)	18	24	30	36	42	48
		SPAN/150	0.12	0.16	0.20	0.24	0.28	0.32
1" Deep, I6010 (60% Open)	250		.03	.08	.14	.22	.34	.46
	500		.07	.15	.28	.44	.68	.92
1-1/2" Deep, I6015 (60% Open)	250		.01	.02	.04	.06	.09	.13
	500		.02	.04	.08	.11	.18	.26
2" Deep T5020 (50% Open)	250		.01	.02	.03	.04	.06	.09
	500		.02	.04	.06	.09	.12	.18
1" Deep I4010 (40% Open)	250		.02	.05	.10	.16	.24	.33
	500		.05	.11	.20	.32	.49	.65
1-1/2" Deep, I4015 (40% Open)	250		.01	.01	.03	.04	.06	.09
	500		.02	.03	.05	.07	.12	.17
2" Deep, T3320 (33% Open)	250		.01	.01	.02	.03	.05	.07
	500		.02	.03	.04	.06	.09	.14
1" Deep, T1210 (12% Open)	250		.06	.13	.19	.26	.37	.47
	500		.10	.22	.34	.46	---	---
1-1/2" Deep, T1215 (12% Open)	250		.05	.07	.07	.11	.15	.18
	500		.08	.12	.16	.20	.28	.36
1" Deep, T2510 (25% Open)	250		.05	.13	.20	.27	.39	.50
	500		.09	.23	.37	.50	---	---
1-1/2" Deep, T2515 (25% Open)	250		.03	.06	.09	.12	.15	.18
	500		.05	.11	.16	.21	.28	.35
1" Deep, T3810 (38% Open)	250		.06	.15	.23	.32	.47	---
	500		.09	.25	.41	---	---	---
1-1/2" T3815 (38% Open)	250		.03	.06	.09	.12	.18	.23
	500		.05	.11	.17	.23	.34	.45

Molded Fiberglass Grating Heavy Duty Details

1-1/2" DEEP X 1" X 2" RECTANGULAR

Load Bar Depth: 1-1/2"
Open Area: 48%
Weight: 6.2 Lbs/Sq. Foot
Bar Width: 0.43"
Bars/Foot: 12



2" DEEP X 1" X 2" RECTANGULAR

Load Bar Depth: 2"
Open Area: 48%
Weight: 8.4 Lbs/Sq. Foot
Bar Width: 0.48"
Bars/Foot: 12



Fiberglass Grating Heavy Duty Systems

MOLDED HEAVY DUTY FIBERGLASS GRATING

- 48% open surface area
- In 4' x 12' panels with depths of 1-1/2" and 2"
- Fire retardant vinyl ester resin system
- Dark gray color
- Smooth or grit surface
- Conforms to an ASTM E-84 flame spread rating of 25 or less and a Class 1 Fire Rating
- VGB compliant

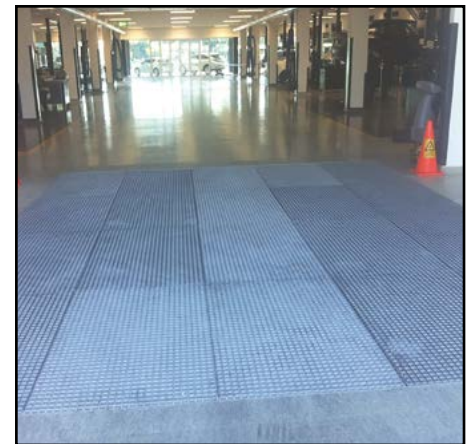


PULTRUDED HEAVY DUTY FIBERGLASS GRATING

With 47% or 58% open surface area options, our pultruded heavy duty grating is available in 1", 1-1/4", 1-1/2", 2", 2-1/2" and 3" depths and comes standard in a fire retardant vinyl ester resin system, dark gray color, with a grit top surface. Our pultruded heavy duty grating merits an ASTM E-84 flame spread rating of 25 or less and a Class 1 Fire Rating. All heavy duty grating is specially engineered to meet rolling load requirements.

COMMON APPLICATIONS FOR HEAVY DUTY FIBERGLASS GRATING

- Rolling loads
- Storage areas
- Flooring
- Long-span walkways
- Platforms
- Assembly lines
- Trenches with vehicular or fork lift traffic



Molded Fiberglass Grating Covered Grating



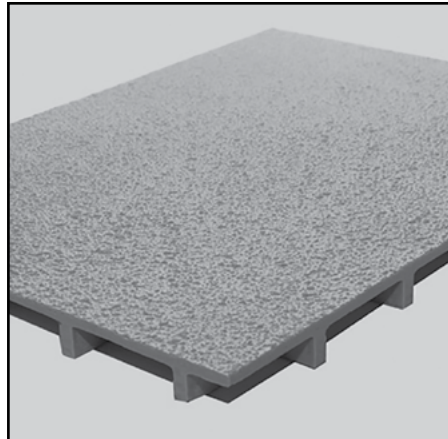
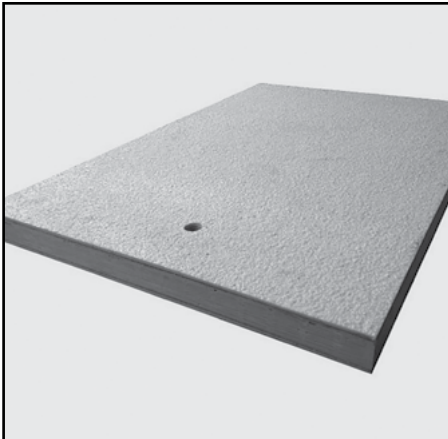
- Long-lasting
- Molded fiberglass floor product
- Slip-resistant plate and molded grating manufactured with any of our resin systems
- Ideal choice when a 100% covered flooring surface is needed
- Used in loading and storage areas with high foot and cart traffic, where a strong, level surface is ideal
- Approximately 50% higher stiffness values than that of open mesh grating
- Standard grit-top cover assures secure footing

FIBERGLASS COVERED GRATING APPLICATIONS

- Food processing facilities where covered grating walkways prevent contamination to conveyor or work surfaces below
- Facilities where covered grating provides a walking surface and controls subsurface odors
- Walkways over tank tops and vats
- Solid flooring where high heels might present a tripping hazard with an open mesh grating

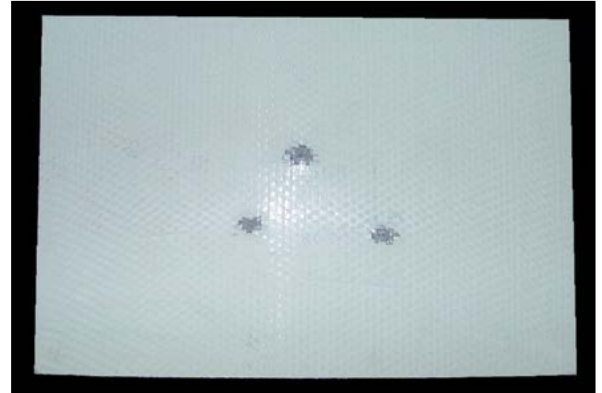
IMPORTANT FEATURES OF FIBERGLASS COVERED GRATING

- Corrosion resistant
- Slip resistant
- Low maintenance
- Strong, solid top
- Increased product stiffness
- Offers sure footing
- Prevents contamination to work surfaces below
- Includes a fiberglass gritted plate cover secondarily fastened to a molded grating panel
- Standard panel sizes
- 1/8" or 1/4" thick plate applied to standard depths of grating
- Available in all of our resin systems and a variety of colors



Pultruded Bullet Resistant Plate

- The latest in military grade protection from armed attackers
- Originally developed for use by the Department of Defense for protection from mortar fire
- Superior ballistic resistance at a weight less than 25% that of a comparable steel panel
- For commercial security applications for your business, home or governmental facility
- Constructed from multiple layers of woven fiberglass encapsulated with a proprietary resin system by the pultrusion process
- Produces a rigid panel with exceptional ballistic resistance
- Allows for retention of the projectile to avoid potentially hazardous ricochet
- Ballistic resistant security
- Durable
- Corrosion resistant
- Electrical non-conductivity
- Low thermal conductivity
- Lightweight
- Used for both indoor and outdoor applications
- Easily incorporated into standard building design to provide undetectable ballistic or bullet resistant protection
- Can be field fabricated using simple installation methods and common carpentry tools
- Surface finish is smooth and in a white color
- Custom colors available
- Primed, painted or covered by gypsum board or other materials to match specific requirements
- Nominal thicknesses of 1/4", 3/8" and 1/2" for protection to UL 752 Levels 1, 2 and 3 and NIJ Levels I, II and IIIA test standards for ballistic or bullet resistance
- Additional protection against higher power ammunitions to UL 752 Level 4 for 30 caliber rifles and Level 8 for 7.62mm rifles is achieved by layering multiple fiberglass panels. This also permits offsetting of panel joints and easier handling for installation over the use of thicker, heavier panels where greater protection is required.
- Constructed from layers of 0-90 degree woven E-glass fiber reinforcements with a proprietary resin system in several sizes from 36" x 84" to 48" x 120" with other panel lengths available
- Rated for Listing by Underwriters Laboratory for Ballistic Resistance to UL 752
- Fire rated for 1 hour per ASTM E-119-09c Fire Tests of Building Construction and Materials, modified to a smaller scale gypsum board wall assembly
- Flame spread rating of 45 and a smoke developed rating of 165 per ASTM E-84-08a Standard Test Method for Surface Burning Characteristics of Building Materials, achieving a NFPA and IBC Class B fire rating. Class A panels available in production quantities.



COMMERCIAL

- Banks
- Check cashing
- Pawn shops
- Loan offices
- Jewelry stores

INDUSTRIAL

- Bonded warehousing
- Security buildings
- Shielding of equipment

GOVERNMENTAL

- Courtrooms
- Judges' chambers
- Police stations
- Detention facilities
- Firing ranges

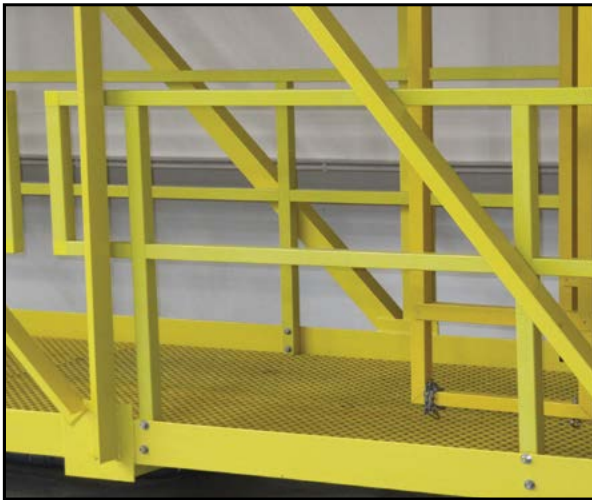
RESIDENTIAL

- Safe rooms
- Storm shelters
- Door systems



Pultruded Fiberglass Grating Handrails and Ladders

Industrial and commercial fiberglass grating railing systems for stair rails, platform/walkway handrails and guardrails. Fiberglass handrail systems are fabricated from pultruded fiberglass components and molded thermoplastic connectors.



- 2" square or 2" round configurations
- Easy to grip
- Ideal for any high traffic area
- Withstands corrosive environments, such as those found in industrial, chemical and wastewater treatment plants as well as commercial structures with urban and salt air
- Our pultruded fiberglass can be customized to meet specific corrosion requirements

FIBERGLASS GRATING HANDRAIL SYSTEMS

- Corrosion resistant
- Structurally strong
- High impact resistant
- Lightweight
- Easy to fabricate
- Low in thermal conductivity
- Non-conductive

FIBERGLASS GRATING HANDRAIL SYSTEMS

- Ease of Assembly - Fiberglass grating handrail systems are produced in lightweight standard sections in kit form and include both post and rail. Fiberglass systems can either be assembled in large sections and shipped to the site or assembled and installed on site with simple carpenter tools.
- Internal Connection System - All connections fit flush, resulting in a streamlined appearance. The internal connections allow the construction of continuous handrail systems around circular tanks without special fittings.
- Safety Features - Systems come in a highly visible yellow color and feature low electrical conductivity and high strength.
- Low Maintenance - Corrosion resistant fiberglass with molded-in color outlasts aluminum or steel systems external finish and virtually no maintenance.
- Cost Effective - Fiberglass components and easy-to-assemble design provide savings on labor and maintenance, which and eliminates the cost and inconvenience of plant shutdowns during repairs.

FIBERGLASS GRATING LADDERS AND FIBERGLASS GRATING LADDER CAGE SYSTEMS

- Outlast aluminum and steel in a wide range of industries, including chemical plants and other corrosive environments, even when the ladder systems are completely submerged for extended periods of time
- Can be installed in a variety of applications from sumps to tanks, buildings, piers, portable equipment, etc.
- Provides years of strength and dependability
- Produced in a premium grade polyester resin system, fiberglass ladders and ladder cages are flame retardant and contain ultraviolet inhibitor additives
- To ensure worker safety, standard fiberglass side rails and cages are pigmented in a highly visible yellow color and the ladder rungs are made from a pultruded fiberglass polyester tube with a fluted non-skid surface, requiring little to no maintenance

Our fiberglass ladders are fabricated in a standard 18" rung width configuration with 12" rung spacings. However, custom designed ladders and access cages manufactured precisely to your required dimensions per OSHA standards are available upon request.

Pultruded Fiberglass Grating Structural Shapes

Our fiberglass structural shapes and pultruded fiberglass profiles are made from a combination of fiberglass and thermosetting resin systems. The manufacturing process involves drawing glass mats and rovings through a resin bath and then pulling them through a heated die to form the desired shapes.

All shapes are lightweight, impact resistant, low maintenance, non-magnetic, low conductive and have dimensional stability, making them easy to install and ideal for several applications. They stand up to wet and corrosive environments and meet lightweight construction component requirements. Specifications such as dimensions and color are customizable.

PULTRUDED FIBERGLASS PROFILES ARE AVAILABLE IN A WIDE VARIETY OF SHAPES

- Fiberglass angles
- Fiberglass C-channels
- Fiberglass round tubes
- Fiberglass square tubes
- Fiberglass rectangular tubes
- Fiberglass round rods
- Fiberglass square rods
- Fiberglass I-Beams

FEATURES OF FIBERGLASS STRUCTURAL SHAPES

- Very lightweight
- Non-conductive
- Impact resistant
- Low maintenance
- High strength
- Easy fabrication



Pultruded Fiberglass Grating Floor Plates

- Lightweight yet durable
- High performance structural floor panels
- Designed for use in applications where durability and long, low-maintenance life are critical
- Non-conductive, gritted exterior that makes them an economical and safe solution to slippery walking surfaces
- Non-gritted fiberglass floor plates can be bolted directly to structural beams
- Used as wall panels that are resistant to corrosive splash
- As flooring, fiberglass plates are often installed over existing grating to provide a solid walkway or to extend the life of a high-traffic area
- A molded-in, grit-top surface is standard for improved footing
- Electrically non-conductive, so the possibility of workers being injured by electrical shock is eliminated
- Nonporous
- Easily cleaned by high-pressure washer and can withstand cleaning solutions
- Standard panel sizes are 3' x 10', 4' x 8', 4' x 2' and 5' x 10'
- Custom sizes available
- Corrosion resistance is unequalled, even when compared to stainless steel
- Supports heavy loads
- Thicknesses ranging from 1/8" to 3/4"
- Easy to install with a minimum of material waste
- Various resin systems and colors



IMPORTANT FEATURES OF FIBERGLASS FLOOR PLATES

- Corrosion resistant
- Slip resistant
- Lightweight
- Low maintenance
- Durable
- Bi-directional strength
- Non-conductive

FIBERGLASS GRITTED FLOOR PLATES

Fiberglass gritted floor plates are durable, corrosion resistant floor plates. The unique combination of pultruded fiberglass plate and an anti-skid grit surface creates textured solid sheet flooring that is ideal for both wet and dry environments.

Used in a variety of applications such as trench covers to contain vapors and fumes or pedestrian bridge walkways for sure footing, fiberglass gritted floor plates provide a long-lasting maintenance-free alternative to steel plates for severe, corrosive environments.

FIBERGLASS GRITTED PLATE APPLICATIONS

- Walkways
- Splash walls
- Overpasses
- Bridge decks
- Pool decks
- Trench covers
- Odor control covers

MATERIALS OF CONSTRUCTION FOR FIBERGLASS GRITTED FLOOR PLATES

- Solid plate or bonded to pultruded fiberglass grating
- The standard surface is fine grit; however, a medium grit or coarse grit is also available
- Customized to meet the requirements of a variety of applications

Standard fiberglass gritted plates have a Class 1 flame rating of 25 or less per ASTM E-84 and meet the self-extinguishing requirements of ASTM D-635.

Fiberglass gritted plates with fine grit are stocked in 4' x 8' panels in standard fiberglass/resin system plate thicknesses of 1/8" and 1/4". Optional plate thicknesses include 3/16", 3/8", 1/2", 5/8", 3/4" and 1" sizes.

Pultruded Fiberglass Grating Floor Plates

Load/Deflection Data

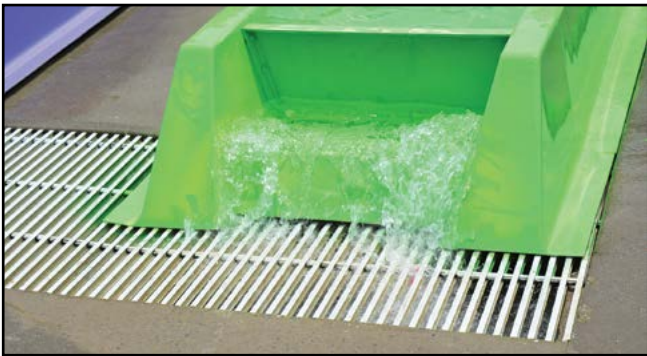
**Important: 1/8" Plate designed for use as covering only; not recommended for load bearing service.*

Depth (in) Weight (psf)	Span (in)	Concentrated Load-Full Panel					Uniform Load-Full Panel					Concentrated Load Required to Produce Deflection Equal to 1% of Span (lb)				
		Maximum Load		Load (lb)			Maximum Load		Load (psf)							
		Norm ¹	Firm ²	100	250	500	750	1000	Norm ¹	Firm ²	25		50	75	100	150
1/4	12	229	135	.047	.104	.199	.294	.392	336	205	.010	.014	229	229	229	300 lb
	18	196	117	.079	.181	.351	--	--	99	54	.056	.085	196	196	196	256 lb
2.5 psf	24	181	116	.102	.263	--	--	--	28	15	.177	.327	181	181	181	223 lb
	36	84	55	.350	--	--	--	--	--	--	--	--	84	84	84	103 lb
3/8	12	515	325	.018	.045	.093	.140	.190	480	300	<.01	--	.016	.020	.030	667 lb
	18	455	288	.028	.077	.158	.239	.320	146	91	.026	.050	.075	.099	.148	584 lb
4.3 psf	24	259	149	.100	.195	.355	--	--	64	40	.075	.150	.225	.300	.449	308 lb
	36	154	98	.178	.467	--	--	--	28	17	.258	--	--	--	--	192 lb
1/2	12	960	600	<.01	.025	.048	.075	.100	654	410	<.01	--	.012	.016	.022	1250 lb
	18	853	543	.011	.011	.038	.081	.125	169	26	.125	.041	.057	.074	.106	1184 lb
5.6 psf	24	508	313	.043	.098	.1490	.282	.374	18	72	.051	.089	.127	.165	.241	631 lb
	36	260	157	.127	.283	--	--	--	49	30	.153	.297	.441	--	--	318 lb
3/4	12	3965	2469	.003	.007	.013	.019	.024	1944	1215	.0012	.0025	.0037	.0049	.0074	4750 lb
	18	1798	1123	.009	.024	.043	.063	.079	576	360	.002	.011	.018	.025	.039	2140 lb
8.4 psf	24	1412	882	.019	.042	.075	.106	.133	243	152	.031	.054	.075	.093	.131	1700 lb
	36	1108	693	.027	.066	.129	.188	.243	85	53	.078	.134	.187	.231	.321	1440 lb

NOTES:

- (1) Normal load is the load which will produce a L/D of 125 or .375" Maximum
- (2) Firm is the load which will produce a L/D of 200 or .25" Maximum
- (3) Loads for Short Span Normal and Firm have been limited to allow for shearing effects
- (4) Clear Span is 2" less than width of grating

Molded & Pultruded Fiberglass Grating Applications



FIBERGLASS



Direct Metals carries an extremely large inventory of Fiberglass products in their Atlanta, GA and Chicago, IL warehouses of molded and pultruded grating types.

Direct Metals Company, LLC

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