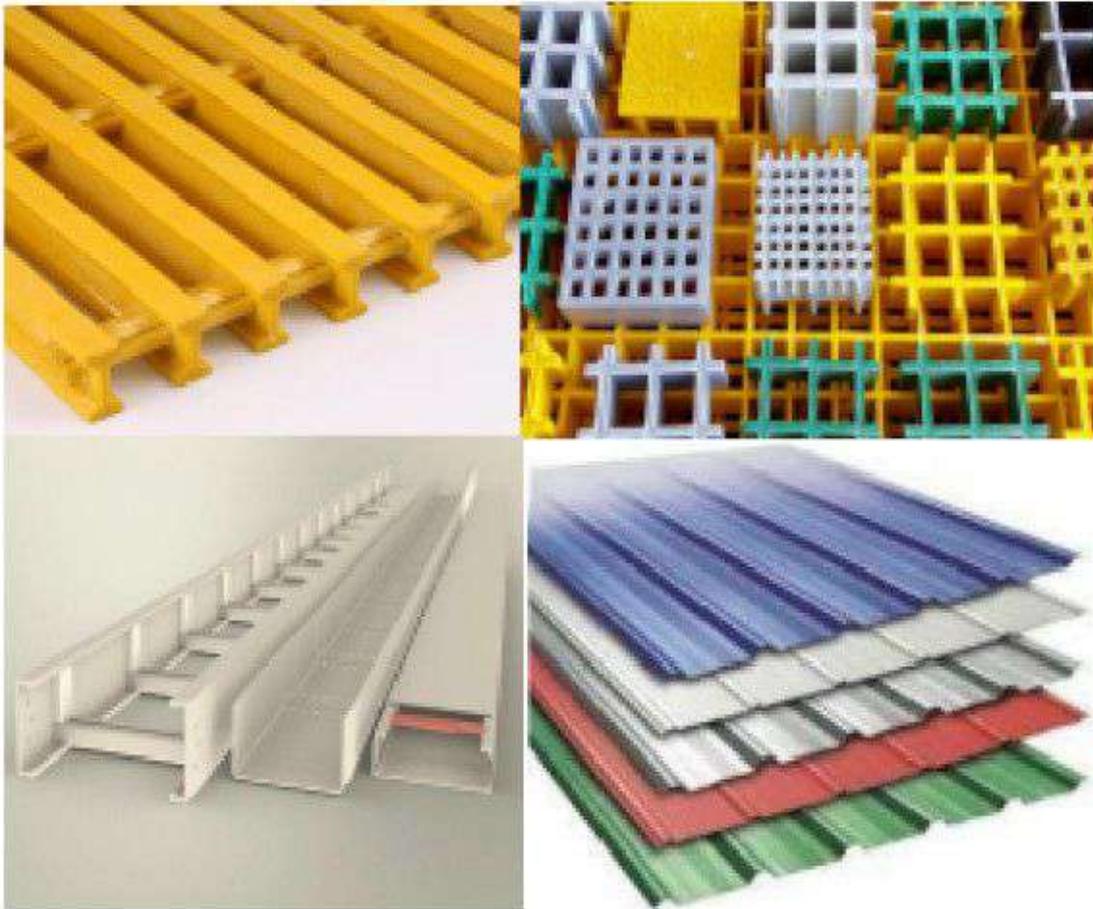
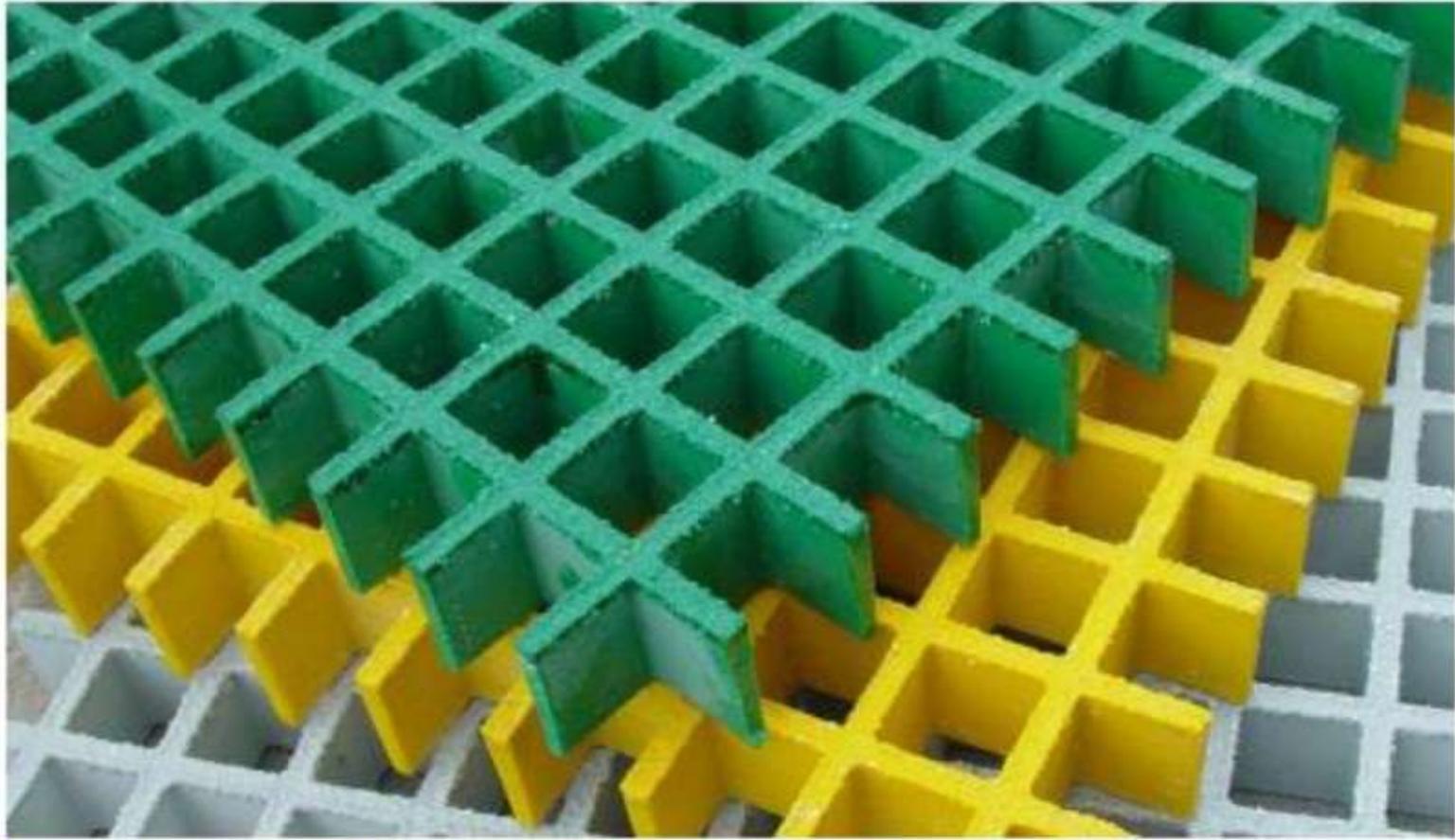


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# FRP GRATINGS



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# APPLICATIONS

- Flooring
- Platform
- Walkways
- Assembly Lines
- Trench Covers
- Stairs
- Catwalks
- Ramps
- Greenhouse Shelving
- Pool Drainage
- Portable Building floors



# MARKETS

- Chemical
- Electronics
- Marine (including military vessels)
- Oil & Gas
- Petroleum Processing
- Plating
- Pulp and Paper
- Water/Wastewater
- Zoos/Aquariums
- Recreational Facilities



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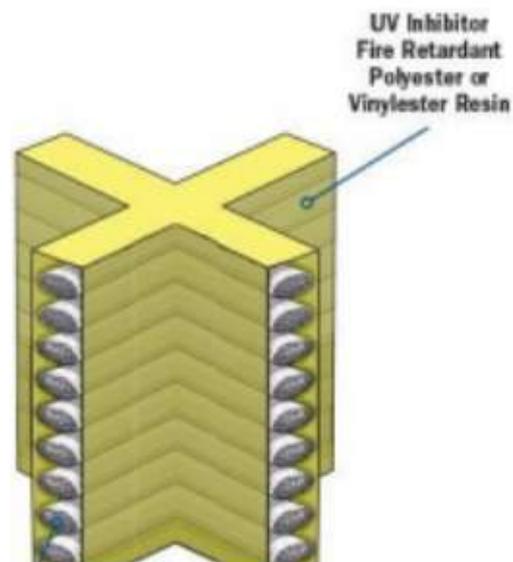
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## MOLDED GRATING PROCESS

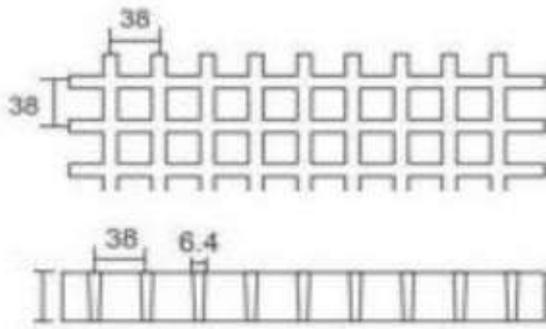
Molded grating is manufactured in an open, heated mold that resembles a large waffle iron. Continuous reinforcements are placed in the mold in alternating layers and thoroughly wetted out with resin. This continuous process produces an integral, one-piece construction, which offers excellent corrosion resistance as well as bi-directional strength. When the weaving process is completed, the mold is heated to cure the panel. If the grating is to have embedded grit, the mold will receive the grit at this time before the part is cured. After curing, the part is extracted from the mold. The standard part would have a meniscus (concave) top surface for slip resistance. Should a standard grit surface be specified, the grit would be bonded to the top of the completed grating panel as a secondary operation.

## MOLDED GRATING

Liquid resin and continuous fiberglass roving are systematically laid in the mold, layer after layer manually, to produce the desired thickness and panel dimensions. The finished molds are set aside for a predetermined time to allow the panel to cure. The panel is then ejected from the mold. The molds are cleaned and prepared for the process to begin again. The one piece interwoven square mesh construction of molded grating produces two primary benefits: maximum corrosion resistance and high strength.



## MG-38



38



### Physical Properties of Molded Grating

Property	Test Method	Units	Value
Tensile Strength	ASTM D-638	PSI	100,000
Tensile Modulus	ASTM D-638	PSI	$5.6 \times 10^6$
Flexural Strength	ASTM D-790	PSI	100,000
Flexural Modulus	ASTM D-790	PSI	$5.6 \times 10^6$
Compressive Strength	ASTM D-695	PSI	60,000
Izod Impact Notch	ASTM D-256	Ft.-Lbs./In.	40
Barcol Hardness			50 (Min.)
Specific Gravity	ASTM D-792		2
Water Absorption	ASTM D-570	Max. %	0.03
Flame Retardant	ASTM E-84		Less than 25
Flame Retardant	ASTM D-635		Self-Extinguishing

## DESCRIPTION



**Non-slip:** Composite Grating's integral grit top surface provides outstanding anti-slip protection for personnel in wet and oily environments. The grit is embedded in the top surface of each panel prior to curing. This combination of integral construction, plus depth of the embedded grit, creates a long-lasting maximum anti-slip top surface.



**corrosion resistance:** The ability of Composite grating is to guard against deterioration from industrial chemicals and environmental factors makes it a logical and cost-effective alternative to carbon steel, aluminum, wood or other conventional materials. Whether the grating is exposed to continuous submersion, splash, spills, fumes or gases, you can be assured that Composite grating will outperform other mediums.



**Fire resistance:** Composite Grating is available in various resin systems, two of which meet the Class 1 flame spread rating of 25 or less, in accordance with ASTM E-84 Tunnel Test Method. If a flame spread of 10 or less is required, it will be available in request.



**Non-Magnetic:** The non-magnetic properties allow the Composite grating to be used in sensitive installations where the inherent magnetic properties of metallic grating would prove unsuitable.



**Impact resistance:** The impact resistance of Composite Grating allows repeated deflection without permanent deformation. A certain amount of deflection can occur with loading. However, once the load is removed, the grating will return to its original shape, unlike metallic grating, which will remain deformed and require costly repairs or replacement.



**Non-sparking:** The non-sparking qualities of Composite Grating systems are ideally suited for those installations where hydrogen or other combustible gases may be found and which may explode or cause a fire from sparks produced from accidental dropping of tools onto the grating.



**Maintenance- Free :**The use of Composite Grating virtually eliminates maintenance costs since painting is not required, and UV inhibitors protect against degradation from the sun.



**Light-weight :**Composite Grating weighs about one-quarter as much as steel grating. Two men can easily handle full panels, without the need for hoists, pulleys or dollies. If the Composite Grating needs to be moved for cleaning, maintenance or utility access, there is less chance of back injuries. The lightweight design of the grating reduces installation and fabrication costs, weighing only 12 kilos per sq mtr for 25mm and 18 kilos per sq mtr for 38mm.



**Raised-Floor:** Many plant operations have a need for slightly elevated Floor Grating. Fixed or adjustable pedestals can be used for applications up to a height of 600mm. Plastic insert mouldings, which raise the Composite Grating panels 7mm off the floor, are ideal for allowing liquid drainage below the Grating.



**Cost-savings:** In a review of costs, Composite grating showed significant savings over the use of stainless steel grating, and when consideration is given to 'life cycle costs', combining anti-slip benefits, the saving over the use of metal grating alternatives is quite considerable.



**Low Installation cost:** Composite Grating weights considerably less than conventional metal gratings, and is easier and less expensive to transport, install and remove. Only simple hand tools are required for installation and removal, eliminating the need for costly equipment and labour costs associated with heavy lifting, cutting and welding.



**High- performance:** Composite structural Composite grating materials have demonstrated a proven ability to withstand the harsh side effects of corrosive conditions better than galvanized steel. For many years, composites have been reliably used in traditionally corrosive industries such as chemical processing, plating and marine construction. While the cost of material is an important criterion in the design of a project, it does not reflect the total cost of the project. Beyond material purchase price, the engineer also should consider the related costs of installation, maintenance over time and replacement of debilitated materials.

## MOLDED GRATING CHEMICAL RESISTANCE GUIDE

CHEMICAL ENVIRONMENT	VINYL ESTER		ISOPHTHALIC POLYESTER		ORTHOPTHALIC	
	% CONCENTRATION	MAX. OPEN. TEMP. F/C	% CONCENTRATION	MAX. OPEN. TEMP. F/C	% CONCENTRATION	MAX. OPEN. TEMP. F/C
Acetic Acid	50	180/82	50	125/52	25	N/R
Aluminum Hydroxide	100	170/77	100	160/71	ALL	-
Ammonium Chloride	ALL	190/88	ALL	170/77	ALL	-
Ammonium Hydroxide	28	100/38	28	N/R	ALL	-
Ammonium Bicarbonate	50	150/65	15	125/52	ALL	N/R
Ammonium Sulfate	ALL	200/93	ALL	170/77	ALL	-
Benzene	N/R	N/R	N/R	N/R	ALL	N/R
Benzoic Acid	SAT	200/93	SAT	150/65	ALL	77/25
Borax	SAT	200/93	SAT	170/77	ALL	-
Calcium Carbonate	ALL	180/82	SAT	170/77	ALL	-
Calcium Nitrate	ALL	200/93	ALL	180/82	ALL	-
Carbon Tetrachloride	100	75/24	N/R	N/R	100	N/R
Chlorine, Dry Gas	--	170/77	--	140/60	-	N/R
Chlorine Water	SAT	180/82	SAT	80/27	SAT	N/R
Chromic Acid	10	120/49	5	70/21	5	N/R
Citric Acid	ALL	200/93	ALL	170/77	ALL	77/25
Copper Chloride	ALL	200/93	ALL	170/77	ALL	104/40
Copper Cyanide	ALL	200/93	ALL	170/77	ALL	77/25
Copper Nitrate	ALL	200/93	ALL	170/77	ALL	-
Ethanol	50	90/32	50	75/24	10	77/25
Ethylene Glycol	100	200/93	100	90/32	100	104/40
Ferric Chloride	ALL	200/93	ALL	170/77	ALL	104/40
Ferrous Chloride	ALL	200/93	ALL	170/77	-	-
Formaldehyde	ALL	100/38	50	75/24	25	-
Gasoline	100	150/65	100	80/27	100	77/25
Glucose	100	200/93	100	170/77	ALL	-
Glycerin	100	200/93	100	150/65	100	-
Hydro bromic Acid	50	120/49	50	120/49	18	-
Hydrochloric Acid	37	100/38	37	75/24	10	86/30
Hydrogen Peroxide	30	100/38	5	100/38	5	N/R

## MOLDED GRATING CHEMICAL RESISTANCE GUIDE

CHEMICAL ENVIRONMENT	VINYL ESTER		ISOPHTHALIC POLYESTER		ORTHOPHTHALIC	
	% CONCENTRATION	MAX. OPEN. TEMP. F/C	% CONCENTRATION	MAX. OPEN. TEMP. F/C	% CONCENTRATION	MAX. OPEN. TEMP. F/C
Lactic Acid	ALL	200/93	ALL	170/77	ALL	77/25
Lithium Chloride	SAT	200/93	SAT	150/65	ALL	-
Magnesium Chloride	ALL	200/93	ALL	170/77	ALL	104/40
Magnesium Nitrate	ALL	180/82	ALL	140/60	ALL	86/30
Magnesium Sulfate	ALL	190/88	ALL	170/77	ALL	104/40
Mercuric Chloride	100	190/88	100	150/65	100	104/40
Mercurous Chloride	ALL	180/82	ALL	140/60	ALL	104/40
Nickel Chloride	ALL	200/93	ALL	170/77	ALL	104/40
Nickel Sulfate	ALL	200/93	ALL	170/77	ALL	104/40
Nitric Acid	20	100/38	20	70/21	2	N/R
Oxalic Acid	ALL	120/49	ALL	75/24	ALL	N/R
Per chloric Acid	30	80/27	N/R	N/R	10	N/R
Phosphoric Acid	100	200/93	100	120/49	80	N/R
Potassium Chloride	ALL	200/93	ALL	170/77	ALL	104/40
Potassium Dichromate	ALL	200/93	ALL	170/77	ALL	77/25
Potassium Nitrate	ALL	200/93	ALL	170/77	ALL	104/40
Potassium Sulfate	ALL	200/93	ALL	170/77	ALL	104/40
Propylene Glycol	ALL	200/93	ALL	170/77	ALL	104/40
Sodium Acetate	ALL	200/93	ALL	160/71	ALL	104/40
Sodium Bisulfate	ALL	200/93	ALL	170/77	ALL	-
Sodium Bromide	ALL	200/93	ALL	170/77	5	-
Sodium Cyanide	ALL	200/93	ALL	170/77	5	N/R
Sodium Hydroxide	25	150/65	N/R	N/R	1	N/R
Sodium Nitrate	ALL	200/93	ALL	170/77	ALL	104/40
Sodium Sulfate	ALL	200/93	ALL	170/77	ALL	104/40
Stannic Chloride	ALL	190/88	ALL	160/71	ALL	104/40
Sulfuric Acid	75	100/38	25	75/24	10	-
Tartaric Acid	ALL	200/93	ALL	170/77	ALL	-
Vinegar	100	200/93	100	170/77	ALL	-
Water, Distilled	100	180/82	100	170/77	ALL	86/30
Zinc Nitrate	ALL	200/93	ALL	170/77	ALL	104/40
Zinc Sulfate	ALL	200/93	ALL	170/77	ALL	104/40

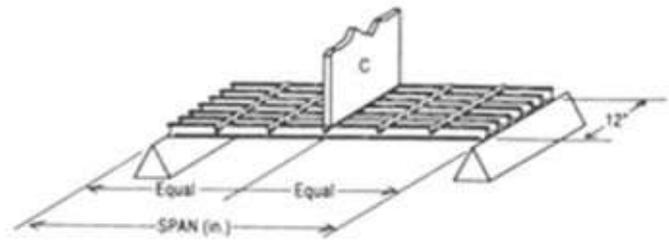
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## Physical Properties of Molded Grating

Property	Test Method	Units	Value
Tensile Strength	ASTM D-638	PSI	100,000
Tensile Modulus	ASTM D-638	PSI	$5.6 \times 10^6$
Flexural Strength	ASTM D-790	PSI	100,000
Flexural Modulus	ASTM D-790	PSI	$5.6 \times 10^6$
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Barcol Hardness			50 (Min.)
Specific Gravity	ASTM D-792		2
Water Absorption	ASTM D-570	Max. %	0.03
Flame Retardant	ASTM E-84		Less than 25
Flame Retardant	ASTM D-635		Self-Extinguishing

**LOAD DESCRIPTION**



**Molded GRATING (METRIC UNITS) CONCENTRATED LOAD TABLES-  
DEFLECTION IN mm**

SPAN IN (mm)	STYLE	LOAD IN KN/M OF WIDTH (CONCENTRATED)														MAXIMUM (RECOMMENDED)	
		3	5	8	10	13	15	20	25	39	50	60	70	80	90		
400	38X38X25	1.2	2.0	3.2	4.1	5.3	6.1	8.1	10.1	15.8							9
	38X38X30	1.6	2.6	4.2	5.3	6.8	7.9	10.5	13.1								9
	38X38X38	0.6	0.9	1.5	1.9	2.4	2.8	3.7	4.7	7.3	9.3	11.2	13.1	14.9			19
	50X50X50	0.3	0.6	0.9	1.1	1.5	1.7	2.3	2.8	4.4	5.7	6.8	7.9	9.1	10.2		30
600	38X38X25	3.7	6.1	9.8	12.3	16.0											6
	38X38X30	4.8	8.0	12.8	16.0												6
	38X38X38	1.6	2.6	4.2	5.3	6.8	7.9	10.5	13.2								13
	50X50X50	0.9	1.5	2.4	3.0	3.9	4.5	6.1	7.6	11.8	15.1						21
800	38X38X25	8.5	14.2														4
	38X38X30	11.3															3
	38X38X38	3.5	5.9	9.5	11.8	15.4											10
	50X50X50	1.9	3.2	5.2	6.4	8.4	9.7	12.9									12
1000	38X38X38	6.9	11.4														7
	50X50X50	3.7	6.1	9.8	12.2	15.9											10
1200	38X38X38	11.8															5
	50X50X50	6.2	10.4														8
1400	50X50X50	9.8															5

## 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.Walking loads, typically 2.4 KN/M<sup>2</sup> is recommended for pedestrian traffic. Deflections for worker comfort are typically limited to or SPAN divided by 120 under full live load.

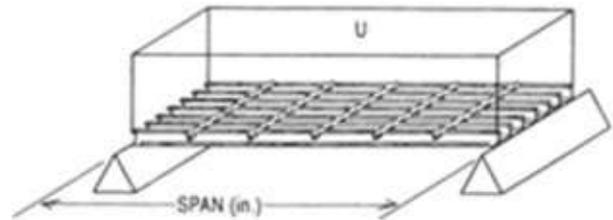
For a firmer feel under full live load or a 3.6 KN/M load, limit deflection to 6mm or SPAN divided by 200.

4.The allowable loads are for STATIC LOAD CONDITIONS at ambient temperatures. Allowable loads for impact or dynamic loads should be a maximum of ONE-HALF the value shown.

Long term loads will result in added deflection due to creep in the material and will also require higher safety factors to ensure acceptable performance.

5.For applications at elevated temperatures, consult your manufacture .

**LOAD DESCRIPTION**



**MOLDED GRATING (METRIC UNITS)  
UNIFORM LOAD TABLES-DEFLECTION IN mm**

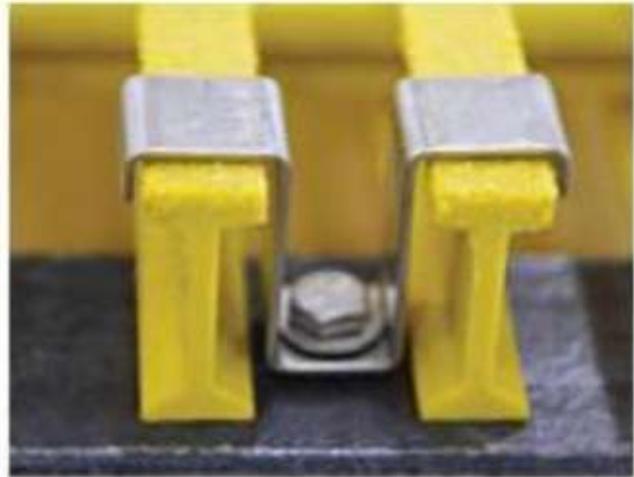
SPAN IN (mm)	STYLE	LOAD IS $KN/M^2$ WIDTH (UNIFORM)														MAXIMUM (RECOMMENDED)
		3	5	8	10	13	15	20	25	39	50	60	70	80	90	
400	38X38X25	0.3	0.5	0.8	1.0	1.3	1.5	2.0	2.5	4.0	5.1	6.1	7.1	8.1	9.1	48
	38X38X30	0.4	0.7	1.1	1.3	1.7	2.0	2.6	3.3	5.1	6.6	7.9	9.2	10.5	11.8	48
	38X38X38	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.2	1.8	2.3	2.8	3.3	3.7	4.2	100
	50X50X50	0.1	0.1	0.2	0.3	0.4	0.4	0.6	0.7	1.1	1.4	1.7	2.0	2.3	2.6	154
600	38X38X25	1.4	2.3	3.7	4.6	6.0	6.9	9.2	11.5							20
	38X38X30	1.8	3.2	4.8	6.0	7.8	9.0	12.0	15.0							20
	38X38X38	0.6	1.0	1.6	2.0	2.6	3.2	3.9	4.9	7.7	9.9	11.8	13.8	15.8		45
	50X50X50	0.3	0.6	0.9	1.1	1.5	1.7	2.3	2.8	4.4	5.7	6.8	8.0	9.1	10.2	73
800	38X38X25	4.3	7.1	11.3	14.2											10
	38X38X30	5.7	9.5	15.1												9
	38X38X38	1.8	3.0	4.7	5.9	7.7	8.9	11.8	14.8							26
	50X50X50	0.1	0.2	0.3	0.3	0.4	0.5	0.7	0.8	1.3	1.6	2.0	2.3	2.6	2.9	35
1000	38X38X25	10.4														6
	38X38X30	13.9														5
	38X38X38	4.3	7.1	11.4	14.3											14
	50X50X50	2.3	3.8	6.1	7.7	9.9	11.5	15.3								21
1200	38X38X38	8.9	14.8													9
	50X50X50	4.7	7.8	12.5	15.6											14
1400	50X50X50	8.5	14.2													8

## NOTES:

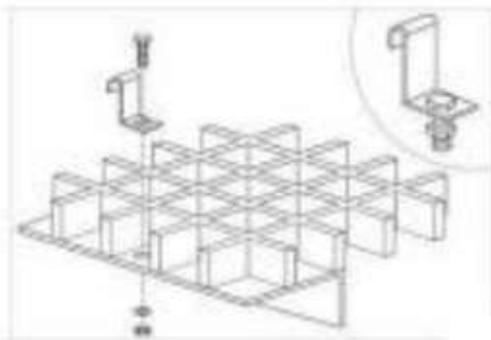
- 1.The designer should not exceed MAXIMUM RECOMMENDED load at any time. MAXIMUM LOAD represents a 2:1 factor of safety on ULTIMATE CAPACITY.
- 2.ULTIMATE CAPACITY represents a complete and total failure of the grating.
- 3.Walking loads, typically 2.4 KN/M<sup>2</sup> is recommended for pedestrian traffic. Deflections for worker comfort are typically limited to 9mm or SPAN divided by 120 under full live load For a firmer feel under full live load or a 3.6 KN/M load, limit 6mm or SPAN divided by 200 deflection to.
- 4.The allowable loads are for STATIC LOAD CONDITIONS at ambient temperatures. Allowable loads for impact or dynamic loads should be a maximum of ONE-HALF the value shown. Long term loads will result in added deflection due to creep in the material and will also require higher safety factors to ensure acceptable performance.
- 5.For applications at elevated temperatures, consult your manufacture.

## MOLDED GRATING FASTENERS

Type **"M"** stainless steel hold down clips used to secure panels to a support using two adjacent grating bars for a secure fit.



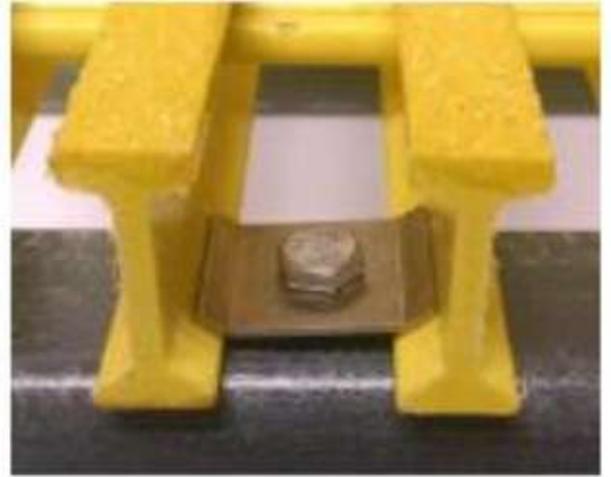
Type **"L"** Clip-For use in securing grating to support frames



Type **"G"** stainless steel hold clips designed to attach grating to any structural member flange, 3/4" or smaller in thickness, with no drilling required.



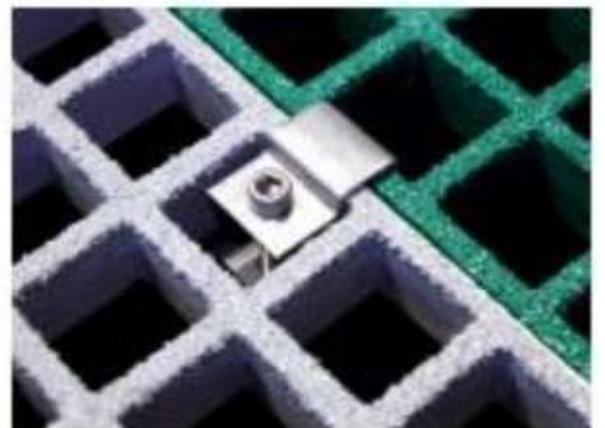
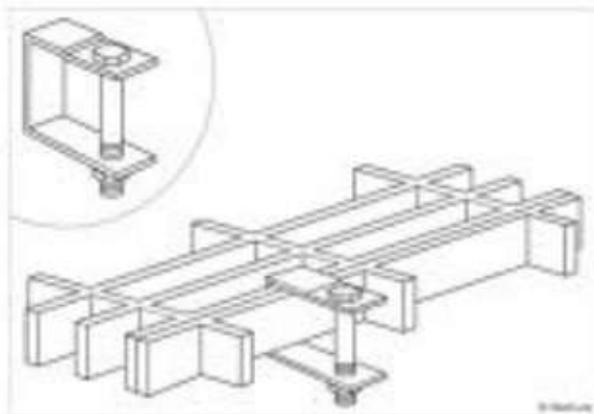
Type **"FB"** stainless steel flange blocks fit inside close mesh products allowing for installation of cap screws from the top surface of the grating.



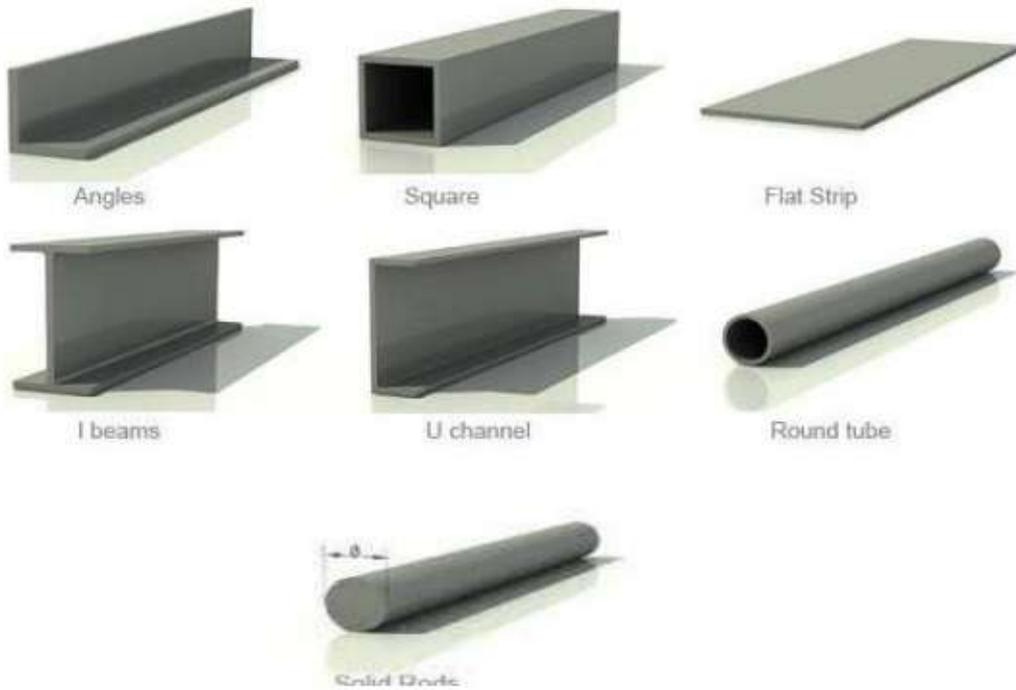
Type **"RK"** stainless steel fasteners offer effective and more secure means for installing pultruded grating.



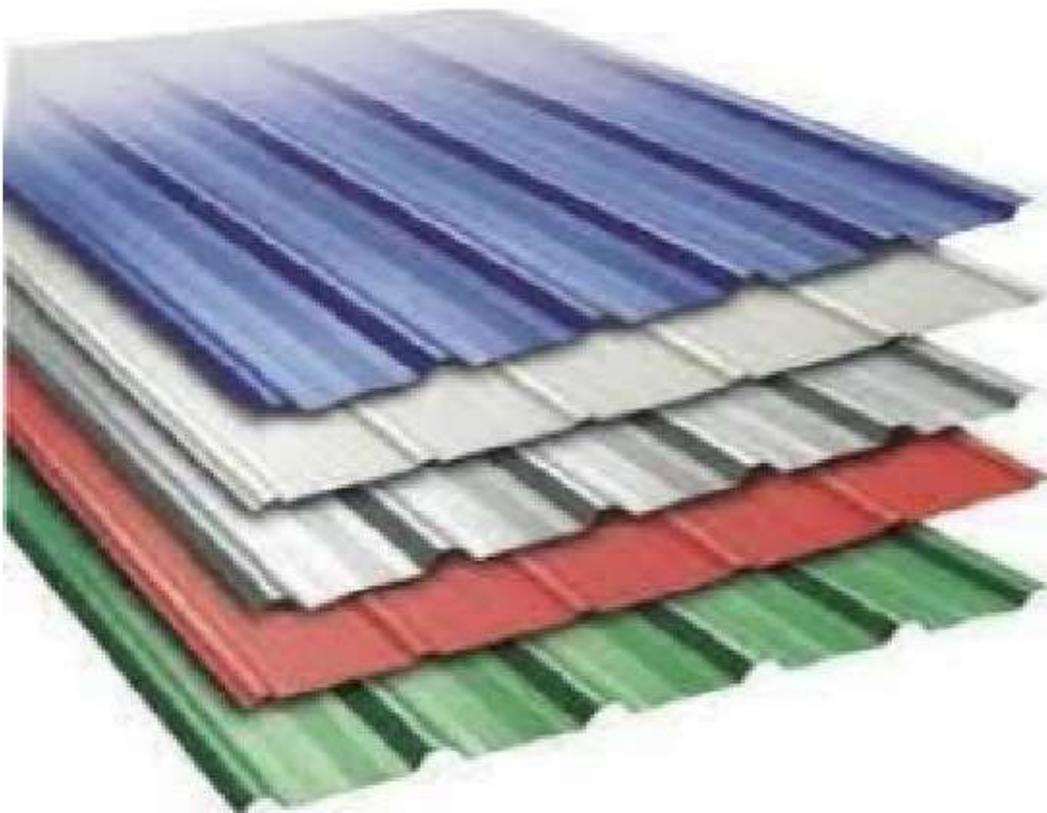
Type **"C"** clips are used to join and two pultruded gratings laid beside.



## FRP PROFILES:



## FRP ROOFING SHEETS:



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## FIBERGLASS RAW MATERIAL:



Chopped Stranded Matt & W R



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## FIBERGLASS TROLLEYS:



## FIBERGLASS BOATS:



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