

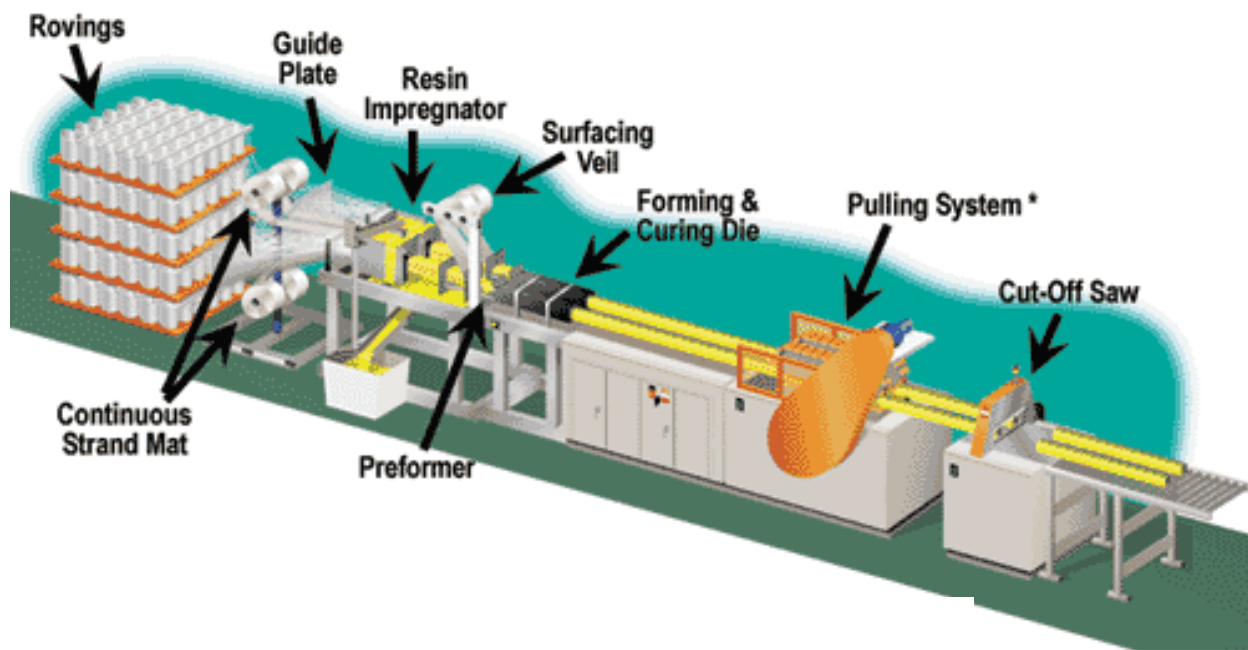


## ***SPECIFICATIONS OF GRP/FRP PULTRUDED GRATINGS***



## ***THE PULTRUSION PROCESS***

Pultrusion is a manufacturing process for producing continuous lengths of reinforced polymer structural shapes with constant cross-sections. Raw materials are a liquid resin mixture (containing resin, fillers and specialized additives) and flexible textile reinforcing fibers. The process involves pulling these raw materials (rather than pushing, as is the case in extrusion) through a heated steel forming die using a continuous pulling device. The reinforcement materials are in continuous forms such as rolls of mat and doffs of roving. As the reinforcements are saturated with the resin mixture ("wet-out") in the resin bath and pulled through the die, the gelatin or hardening, of the resin is initiated by the heat from the die and a rigid, cured profile is formed that corresponds to the shape of the die. While pultrusion machine design varies with part geometry, the basic pultrusion process concept is described in the following schematic.



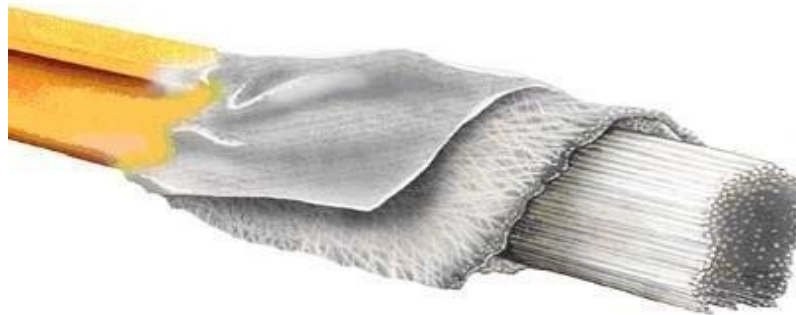
The creels position the reinforcements for subsequent feeding into the guides. The reinforcement must be located properly within the composite and this is the function of the reinforcement guides.

The resin bath saturates (wets out) the reinforcement with a solution containing the resin, fillers, pigment, and catalyst plus any other additives required. The interior of the resin bath is carefully designed to optimize the wet-out of the reinforcement.

On exiting the resin bath, the composite is in a flat sheet form. The performer is an array of tooling which squeezes away excess resin as the product is moving forward and gently shapes the materials prior to entering the forming and curing die. In the forming and curing die, the thermosetting reaction is heat activated (energy is primarily supplied electrically) and the composite is cured (hardened). On exiting the die, it is necessary to cool the hot part before it is gripped by the pull blocks (made of durable urethane foam) to prevent cracking and/or deformation by the pull blocks. Strong well uses two distinct pulling systems, one that is a caterpillar counter-rotating type and the other a hand-over-hand reciprocating type to pull the cured profile to the saw for cutting to length.

### *Pultruded Grating*

The pultruded grating product is a mostly mechanized process. Reinforcement of different shapes such as: strand, mat and veil are pulled through a liquid resin bath and a heated die where the bar is shaped and the resin is cured.



These pultruded bars can be cut into requested lengths. The bars are then drilled on the sides to accept the crossbars. The drilled bars are spaced. The final step is to seal the entire crossbars and holes with corrosion resistant epoxy resin.



The pultruded grating provides increased load capacity with moderate levels of corrosion resistance. The components (bearing bars and cross bars) are pulled by machine to have a higher reinforcement content. Its superior load capacity is a result of the higher reinforcement to resin ratio. The pultrusion process is automated and produces a consistent, high quality finished product. Assembled from bars, the pultruded grating can offer a wide variety of panel sizes and substantially reduce "scrap loss".

# ***APPLICATIONS AND MARKET OF PULTRUDED GRATING***

## **Applications**

- Flooring
- Platform
- Walkways
- Assembly Lines
- Trench Covers
- Stairs
- Ramps
- Greenhouse Shelving
- Pool Drainage
- Portable Building Floors
- channel's cover

## **Markets**

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



## ***Benefits and Characteristics of GRP/FRP Pultruded Grating***

- Non-Slip
- Corrosion Resistance
- Fire Resistance
- Non-Magnetic
- Impact Resistance
- Non-sparking
- Maintenance Free
- Light Weight
- Design
- Cost Savings
- Non-conductive
- Low Installation Costs
- Superior Strength
- Mechanical Strength
- Conductive Grating
- High Performance

## ***DESCRIPTION***

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### ***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.

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### ***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, aluminium, 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.

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### ***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.

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### ***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.

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### ***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.

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### *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.

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### *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.

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### *LIGHTWEIGHT*

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 meter for 25mm and 18 kilos per sq meter for 38mm.

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### *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.

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### *NON-CONDUCTIVE*

The non-conductive properties make Composite Grating ideally suited for work platforms and flooring situated in electrically hazardous locations.



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***LOW INSTALLATION  
COSTS***

Composite Grating weights considerably less than conventional metal gratings, and are 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.

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***ENICAL STRENGTH  
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 criteria 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.



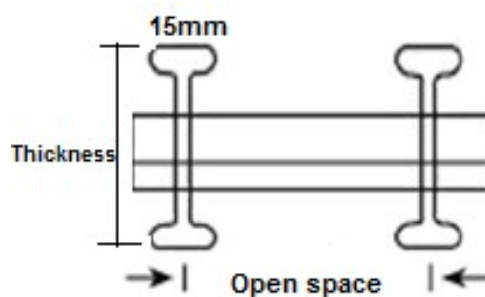
## ***PULTRUDED GRATING SELECTION***

**There are two types:**

### **1- Pultruded Gratings without Cover:**

The Pices will be cutted according to the customer's enquiry.

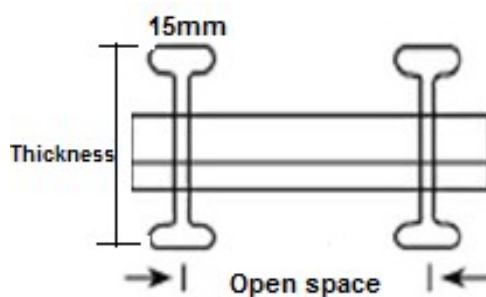
<b>Type</b>	<b>Thickness (mm)</b>	<b>Beam Width (mm)</b>	<b>Open Space (cm)</b>
I25B1	25	15	1
I25B1/5	25	15	1/5
I25B2	25	15	2
I25B2/5	25	15	2/5
I38B1	38	15	1
I38B1/5	38	15	1/5
I38B2	38	15	2
I38B2/5	38	15	2/5
I38B3	38	15	3
I46B1	46	15	1
I46B1/5	46	15	1/5
I46B2	46	15	2
I46B2/5	46	15	2/5
I46B3	46	15	3



## 2- Pultruded Gratings With Cover:

The Pices will be cutted according to the customer's enquiry.

Type	Thickness (mm)	Beam Width (mm)	Open Space (cm)
I28B1	28	15	1
I28B1/5	28	15	1/5
I28B2	28	15	2
I28B2/5	28	15	2/5
I41B1	41	15	1
I41B1/5	41	15	1/5
I41B2	41	15	2
I41B2/5	41	15	2/5
I41B3	41	15	3
I49B1	49	15	1
I49B1/5	49	15	1/5
I49B2	49	15	2
I49B2/5	49	15	2/5
I49B3	49	15	3



## ***PULTRUDED GRATING CHEMICAL RESISTANCE GUIDE***

CHEMICAL	VINYL ESTER RESIN		ISOPHTHALIC POLYESTER	
ENVIRONMENT	% CONCENTRATION	MAX. OPEN. TEMP. F/C	% CONCENTRATION	MAX. OPEN. TEMP. F/C
Acetic Acid	50	180/82	50	125/52
Aluminum Hydroxide	100	170/77	100	160/71
Ammonium Chloride	ALL	190/88	ALL	170/77
Ammonium Hydroxide	28	100/38	28	N/R
Ammonium Bicarbonate	50	150/65	15	125/52
Ammonium Sulfate	ALL	200/93	ALL	170/77
Benzene	N/R	N/R	N/R	N/R
Benzoic Acid	SAT	200/93	SAT	150/66
Borax	SAT	200/93	SAT	170/77
Calcium Carbonate	ALL	180/82	SAT	170/77
Calcium Nitrate	ALL	200/93	ALL	180/82
Carbon Tetrachloride	100	75/24	N/R	N/R
Chlorine, Dry Gas	--	170/77	--	140/60
Chlorine Water	SAT	180/82	SAT	80/27
Chromic Acid	10	120/49	5	70/21
Citric Acid	ALL	200/93	ALL	170/77
Copper Chloride	ALL	200/93	ALL	170/77
Copper Cyanide	ALL	200/93	ALL	170/77
Copper Nitrate	ALL	200/93	ALL	170/77
Ethanol	50	90/32	50	75/24
Ethylene Glycol	100	200/93	100	90/32
Ferric Chloride	ALL	200/93	ALL	170/77
Ferrous Chloride	ALL	200/93	ALL	170/77
Formaldehyde	ALL	100/38	50	75/24
Gasoline	100	150/65	100	80/27
Glucose	100	200/93	100	170/77
Glycerin	100	200/93	100	150/66
Hydrobromic Acid	50	120/49	50	120/49
Hydrochloric Acid	37	100/38	37	75/24
Hydrogen Peroxide	30	100/38	5	100/38
Lactic Acid	ALL	200/93	ALL	170/77
Lithium Chloride	SAT	200/93	SAT	150/66
Magnesium Chloride	ALL	200/93	ALL	170/77

Office: Unit 10-11,3 rd Floor,No .6,Nader Alley,Vali Asr St,Tehran,Iran.  
 Tel: +98 (21) 88106590-92, Tel / Fax: 88384775, Post Cod: 1511643911

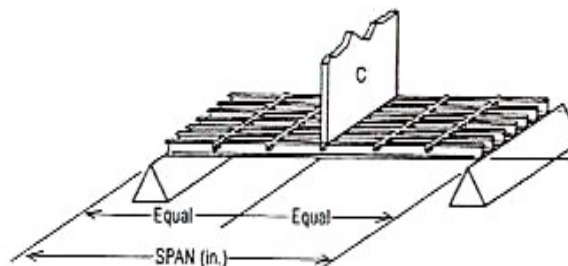
CHEMICAL	VINYL ESTER RESIN		ISOPHTHALIC POLYESTER	
ENVIRONMENT	% CONCENTRATION	MAX. OPEN. TEMP. F/C	% CONCENTRATION	MAX. OPEN. TEMP. F/C
Magnesium Nitrate	ALL	180/82	ALL	140/66
Magnesium Sulfate	ALL	190/88	ALL	170/77
Mercuric Chloride	100	190/88	100	150/66
Mercurous Chloride	ALL	180/82	ALL	140/60
Nickel Chloride	ALL	200/93	ALL	170/77
Nickel Sulfate	ALL	200/93	ALL	170/77
Nitric Acid	20	100/38	20	70/21
Oxalic Acid	ALL	120/96	ALL	75/24
Perchloric Acid	30	80/27	N/R	N/R
Phosphoric Acid	100	200/93	100	120/49
Potassium Chloride	ALL	200/93	ALL	170/77
Potassium Dichromate	ALL	200/93	ALL	170/77
Potassium Nitrate	ALL	200/93	ALL	170/77
Potassium Sulfate	ALL	200/93	ALL	170/77
Propylene Glycol	ALL	200/93	ALL	170/77
Sodium Acetate	ALL	200/93	ALL	160/71
Sodium Bisulfate	ALL	200/93	ALL	170/77
Sodium Bromide	ALL	200/93	ALL	170/77
Sodium Cyanide	ALL	200/93	ALL	170/77
Sodium Hydroxide	25	150/66	N/R	N/R
Sodium Nitrate	ALL	200/93	ALL	170/77
Sodium Sulfate	ALL	200/93	ALL	170/77
Stannic Chloride	ALL	190/88	ALL	160/71
Sulfuric Acid	75	100/38	25	75/24
Tartaric Acid	ALL	200/93	ALL	170/77
Vinegar	100	200/93	100	170/77
Water, Distilled	100	180/82	100	170/77
Zinc Nitrate	ALL	200/93	ALL	170/77
Zinc Sulfate	ALL	200/93	ALL	170/77

ALL...Concentrations; SAT...Saturated Solution; N/R...Not Recommended; -...No Information Available.

### ***Mechanical and Physical Properties Pultruded Grating***

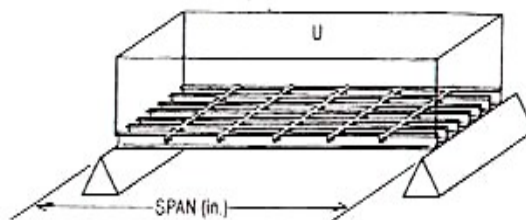
<b>Property</b>	<b>Test Method</b>	<b>Units</b>	<b>Value</b>
Tensile Strength	ASTM D-638	PSI	100,000
Tensile Modulus	ASTM D-638	PSI	$5.6 \times 10^6$
Flexural Strength	ASTM D-790	PSI	100,000
Flexural Modulus	ASTM D-790	PSI	$5.6 \times 10^6$
Compressive Strength	ASTM D-695	PSI	60,000
Izod Impact Notch	ASTM D-256	Ft.-Lbs./In.	40
Barcol Hardness	ASTM D-2583		50 (Min.)
Specific Gravity	ASTM D-792	gr/cm <sup>3</sup>	2
Water Absorption	ASTM D-570	Max. %	0.3
Flame Retardant	ASTM D-635		Self-Extinguishing

## LOAD DESCRIPTION



**PULTRUDED 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	100	150	200	250	
400	1" I-60	0.4	0.6	1.0	1.3	1.7	1.9	2.6	3.2	5.0	6.4	12.8				56
	1" I-40	0.3	0.4	0.7	0.9	1.1	1.3	1.7	2.1	3.3	4.3	8.5	12.8			83
	1 1/2" I-60	0.2	0.3	0.5	0.6	0.7	0.8	1.1	1.4	2.2	2.8	5.6	8.4	11.3	14.1	76
	1 1/2" I-40	0.1	0.2	0.3	0.4	0.5	0.6	0.8	0.9	1.5	1.9	3.8	5.6	7.5	9.4	114
	2" T-50	0.1	0.2	0.3	0.4	0.5	0.6	0.8	1.0	1.6	2.1	4.1	6.2	8.3	10.3	79
	2" T-33	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.8	1.2	1.6	3.1	4.7	6.2	7.8	138
500	1" I-60	1.0	1.7	2.8	3.5	4.5	5.2	7.0	8.7	13.6						41
	1" I-40	0.7	1.2	1.9	2.3	3.0	3.5	4.7	5.8	9.1	11.7					62
	1 1/2" I-60	0.4	0.7	1.1	1.4	1.8	2.1	2.8	3.5	5.4	7.0	13.9				51
	1 1/2" I-40	0.3	0.5	0.7	0.9	1.2	1.4	1.9	2.3	3.6	4.6	9.3	13.9			78
	2" T-50	0.3	0.5	0.7	0.9	1.2	1.4	1.8	2.3	3.6	4.6	9.2	13.8			79
	2" T-33	0.2	0.3	0.6	0.7	0.9	1.0	1.4	1.7	2.7	3.4	6.9	10.3	13.8		105
800	1" I-60	2.3	3.9	6.2	7.7	10.0	11.6	15.4								33
	1" I-40	1.5	2.6	4.1	5.2	6.7	7.7	10.3	12.9							50
	1 1/2" I-60	0.9	1.5	2.4	2.9	3.8	4.4	5.9	7.4	11.5	14.7					41
	1 1/2" I-40	0.6	1.0	1.6	2.0	2.6	2.9	3.9	4.9	7.7	9.8					61
	2" T-50	0.5	0.9	1.4	1.8	2.4	2.7	3.6	4.5	7.1	9.0					63
	2" T-33	0.4	0.7	1.1	1.4	1.8	2.0	2.7	3.4	5.3	6.8	13.6				85
1000	1" I-60	4.4	7.3	11.7	14.7											25
	1" I-40	2.9	4.9	7.8	9.8	12.7	14.7									38
	1 1/2" I-60	1.6	2.7	4.4	5.5	7.1	8.2	10.9	13.7							33
	1 1/2" I-40	1.1	1.8	2.9	3.7	4.7	5.5	7.3	9.1	14.2						50
	2" T-50	1.0	1.7	2.7	3.3	4.3	5.0	6.6	8.3	13.0						50
	2" T-33	0.7	1.2	2.0	2.5	3.2	3.7	5.0	6.2	9.7	12.5					67
1200	1" I-60	7.5	12.4													21
	1" I-40	5.0	8.3	13.3												31
	1 1/2" I-60	2.8	4.7	7.5	9.3	12.1	14.0									26
	1 1/2" I-40	1.9	3.1	5.0	6.2	8.1	9.3	12.5	15.6							39
	2" T-50	1.7	2.8	4.4	5.5	7.2	8.3	11.0	13.8							33
	2" T-33	1.2	2.1	3.3	4.1	5.4	6.2	8.3	10.4							44
1400	1 1/2" I-60	4.4	7.4	11.8	14.8											19
	1 1/2" I-40	3.0	4.9	7.9	9.9	12.8	14.8									29
	2" T-50	2.6	4.3	6.8	8.5	11.1	12.8									31
	2" T-33	1.9	3.2	5.1	6.4	8.3	9.6	12.8	16.0							42
1600	1 1/2" I-60	6.6	11.0													15
	1 1/2" I-40	4.4	7.3	11.7	14.7											24
	2" T-50	3.8	6.3	10.1	12.6											26
	2" T-33	2.8	4.7	7.6	9.5	12.3	14.2									35



# **PULTRUDED GRATING (Metric units)**

UNIFORM LOAD TABLES - DEFLECTION IN mm

SPAN IN mm	STYLE	LOAD IS KN/SQm (UNIFORM)														MAXIMUM RECOMMENDED	APPARENT EI x 10 <sup>6</sup> N-mm <sup>2</sup> /m
		3	5	8	10	13	15	20	25	39	50	100	150	200	250		
400	1" I-60	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.8	1.2	1.6	3.2	4.8	6.4	8.0	279	10.43
	1" I-40	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.8	1.1	2.1	3.2	4.3	5.3	419	15.60
	1 1/2" I-60	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.7	1.4	2.1	2.8	3.5	383	23.69
	1 1/2" I-40	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.5	0.9	1.4	1.9	2.3	574	35.53
	2" T-50	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.5	1.0	1.6	2.1	2.6	520	32.24
	2" T-33	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.8	1.2	1.6	1.9	694	42.96
600	1" I-60	0.4	0.7	1.0	1.3	1.7	2.0	2.6	3.3	5.1	6.6	13.1				138	12.88
	1" I-40	0.3	0.4	0.7	0.9	1.1	1.3	1.8	2.2	3.4	4.4	8.8	13.1			207	19.27
	1 1/2" I-60	0.2	0.3	0.4	0.5	0.7	0.8	1.0	1.3	2.0	2.6	5.2	7.8	10.4	13.0	173	32.34
	1 1/2" I-40	0.1	0.2	0.3	0.3	0.5	0.5	0.7	0.9	1.4	1.7	3.5	5.2	7.0	8.7	259	48.50
	2" T-50	0.1	0.2	0.3	0.3	0.4	0.5	0.7	0.9	1.3	1.7	3.4	5.2	6.9	8.6	264	49.07
	2" T-33	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.6	1.0	1.3	2.6	3.9	5.2	6.4	353	65.42
800	1" I-60	1.2	1.9	3.1	3.9	5.0	5.8	7.7	9.6	15.1						85	13.82
	1" I-40	0.8	1.3	2.1	2.6	3.4	3.9	5.2	6.4	10.1	12.9					126	20.68
	1 1/2" I-60	0.4	0.7	1.2	1.5	1.9	2.2	2.9	3.7	5.7	7.4	14.7				103	36.19
	1 1/2" I-40	0.3	0.5	0.8	1.0	1.3	1.5	2.0	2.5	3.8	4.9	9.8	14.7			155	54.33
	2" T-50	0.3	0.5	0.7	0.9	1.2	1.4	1.8	2.3	3.5	4.5	9.0	13.6			160	58.94
	2" T-33	0.0	0.3	0.5	0.7	0.9	1.0	1.4	1.7	2.7	3.4	6.8	10.2	13.6		214	78.49
1000	1" I-60	2.8	4.6	7.3	9.2	11.9	13.8									51	14.19
	1" I-40	1.8	3.1	4.9	6.1	8.0	9.2	12.3	15.3							77	21.24
	1 1/2" I-60	1.0	1.7	2.7	3.4	4.4	5.1	6.8	8.6	13.3						67	38.07
	1 1/2" I-40	0.7	1.1	1.8	2.3	3.0	3.4	4.6	5.7	8.9	11.4					100	57.06
	2" T-50	0.6	1.0	1.7	2.1	2.7	3.1	4.2	5.2	8.1	10.4					101	62.70
	2" T-33	0.5	0.8	1.2	1.6	2.0	2.3	3.1	3.9	6.1	7.8	15.6				135	83.47
1200	1" I-60	5.6	9.3	14.9												35	14.48
	1" I-40	3.7	6.2	9.9	12.4											52	21.71
	1 1/2" I-60	2.1	3.5	5.6	7.0	9.1	10.5	14.0								43	38.54
	1 1/2" I-40	1.4	2.3	3.7	4.7	6.1	7.0	9.3	11.7							66	57.81
	2" T-50	1.2	2.1	3.3	4.1	5.4	6.2	8.3	10.3							55	65.24
	2" T-33	0.9	1.6	2.5	3.1	4.0	4.7	6.2	7.8	12.1	15.5					75	86.95
1400	1 1/2" I-60	3.9	6.5	10.4	12.9											28	38.63
	1 1/2" I-40	2.6	4.3	6.9	8.6	11.2	13.0									42	57.90
	2" T-50	2.2	3.7	6.0	7.4	9.7	11.2	14.9								45	67.21
	2" T-33	1.7	2.8	4.5	5.6	7.3	8.4	11.2	14.0							60	89.58
1600	1 1/2" I-60	6.6	11.0													19	38.82
	1 1/2" I-40	4.4	7.3	11.7	14.7											29	58.19
	2" T-50	3.8	6.3	10.1	12.6											33	67.68
	2" T-33	2.8	4.7	7.6	9.5	12.3	14.2									45	90.24



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



## ***STANDARDS OF FRP COMPOSITES***

The Following Standards are used in composite productions:

ASTMC-177-85	<b>Heat Flux</b>
ASTMD-149-87	<b>Dielectric Strength</b>
ASTMD-229-86	<b>Testing Rigid Sheet for Electrical Insulation (Ladder)</b>
ASTMD-256-87	<b>Impact Resistance</b>
ASTMD-495-84	<b>Electrical Resistance</b>
ASTMD-570-81	<b>Water Absorption</b>
ASTMD-635-81	<b>Flammability</b>
ASTMD-638-87b	<b>Tensile Strength</b>
ASTMD-695-85	<b>Compressive Strength</b>
ASTMD-696-79	<b>Thermal Expansion</b>
ASTMD-709-87	<b>Specifications for Laminated Thermosetting Materials</b>
ASTMD-732-85	<b>Shear Strength by Punch</b>
ASTMD-790-86	<b>Flexural Strength</b>
ASTMD-792-86	<b>Specific Gravity</b>
ASTMD-953-87	<b>Bearing Strength</b>
ASTMD-1499-84	<b>Weathering</b>
ASTMD-1505-85	<b>Density</b>
ASTMD-2344-89	<b>Interlaminar Short Beam Shear Strength</b>
ASTMD-2583-87	<b>Hardness</b>
ASTMD-2584-85	<b>Ignition Loss</b>
ASTMD-3647-84	<b>Classifying Pultruded</b>
<b>Shapes</b> ASTMD-3846-85	<b>In-plane Shear Strength</b>
ASTMD-3914-84	<b>In Plane Shear</b>
ASTMD-3916-84	<b>Tensile</b>
ASTMD-3917-88	<b>Dimensional Tolerances</b>
ASTMD-3918-80	<b>Pultrusion Terms</b>
ASTMD-4385-88	<b>Visual Defects</b>
ASTMD-4475-85	<b>Short Beam Shear Strength</b>
ASTMD-4476-90	<b>Flexural Properties</b>
ASTM E-84-87	<b>Tunnel Beam Test</b>
ASTM E-662-83	<b>Smoke Chamber</b>
ASTM E-831-86	<b>Linear Thermal Expansion (CTE)</b>
ASTM F-1092-94	<b>Handrails</b>