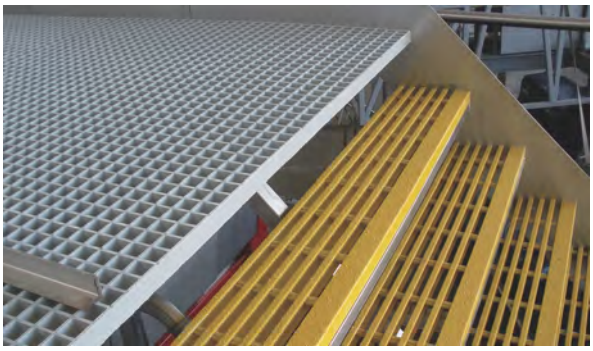
FRP GRATING

STEEL GRATING



FRP GRATING

FRP MANUFACTURING PROCESS

Liquid resin and continuous fiberglass roving's are systematically laid in a mould, layer after layer to produce the desired thickness and panel dimensions. The finished moulds are then set aside to cure. The one piece interwoven mesh construction of moulded fiberglass grating produces a product with optimal corrosion resistance and bi-directional strength. Since the fiberglass grating is "cast" in one piece, there is no mechanical joint between bearing bars. The high percentage of resin (65%) in moulded fiberglass grating offers superior corrosion resistance and optimal impact resistance. Moulded fiberglass gratings with a square mesh pattern offer increased load capacity and panel utilization due to its bi-directional trait. Being of one-piece construction, the fiberglass grating distributes loads throughout the fiberglass grating section.

ADVANTAGES OF FRP GRATING

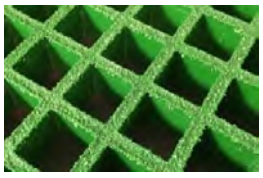
- Light weight
- Chemical corrosion resistance
- Non sparking
- Non electrically conductive
- Non magnetic
- Tapered bars allow debris to easily full through
- Standard mesh has a 70% open area
- Mini Mesh has a 45% open area

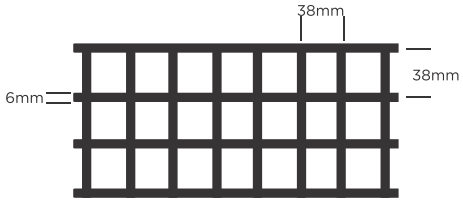
FRP GRATING PATTERNS

FRP grating is available in two pattern types (stocked)

STANDARD MESH

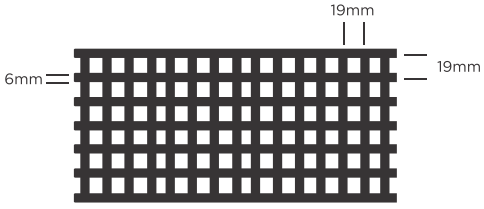
38x38mm centre to centre





MINI MESH

19x19mm centre to centre



**Other pattern types are available but are manufactured to order. Please contact Steel Grating limited to discuss what other patterns are available.*

COMMONLY STOCKED FRP GRATING TYPES

TYPE	RESIN		SURFACE		COLOURS			
Standard Mesh	ISO	Vinyl	Grit	Concave	Green	Yellow	Light Grey	Dark Grey
FRP 25mm	✓	–	✓	–	✓	✓	✓	✓
FRP 32mm	✓	–	–	✓	–	✓	–	–
FRP 38mm	✓	–	✓	–	✓	✓	✓	✓
FRP 38mm	✓	–	–	✓	–	–	✓	–
FRP 38mm	–	✓	✓	–	–	✓	–	–
Mini Mesh								
FRP 38mm	✓	–	✓	–	–	–	–	✓

Table above shows the FRP grating products that are commonly stocked. Other combinations of type, resin, surface and colour that are not stated above are available but are manufactured to order.

STANDARD SHEET SIZES

FRP grating comes in one standard sheet size 1220x3660mm ex stock. Other sheet sizes are available but are manufactured to order. For nonstandard panel sizes please call Steel Grating Ltd to discuss what options are available to suit your requirements.

CUTTING TO SIZE

In addition to supplying stock sheets we can also cut FRP grating to the shapes and sizes you require along with any cut outs or penetrations.

TOP SURFACE

FRP grating comes standard with two different surfaces for slip resistance.

- Grit top Surface
- Concave top surface

RESIN SELECTION

Isophthalic Polyester (Type I) – Industrial grade resin great for environments where fiberglass grating may occasionally be in contact with harsh chemicals due to splashes or spills.

Vinyl Ester (Type V) - Developed to withstand frequent and direct contact in the harshest of chemical environments. Type V is ideal for use in acidic and caustic environments.

FLAME SPREAD RATING

Isophthalic polyester resin and Vinyl ester resin have an ASTM-E84 fire class rating of class 1, 25 or less.

***Phenolic (Type P)**. - Best choice for applications where fire resistance, low smoke, and low toxic fume emissions are critical. **Phenolic resin grating is not stocked but available to order.** Please contact Steel Grating Ltd to discuss the availability of phenolic resin grating.*
Please note: Phenolic resin grating is only available in a reddish brown colour.

Please contact Steel Grating for any non standard resin types, surfaces and colours

FRP GRATING LOAD CHART:

Product Code	Load Bar Size (mm)	Load Bar Spacing	Mass (kg/sqm)	Load (kPa)	Simple Span (mm) Delection (mm)							Span (mm) for 5mm deflection at 4kPa
					300mm	450mm	600mm	750mm	900mm	1050mm	1200mm	
FRP25mm (SM)	25x6mm	38.1mm	12.2	2.5	<0.25	0.49	1.24	2.99	5.97			760
				4.0	<0.25	0.64	1.99	4.78	9.56			
				5.0	<0.25	0.76	2.49	5.97				
				7.5	<0.25	1.26	3.73	8.93				
				10.0	0.28	1.71	4.98	11.7				
				12.0	0.48	1.91	5.96	14.1				
FRP32mm (SM)	32x6mm	38.1mm	15.0	2.5	<0.25	<0.25	0.75	1.75	3.73	6.90		860
				4.0	<0.25	0.40	1.19	2.95	5.97	11.0		
				5.0	<0.25	0.50	1.49	3.72	7.47			
				7.5	<0.25	0.75	2.24	5.47	11.2			
				10.0	<0.25	1.00	2.99	7.25				
				12.0	<0.25	1.19	3.58	8.82				
FRP38mm (SM)	38x6mm	38.1mm	19.2	2.5	<0.25	<0.25	0.26	0.76	1.73	3.08	5.39	1050
				4.0	<0.25	<0.25	0.56	1.35	2.63	5.07	8.62	
				5.0	<0.25	0.26	0.74	1.73	3.25	6.37	10.8	
				7.5	<0.25	0.48	1.02	2.48	4.99	9.44		
				10.0	<0.25	0.52	1.47	3.27	6.73	12.5		
				12.0	<0.25	0.72	1.67	4.05	8.10	15.2		
FRP38mm (MM)	38x6mm	19.1mm	23.2	2.5	<0.25	<0.25	<0.25	0.74	1.24	2.3	3.85	1140
				4.0	<0.25	<0.25	0.40	1.03	1.99	3.68	6.16	
				5.0	<0.25	<0.25	0.50	1.26	2.49	4.60	7.70	
				7.5	<0.25	0.27	0.75	1.97	3.73	6.90	11.5	
				10.0	<0.25	0.48	1.00	2.51	4.98	9.19		
				12.0	<0.25	0.48	1.19	3.10	5.96	11.00		

** **(SM)** denotes standard mesh grating 38x 38mm centres *(MM) denotes mini mesh grating 19x 19mm centres*

HOW TO SPECIFY/ORDER FRP GRATING

- Designate that you require FRP grating by putting **FRP** at the start of the code.
- Designate the thickness of FRP grating: **25**mm, **32**mm or **38**mm.
- Designate whether you require standard or minimesh grating
  - 38x38mm **S**tandard **M**esh is denoted by **SM**
  - 19x19mm **M**ini **M**esh is denoted by **MM**

DESIGNATE RESIN TYPE

- **I=** Isophthalic polyester resin or
- **V=** Vinyl ester resin

FOLLOWED BY SURFACE FINISH

- **G=** Grit top surface
- **C=** Concave top surface

THEN FINALLY COLOUR

- **Y=** Yellow
- **G=** Green
- **L=** Light grey
- **D=** Dark grey

EXAMPLE FOR ORDERING / SPECIFYING FRP GRATING:

FRP25 SM IGG – FRP grating **25**mm thick, 38x38mm **S**tandard **M**esh, **I**sophthalic polyester resin, **G**rit top surface, **G**reen in colour.

FRP32 SM ICY- FRP grating **32**mm thick, 38x38mm **S**tandard **M**esh, **I**sophthalic polyester resin, **C**oncave top surface, **Y**ellow in colour

FRP GRATING CHEMICAL RESISTANCE CHART

CHEMICAL ENVIRONMENT	CONCENTRATION %	TEMP °C	TYPE: ISOPHTHALIC	TYPE: VINYL
Acetic Acid	25	MAX	C	C
Acetic Acid	50	MAX	C	C
Aluminium Hydroxide	ALL	MAX	C	C
Ammonium Chloride	ALL	48.8	C	C
Ammonium Bicarbonate	15	48.8	C	C
Ammonium Bicarbonate	50	48.8	C	C
Ammonium Hydroxide	20	26.6	N	F
Ammonium Sulphate	ALL	48.8	C	C
Benzene	100	65.5	I	I
Benzoic Acid (SAT)	SAT	MAX	C	C
Borax (SAT)	SAT	MAX	C	C
Calcium Carbonate	ALL	MAX	C	C
Calcium Nitrate	ALL	MAX	C	C
Carbon Tetrachloride	100	26.6	N	I
Chlorine, Dry Gas	ALL	MAX	C	C
Chlorine Water (SAT)	SAT	48.8	I	C
Chromic Acid	50	65.5	N	I
Citric Acid	ALL	MAX	C	C
Copper Chloride	ALL	MAX	C	C
Copper Cyanide	ALL	60	F	C
Copper Nitrate	ALL	MAX	C	C
Ethanol	10	48.8	F	C
Ethanol	50	48.8	I	C
Ethylene Glycol	ALL	65.5	C	C
Ferric Chloride	100	MAX	C	C
Ferrous Chloride	ALL	MAX	C	C
Formaldehyde 0-50%	50	48.8	I	F
Gasoline	ALL	48.8	C	C
Glucose	ALL	48.8	C	C
Glycerine	100	MAX	C	C
Hydrobromic Acid	50	MAX	F	F
Hydrochloric Acid	10	MAX	F	C
Hydrochloric Acid	37	MAX	F	I
Hydrogen Peroxide	30	26.6	N	C

CHEMICAL ENVIRONMENT	CONCENTRATION %	TEMP °C	TYPE: ISOPHTHALIC	TYPE: VINYL
Lactic Acid	100	MAX	C	C
Lithium Chloride (SAT)	SAT	MAX	N	N
Magnesium Chloride	ALL	MAX	C	C
Magnesium Nitrate	ALL	MAX	C	C
Magnesium sulphate	ALL	MAX	C	C
Mercuric Chloride	ALL	MAX	C	C
Mercurous Chloride	ALL	MAX	C	C
Nickel Chloride	ALL	MAX	C	C
Nickel Sulphate	ALL	MAX	C	C
Nitric Acid	20	48.8	F	F
Oxalic Acid	ALL	65.5	C	C
Perchloric Acid	30	32.2	I	F
Phosphoric Acid	80	MAX	C	C
Potassium Chloride	ALL	MAX	C	C
Potassium Dichromate	ALL	MAX	C	C
Potassium Nitrate	ALL	MAX	C	C
Potassium Sulfate	ALL	MAX	C	C
Propylene Glycol	ALL	MAX	C	C
Sodium Acetate	ALL	MAX	C	C
Sodium Bisulfate	ALL	26.6	F	F
Sodium Bromide	ALL	26.6	C	C
Sodium Cyanide	ALL	26.6	I	C
Sodium Hydroxide	10	MAX	I	C
Sodium Hydroxide	50	MAX	N	F
Sodium Nitrate	ALL	MAX	C	C
Sodium Sulfate	ALL	MAX	C	C
Sulfuric Acid	10	MAX	F	C
Sulfuric Acid	25	MAX	F	C
Sulfuric Acid	75	37.7	I	C
Tartaric Acid	ALL	MAX	C	C
Vinegar	ALL	MAX	C	C
Water,Distilled	ALL	MAX	C	C
Zinc Nitrate	100	MAX	C	C
Zinc Sulfate	100	MAX	C	C

MAX- Temperature for Isophthalic polyester 71°C / Vinyl Ester 85°C

C- Continuous exposure of the grating to the temperature and chemical environment listed above

F-Frequent exposure of the grating to splashes and spills to the temperature and chemical environment listed above

I- Infrequent exposure of the grating to splashes and spills to the temperature and chemical environment listed above with the spill being immediately cleaned up / washed from the grating

N- Not recommended for the temperatures and concentrations listed above

The corrosion data listed above is for general information only. Resin Manufacturers have provided test data that indicates that the specific resin can withstand the corrosion conditions listed. Steel Grating ltd believes this information to be true and correct. In certain cases testing for specific environments is recommended.

CUTTING & INSTALLATION

Cutting: FRP grating can be cut with a variety of different cutting tools. For best results we recommend a heavy duty rotary saw with a masonry, carbide or diamond tip blade. Make sure that the grating is on a steady and even surface to help prevent shifting or moving of the grating that can cause chipping of the grating surface. Please ensure you wear gloves, full length overalls, a face shield and a dust mask when cutting FRP grating. Always cut FRP grating in a well ventilated area or where mechanical extraction of the dust particles is available.

Finishing: All cut surfaces should be coated with resin to prevent corrosion of the glass fibres. A coating of a two part resin or comparable to the resin used to manufacture the grating should be used.

APPEARANCE OF FRP GRATING:

Unlike traditional Steel and Aluminium grating when FRP grates are cut they do not have a banding bar welded to the cut edges (the cut edge becomes the finished edge). Where possible to make FRP grating look neat and presentable we recommend that any sheets cut to size along with cut outs or penetrations be made to the nearest whole square dimension. This prevents any grates with open ends or fingers as we call them. This is not always practical but with enough forward planning this can be achieved.

FRP FIXING CLIPS

All FRP fixing are grade 316 stainless steel.

Stainless steel "M" Clips:

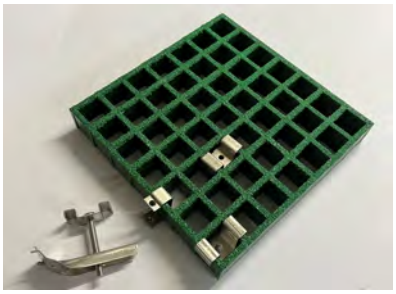
M clips are designed to clamp two of the FRP grating load bars to the supporting member.
This provides excellent holding capacity as it restrains movement in both directions. "M" clips are available for both Standard and Minimesh grating.

Stainless steel "C" Clips:

C Clips are designed to hold two grating panels together to minimise differential deflections when their joints fall between supports. The lower nut is secured to the bottom of the clips so these can be installed from the top side of the grating. C Clips are available for standard mesh grating only and are designed for 25mm and 38mm thick FRP grating.

Standard mesh:

- Standard M clip – optional supply with M6x40 or M6x60 bolt with nylock nut
- Deep recessed M clip – optional supply with M8x40 bolt with nylock nut
- Complete fixing clip set – top M clip, bottom J clip, M8x70 bolt with nut
- C clip – with captivated nut and bolt



Minimesh:

- M clip – optional supply M5x40mm bolt with nut and washer
- Disc washer – optional supply with M6x70 bolt and nylock nut