

FIBREGRATE Grating

Maskell manufacture and supply a complete range of fibreglass (FRP/GRP) moulded grating for longevity and corrosion resistance in industrial applications FIBREGRATE Grating is available in a full range of types and thicknesses to suit client applications.

What is FIBREGATE Grating?

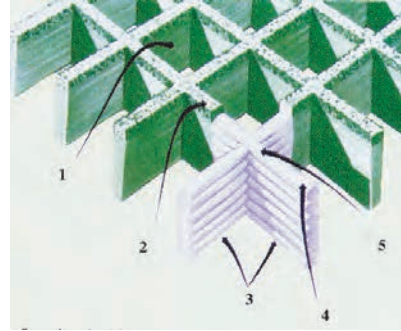
FIBREGRATE grating is a one-piece moulded fibreglass reinforced plastic (FRP) grating. It is principally used for floors, platforms, stairs, ramps, catwalks and covers.

FIBREGRATE grating is manufactured from resin and continuous fibreglass. It can not rust, never needs painting and resists chemical corrosion.

FIBREGRATE grating is made with an integral anti-slip and draw. It has a high strength-to-weight ratio and is virtually maintenance free.

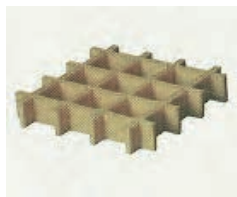
FIBREGRATE's interwoven construction gives it tremendous strength. Also, the interweaving procedure of cross bars with bearing bars serves to transfer part of load to other portions of the panel. This load carrying capability coupled with its other features, assures you of the finest quality grating on the market today.

How is FIBREGATE made?

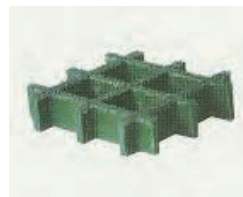


1. Smooth resin rich surface and taper bars provide self-cleaning.
2. A concave cross-section formed in the moulding process on the working surface of each bar, provides an anti-slip feature. A grit-top surface is also available.
3. Combining a carefully engineered polyester resin with completely wetted continuous glass fibres, FIBREGRATE grating assures the user maximum corrosion resistance.
4. Load applied to a FIBREGRATE grating bar is transferred to adjoining cross bars and bearing bars, thereby assisting in load distribution on the grating as well as on the support structure.
5. Integral construction distributes loads to both span bars and cross bars.

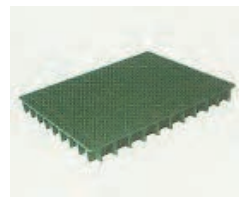
FIBREGATE Product Gallery



Concave-top Grating



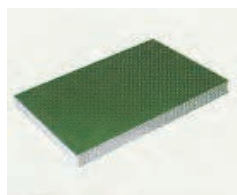
Grit-top Grating



Covered Grating



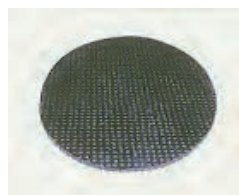
Stair Treads



Sandwich Panels



Decorative Panels



Filter Grating



Manhole Covers

FIBREGRATE Grating

Standard Grating Parameters

Type	Panel Thickness (mm)	Panel Size Length x Width (mm x mm)	Mesh Size (mm)	Bar Thickness (mm)	Open Area (%)	Weight (Kg/m ²)	Panel Wt. (Kg)
GI25	25	3660x1220	38x38	6.4	69	11.7	52
GI38	38	3660x1220	38x38	6.4	69	17.5	78
GI50	50	3660x1220	50x50	6.4	72	19.5	87

NOTE: 1. In the Type column, I = Isophthalic resin. V = Vinyl Ester Resin.
 2. Besides the above specifications, Maskell is able to supply grating cut to size, for example stair treads and customised grating such as covered grating, high fire-resistance grating.

CORROSION RESISTANCE of FIBREGRATE grating over a wide PH range (both acidic and caustic) is achieved by use of the premium grade resin systems. Whether the grating is exposed to continuous submersion, splash, fumes or gases, you can be assured that FIBREGRATE FRP grating will out perform metallic grating (refer also Chemical Resistance Guide).



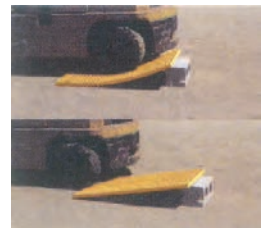
Corrosion Resistance

FIRE RESISTANCE with a Class 1 flame spread rating of 25 or less, FIBREGRATE grating has been tested in accordance with the ASTM E-84 Tunnel Test Method.



Fire Resistance

IMPACT RESISTANCE of FIBREGRATE grating allows repeated deflection of the grating without permanent deformation. Once the object is removed, it will fully recover to its original position unlike metallic grating which will deform and require replacement.



Impact Resistance

SLIP RESISTANCE feature of FIBREGRATE grating is created during the moulding process by the formation of a concave cross-section on the working surface of each bar. A grit surface is also available.



Slip resistance

NON-CONDUCTIVE properties make FIBREGRATE grating ideally suited for work platforms, flooring and fencing in electrically hazardous locations acting as an insulator.

NON-MAGNETIC properties allow FIBREGRATE grating to be used in sensitive installation where the inherent magnetic properties of metallic grating are not desirable.



Non-Magnetic

NON-SPARKING FIBREGRATE grating is ideally suited for those installations where combustible gases may be present and which may explode or cause a fire from sparks produced by the accidental dropping of tools onto the grating.

MAINTENANCE FREE from painting and/or coating of FIBREGRATE grating is achieved, not only by the inherent corrosion/rust resistance, but also by the moulded in colour and ultra-violet resistance.

LIGHT WEIGHT FIBREGRATE grating reduces installation and fabrication costs. Two men without the need of hoists, pulley or dollies can easily handle a full panel. No cumbersome cutting or welded torches are required.

FIBREGRATE Grating

Uses & Applications

FIBREGRATE grating has been engineered not only for strength, but also to overcome the corrosion problems normally found in chemical and other industries where corrosive products are encountered. These are areas where metal grating rapidly deteriorates or creates constant maintenance problems.



Petroleum Platform



Flooring & Stairs



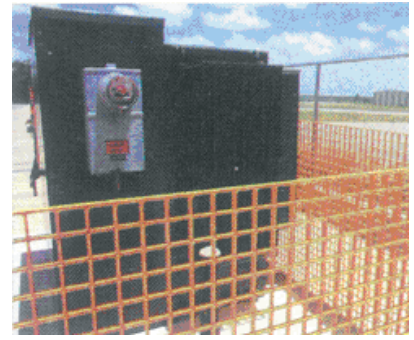
Tank-top Walkway

FIBREGRATE grating is ideal for use in the following locations:

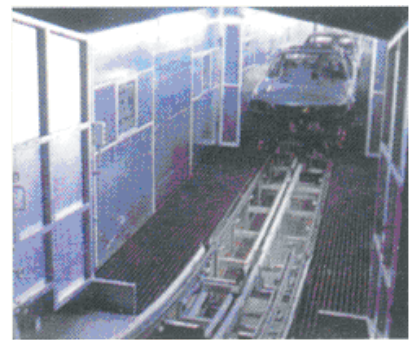
Flooring, Catwalk, Stairs, Drainage Stairs, Drainage Pit Covers, Platforms, Freight Car Top Walkways, Refrigerator Car Trays, Vestibule Grates, Fencing Ornamental Grills, Concrete Armouring, Bridge Flooring, Vault Covers, Tote Trays and Boxes, Truck Radiator Grills, Cracking Plant Trays, Crows Nests, Strainers, Dipping Trays, Boat Landing Ramps, Scaffolding, Stiles, Ventilated Bin Floors, Airplane Landing Mats, Ramps, Racks and Shelving, Truck Beds, Mooring Decks, Machine and Motor Bases, Trench Covers, Freight Car Flooring, Parapet Screens, Fire Escapes, Solar Screens, Window Guards, Partitions, Material Screens, Machinery Safety Guards, Railway Crossing, Concrete Reinforcement, Bridge Sidewalks, Bridge Centreline Markers, Airport Light Guards, Areaways, Trap Doors, Wash Racks, Floor Boards, Running Boards, Airplane Unloading Ramps, Ventilating Screens, Snow Fences, Tree and Pole Guards, Deflecting Fenders, Foot Scrapers, Temporary Wing Walls, Crating, Mezzanine Floors

FIBREGRATE grating is used economically in hundreds of industrial applications:

Chemical Process, Metal Finishing, Food Processing, Water and Waste Treatment, Uranium Extraction, Process Equipment, Pulp and Paper, Oil Refining, Metal Refining, Petrochemical, Aquaculture, Architectural, Fertiliser, Bottling, Chlorine and Acid Plants, Power Plants, Mining



Machinery Safety Guard



Flooring for Automobile Cover with Paint



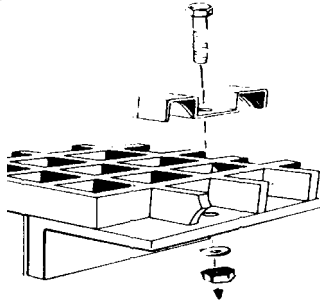
Working Platform

FIBREGRATE Grating

Panel Installation

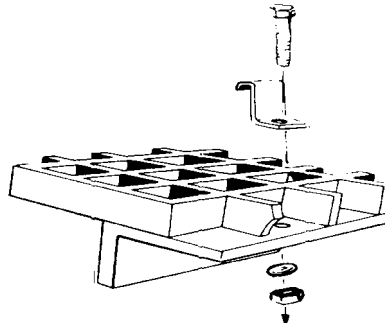
TYPE M

Restrains movement in all directions. Can use self-tapping screws when attaching to metal supports.



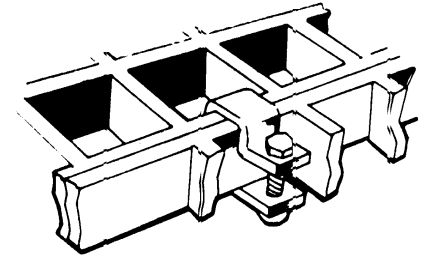
TYPE L

For moderate loads.



TYPE C

For joining two unsupported ends.



Ideally FIBREGRATE panels should be supported on all sides and attached to the supporting frame with either Type M or Type L Hold-down clips. A minimum of four (4) clips per side are required for full-size panels. Where panels can not be supported on all sides, use Type C End Panel clips to unite the two (2) adjacent panels. Clips are sold as sets consisting of clip, bolt, nut and washer, all manufactured from 316 stainless steel.

A. Installation Cost: FIBREGRATE Grating vs. Steel

Platform Cost Comparison FIBREGRATE Grating vs. Welded Steel Bar Grating	
Description	Comparison
Structural Steel Support-Installed	Same Cost
Cost	FIBREGRATE 1.8 times Steel
Fabrication	FIBREGRATE 0.75 of Steel
Banding	Not required with FIBREGRATE
Installation Materials	Same
Installation	FIBREGRATE 0.6 of Steel
Freight	FIBREGRATE 0.7 of Steel

Total installed cost ratio : FIBREGRATE 1.08 times Steel

B. Floor Material Selection Guide

Material	Cost Rating	Moist & Wet	Acid	Akali	Salt Solution	Solvent	Max Temp °C	Thermal Resistance
Steel	1	poor	poor	fair	poor	exc	205	low
Galv Steel	2	fair	poor	poor	fair	exc	-	low
FIBREGRATE	3	exc	exc	fair	exc	var	116	high*
Aluminium	4	fair	fair	poor	fair	exc	166	low
Stainless	5	exc	fair	exc	fair	exc	315	low
Concrete	var	exc	poor	fair	fair	exc	315	high
Wood	var	fair	fair	poor	fair	var	99	high*

Exc – excellent, normally used, few limitations;
 Fair – can be used but limited for some applications;
 Poor – can fail or have limited life
 * can burn but fire retardant grades available

C. Anti-Skid for Flooring Grating

Material	Used Primarily With	Anti-Skid Rating	
		Initial	After Use
Integral Grit	FIBREGRATE FRP	exc	exc
Adhesive Grit	FRP, Steel, Aluminium	exc	poor
Serrated	Steel, Stainless Steel	fair	fair
Grooved	Aluminium, FRP	poor	poor
Stamped or Expanded Metal	Steel, Stainless Steel	exc	fair
Bar Grating	Steel, Stainless Steel	poor	poor
(No Anti-Skid Treatment)			

D. Features of Floor Grating Plans

Type	Primary Material	Principal Features	Distributes Loads Both Directions	Installed Cost Ratio* (Steel Bar Grating = 1.0)
Moulded	FIBREGRATE FRP	Corrosion resistant, Anti-skid	Yes	1.08
Welded Bar Grating	Steel and St. Steel	Economic	No	1.0 & 1.8
Riveted Bar Grating	Steel and St. Steel	Dynamic and heavy loads	Yes	1.2 & 4.0
Pressure Lock	Steel and Alum.	Economic resistance	No	0.9 & 1.1
Adhesive Bonded	Wood and Pultruded	FRP corrosion resistance	No	Var & 1.8
Expanded or Stamped Metal	Steel and St. Steel	Light loads-low cost, with stands abuse??	Yes	0.75 & 1.5
Cast	Iron and Alum	High loads, hard to fabricate, costly	Yes	>2 & >2

* Includes Steel Structural and Complete Installation



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FIBREGRATE Grating

Load & Deflection

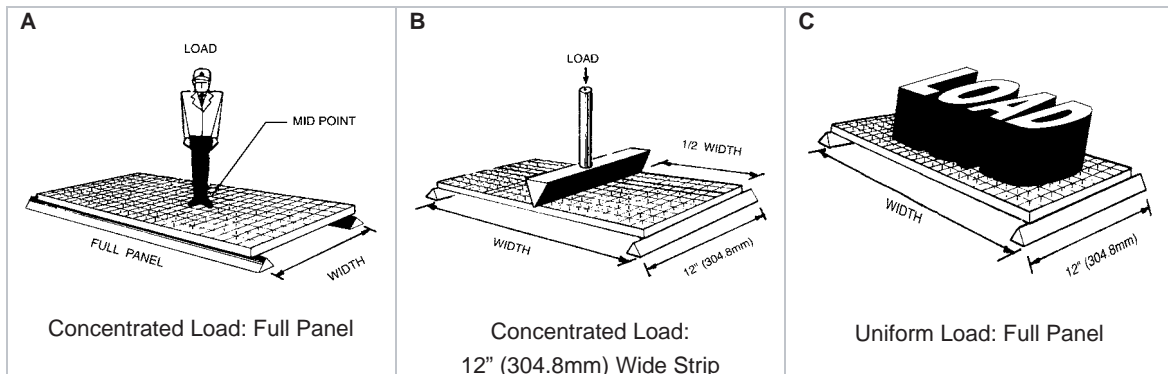
The design procedure associated with fibreglass plastic reinforced grating is entirely different from those associated with other materials. The prime consideration when designing with FIBREGRATE grating is the allowable DEFLECTION as opposed to the ultimate LOADING used with other materials (steel, aluminium etc). The reason for this is that the inherent elasticity of fibreglass reinforced plastic permits far greater deflection than steel without the danger of structural failure (this is all based on the relatively lower flexural modulus of the FRP bars versus equivalent sized metal bars). What this means is that if you know the loading and the allowable deflection, you can select the appropriate span from the tables.

The load data provided here is for general information only as actual environmental and operational conditions are beyond our control and may affect the performance of the grating. For this reason, MASKELL cannot guarantee that actual performance will correspond to the load tables provided here.

Maximum Load

T	SPAN	MAX. LOAD A (KG)			MAX. LOAD B (KG)			MAX. LOAD C (KG)		
		FI	SI	DI	FI	SI	DI	FI	SI	DI
25	300	-	-	-	243	347	437	2352	3384	4232
25	450	323	466	582	124	180	225	850	1224	1531
25	600	312	319	399	71	102	129	376	543	678
25	900	125	180	225	-	-	-	106	154	192
25	1200	77	111	139	-	-	-	-	-	-
38	300	-	-	-	540	778	969	-	-	-
38	450	665	953	1195	346	498	625	2986	4298	5380
38	600	511	732	916	207	301	376	1503	2161	2702
38	900	344	497	622	93	132	167	458	659	826
38	1200	214	314	392	-	-	-	190	275	344

- NOTE: T = Thickness
 FI = Firm installation : deflection/span = 1/180
 SI = Standard installation : deflection/span = 1/120
 DI = 1% deflection installation : deflection/span = 1/100



FIBREGRATE Grating

Deflection

Concentrated Load : Full Panel (A)

38mm high, 38mm square mesh, METRIC

PANEL WIDTH	KILOGRAMS					
(mm)	100	200	400	600	800	1000
300	-	-	-	-	-	-
450	0.381	0.737	1.551	2.261	2.997	3.772
600	0.635	1.308	2.667	3.962	5.283	6.617
900	1.461	2.870	5.776	8.674	11.558	-
1200	3.239	6.096	12.200	-	-	-

25.4mm high, 38mm square mesh, METRIC

PANEL WIDTH	KILOGRAMS					
(mm)	100	200	400	600	800	1000
300	-	-	-	-	-	-
450	0.800	1.549	3.112	4.648	6.210	7.772
600	1.524	2.997	6.020	8.992	12.014	-
900	4.001	8.001	-	-	-	-
1200	8.611	-	-	-	-	-

Concentrated Load : 12" (304.8mm) Wide Strip (B)

38mm high, 38mm square mesh, METRIC

PANEL WIDTH	KILOGRAMS					
(mm)	100	200	400	600	800	1000
300	0.318	0.622	1.245	1.854	2.451	3.073
450	0.737	1.448	2.898	4.318	5.740	7.189
600	1.626	3.175	6.388	9.589	12.763	-
900	5.461	10.859	-	-	-	-
1200	-	-	-	-	-	-

25.4mm high, 38mm square mesh, METRIC

PANEL WIDTH	KILOGRAMS					
(mm)	100	200	400	600	800	1000
300	0.648	1.346	2.743	4.140	5.512	6.909
450	1.994	4.000	7.963	11.938	-	-
600	4.674	9.271	-	-	-	-
900	-	-	-	-	-	-
1200	-	-	-	-	-	-

Uniform Load : Full Panel (C)

38mm high, 38mm square mesh, METRIC

PANEL WIDTH	KILOGRAMS/SQ.M						
(mm)	200	400	500	600	800	1000	1200
300	-	-	-	-	-	-	-
450	-	0.330	0.419	0.508	0.660	0.838	1.003
600	0.432	0.876	1.105	1.334	1.778	2.222	2.692
900	2.222	4.331	5.410	6.375	8.712	10.871	-
1200	6.690	-	-	-	-	-	-

25.4mm high, 38mm square mesh, METRIC

PANEL WIDTH	KILOGRAMS/SQ.M						
(mm)	200	400	500	600	800	1000	1200
300	-	0.305	0.368	0.432	0.572	0.711	0.838
450	0.597	1.168	1.461	1.765	2.350	2.921	3.531
600	1.791	3.531	4.432	5.321	7.074	8.865	10.643
900	-	-	-	-	-	-	-
1200	-	-	-	-	-	-	-



FIBREGRATE Grating

Chemical Resistance Guide

CHEMICAL	TYPE 'V'		TYPE 'T'	
	ENVIRONMENT	% CONCENTRATION	MAX. OPER. TEMP. F/C	% CONCENTRATION
Acetic Acid	50	180/82	50	125/52
Aluminium Hydroxide	100	180/82	100	160/71
Ammonium Chloride	ALL	210/99	ALL	170/77
Ammonium Hydroxide	28	100/38	28	N/R
Ammonium Bicarbonate	50	160/71	15	125/52
Ammonium Sulphate	ALL	210/99	ALL	170/77
Benzene	N/R	N/R	N/R	N/R
Benzoic Acid	SAT	210/99	SAT	150/66
Borax	SAT	210/99	SAT	170/77
Calcium Carbonate	ALL	180/82	ALL	170/77
Calcium Nitrate	ALL	210/99	ALL	180/82
Carbon Tetrachloride	100	150/65	N/R	N/R
Chlorine, Dry Gas	-	210/99	-	140/60
Chlorine Water	SAT	200/93	SAT	80/27
Chromic Acid	10	150/65	5	70/21
Citric Acid	ALL	210/99	ALL	170/77
Copper Chloride	ALL	210/99	ALL	170/77
Copper Cyanide	ALL	210/99	ALL	170/77
Copper Nitrate	ALL	210/99	ALL	170/77
Ethanol	50	100/38	50	75/24
Ethylene Glycol	100	200/93	100	90/32
Ferric Chloride	ALL	210/99	ALL	170/77
Ferrous Chloride	ALL	210/99	ALL	170/77
Formaldehyde	ALL	150/65	50	75/24
Gasoline	100	180/82	100	80/27
Glucose	100	210/99	100	170/77
Glycerine	100	210/99	100	150/66
Hydrobromic Acid	50	150/65	50	120/49
Hydrochloric Acid	37	150/65	37	75/24
Hydrogen Peroxide	30	150/65	5	100/38
Lactic Acid	ALL	210/99	ALL	170/77
Lithium Chloride	SAT	210/99	SAT	150/66
Magnesium Chloride	ALL	210/99	ALL	170/77
Magnesium Nitrate	ALL	210/99	ALL	140/60
Magnesium Sulphate	ALL	210/99	ALL	170/77
Mercuric Chloride	100	210/99	100	150/66
Mercurous Chloride	ALL	210/99	ALL	140/60
Nickel Chloride	ALL	210/99	ALL	170/77
Nickel Sulphate	ALL	210/99	ALL	170/77
Nitric Acid	20	120/49	20	70/21
Oxalic Acid	ALL	210/99	ALL	75/24
Perchloric Acid	30	100/38	N/R	N/R
Phosphoric Acid	100	210/99	100	120/49
Potassium Chloride	ALL	210/99	ALL	170/77
Potassium Dichromate	ALL	210/99	ALL	170/77
Potassium Nitrate	ALL	210/99	ALL	170/77
Potassium Sulphate	ALL	210/99	ALL	170/77
Propylene Glycol	ALL	210/99	ALL	170/77
Sodium Acetate	ALL	210/99	ALL	160/71
Sodium Bisulphate	ALL	210/99	ALL	170/77
Sodium Bromide	ALL	210/99	ALL	170/77
Sodium Cyanide	ALL	210/99	ALL	170/77
Sodium Hydroxide	25	180/82	N/R	N/R
Sodium Nitrate	ALL	210/99	ALL	170/77
Sodium Sulphate	ALL	210/99	ALL	170/77
Stannic Chloride	ALL	210/99	ALL	160/71
Sulphuric Acid	75	100/38	25	25/24
Tartaric Acid	ALL	210/99	ALL	170/77
Vinegar	100	210/99	100	170/77
Water, Distilled	100	180/82	100	170/77
Zinc Nitrate	ALL	210/99	ALL	170/77
Zinc Sulphate	ALL	210/99	ALL	170/77

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

The corrosion resistance data listed above is for general information only. Resin manufacturers have provided test data which indicates that the specific resin can withstand the corrosion conditions listed above. MASKELL PRODUCTIONS LTD believes the data to be true and accurate but no guarantee is expressed or implied as to specific performance. Testing for specific environments is recommended. Our responsibility for claims arising from breach of warranty, negligence or otherwise is limited to the purchase price of the material sold by MASKELL PRODUCTIONS LTD.



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