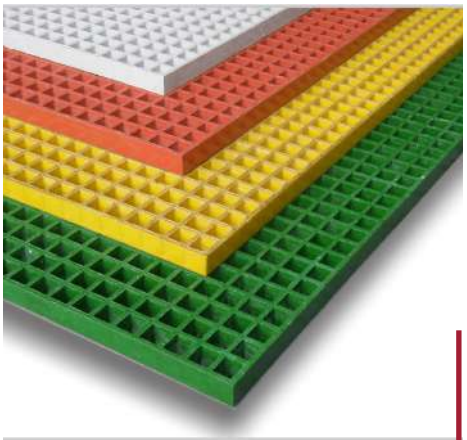
Arvind
COMPOSITES

Built to last: Arvind FRP Gratings



Arvind Composites Division

Founded in 1931, Arvind is one of India's largest integrated textile-to-retail conglomerates with successful forays in advanced materials, environmental solutions and real estate. A pioneer of denim in India, Arvind is a $1.5 bn company with an unmatched portfolio of owned, licensed brands and retail formats. Arvind is a supplier of fabrics to global brands such as Levi's, Gap, VF Corp, Tommy Hilfiger, Zara, H&M and others.

Known for its commitment to innovation and quality, Arvind manufactures high performance protective and industrial fabrics through its Advanced Materials Division, using world-class technology and research-led processes.

Arvind started its Composites Division in 2014 producing structural profiles and hand-laminated products. With a monthly production capacity exceeding 500 MT, Arvind has been able to serve global customers with high standards of quality and delivery. Arvind provides complete solutions for all structural needs, including gratings, poles and hand-laminated products. Arvind's FRP products are sold in more than 30 countries to 40 countries.

WHY FRP?

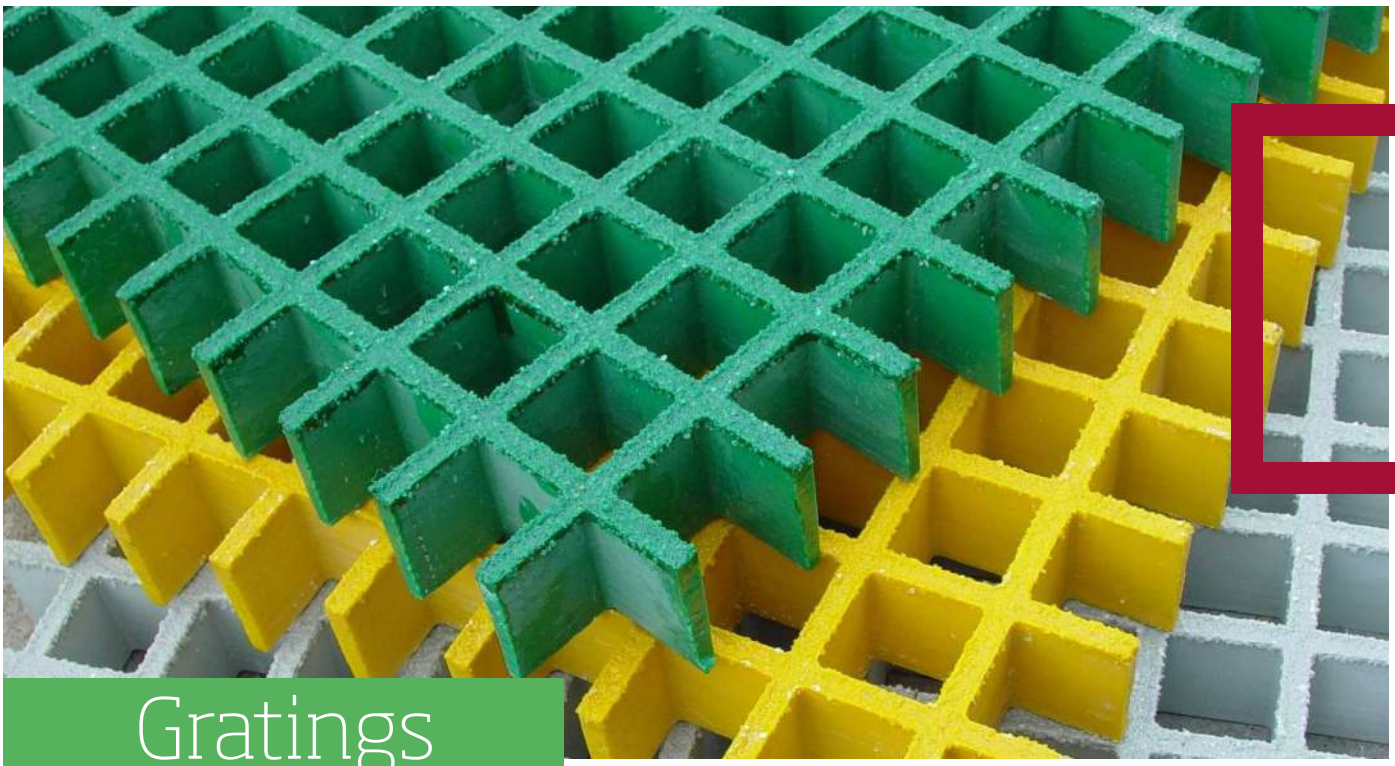
FRP (Fibre-reinforced plastics) is a composite material made from a polymer resin matrix reinforced by glass fibres and fabrics. Also known as GRP (Glass reinforced plastic) or fibreglass, it is a lightweight, strong and durable material, used as a superior alternative to steel, aluminum, wood or concrete.

- High strength and low weight
- Durable and maintenance-free
- Non-conductive
- Rapid installation
- Fire retardance
- Design Flexibility

Steel Rusts

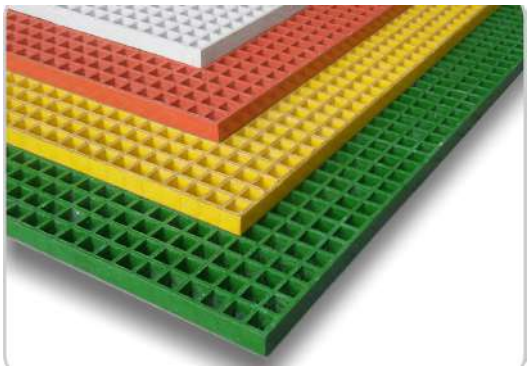
Wood Rots

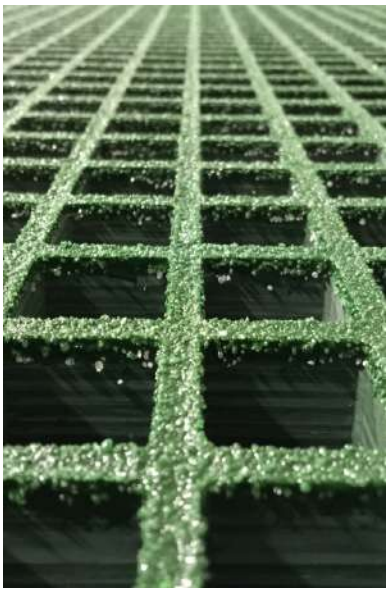
FRP Lasts



Gratings

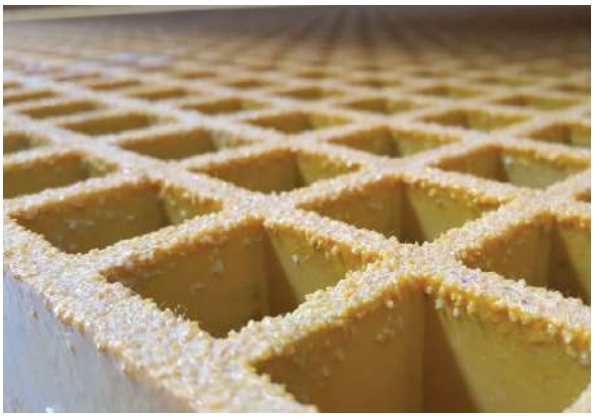
Arvind offers a range of pultruded and moulded gratings designed to meet the load requirements for a variety of industrial purposes. FRP gratings are lightweight which allow them to be an economic replacement for conventional gratings, and its anti-corrosive properties allows it to be applicable for a range of industrial and extreme environments. FRP gratings perform reliably for many years, even in heavy duty conditions. Arvind's FRP gratings are available in a wide variety of dimensions, along with slip resistant options such as anti-skid coatings, chequered plates etc.





Advantages

- ✓ Low maintenance due to corrosion resistance
- ✓ High Strength to Weight Ratio
- ✓ Impact Resistant & bidirectional strength
- ✓ Fire Retardant
- ✓ Slip Resistant



Applications

- FRP Grating is often used when there are safety concerns due to liquids or oils on the floor and more corrosive environments needing chemical resistance.
- Many different applications can benefit from FRP Grating, such as: Walkways, Platforms, Protective Shielding, Machinery Housings, Raised Floors and Stairways
- In addition, Industries that use Moulded FRP Grating can include bottling lines, food processing plants, lift stations, commercial aquariums, lube oil facilities, plating shops, beverage canning facilities, chemical plants and pulp and paper plants
- Several applications in Effluent Treatment Plants and Water Treatment Plants

Lifetime cost benefit analysis

- Life cycle cost of FRP gratings much lower than MS gratings
- Moulded gratings more economical than pultruded gratings

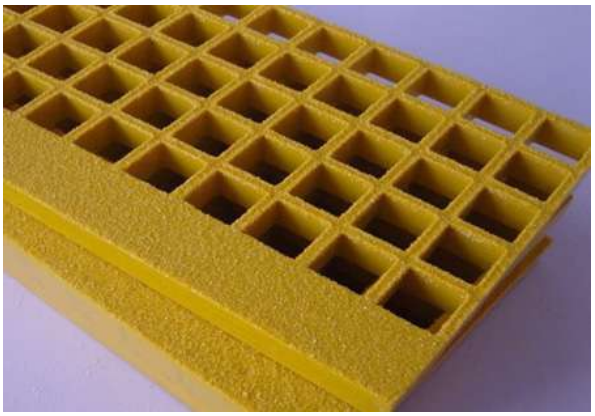
Parameters for 1 square meter of Grating	FRP (Moulded) Mesh size 38 mm*38 mm	FRP (Pultruded) Mesh Size 25.4 mm*152.4 mm height of 25.4	MS Mesh Size 30 mm *100mm height of 30 mm
Weight (kgs)	18.3	20	50
UDL at support span of 1000 mm (kgs)	360	min 1,000	min 1,000
Zero Maintenance life (years)	15	15	2
Structural Approx. price (Rs.)	2,379	3,000	4,000
Clips/Welding approx. price (Rs.)	130	130	
Installation+ transport Approx. price (Rs.)	95	95	
Total cost	2,604	3,225	4,000
Recurring cycles (no.)	0	0	7.5
Colouring+Labour approx price (Rs.)	0	0	14
Total Recurring cost (Rs.)	0	0	91
Total Lifecycle Cost (Rs.)	2,604	3,225	4,091

Product offering – Moulded Gratings
38 mm Grating

Sr No	Clear Span (L) mm	Height of Grating in mm	Mesh size in mm	Deflection as per L/200 in mm	Uniform Distribution Load (Kg/m²)	Maximum Recommended Load (Kg/m²)
1	300	38.1	38.1 x 38.1	1.5	8,230	18,715
2	400	38.1	38.1 x 38.1	2.0	3,490	10,480
3	500	38.1	38.1 x 38.1	2.5	2,050	6,160
4	600	38.1	38.1 x 38.1	3.0	1,508	4,525
5	700	38.1	38.1 x 38.1	3.5	930	2,792
6	800	38.1	38.1 x 38.1	4.0	731	2,198
7	900	38.1	38.1 x 38.1	4.5	550	1,651
8	1000	38.1	38.1 x 38.1	5.0	405	1,216

30 mm Grating

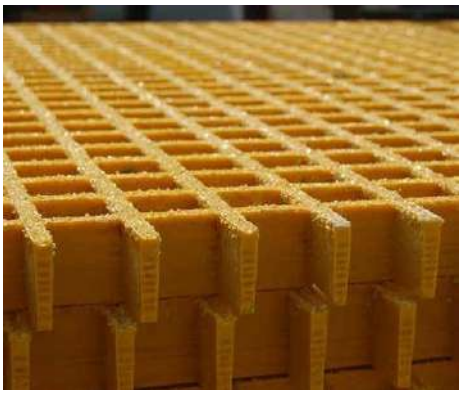
Sr No	Clear Span (L) mm	Height of Grating in mm	Mesh size in mm	Deflection as per L/200 in mm	Uniform Distribution Load (Kg/m²)	Maximum Recommended Load (Kg/m²)
1	300	30	38.1 x 38.1	1.5	7,066	16,959
2	400	30	38.1 x 38.1	2.0	2,650	7,955
3	500	30	38.1 x 38.1	2.5	1,110	3,332
4	600	30	38.1 x 38.1	3.0	550	1,651
5	700	30	38.1 x 38.1	3.5	425	1,277
6	800	30	38.1 x 38.1	4.0	331	994
7	900	30	38.1 x 38.1	4.5	289	866
8	1000	30	38.1 x 38.1	5.0	240	721



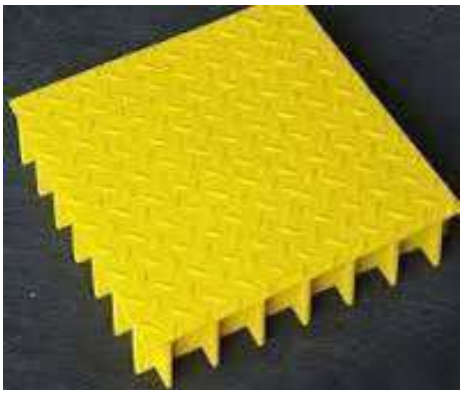
Product offering – Pultruded Grating

Sr. No.	Series	Load Bar Spacing (mm)	Grating Depth (mm)	Support Bars Spacing (mm)
1	I-2530	30.48	25.4	152.4
2	I-2538	38.1	25.4	152.4
3	I-3830	30.48	38.1	152.4
4	I-3838	38.1	38.1	152.4
5	I-5050	50.8	50.8	152.4

Also available in different variations



Anti-Skid

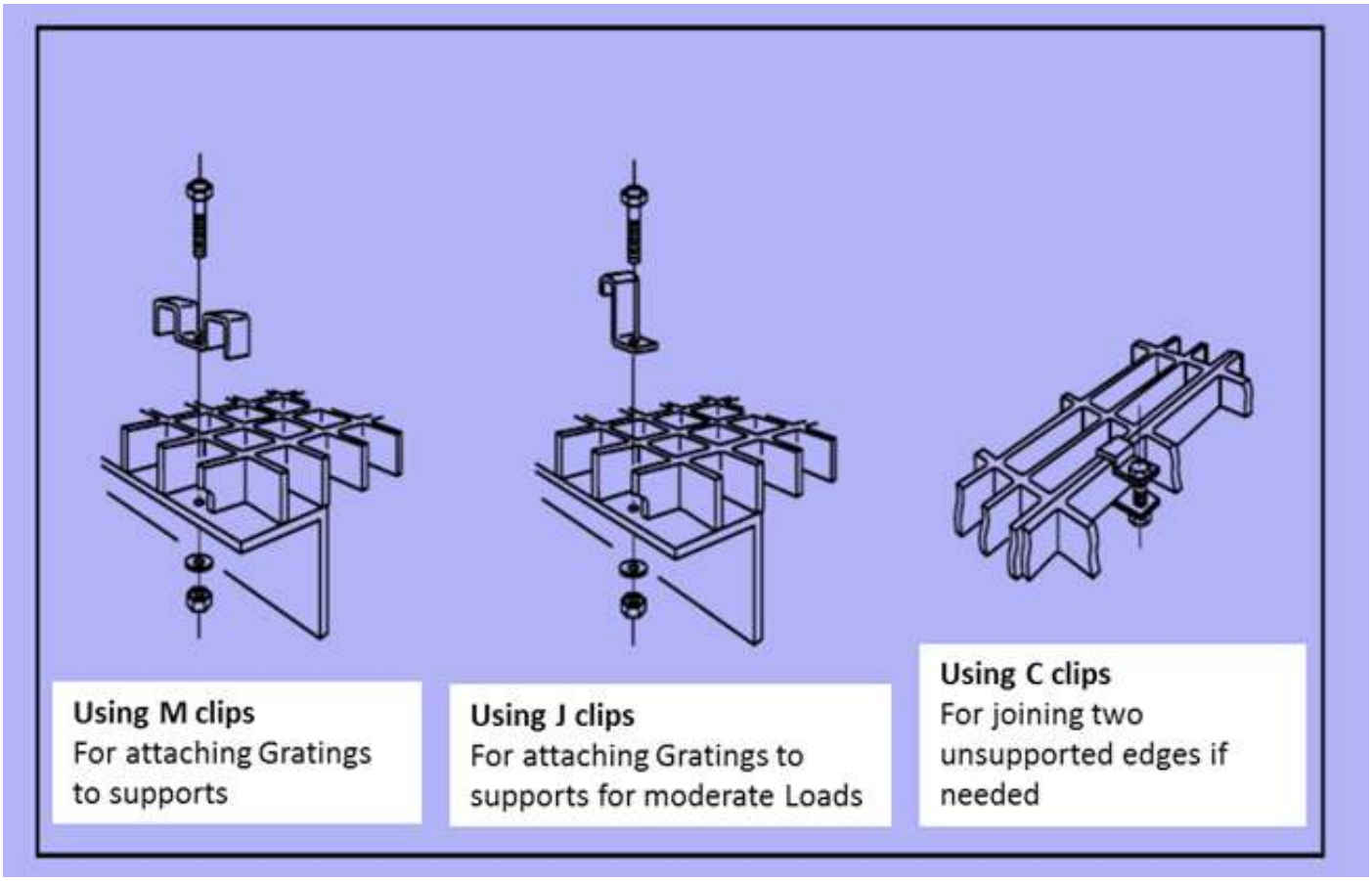


Chequered Plate

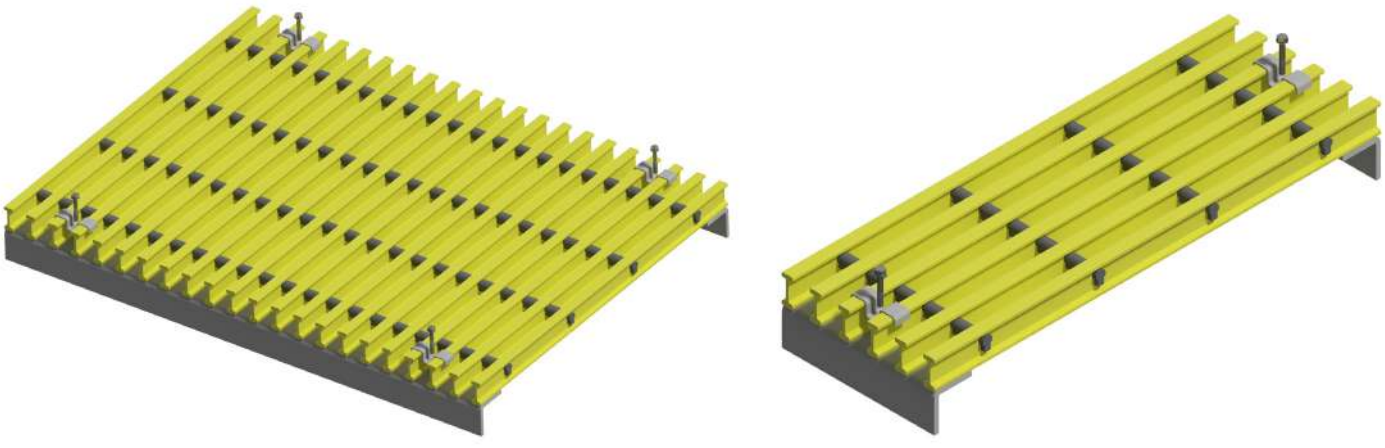
Properties of FRP

Mechanical Properties	ASTM	UNITS	VALUE
Tensile Strength, LW	D-638	psi	30,000
Tensile Strength, CW	D-638	psi	7,000
Tensile Modulus, LW	D-638	10^6 psi	2.5
Tensile Modulus, CW	D-638	10^6 psi	0.8
Compressive Strength, LW	D-695	psi	30,000
Compressive Strength, CW	D-695	psi	15,000
Compressive Modulus, LW	D-695	10^6 psi	2.5
Compressive Modulus, CW	D-695	10^6 psi	1
Flexural Strength, LW	D-790	psi	30,000
Flexural Strength, CW	D-790	psi	10,000
Flexural Modulus, LW	D-790	10^6 psi	1.8
Flexural Modulus, CW	D-790	10^6 psi	0.8
Modulus of Elasticity, E	Full Section	10^6 psi	2.8
Shear Modulus	--------	10^6 psi	0.45
Short Beam Shear	D-2344	psi	4,500
Punch Shear	D-732	psi	10,000
Bearing Strength, LW	D-953	psi	30,000
Notched Izod Impact, LW	D-256	ft-lbs/in	25
Notched Izod Impact, CW	D-256	ft-lbs/in	4
Physical Properties			
Barcol Hardness	D-2583	--------	45
24 Hour Water Absorption	D-570	% max	0.45
Density	D-792	lbs/in 3	.062-0.70
Coefficient of Thermal Expansion, LW	D-696 G53	10^{-6} in/in/°C	8
UV			
Electrical Properties			
Arc Resistance, LW	D-495	seconds	120
Dielectric Strength, LW	D-149	kv/in	35
Dielectric Strength, PF	D-149	volts/mil	200
Dielectric Constant, PF	D-150	@60hz	5
Flammability Properties			
Tunnel Test	E-84	Flame Spread	25 max
Flammability	D-635	--------	Nonburning

How to Install Gratings
Illustration: Moulded gratings



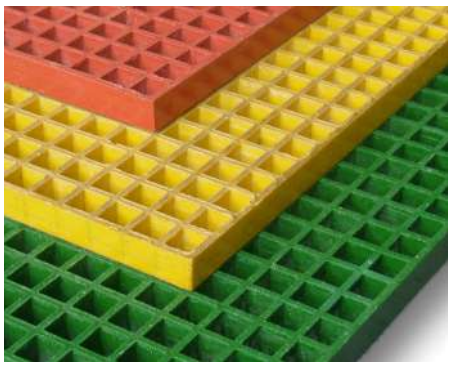
How to Install Gratings
Illustration: Pultruded gratings



ARVIND COMPOSITES

Product Offering

Cable trays

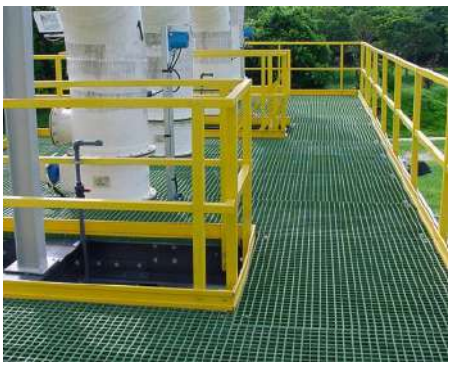


Gratings

Poles

Ladder

Platforms



Handrails / Walkways

Staircases

Monkey ladders

Toilets

Why Arvind?

Arvind lineage: 100+ year-old financially strong publicly listed corporate with experience of delivering high quality products to global customers

Scale: 500T+ pultrusion production capacity per month with sufficient resources to expand, working across a range of products and solutions

Systems and processes: Strong in-house processes for production planning, export logistics support and quality control to ensure total customer satisfaction

Best cost structure: Backward integration of glass fabrics, scale for glass and resin purchase, export logistics advantage

Team capabilities: All round-capabilities across team supported by expertise across various areas by broader Arvind team

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