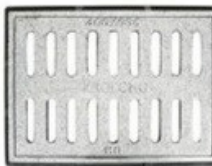




# FRP/GRP Composite Covers



## CORROSION RESISTANCE LIGHT-WEIGH HIGH STRENGTH

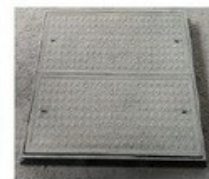


FRP IS **70% LIGHTER** THAN STEEL WITH AN EXCEPTIONAL STRENGTH-TO-WEIGHT RATIO.

FRP IS NON-CONDUCTIVE AND SLIP RESISTANT, PROVIDING A SAFER **ALTERNATIVE TO STEEL** AND CONCRETE.

FRP IS CORROSION RESISTANT AND REQUIRES **LESS MAINTENANCE** THAN TRADITIONAL MATERIALS LIKE METAL, WOOD, AND CONCRETE.

AVAILABLE IN A RANGE OF COLORS AND SHAPES, OFFERING FLEXIBLE DESIGN OPTIONS FOR **ARCHITECTURAL APPLICATIONS.**



7350006600  
9322889638



[dwarkeshint07@hotmail.com](mailto:dwarkeshint07@hotmail.com)



107, St. Patrick Town Society, Behind  
Vijay Sales, Solapur Road, Hadapsar,  
Pune - 411013



# What is FRP/GRP?

FRP stands for Fiberglass-Reinforced Polymer material that has the strength of steel at the fraction of the weight. FRP won't corrode, rot, warp, attract insects, or rust, making it an ideal and long-lasting replacement for steel, wood and aluminum in a wide range of applications.

FRP is a composite material made up of fiberglass reinforcements and polymer resins. The glass fiber provides the strength and stiffness, and the resin provides shape and protects the fibers.

## DIFFERENCE BETWEEN FRP AND GRP:

It has been seen that there is lot of confusion between what is FRP and what is GRP. Whether it is the same material or two different materials. FRP or GRP are both composite materials. FRP or Fiber Reinforced Plastic is the general name in which any fiber is used for making the composite material. That fiber can be glass fiber also. If glass fiber is used for making composite material may be called Glass Fiber Reinforced Plastic or GRP. Thus we can define both as under.

### **"FIBER-REINFORCED POLYMER(FRP),**

is a composite material made of a polymer matrix reinforced with fibers. The fibers are usually fiberglass (many categories), carbon, aramid, boron etc while the polymer is usually an epoxy, vinylester or polyester thermosetting plastic. FRPs are commonly used in the aerospace, automotive, marine, and construction industries.

### **"GLASS-REINFORCED POLYMER(GRP),**

also known as glass fiber-reinforced plastic (GFRP), is a fiber reinforced polymer made of a plastic matrix reinforced by fine fibers made of glass. It is also known simply by the name of the reinforcing fibers themselves **Firber Glass**

### **Finally, we can say that FRP contains**

1. Fiber like Glass, Aramid, Carbon, Ceramic
2. Matrix of Polymer like Polyester, Vinyl ester, Epoxide, HDPE, PTFE etc.
3. Additives like Colours, Fire inhibitors, UV Retardants, Anti-Skid, Conductivity etc.

FRP materials can be made in various ways. In terms of manufacturing methods and type and number of products manufactured, these are the most versatile materials. They can be molded, pushed, pulled, profiled, rotated etc. The shape they can form is only limited by imagination.



7350006600  
9322889638



[dwarkeshint07@hotmail.com](mailto:dwarkeshint07@hotmail.com)



107, St. Patrick Town Society, Behind  
Vijay Sales, Solapur Road, Hadapsar,  
Pune - 411013



# Features of Prolong Covers

## HIGH LOAD RATING & STRENGTH

- Hardness comparable of cast iron, but major advantages on stretch recovery and bend resistance. Less noise and lower vibration transmissions.
- Designed to meet and exceed load ratings according to EN 124: 2015, from 2.5 to 60 tonnes.

## ANTI THEFT & SAFETY SOLUTIONS

- Compared to conventional metal, FRP/GRP covers has zero theft value which reduce the potential accident and further maintenance cost caused by theft.
- Surface anti-slip thread guarantees safe road condition even in extreme weather. Zero heat conduction and electrically non-conductive.

## DURABILITY & LONG SERVICE LIFE

- More than 30 years theoretical service life at usual road condition.
- FRP doesn't rust or corrode like metal and other alloys. FRP is impervious to water (be it sub-version or splash), fumes and gases and is resistant to most chemicals. Extreme temperature tolerance.
- Thanks to its non-corrosive attributes requires no-maintenance aside from clean-up, UV stabilization means lacquering or no painting is required after installation along with the light-weight nature of FRP means it moved and can be readily raised for easy cleanup.

## LIGHT IN WEIGHT

- FRP is approximately 50-55% lighter than metal, yet it is stronger as per strength weight ratio. Installation, transportation and handling prices are greatly reduced by the lighter weight. The large glass to resin ratio creates a substance that is really capable of attaining excellent load bearing results.
- Easy handling and movement reduce maintenance cost.

## LOW CARBON FOOTPRINT

- New material, manufacturing technology and lean production help reduce carbon footprint.
- Low energy requirement in manufacturing than conventional metal covers reduces carbon footprint.
- Long life & corrosion resistant PROLONG covers reduces metal wastage.
- FRP is light-weight, usually permitting a simple two-man raise. As cranes and other lifting gear isn't required. Transportation costs can be greatly reduced thanks to the decreased weight.
- FRP doesn't require expert cutting or welding equipment and can usually be set up with hand tools that are simple.



7350006600  
9322889638



[dwarkeshint07@hotmail.com](mailto:dwarkeshint07@hotmail.com)



107, St. Patrick Town Society, Behind  
Vijay Sales, Solapur Road, Hadapsar,  
Pune - 411013

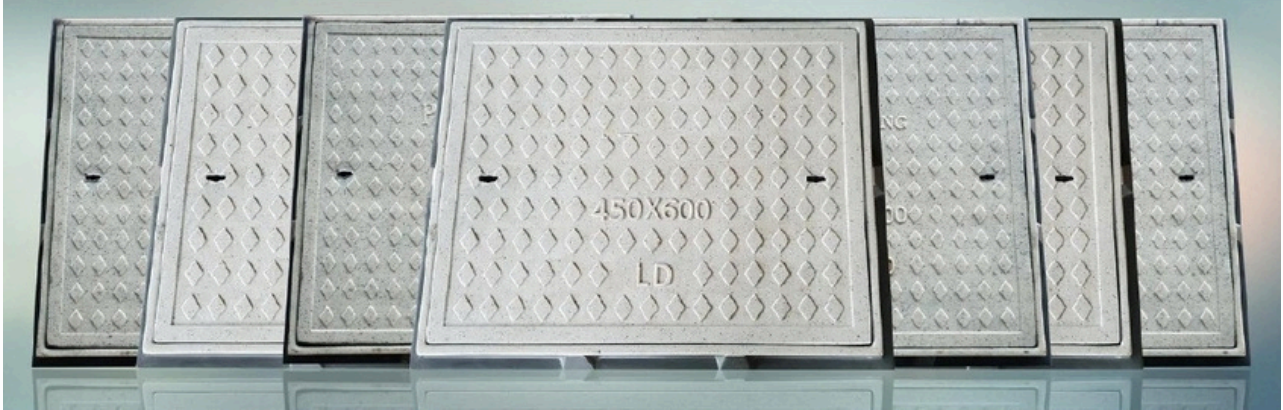
## COMPOSITE VS METAL COVERS

PROLONG FRP GRP MANHOLE COVERS	CAST/ DUCTILE IRON MANHOLE COVERS
LIGHT WEIGHT EASY TO HANDLE	HEAVY — NEED EXTRA MANPOWER
ZERO SCRAP VALUE — NO THEFT	RISK OF THEFT DUE TO METAL SCRAP VALUE
HIGH STRENGTH TO WEIGHT RATIO	MODERATE STRENGTH TO WEIGHT RATIO
CORROSION RESISTANT NO EFFECT OF SEA/SEWAGE WATER	GETS CORRODED DUE TO SEA/SEWAGE WATER
HIGH AESTHETIC VALUE, AVAILABLE IN ALL RAL COLOR SHADE	STANDARD APPEARANCE
PIGMENTED — NO PAINTING REQUIRED	PAINTING REQUIRED AT REGULAR INTERVALS
LOW FREIGHT & HANDLING COST DUE TO LESS WEIGHT	HIGHER FREIGHT & HANDLING COST DUE TO HEAVY WEIGHT
AVAILABLE IN VARIOUS DESIGN & DIMENSIONS	LIMITED DESIGN & DIMENSIONS

## COMPOSITE VS CONCRETE COVERS

PROLONG FRP/GRP MANHOLE COVERS	SFRC/CONCRETE MANHOLE COVERS
• NO METAL CONTENT — NO RESALE VALUE HENCE NO THEFT	• THEFT HAPPENS DUE TO PRESENCE OF STEEL INSIDE
• HIGH STRENGTH TO WEIGHT RATIO	• POOR STRENGTH TO WEIGHT RATIO
• LONG LIFE (20-30 YEARS)	• SHORT LIFE (4-5 YEARS)
• LIGHT WEIGHT — EASY TO HANDLE	• HEAVY — NEEDS MORE MANPOWER
• HIGH ABRASION RESISTANCE — NO EROSION DUE TO RAIN WATER & MOVING VEHICLE	• POOR ABRASION RESISTANCE — GETS ERODED DUE TO RAIN WATER & MOVING VEHICLE
• INERT TO CHEMICALS, GAS & SEWAGE WATER	• EROSION DUE TO SEWAGE WATER & CHEMICALS
• NO ENVIRONMENTAL DEGRADATION	• HIGH ENVIRONMENTAL DEGRADATION





**COMPLIES WITH EN124:2015**

**STRONG YET LIGHT WIGHT**

## LOAD TABLE

TRAFFIC DESCRIPTION	CLASS	PROOF LOAD KN
<ul style="list-style-type: none"> <li>Area which can only be used by pedestrians.</li> </ul>	A15-ELD 2.5T	15 KN-25 KN
<ul style="list-style-type: none"> <li>Suitable for use in light vehicle movement.</li> </ul>	LD 5T	50 KN
<ul style="list-style-type: none"> <li>Suitable for use in service lane, parking etc.</li> </ul>	B125 -MD 10T	125KN -100KN
<ul style="list-style-type: none"> <li>Gully taps for curb side of roads.</li> </ul>	C250-HD 20T	250 KN-200 KN
<ul style="list-style-type: none"> <li>Carriageways of roads, hard shoulders &amp; Parking areas.</li> </ul>	D400-EHD 35T	400KN 350 KN
<ul style="list-style-type: none"> <li>Areas for imposing high wheel loads e.g. docks &amp; aircraft hangar.</li> </ul>	E600	600 KN



7350006600  
9322889638



[dwarkeshint07@hotmail.com](mailto:dwarkeshint07@hotmail.com)



107, St. Patrick Town Society, Behind  
Vijay Sales, Solapur Road, Hadapsar,  
Pune - 411013



**DWARKESH  
INTERNATIONAL**

# FRP&GRP MANHOLE COVERS

## SIZE CHART

CIRCULAR		SQUARE		RECTANGULAR	
mm	inches	mm	inches	mm	inches
530	21"	300 x 300	12" x 12"	450 x 600	18" x 24"
600	24"	450 x 450	18" x 18"	900 x 450	36" x 18"
750	30"	600 x 600	24" x 24"	900 x 600	36" x 24"
900	36"	750 x 750	30" x 30"	1200 x 600	48" x 24"
1000	40"	900 x 900	36" x 36"	1200 x 900	48" x 36"
1400	55"	1000 x 1000 1200 x 1200	40" x 40" 48" x 48"	1220 x 990	48" x 40"
		1500 x 1500	60" x 60"		



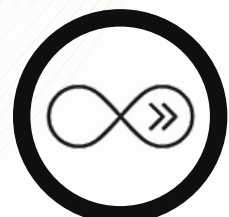
**ANTI-CORROSIVE**



**LIGHT WEIGHT**



**STRONG**



**LONG LIFE**



7350006600  
9322889638



[dwarkeshint07@hotmail.com](mailto:dwarkeshint07@hotmail.com)



107, St. Patrick Town Society, Behind  
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Recessed manhole covers are utilized within paved area in order to hide inspection chambers, manhole and access fittings.

When aesthetic value is required, Recessed manhole covers are vital when compared with regular manhole covers normally employed in modern construction.



## SIZE TABLE & AVAILABLE LOAD CAPACITY

### RECTANGULAR RECESS COVERS

Clear Opening Size	Load Bearing				
	2.5 T	5 T	12.5 T	25 T	40 T
in (mm)					
450 x 600	✓	✓	✓	✓	✓
450 x 900	✓	✓	✓	✓	✓
600 x 900	✓	✓	✓	✓	✓



**RECTANGULAR RECESS COVERS**

### SQUARE RECESS COVERS

Clear Opening Size	Load Bearing				
	2.5 T	5 T	12.5 T	25 T	40 T
In (mm)					
300 x 300	✓	✓	✓	✓	✓
450 x 450	✓	✓	✓	✓	✓
600 x 600	✓	✓	✓	✓	✓
750 x 750	✓	✓	✓	✓	✓
900 x 900	✓	✓	✓	✓	✓



**SQUARE RECESS COVERS**





**FRP UNDERGROUND (U.G.) TANK COVER**



**FRP OVERHEAD (O.H.) TANK COVER**

## SIZE TABLE & AVAILABLE LOAD CAPACITY

### UNDERGROUND (U.G.) TANK COVER

Circular Tank Cover		
Clear Opening Size	Grade	Load Bearing
600 mm	LD	5 T
600 mm	MD / B125	12.5 T
600 mm	HD / C250	25 T
600 mm	EHD / D400	40 T

Square Tank Cover		
Clear Opening Size	Grade	Load Bearing
600 x 600 mm	LD	5 T
600 x 600 mm	MD / B125	12.5 T
600 x 600 mm	HD / C250	25 T
600 x 600 mm	EHD / D400	40 T

Overhead (O.H.) Tank Cover		
Clear Opening Size	Grade	Load Bearing
600 mm	ELD	500 Kgs

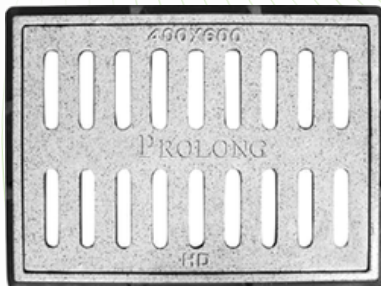
- Water tight & Air tight.
- Corrosion Resistance.
- Lightweight.
- Load Capacity upto 40 T

- Available for Underground & Overhead Purpose.
- Available in Circular & Square Shape.
- Double Seal with EPDM Rubber Gasket.





**DESIGNED FOR A STRONGER  
AND EASIER DRAINAGE SOLUTION    PROLONG DRAINAGE COVERS**



- Withstand Heavy Automotive Vehicle Load
- High Corrosion Resistance
- Zero Thermal Expansion
- Zero Scrap Value
- Longer Life
- High Water Flow
- Available in all standard sizes and colours.

### Applications

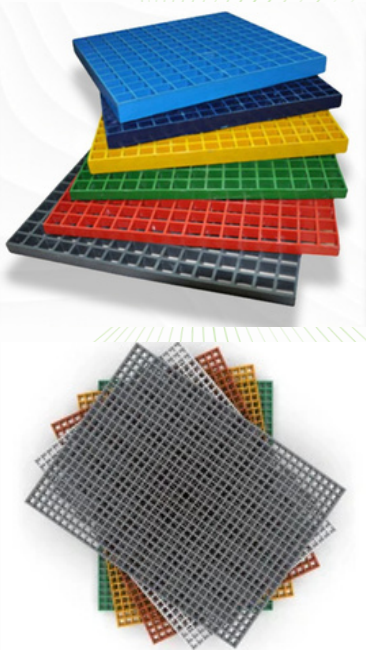
- **Driveways** - Positioned between the garage and the driveway.
- **Patios** - Used in areas where water may accumulate.
- **Swimming Pools** - Helps divert pool water away from surrounding areas such as grass.
- **Sport Courts** - Prevents standing water, which could be hazardous.
- **Gardens** - Safely diverts natural runoff water.
- **Walkways** - Drains away pooled water effectively.

### Standard Sizes with Available Load Capacity

Size (mm)	2.5T (A15)	5T	12.5T (B125)	25T (C250)	40T (D400)
375 × 700	✓	✓	✓	✓	✓
450 × 700	✓	✓	✓	✓	✓
300 × 300	✓	✓	✓	✓	✓
300 × 600	✓	✓	✓	✓	✓
450 × 450	✓	✓	✓	✓	✓
500 × 600	✓	✓	✓	✓	✓
600 × 600	✓	✓	✓	✓	✓
450 × 900	✓	✓	✓	✓	✓
600 × 900	✓	✓	✓	✓	✓
900 × 900	✓	✓	✓	✓	✓



FRP moulded gratings are available in a variety of resins, standard and custom colors, depths, panel sizes and mesh configurations. Surface options which offer superior, slip resistant footing. FRP moulded matings are used in place of traditional materials for a FRP solution that fits a wide range of applications and environments.



Advantages vs Usage	
Advantages	Usage
Corrosion Resistant	Residential & Commercial Buildings
Bi-directional Strength	Chemical Plants
Slip Resistant	Refineries
Low Maintenance	Food & Pharma Industries
High Strength to Weight Ratio	Mining
Fire Retardant	Air & Water Pollution Control Plants
Lightweight	Swimming Pools
Impact Resistant	Walkways & Bridges
Long Service Life	Fencing & Signboards
Superior Ergonomics	Loading Platforms
Electrically & Thermally Non-Conductive	Mezzanine Floors
Low Installation Cost	Trench Covers
Available in Many Sizes & Colours	General Manufacturing Industries

Tolerance			
Length	Width	Height	Weight
+1 / -4 mm	+1 / -4 mm	+2 / -2 mm	-100
Material Composition			
Material			Percentage
Resin			Approx. 68%
Glass Fibre			Approx. 32%

Technical Data Sheet	
Parameter	Value
Rib Thickness	5 to 7 mm
Height	25, 30, 38, 40 mm
Pitch	38 × 38 mm
Panel Size	1220 × 3660 mm
MOC	Glass Fibre E-glass, Polymers

Product Specifications					
Length (mm)	Width (mm)	Height (mm)	Pitch (mm)	Weight (kg/m <sup>2</sup> )	Panel Weight (kg)
1220	3660	25	38 × 38	12.5	55.81
1220	3660	30	38 × 38	14.5	64.74
1220	3660	38	38 × 38	18.5	82.6
1220	3660	40	38 × 38	19	84.83

Further Indications:

FRP Gratings are UV resistant.

Fire Classification B2 (normal ignition as per DIN 4102 part 1).

The FRP Gratings have a resistance to conductive discharge of  $1.098 \times 10^{17}$  ohm  $\times$  m<sup>2</sup>.

Gratings can also be provided with an anti-skid surface.



## SIZE TABLE

Holes Width	Holes Length	Holes Width	Holes Length	Holes Width	Holes Length
1	45	32	1263	63	2482
2	82	2	82	33	1300
3	160	3	160	34	1339
4	197	4	197	35	1377
5	236	5	236	36	1415
6	273	6	273	37	1454
7	311	7	311	38	1492
8	350	8	350	39	1530
9	387	9	387	40	1568
10	425	10	425	41	1606
11	463	11	463	42	1649
12	501	12	501	43	1681
13	540	13	540	44	1720
14	578	14	578	45	1758
15	615	15	615	46	1796
16	653	16	653	47	1834
17	691	17	691	48	1872
18	730	18	730	49	1909
19	768	19	768	50	1947
20	805	20	805	51	2024
21	844	21	844	52	2062
22	881	22	881	53	2100
23	920	23	920	54	2139
24	958	24	958	55	2176
25	996	25	996	56	2215
26	1034	26	1034	57	2257
27	1073	27	1073	58	2291
28	1111	28	1111	59	2329
29	1149	29	1149	60	2366
30	1187	30	1187	61	2405
31	1225	31	1225	62	2444

The largest available grating size is 1220 mm x 3660 mm.



7350006600  
9322889638



[dwarkeshint07@hotmail.com](mailto:dwarkeshint07@hotmail.com)



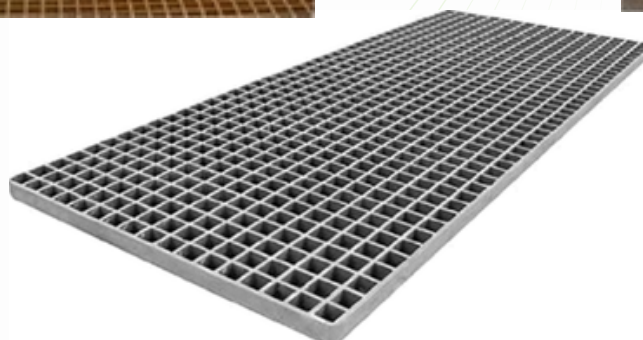
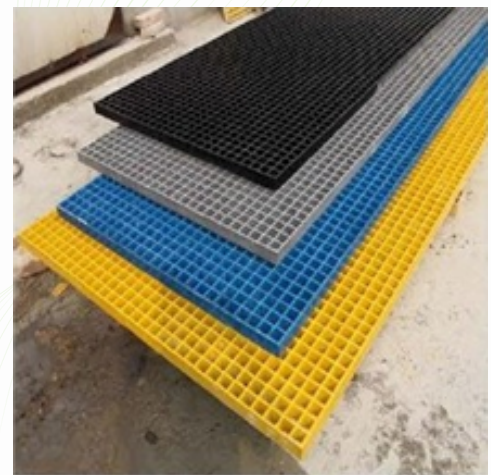
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Pune - 411017

## 30 mm Height

Clear Span (Out to Out)	Description	Load Capacity
311 mm x 996 mm	4-Wheel Light Movement	4-Wheel Light Movement
501 mm x 996 mm	2-Wheel Movement	2-Wheel Movement
578 mm x 996 mm	Pedestrian Movement	Pedestrian Movement

## 40 mm Height

Clear Span (Out to Out)	Description	Load Capacity
311 mm x 996 mm	4-Wheel Heavy Movement	4-Wheel Heavy Movement
501 mm x 996 mm	2-Wheel Movement	2-Wheel Movement
578 mm x 996 mm	Pedestrian Movement	Pedestrian Movement



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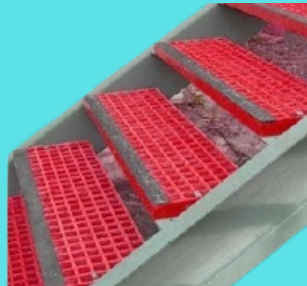
## FRP Chequered Gratings

- Uniform texture and excellent quality
- Anti-skid property
- Minimum maintenance
- Fire Resistance
- Thermally / Electrically Non-Conductive
- Impact resistance
- Nil Ignition Source



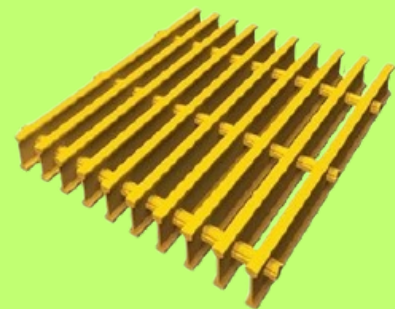
## FRP Stair Treads

- Slip Resistant
- Corrosion Resistant
- Easily Fabricated
- Low Maintenance
- Low Installation Cost
- Long Service Life



## Pultruded Gratings

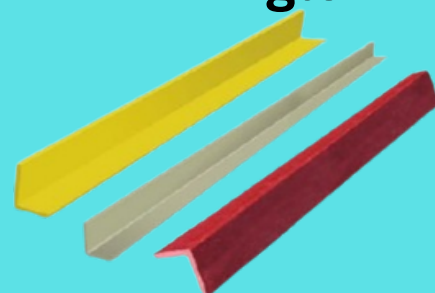
- Increased Workplace Safety
- Low Maintenance
- Longer Lifetime
- Non-conductive
- High Strength to Weight Ratio
- Maintenance Free



## Anti-Skid Gratings



## FRP L-Angle





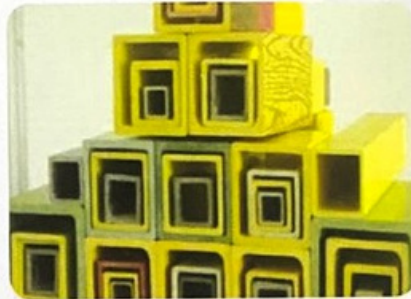
## PROCESS PIPING

- **Water Pipe Lines**
- **Sewerage Water Pipe Lines**
- **Sea Water Pipe Lines**
- **ETP Pipe Lines**
- **Chemical Pipe Lines**
- **Any type of Piping works**

## LINING & COATING

- **PPGL Lining**
- **FRP Lining**
- **PVDF Lining/Coating**
- **PVC/CPVC Lining**
- **PTFE Lining/Coating**
- **Acid Proof Bricks/Tiles Lining**





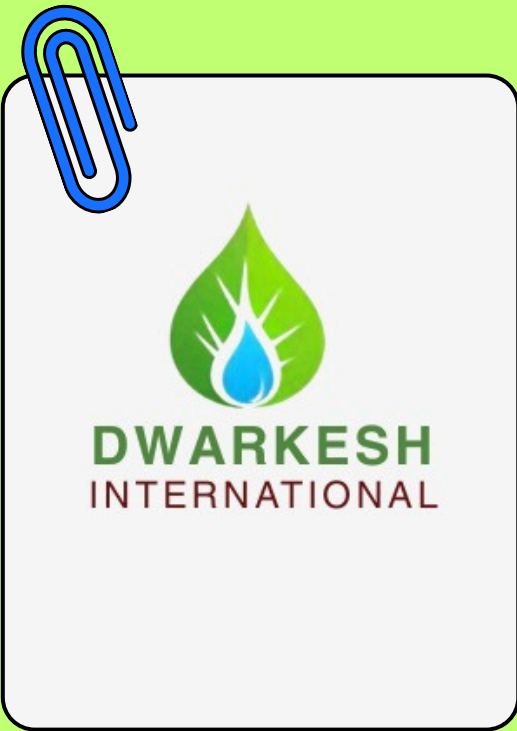
## MATERIALS OF CONSTRUCTION FRP

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• FRB – Bisphenol Resin</li> <li>• FRV – Vinyl Ester Resin</li> <li>• FRVS – Super Vinyl Ester Resin</li> <li>• FRE – Epoxy Resin</li> <li>• CPVC – Chloropolyvinylchloride</li> <li>• HDPE – High Density Polyethylene</li> <li>• PVDF – Polyvinylidene fluoride</li> <li>• FEP – Fluorinated ethylene propylene</li> <li>• PFA – Polyfluoroalkoxy</li> </ul> | <ul style="list-style-type: none"> <li>• FRD – Derakane Resin</li> <li>• PP – Polypropylene</li> <li>• PPGL – Polypropylene Glass Lining</li> <li>• PPH – Polypropylene Homo Polymer</li> <li>• PVC – Polyvinylchloride</li> <li>• ECTFE – Ethylene Chlorotrifluoro Ethylene</li> <li>• PTFE – Polytetrafluoroethylene</li> <li>• Acid Proof Brick Lining</li> <li>• Lead Lining</li> <li>• MS+FRP, MS+PP, MS+PVC, MS+PVDF, etc.</li> </ul> |
|---|---|

## OUR PRODUCTS ARE USED IN

- |   |   |  |
|---|---|--|
| <ul style="list-style-type: none"> <li>• Chemicals Industries</li> <li>• Pharmaceuticals Industries</li> <li>• Petrochemicals Industries</li> <li>• Agrochemicals Industries</li> <li>• Fertilizers Industries</li> <li>• Power Plants</li> <li>• Steel Plants</li> <li>• Effluent Treatment Plant</li> </ul> | <ul style="list-style-type: none"> <li>• Sewage Treatment Plant</li> <li>• Pickling Plants</li> <li>• Pulp &amp; Paper Plants</li> <li>• Textile Industries</li> <li>• Zinc &amp; Copper Smelter Plant</li> <li>• Civil &amp; Computer Engineering</li> <li>• Road &amp; Traffic Division</li> <li>• Automobiles &amp; Train</li> </ul> | <ul style="list-style-type: none"> <li>• Air Pollution Control Equipments</li> <li>• Laboratory Furniture Systems</li> <li>• Exhaust Systems</li> <li>• Chemical Process Plants</li> <li>• Oil &amp; Gas</li> <li>• Cement Plant</li> <li>• Process Pipes &amp; Fittings</li> <li>• Aerospace Divisions and Many more</li> </ul> |
|---|---|--|







# Dwarkesh International

Manufacturer & Exporter of FRP/GRP Composite Manhole Covers, Recess Manhole Covers, STP Bio Digester Tank Covers, Gully Gratings, Moulded Gratings, Water Tank Covers, FRP L-Angles & Railings.

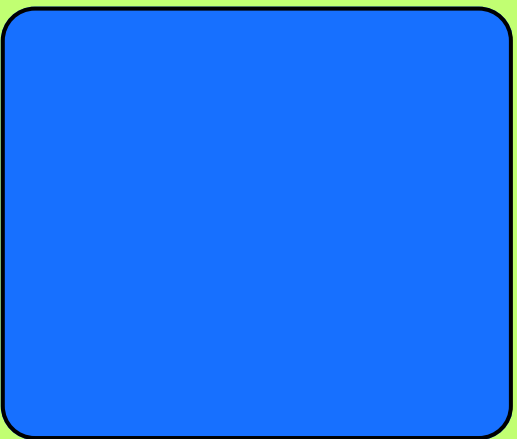
**CONTACT**

 7350006600 / 9322889638

 dwarkeshint07@hotmail.com

 **ADDRESS**

107, St. Patrick Town Society,  
Behind Vijay Sales, Solapur  
Road, Hadapsar, Pune - 411013



## LEADING MANUFACTURER & EXPORTER OF FRP/GRP COMPOSITE SOLUTIONS

Dwarkesh International stands at the forefront of manufacturing and exporting a wide range of premium FRP (Fiberglass Reinforced Plastic) and GRP (Glass Reinforced Plastic) composite products. With a dedicated focus on quality and innovation, we offer a comprehensive array of solutions tailored to meet the demands of both industrial and residential sectors.

### OUR PRODUCT PORTFOLIO INCLUDES:

- FRP/GRP Composite Manhole Covers: Robust, lightweight, and corrosion-resistant covers designed for durability and safety, suitable for both urban and rural infrastructure.
- Recess Manhole Covers: Perfectly engineered for easy installation and long-lasting performance in demanding environments.
- STP Tank Covers: Specially designed covers for Sewage Treatment Plants, providing protection against environmental factors while ensuring optimal performance.
- Gully Gratings & Moulded Gratings: Highly durable and efficient grating solutions, ideal for stormwater drainage and wastewater treatment facilities.
- Water Tank Covers: Custom-built covers for water storage tanks, ensuring hygiene, durability, and weather protection.
- FRP L-Angles & Railings: Strong, non-corrosive, and easy-to-install L-angles and railings, ideal for both industrial applications and safety barriers.