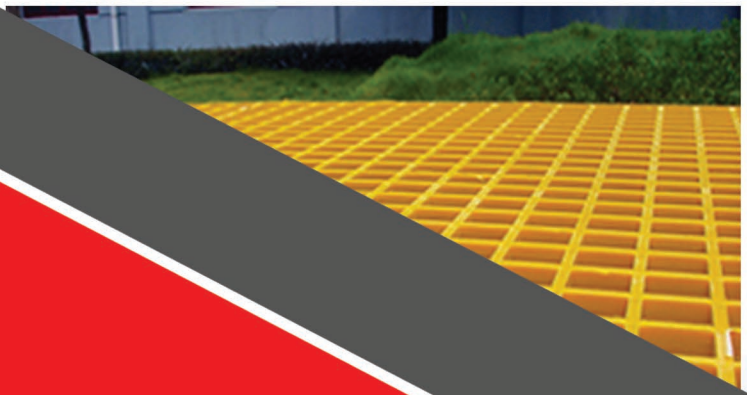
FARATEC

FARATEC FRP CATALOGUE
Pultruded FRP Products



- **FATAREC Pultruded FRP Products**

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1. FATAREC Pultruded FRP Products

Considering the increasing need of chemical, oil, gas , electricity and construction industries to use durable and economical products, the pultruded products (GRP Glass/Fiber Reinforced Plastic) under FARATEC Brand, is a comprehensive and effective solution for Iran's economical productivity.

Pultruded FRP Products include profile, beam, rebar, cable tray, handrail, greeting etc...

The pultrusion production system is one of the fastest methods for producing composites reinforced by continuous fibers by which different composite profiles can be produced with high speed. Because high percentages fibers and engineering design, the manufactured products with this method have very high strength, light weight, long life time especially under chemical conditions.

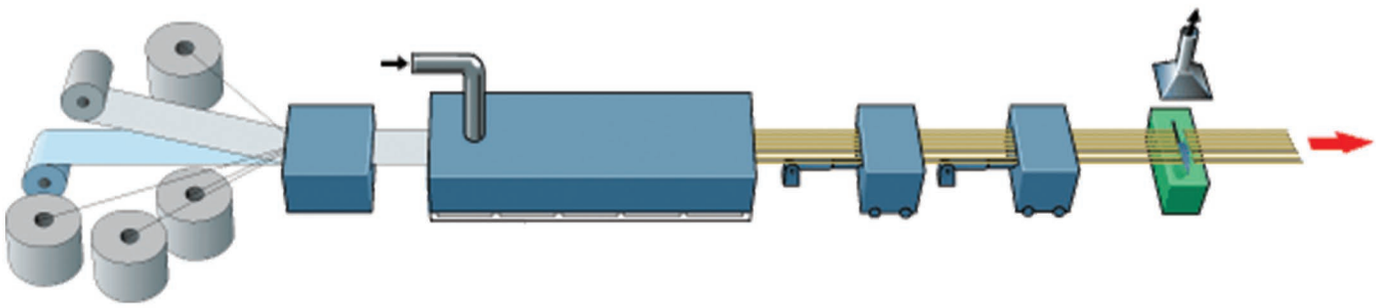
Todays, FRP products are increasingly popular in the world due to their light weight and high strength.

Pultruded products

2. Pultrusion Industry

Pultrusion Production Process

Pultrusion is a continuous process for manufacturing composite materials with constant cross-section. In the standard pultrusion process the reinforcement materials like fibers or woven or braided strands are impregnated with resin, possibly followed by a separate preforming system, and pulled through a heated stationary die where the resin undergoes polymerization. After this stage, the products can be cut in different sizes. One of the advantages of this method is that high amount of fibers is used , so the final product has very high tensile and compressive strength.



FRP PROFILES

3. FARATEC FRP/GRP Profiles

FRP profiles can be manufactured in different cross-sections. Using pultrusion method for producing composite profiles can results in high resistance to corrosion and lower weight in comparison with metal profiles.
Advantages of Composite Profiles

Light Weight: About %30 lighter than aluminum and %70 lighter than steel.

Non-conductivity: Despite steel, aluminum and wood (with humidity), FRP Pultrusions are electrical insulation.

Electromagnetic Waves: EMI/RFI Waves can pass through Pultrusion Profiles but metal profiles like aluminum and steel can be detected by radars.

Anti-corrosion: composite profiles are not degraded like wood, not become mouldy and not corroded like steel

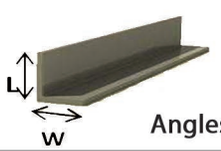
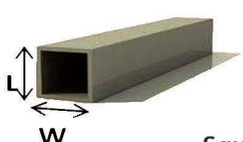
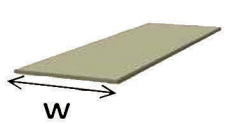
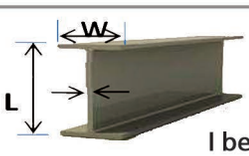
High Strength: these profiles have high special strength, stability and stiffness. The profiles have high efficiency under intensive strikes and alternative forces like wind.

FRP PROFILES

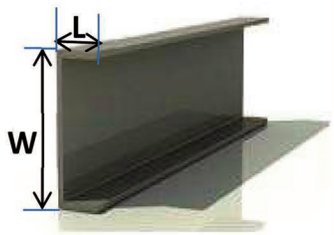
4. Different Types of Composite Profiles:

FARATEC Company produces different GRP composite profiles such as Angle, square, flat strip, I shape beams, U channel, round tube, solid rods,…
Meanwhile, the company can manufacture molds to customize its composite profiles products as required by customers.

Dimensional Thickness of Composite Profiles

Profile	Length(mm)	Width(mm)	Thickness(mm)
 Angles	40 50 75 100	40 50 75 100	5 6 10 10
 Square	25 30 38 48 50 70 70	25 30 38 48 50 30 50	3 3 4 4 4 3 4
 Flat STRIP		7 8 10 33 40 44 50 46 70 87	4 5 3 10 10 10 10 10 10 10
 I beams	150 38.3 44.5 25.5	126 15 15 15	10 4 4/5 4

FRP PROFILES

Profile	Length(mm)	Width(mm)	Thickness(mm)
 U channel	30 50 40 40 40 40 100 110 30 200	50 50 100 100 150 150 200 220 265 280	5 3 10 6 10 6 3 5 6.6 5
Solid Rods			

FRP PROFILES

Composite Pipe	Inside Diameter(mm)	Outside Diameter(mm)
Round tube	4 3 4 4 8 10 8 12 14 16 20 12 14 17 20 22 24 20 27 30 32 36 38 40 38 40 45 43 45 62 100 104 108	7 8.5 8.5 12 12 16 20 20 20 20 24 26 26 26 26 30 30 32 32 38 38 46 46 46 50 50 50 52 52 72 116 116 116

FRP PROFILES

Physical, Mechanical and Electrical Properties of Composite Profiles

Property	Test Method	Unit	Value
Density	ASTM D-792	gr/cm^3	2
Water Absorptivity rate	ASTM D-570	%	0.2-0.6
Tensile Strength	ASTM D-638	MPa	200-600
Bending Strength	ASTM D-790	MPa	460
Compressive Strength	ASTM D-695	MPa	547
Di electrical Strength	ASTM D-149	Kv/mm	13
Elongation at rupture	ASTM D-3916	%	2.5
Hardness	ASTM D-2583	Barcol	45-70
Impact Strength	ISO 179	Kj/m^2	279
Thermal Expansion Coefficient	ASTM D-696	$10^{-6}/^{O}C$	4-5
Flame Spread	ASTM E-84		25MAX

FRP PROFILES

5. Comparison of Composite & Steel Profiles

Property	Composite	Steel
Resistant to Corrosion	Profiles are manufactured using 3 types of resin: polyester , vinyl ester or epoxy Final product is highly resistant to different chemicals	Corrosion, rust and degrading risks
Weight	¼ of Steel	Needs some tools for transportation
Conductivity	Low conductivity low thermal conductivity 4(BTU/SF/HR/F/1N)	Conductor, Possible Electrical Shock
Resistance	High resistance. Higher longitudinal stress than steel. CW=7 ksi,30ksi	Homogeneous Tensile strength : 60ksi Efficiency Resistance: 36 ksi
Stiffness	29 MSi	Bending Module :29 Ksi Tensile Module : 29 Mpa
Compressive Strength	The embedded glass wool in profile distributes load pressure and makes it resistant to pressure and compression	May be permanently re-shaped under compression
Waves Passing	Electromagnetic and photochemical waves can pass through it	Makes interference to Electromagnetic and photochemical waves
Tolerance	Color paste added to resin results in self-coloring of profile in different colors	Coloring and re-coloring are needed
Easy Installation	Easy installation due to its light weight	Often needs welding and CNC and special tools for set up and installation
Cost	Total costs are reduced due to lower installation and maintenance costs.	Lower initial costs

FRP REBAR

6. FRP/GRP Rebar

FRP rebars are similar in shape with conventional ones but they are manufactured with very high resistant fiber glass and a type of polymer resin. FRP composite rebar is used in many concrete structures as a suitable alternative for steel ones.
FRP composite rebar is non-electrical and non-magnetic resistant against corrosion. It can be used to avoid electromagnetic waves interference and corrosion. Additionally, their high tensile strength makes them a good choice for concrete structures.

FRP REBAR

7. Applications of FRP/GRP Rebar

The composite rebar is suitable for using in the structure with high risk of corrosion such as marine structures, docks, bridge deck, and structure which are subject to defrosting salts. Due to its non-magnetic property, FRP rebar can be used rather than steel ones for sensitive equipment such as hospitals electromagnetic fields.

FRP Redbars can be used for the following items:

- Waste water facilities such as treatment plants , clarifiers, manholes , grease trap
- Concrete pipes and canals for transferring sewage, industrial waste waters and chemicals
- Concrete structures of marine and offshore
- Near MRI structures in hospitals and clinics
- Upper layer rebar of deck , bridges in cold regions and reinforced concrete floor
- Temporary concrete walls in soft eye
- Nailing and soil reinforcement
- Underground and water piles
- Culvert and water transfer concrete canals
- GRC panels
- Fabricated walls , columns and foundations , fencing and landscape
- Electrical beams and power transmission towers
- Fabricated power substations rooms
- Parking floor and industrial salons
- Concrete Dropped ceiling and floor
- Cooling towers

FRP REBAR

8. FRP/GRP Composite Rebar Size

Diameter (mm)	Length (m)
4	50 (portable Roll)
6	50(portable Roll)
7	50(portable Roll)
8	50(portable Roll)
10	50(portable Roll)
12	12 Branch
14	12 Branch
16	12 Branch
18	12 Branch
20	12 Branch

FRP

FRP GRATING

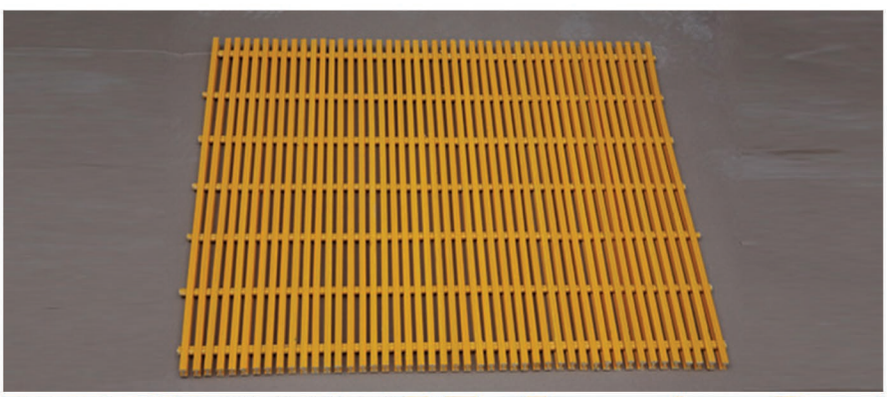
9. FRP/GRP Grating

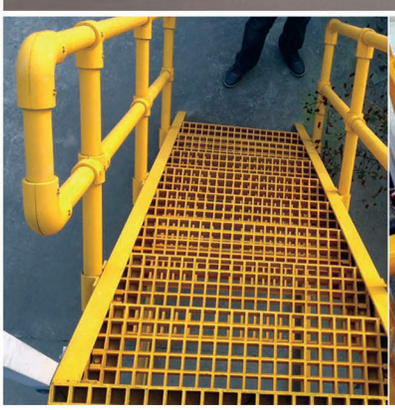
FRP/GRP Grating can be used in different fields such as flooring, protective panels, urban/ industrial canals covers, stairs, dropped ceiling, bridges and pass ways. The main application of grating is in places where metal cannot be used due to high humidity or corrosion.

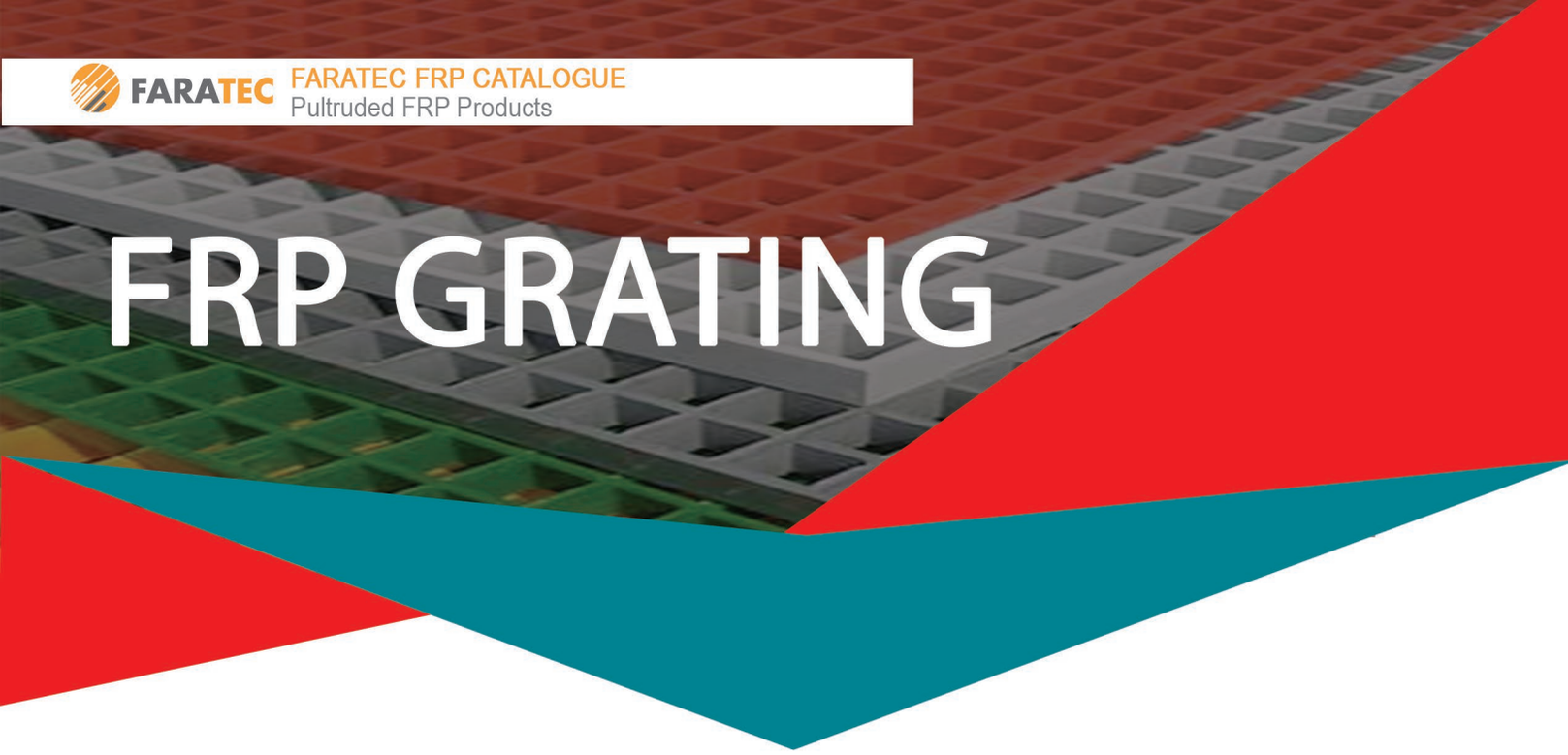
Main Applications:

- Gas and oil platforms (marine & offshore)
- Offshore structures
- Vessels
- Drilling equipment
- Oil & petroleum industry
- Warehouse equipment
- waste water treatment plants
- chemical industries
- power plants

GREETING FRP







FRP GRATING

10. Major Properties of Grating

- Corrosion Resistance: Todays, corrosion is a big challenge for cost and depreciation in most industries. The composite gratings have high resistant against corrosion factors including different range of PH values.

- Permanent anti-slip Surface

  The gratings surface can be designed as permanent anti-slip so that they will be resistant against moisture, freezing, grease and even oil or other special materials in long term. These anti-slip surfaces are in accordance with DIN51 Class R13-V10 Standard.

- Isolation and resistant against fire

  These gratings are non-magnetic and isolator so the y have the highest thermal isolation properties. High resistant against fire and lowest smoke emission are the main properties of these gratings.
  Class M1/F1, M1/FO, M2/F1-ASTM-E-84.

- Light Weight

  Light weight is one of the other properties of gratings. In comparison with aluminum and steel, they are lighter 12-28 kg/m3.

- Considerable Ease of Installation & Maintenance

  These gratings can be customized in size based on related standards. Light weight, possibility of fast cutting in-site is an advantage which considerably reduces installation costs. Non-presence of metal parts in these gratings causes no edge damage on cutting process which in turn reduces maintenance and repair costs to zero.

FRP LADDER

11. FRP/GRP Cable Tray and Ladders

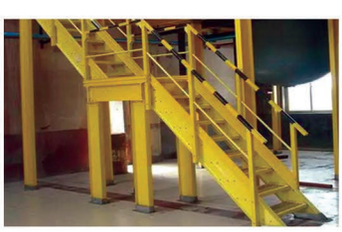
The FRP/GRP Cable Tray and Ladders are manufactured using Patrusion process based on NEMA FG1 Standard.

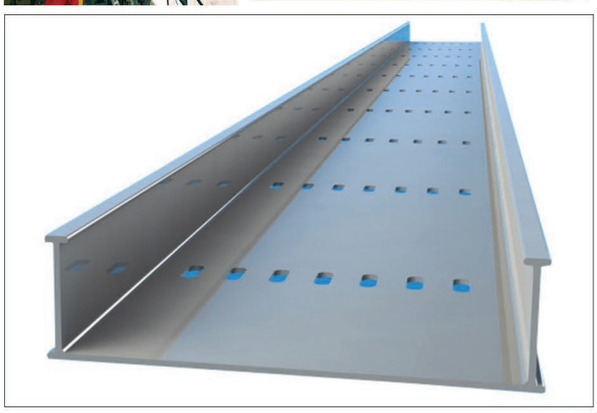
Applications

The applications of FRP/GRP Cable Tray and Ladders include (but not limited to) chemical treatment factories , offshore and marine stations , power and energy equipment, tunnels , marine industries, metallurgy industries, petroleum and gas industry, building and construction industry, railway, telecommunications and electrical industries.

Advantages

- Resistant against chemical agents and corrosive fluids
- Resistant against corrode (rust)
- Very high stability for UV Radiation
- Resistant to flame and self-firefighting property
- Isolator
- Non-magnetic anti-shock
- Anti-spark
- Lower light than metals
- No maintenance cost
- Ease of installation and low cost installation , cutting and drilling
- Resistant in temperature ranges -40-1600c depends on its mixture
- High strength
- Durability





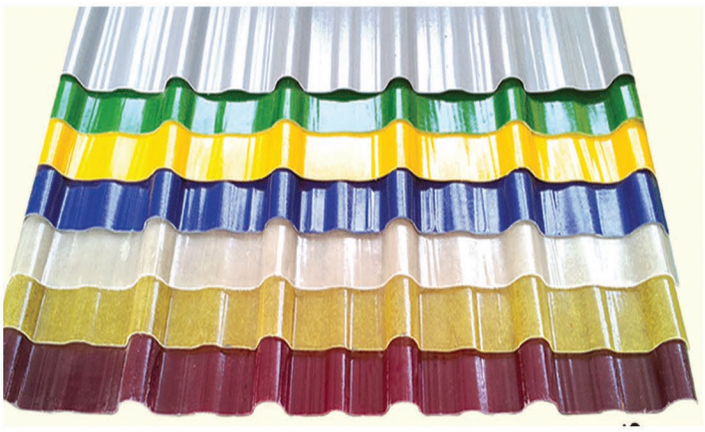
FRP SHEET

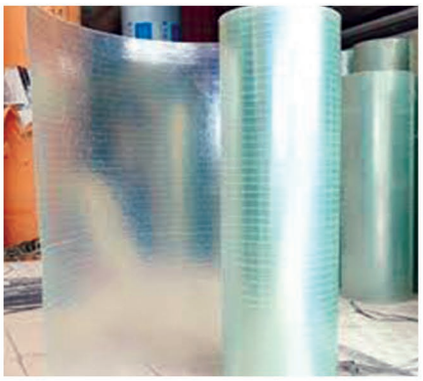
12. FRP Sheets

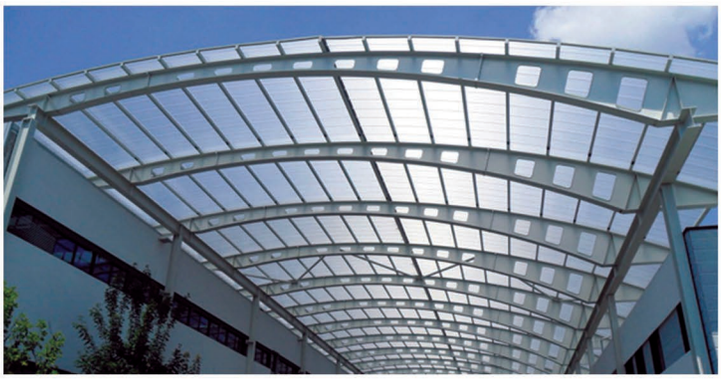
Composite sheets are a combination of non–saturated polyester resin and fiberglass in which the fiber glass is used for applying mechanical resistant and consumable resin is used for chemical resistance, prevention of destroying, rubbing and tearing. FRP sheets are mostly used for parking shelter, greenhouse roof, outdoors and indoors and official partitioning etc…

Advantages

- Producible in different thicknesses ad widths
- Resistant against different environmental conditions and UV Radiation
- High strength , fast installation , color stability and wash ability
- Low expansion and thermal conductivity coefficients







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