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Product Technical Data Sheet

Terra Tech

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GLASS FIBER

1. Identification of the product

Name: Terra Tech Glass Fiber Rebar.

Product Number: Foreign Trade (Export Only): 3815xxxxxx

2. Products Description:

Glass fiber rebar is a reinforcing bar produced from glass fiber impregnated with resin matrix, GFRP rebar successfully substitutes steel rebar in reinforcement of concrete structures. Products Produced in diameters from 4mm – 42 mm. (Ø= 4mm to Ø= 42mm)

3. Features And Benefits:

Glass fiber rebar has following benefits over steel rebar:

- No corrosion
- Cheaper than steel rebar
- Eight times lighter approximately
- Three times stronger approximately
- Has low thermal and low electrical conductivity
- Rust free and more durable
- **Easier to transport and handle**

4. **Technical Characteristics**

Parameter	GFRP Value, not less than
Tensile Strength, MPa	1.000 – 1.300
Modulus of elasticity, Mpa	50.000
Density, kg/m3	1.9-2.0
Ultimate elongation,(Relative extension) %	2,2
Temporary tensile strength, MPa	From 800
Coefficient of linear expansion αt*10-5/°C	9-12
Ultimate compression strength, MPa	300
Decrease in tensile strength after aging in alkaline medium,%, not more than	25%
Elongation, %, not more than	2.3
Yield strength, N/mm²	not rated
Electrical conductivity	Non-electro conductive dielectric
Thermal conductivity	Non – Transparent(0,35)
Environmental friendliness	No harmful and toxic substances emission
Corrosion & chemical resistance	Non-corroding material, 1st group of chemical resistance, including the alkaline environment of concrete
Fire-resistance	Calculated parameter (depends on the thickness of concrete, support, protection)

5.Handling and Transportation

- Use fine blade saw, grinder or diamond blade for field cutting of fiberglass rebar.
- Plastic or metal wire or clips can be used to fix and tie rebar. Support chairs are used to provide required concrete layer.
- A work with our reinforcement is significantly easier than with steel reinforcement. In order to cut the rods of the required length, it is recommended to use an angle grinder, which allows you to get an intact and unreformed cut of the rod.
- To connect the rods to each other, both binding wire and plastic clips / clamps can be used.

6.Storage

- The Glass Fiber Rebar is stored in horizontal position on racks or specially designated areas for storage, in unheated or heated warehouses no closer than 1 meter from heating appliances.
- For long-term storage, the reinforcement must be protected from UV exposure and mechanical damage.

7.Packing

Due to rebar properties, it can be twisted into coils without losing its strength characteristics, Glass fiber rebar can be supplied as follow:

. In coils 50m or 100m – for up to 10mm diameter)
. In rods 12m or 6 m (for any diameter) in bundles of 10 or 25 Other lengths are available upon request.

Diameters of rebar	packaging	Length of bar	Quantity of bars in a packaging	Meters in a coils
Ø 4 mm	bars / coils	up to 12 meters	50	up to 100 meters
Ø 6 mm	bars / coils		50	
Ø 8 mm	bars / coils		50	
Ø 10 mm	bars / coils		25	
Ø 12 mm	bars / coils		15	up to 50 meters
Ø 14 mm	bars		10	-//-
Ø 16 mm	bars		5	-//-
Ø 18 mm	bars		5	-//-
Ø 20 mm	bars		5	-//-
Ø 22 mm	bars		5	-//-
Ø 24 mm	bars		5	-//-
Ø 26 mm	bars		5	-//-
Ø 28 mm	bars		5	-//-
Ø 30 mm	bars		5	-//-

8. Replacement Table Metal Rebar on GFRP Rebar

GFRP REBAR			METAL REBAR		
Diam., mm	Wight 1 m, kg		Diam., mm	Wight 1 m, kg	Quantity in 1 ton, m
4	0,024		6	0,3	4 504,5
6	0,054		8	0,4	2 531
7	0,086		10	0,6	1 621
8	0,096		12	0,9	1 126
10	0,145		14	1,2	826
12	0,200		16	1,5	633
14	0,300		18	1,6	500
16	0,460		20	2,0	405
18	0,560		22	3,0	335
20	0,650		25	3,9	295
22	0,730		28	4,8	207
24	0,860		32	6,3	158

The table for replacing metal rebar on GFRP rebar is used in non-bearing structures

Because the elasticity modulus of GFRP rebar, then in case of using GFRP rebar in low-duty and ground level structures, you no need to make additional calculations for the design and bigger steel rebar is replaced by smaller GFRP rebar (i.e. Ø = 12 mm steel is replaces by Ø = 8 mm GFRP) due to higher tensile strength of GFRP rebar.

GFRP can be used in any other structures but additional calculations for design should be done.

9. Fields of Applications

- Fiberglass rebar is intended for:
- Slab on grade applications (parking slabs, sidewalks, drive-ways, paving etc.)
- Masonry reinforcement
- Precast and architectural concrete reinforcement
- Road construction
- Marine construction etc.

. In concrete frames of buildings and structures for various purposes;
. For light and heavy concrete (foam concrete, cover slabs, floor slabs, and monolithic foundations).
. Using layered brickwork; As anchors for fastening external thermal wall insulation for buildings.
. In foundations below the grade level; As meshes and bars in structures.
. As flexible bracings for three-layer stone walls of civil, industrial, and agricultural buildings and structures where such walls include a base layer, a veneered layer, and a layer of rigid insulation.
. Strengthening the shoreline.
. Construction of maritime and port facilities.
. Installation of drainage, reclamation, and sanitation networks.
. Installation of the roadbed and fencing structures.
. Construction of research centers and medical institutions that may require the use of equipment that is sensitive to electromagnetic oscillations.
. Creating hydraulic structures, road construction, reinforced concrete products.

Material properties:

High corrosion resistance:

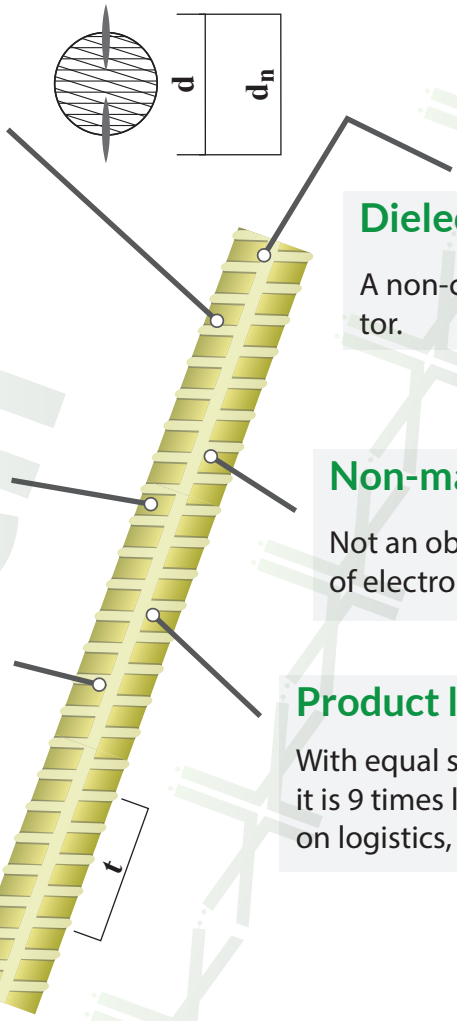
Not subject to corrosion, allowing to reduce the protective layer of concrete.

High tensile strength:

Composite reinforcement is 2.5 times stronger in tensile than steel reinforcement of class AIII.

High chemical resistance:

Composite reinforcement is resistant to chlorides, acids and chemicals, it can be used in acid and alkaline environments.



Dielectric:

A non-conductive electrical insulator.

Non-magnetic:

Not an obstacle to the penetration of electromagnetic waves.

Product lightness:

With equal strength replacement, it is 9 times lighter, what let saving on logistics, handling operations.

No thermal conductivity:

Composite reinforcement does not conduct heat and, in comparison with steel, it does not lose its properties at very low temperatures. The coefficient of thermal expansion is similar to the coefficient of concrete, and this prevents damage caused by changes in temperature. The composite reinforcement has more than a hundred times lower thermal conductivity than steel Rods.

Emergency telephone

EGYPT +2 (247) 30-666

Information prepared

Prepared "Terra Tech Environmental Solutions" LLC, Tel ./fax: + 2 (247) 30-666

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Contact Us Now

www.terratech.world
+20 1157700785
+20 1067884098
info@terratech.world

Factory: Investment Zone Met Gamr City
Office: 4A Building, 3rd Floor
Nasr City, Cairo, Egypt