

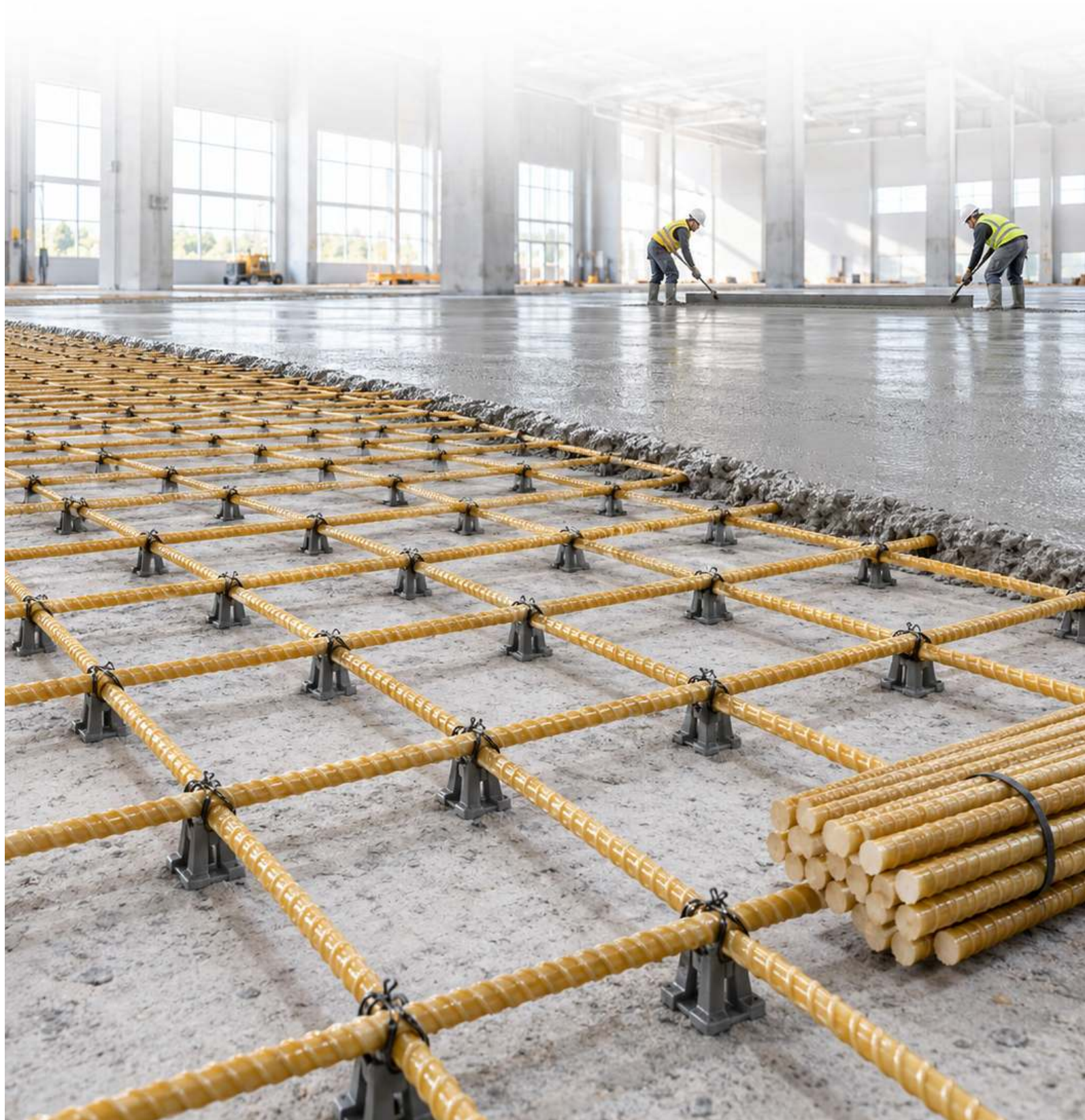
FIBERONEX

COMPOSITES



PRODUCT BROCHURE

BUILDING *The* FUTURE OF REINFORCEMENT



ABOUT US

At **FIBERONEX**, our journey in the field of Glass Fiber Reinforced Polymer (GFRP) reinforcement began in 2021. Since then, we have been focused on understanding the technology, applications, and evolving potential of advanced composite reinforcement solutions for the construction industry.

With a strong interest in innovation and modern construction materials, we aim to contribute to the growing adoption of GFRP rebars across India. We believe that the future of infrastructure lies in exploring smarter, durable, and corrosion-resistant reinforcement alternatives that meet the changing needs of the construction industry.

Our approach is built on technical understanding, product awareness, quality-conscious practices, and a commitment to building lasting relationships with our customers, contractors, engineers, and industry partners.

At **FIBERONEX**, we are working toward establishing a trusted presence in India's GFRP reinforcement market by combining industry knowledge with a forward-looking vision for advanced composite materials.

As we continue to grow, our ambition is to make **FIBERONEX** a recognized name in the GFRP industry, contributing to the development of reliable and innovative reinforcement solutions for the infrastructure of tomorrow.

VISION

To become one of India's most trusted and recognized names in GFRP reinforcement by advancing composite technology, strengthening infrastructure solutions, and setting higher benchmarks for quality and reliability.

MISSION

To deliver dependable GFRP rebar solutions through consistent quality, technical excellence, transparent business practices, and responsive customer support — while building the capabilities to advance towards manufacturing, innovation, and sustainable infrastructure development.



OUR CORE VALUES



QUALITY WITHOUT COMPROMISE

We prioritize quality-conscious practices and dependable products to support the evolving needs of modern construction.



INNOVATION WITH PURPOSE

We embrace advanced composite technologies and continuously expand our understanding of GFRP reinforcement to support smarter construction solutions.



INTEGRITY AND TRANSPARENCY

We believe in honest communication, responsible business practices, and building trust through transparency and accountability.



TECHNICAL EXCELLENCE

We value technical knowledge, product understanding, and continuous learning to help our customers make informed decisions.



CUSTOMER COMMITMENT

We focus on understanding customer requirements, providing dependable support, and building long-term professional relationships.



SUSTAINABLE PROGRESS

We aim to contribute to the development of durable infrastructure by promoting suitable advanced reinforcement alternatives and responsible material choices.



STRENGTH THROUGH RELIABILITY

We strive to build lasting confidence in Fiberonex through consistency, dependable service, and a long-term commitment to our industry.

PILLARS OF

Fiberonex GFRP Rebars



**Corrosion
Resistant**



**Water
resistant**



Stronger



**Less thermal
expansion**



Lighter



Durable



**Zero
Maintenance**



**Lower installation
cost**



**Longer Life
Span**



**Easy site handling
& easy cutting**



Eco Friendly



**Faster and safer
installation**



Dielectric



**Savings in
overlapping cost**

TECHNICAL COMPARISON

FIBERONEX Rebar vs TMT Steel Rebar

PROPERTY	UNIT	FIBERONEX REBAR	TMT STEEL REBAR
Tensile Strength	Mpa	1100>	415 – 600
Modulus of Elasticity	Gpa	60>	200
Bond Strength	Mpa	16	14
Shear Strength	Mpa	190	120
Length	Meter	Upto 100	12
Ultimate Strain	%	1.5 – 2.5	0.5 – 0.8
Density	g/cm ³	1.9 – 2.1	7.85
Compression	Mpa	450	500
Thermal Conductivity	W/mK	0.3 – 0.5	45 – 60
Chemical Resistance	-	Excellent	Limited
Bond with Concrete	-	Excellent	Excellent
Maintenance Requirement	-	Very Low	High



TABLE OF SUBSTITUTION BY TENSILE STRENGTH

FIBERONEX GFRP REBAR			METAL REBAR	
				
Diameter	Weight (Per 12 meter bar)		Diameter	Weight (Per 12 meter bar)
03 mm	0.204	=	----	----
3.5 mm	0.276	=	----	----
04 mm	0.360	=	06 mm	2.75 kg
05 mm	0.528	=	----	----
06 mm	0.780	=	08 mm	4.74 kg
07 mm	0.900	=	10 mm	7.40 kg
08 mm	1.356	=	12 mm	10.65 kg
10 mm	2.040	=	14 mm	14.52 kg
12 mm	2.880	=	16 mm	18.93 kg
14 mm	3.240	=	18 mm	24.00 kg
16 mm	5.124	=	22 mm	35.76 kg
18 mm	6.276	=	25 mm	46.22 kg
20 mm	8.076	=	28 mm	58.02 kg
22 mm	9.804	=	32 mm	75.79 kg
25 mm	11.676	=	40 mm	118.52 kg
32 mm	16.320	=	----	----

NOTE : Weight of individual bars may vary within an allowable tolerance of $\pm 2\%$.

ATTRIBUTES OF

FIBERONEX GFRP REBARS

Corrosion Free Application

- Marine precast walls
- Pipe sleepers / railways sleepers
- Bridge decks & approach slabs
- Roads and infrastructure
- MSE walls
- Warehouse / industrial floorings
- Building foundations, basements, retaining walls, compound walls
- Coastal regions, parking lots, swimming pools
- Underwater structures
- RCC Roads

Nonconductive/Nonmagnetic applications

- Airport compass calibration pads
- Hospitals
- Power plants and transformer sites
- Light rails

High chemical resistance & industrial applications

- Industrial applications
- Sewage treatment plants
- Agricultural facilities
- Industrial facilities
- Chemical plants
- ETP plants
- Culverts
- Storm water drain channels

Other Applications

- Energy efficient buildings
- Cold storage warehouses

APPLICATIONS OF

FIBERONEX GFRP REBARS



RCC roads



Pavements



Drainage



Crash barriers



Friction Slab



Industrial Floorings



Parking's



Concrete slabs



Chemical plants



Precast



Foundations



Walls

APPLICATIONS OF

FIBERONEX GFRP REBARS



Water & waste water treatment plants



Dams, sea walls & marine applications



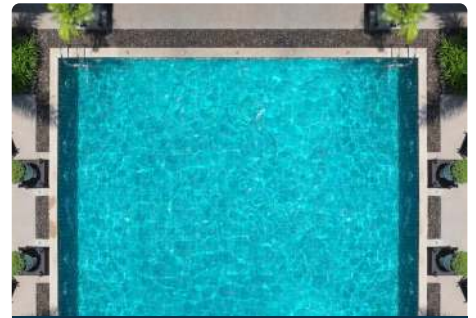
Bridge decks



RCC floorings built in or close to the sea



Highway construction



Swimming pools



Barrier walls



Underground water tanks



Tunneling & temporary reinforcement



Approach slab



Hospital MRI areas

GFRP REBARS — TECHNICAL & PRODUCT FAQs

01. What are FIBERONEX GFRP Rebars, and how are they different from conventional steel reinforcement?

FIBERONEX GFRP Rebars are non-metallic composite reinforcement bars manufactured using high-strength glass fibres embedded in a polymer resin matrix. Their engineered external surface is designed to develop effective bond with concrete.

Compared with conventional steel reinforcement, GFRP offers several important characteristics, including high corrosion resistance, low density, high tensile strength-to-weight ratio, electrical non-conductivity and non-magnetic behaviour.

GFRP and steel, however, have different mechanical properties. GFRP generally exhibits predominantly linear-elastic behaviour up to failure and has a lower modulus of elasticity than steel. Therefore, GFRP should be designed using its own verified material properties and applicable GFRP design provisions rather than being treated as a direct one-to-one replacement for steel.

02. Can FIBERONEX GFRP Rebars be used together with steel reinforcement?

Yes. FIBERONEX GFRP Rebars can be used in combination with steel reinforcement where permitted by the structural design and project specifications.

Since GFRP and steel have different stiffness, tensile behaviour, thermal characteristics, durability properties and detailing requirements, the reinforcement arrangement should be determined by a qualified structural designer.

The use of both materials within the same project should therefore be based on the applicable design provisions, structural requirements and verified material properties.

03. Can FIBERONEX GFRP Rebars be used in earthquake-resistant construction?

GFRP reinforcement may be considered for appropriate structural applications, but it should not be described universally as being “better than steel” for earthquake-resistant construction.

Seismic structural design involves several parameters, including strength, stiffness, shear capacity, anchorage, confinement, cyclic response, detailing and the required structural performance.

The suitability of FIBERONEX GFRP Rebars for a seismic application should therefore be established through project-specific structural design and the applicable design provisions.

04. What should be used to tie and secure FIBERONEX GFRP Rebars during installation?

FIBERONEX GFRP Rebars should be securely positioned using suitable tying materials and reinforcement-support systems that do not damage the bar.

Plastic or nylon ties and other suitable non-damaging tying methods may be used where permitted by the project specifications.

The tying system is intended to maintain the correct reinforcement position during concrete placement. It should not damage the bar surface, fibres or engineered surface enhancement.

GFRP REBARS — TECHNICAL & PRODUCT FAQs

05. What are the key advantages and limitations of FIBERONEX GFRP Rebars?

FIBERONEX GFRP Rebars offer several performance advantages for suitable concrete applications:

- Excellent resistance to electrochemical corrosion
- Significantly lower density than steel
- High tensile strength relative to weight
- Non-magnetic characteristics
- Electrical non-conductivity
- Reduced handling weight
- Suitability for many aggressive exposure environments

At the same time, GFRP has specific engineering characteristics that must be considered:

- Lower modulus of elasticity than steel
- Predominantly linear-elastic behaviour until failure
- No conventional steel-like yielding
- Different transverse and shear properties
- Temperature-sensitive polymer matrix
- Generally cannot be field-bent or welded like steel
- Crack control and deflection may influence design

FIBERONEX therefore positions GFRP as an engineered reinforcement solution, not simply as a steel bar with a different material.

06. How does FIBERONEX GFRP Rebar bond with concrete?

FIBERONEX GFRP Rebars are manufactured with an engineered surface profile intended to provide effective mechanical and interfacial bond with concrete.

Bond performance depends on several factors, including:

- Bar surface configuration
- Bar diameter
- Concrete strength
- Development and embedment length
- Concrete cover
- Confinement
- Reinforcement detailing
- Installation conditions

For this reason, GFRP bond behaviour should be established through applicable testing and design provisions rather than simply assumed to be identical to steel.

Relevant References: IS 18256:2023; ASTM D7913/D7913M — Bond Strength of FRP Bars to Concrete by Pullout Testing.

GFRP REBARS — TECHNICAL & PRODUCT FAQs

07. How do FIBERONEX GFRP Rebars perform under fire or elevated temperatures?

GFRP reinforcement should not be considered thermally equivalent to conventional steel reinforcement.

Because GFRP contains a polymer resin matrix, elevated temperatures can affect the resin's mechanical contribution and consequently the performance of the reinforcement system.

Fire performance depends on factors such as:

- Resin system
- Glass-transition temperature
- Reinforcement stress level
- Concrete cover
- Member geometry
- Fire exposure
- Required fire-resistance rating

Therefore, FIBERONEX does not recommend assigning one universal “safe temperature” to all GFRP products. Fire-resistance requirements should be evaluated for the specific product and structural system.

08. Can FIBERONEX GFRP Rebars be bent at the construction site?

Straight FIBERONEX GFRP Rebars should generally not be field-bent like conventional steel reinforcement.

Where hooks, bends, stirrups or other shaped reinforcement are required, these should be manufactured under controlled production conditions according to the specified geometry and applicable requirements.

Unauthorized heating, welding or field bending can adversely affect the reinforcement and should not be performed.

09. Does temperature affect the performance of FIBERONEX GFRP Rebars?

Yes. Temperature can influence the mechanical performance of GFRP reinforcement, particularly at elevated temperatures because the polymer resin matrix is temperature-sensitive.

The applicable temperature range should be evaluated with consideration of:

- Resin system
- Glass-transition temperature
- Sustained loading
- Reinforcement stress
- Environmental exposure
- Concrete cover
- Project-specific service conditions

FIBERONEX product documentation should therefore state temperature-related performance based on verified product testing rather than using an unsupported universal temperature rating.

GFRP REBARS — TECHNICAL & PRODUCT FAQs

10. What type of concrete can be used with FIBERONEX GFRP Rebars?

FIBERONEX GFRP Rebars can be used in suitable reinforced-concrete applications where the concrete mix and structural system meet the requirements of the project.

Concrete selection should consider:

- Required concrete strength
- Exposure conditions
- Durability requirements
- Crack-control requirements
- Concrete cover
- Bond and development requirements
- Structural loading
- Applicable design provisions

The use of GFRP reinforcement does not eliminate the need for proper concrete quality, placement and curing.

For India, IS 18256:2023 specifies the product requirements, while IS 18255:2023 provides test methods for FRP reinforcement. BIS's current laboratory information confirms testing categories under IS 18256 including tensile force, tensile modulus, tensile strain, transverse shear, bond, moisture absorption and alkaline resistance.

Internationally, ASTM D7957/D7957M is the GFRP bar product specification, with associated ASTM methods for tensile properties, transverse shear, bond, alkali resistance and creep rupture.

Approved By



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