

PREMIUM GLASS FIBER REINFORCED BARS

PGFRB

GFRP REBAR
TECHNICAL PRODUCT CATALOGUE

Engineered in Pakistan. Built for the World.

Preliminary Edition • September 2026

A preliminary technical document prepared from PGFRB's current production configuration. Mechanical, physical and durability test values are intentionally left pending until laboratory testing and certification are completed.

1. Document Control

This catalogue presents the current product concept, production range and material configuration for PGFRB GFRP Rebar. It is intended for preliminary commercial, technical and project-discussion use. Final declared performance values will be added following completion of product testing and certification.

Company	Premium Glass Fiber Reinforced Bars (PGFRB)
Product	GFRP Reinforcing Bars
Manufacturing location	Karachi, Pakistan
Current product range	DN6–DN35
Glass-fiber roving	4800 Tex
Matrix system	Epoxy-based system; DY-128 resin + MTHPA/DY-013 curing agent
Testing status	Mechanical, physical and durability testing in progress
Certification status	Certification program in progress
Revision	0.1 — Preliminary

Important: The information in this preliminary edition is not a certification of product performance. Project-specific design should be undertaken by a qualified engineer using verified PGFRB test data and the applicable design code or specification.

2. About PGFRB

Premium Glass Fiber Reinforced Bars (PGFRB) is a Pakistan-based manufacturer focused on Glass Fiber Reinforced Polymer (GFRP) reinforcement for concrete construction. With manufacturing operations in Karachi, PGFRB is developing a locally manufactured composite reinforcement platform for Pakistan, GCC, Africa and international markets.

Our objective is to provide a modern reinforcement option for projects where corrosion resistance, low weight, non-metallic properties and long-term durability are important considerations.

Vision

To become a trusted international manufacturer and supplier of composite reinforcement solutions.

Mission

To manufacture consistent, reliable GFRP reinforcement products and develop the technical, testing and quality systems required to serve demanding infrastructure markets.

3. Product Overview

PGFRB GFRP Rebar is a non-metallic composite reinforcement product made from continuous glass-fiber rovings embedded in a polymer resin matrix. The composite combines load-carrying glass fibers with a protective polymer matrix to form a continuous reinforcement bar.

GFRP has a different mechanical behavior from steel. In particular, GFRP is anisotropic and its design properties, stiffness, development length, bend behavior and environmental reduction factors must be considered using the applicable engineering provisions. GFRP should therefore be specified and designed as a composite reinforcement material rather than treated as a direct material-for-material replacement for steel.

Key Product Characteristics

Characteristic	Description
Corrosion resistance	Non-metallic reinforcement that does not rust through the electrochemical mechanism affecting steel.
Lightweight construction	Lower density than steel can simplify handling, transportation and site logistics.
Non-magnetic	Suitable for applications where magnetic interference is undesirable.
Electrical non-conductivity	Useful in selected electrical, medical, transportation and specialized infrastructure applications.
High strength-to-weight ratio	High tensile capacity can be achieved with relatively low material weight; final values are pending testing.
Multiple diameters	Current production configuration covers DN6 through DN35.

4. Material & Manufacturing Configuration

The current PGFRB production configuration uses continuous glass-fiber roving as the primary reinforcement and an epoxy-based polymer matrix system. Supplier documentation supplied for this preliminary catalogue identifies the resin as DY-128 and the curing agent as MTHPA (DY-013).

Material / component	Current configuration
Reinforcement	Continuous glass-fiber roving
Roving specification	4800 Tex
Roving mass used for calculation	Approx. 0.0048 kg/m per roving
Epoxy resin	DY-128
Curing agent	Methyl Tetrahydrophthalic Anhydride (MTHPA), DY-013

The chemical identities above are reproduced from the supplier documents provided for the current production configuration. Final PGFRB formulation ratios and finished-product fiber/resin fractions should be confirmed by PGFRB production records and laboratory testing before publication as certified data.

Manufacturing Process

- 1. Roving preparation** — Glass-fiber rovings are arranged according to the selected bar diameter and production configuration.
- 2. Resin impregnation** — Continuous fibers are impregnated with the polymer matrix system.
- 3. Consolidation & forming** — Impregnated fibers are consolidated and formed into the required bar profile.
- 4. Curing** — The resin system is cured to develop the composite matrix.
- 5. Surface profiling** — The external profile is formed to support mechanical interaction and bond with concrete.
- 6. Cutting & finishing** — Bars are cut to required lengths and prepared for inspection and packaging.
- 7. Quality inspection** — Finished bars are checked against applicable dimensional and production requirements.

5. Product Range & Roving Configuration

The following table is based on the current GFRP rebar glass-fiber roving configuration supplied by PGFRB. The listed weight per meter and roving quantity are production-configuration values and should be verified against finished-bar measurements during quality control.

Product	Nominal Diameter (mm)	Weight / Meter (kg/m)	Recommended Rovings (pcs)
DN6	6	0.055	9
DN7	7	0.075	12
DN8	8	0.097	16
DN10	10	0.150	24
DN12	12	0.220	35
DN16	16	0.390	61
DN18	18	0.500	79
DN20	20	0.610	96

Product	Nominal Diameter (mm)	Weight / Meter (kg/m)	Recommended Rovings (pcs)
DN25	25	0.960	150
DN30	30	1.380	216
DN35	35	1.880	294

Configuration note: The supplier table states that the roving quantity is calculated using 4800 Tex roving and a roving weight of approximately 0.0048 kg/m, with the supplied formula: Weight per meter $\times$ 0.75 $\div$ roving weight per meter. This formula is retained here as a production-reference note, not as a certified finished-product composition.

6. Technical Performance — Testing in Progress

PGFRB is currently undertaking laboratory testing of its finished GFRP rebar. The following fields are reserved for verified product data. They should be populated only after test reports are issued and approved for publication.

Property	Current status	Final publication value
Tensile strength	Testing in progress	To be confirmed
Tensile modulus	Testing in progress	To be confirmed
Ultimate tensile strain	Testing in progress	To be confirmed
Glass-fiber content	Testing in progress	To be confirmed
Density	Testing in progress	To be confirmed
Bar diameter tolerance	QC verification	To be confirmed
Bond / shear performance	Testing in progress	To be confirmed
Water absorption / moisture performance	Testing in progress	To be confirmed
Alkaline / durability performance	Testing in progress	To be confirmed
Thermal / Tg properties	Testing in progress	To be confirmed

Once testing is completed, PGFRB should issue a controlled technical data sheet for each product family or diameter range, including test method, laboratory, test date, sample identification and acceptance criteria where applicable.

7. Standards & Engineering References

PGFRB is developing its testing and technical documentation with internationally recognized FRP reinforcement practices in view. The following references are included as engineering frameworks and test-method references; their inclusion does **not** mean that PGFRB currently claims certification or compliance with them.

ISO 10406-1:2025 — Fibre-reinforced polymer (FRP) reinforcement of concrete — Test methods — Part 1: FRP bars. The current ISO edition specifies test methods for physical, mechanical, durability and long-term properties of FRP bars. The 2025 edition is the current published edition; the 2015 edition has been withdrawn.

ACI CODE-440.11-22 — Building Code Requirements for Structural Concrete Reinforced with GFRP Bars. ACI states that this code covers materials, design and detailing for structural concrete reinforced with GFRP bars, including construction documentation, field inspection and testing, and references ASTM D7957-22 for conforming GFRP bars.

Future certification statement: Once PGFRB testing and certification are complete, this section should be updated to identify the exact standards, test methods, laboratories, certificate numbers and scope that are actually applicable to PGFRB products.

8. Recommended Application Areas

GFRP reinforcement is particularly relevant to concrete structures where corrosion resistance, reduced weight, non-magnetic behavior or electrical non-conductivity are important. Final suitability should always be confirmed by the project engineer and applicable design requirements.

Bridges & flyovers — Bridge decks and components exposed to moisture, chlorides and de-icing environments.

Roads & highways — Concrete pavement and transportation infrastructure where durable non-metallic reinforcement is appropriate.

Marine & coastal structures — Piers, seawalls, waterfront structures and other chloride-rich environments.

Water & wastewater — Tanks, treatment facilities and concrete infrastructure exposed to moisture and aggressive conditions.

Parking structures — Selected concrete elements exposed to water, salts and corrosion risks.

Industrial facilities — Concrete structures where moisture, chemicals or maintenance requirements make corrosion resistance important.

Tunnels & underground structures — Selected applications where non-metallic reinforcement and corrosion resistance are beneficial.

Precast concrete — Potential use in suitable precast components subject to project design and manufacturing requirements.

9. Handling, Storage & Installation

GFRP bars should be handled in a manner that prevents damage to the bar surface and profile. Bars should be supported during storage, protected from unnecessary impact and kept in accordance with the manufacturer's handling instructions.

Preliminary handling guidance

- Store bars on suitable supports to prevent excessive bending or sagging.
- Protect the bar surface from sharp impact, abrasion and uncontrolled cutting.
- Use appropriate lifting and handling methods for bundled bars.
- Keep products identified by diameter, batch and production information.
- Do not weld GFRP bars.
- Do not field-bend bars unless the product and design documentation specifically permits the method.
- Cut bars using suitable tools and procedures specified by the manufacturer.
- Final installation instructions should be based on verified PGFRP product data and the applicable design standard.

10. Quality Control Framework

PGFRB is establishing a quality-control framework covering incoming materials, production parameters, dimensional checks, finished-product inspection and laboratory testing.

Stage	Control focus
Incoming materials	Supplier identification, batch records and material documentation.
Roving	Roving specification, batch identification and production quantity.

Resin system	Material identification, batch control and process records.
Production	Process parameters, line operation and visual consistency.
Finished bar	Diameter, weight per meter, surface/profile and appearance.
Mechanical testing	Tensile and related performance properties after laboratory verification.
Durability testing	Environmental and long-term performance testing as applicable.
Traceability	Batch/lot identification linking raw materials and finished product.

11. GFRP Rebar Compared with Steel

GFRP and steel are different reinforcement materials with different mechanical and physical behavior. The comparison below is intended to explain the main material-level differences and should not be used as a structural design substitution table.

Property	GFRP Rebar	Steel Rebar
Corrosion mechanism	Does not rust through steel-type electrochemical corrosion	Susceptible to corrosion under suitable exposure conditions
Density / handling	Low density; easier manual handling in many applications	High density; heavier handling
Magnetic behavior	Non-magnetic	Magnetic
Electrical behavior	Non-conductive	Conductive
Stiffness	Lower elastic modulus than typical steel; design must account for this	High elastic modulus
Failure behavior	Generally linear-elastic to rupture; no steel-like yielding	Ductile yielding behavior
Design approach	Requires GFRP-specific design provisions	Conventional steel-reinforced concrete provisions

12. Packaging & International Supply

PGFRB is developing its supply capability for Pakistan, the GCC, Africa and worldwide markets. Packaging and shipping configurations can be adapted to order quantity, bar length, container utilization and destination requirements.

Export support can include:

- Bulk project supply
- Distributor and importer orders
- Diameter-specific production
- Custom cut lengths subject to production capability
- Batch and product identification
- Export-oriented packaging
- Commercial and technical documentation for international customers

13. Planned Technical Updates

This preliminary catalogue is designed to be updated as PGFRB completes its testing and certification program.

Item	Update when available
Mechanical properties	Insert verified tensile strength, modulus and ultimate strain by product size/family.
Physical properties	Insert density, fiber content and dimensional tolerances.
Durability	Insert verified environmental and long-term test results.
Bond performance	Insert applicable bond/development data and test method.

Certifications	Insert certificate name, issuing body, number, scope and validity.
Design data	Add engineer-ready tables aligned with the applicable design standard.
Installation guide	Add final cutting, placement, support, lap/development and handling instructions.

14. Technical Disclaimer

This preliminary technical catalogue is based on the production configuration and supplier documentation made available to PGFRB at the time of preparation. Product performance values that require laboratory verification have intentionally not been stated as final specifications.

No statement in this catalogue should be interpreted as a certification, code-compliance declaration, structural design approval or warranty of project performance. Engineers, contractors and project owners should use verified PGFRB technical data, applicable project specifications and the relevant design code when selecting and designing GFRP reinforcement.

PGFRB reserves the right to update product specifications, manufacturing configurations and technical information as testing, certification and production development progress.

15. Contact PGFRB

Premium Glass Fiber Reinforced Bars (PGFRB)

Karachi, Pakistan

Products: GFRP Reinforcing Bars

Current range: DN6–DN35

Markets: Pakistan • GCC • Africa • Worldwide

Website: To be confirmed **Email:** To be confirmed **Phone / WhatsApp:** To be confirmed

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