

# MST-BAR®

## High-Mod GFRP Rebar

### PRODUCT TECHNICAL DATA

MST-BAR® is a higher modulus GFRP (Glass Fiber Reinforced Polymer) Rebar for concrete reinforcement providing a corrosion-proof, high strength replacement for steel rebar. Manufactured by pultrusion, MST-BAR® is made with 100% boron-free ECR Glass Fiber and long lasting Vinyl Ester Resin giving concrete centuries of maintenance-free reinforcement. Replaces plain, epoxy-coated, galvanized, and stainless steel rebar.



### ADVANTAGES

- **Corrosion-proof Reinforcement**  
Zero rust, zero spalling, eliminates costly rehabilitation and maintenance.
- **200+ Years Service Life**  
Engineered to extend the service life of your reinforced concrete for centuries.
- **Quick & Simple Installation**  
Up to 50% labor savings compared to installing traditional steel rebar.
- **Transportation Savings**  
Weighs 25% the weight of steel rebar. One truck of MST-BAR® replaces four truckloads of steel.
- **High Performance in All Climates**  
Stronger reinforcement in freeze-thaw climates and guaranteed longevity in coastal regions.
- **No Waterproofing**  
Eliminates need for costly waterproofing agents and epoxy coating necessitated by rust-prone steel rebar.
- **MST-BEND™ Technology**  
Fastest turnaround time for factory fabricated bent bars. Our proprietary corrugated sleeve achieves any bend possible.
- **Thermal Insulator**  
Increase your structure's energy efficiency.
- **Nonconductive & Nonferrous**  
Ideal for projects with electro-magnetic sensitivity.
- **High Chemical Resistance**  
High alkaline resistance. Impervious to de-icing salts and other harsh chemical attacks.
- **Environmental Sustainability**  
Environmentally friendly manufacturing leaves a fraction of the carbon footprint left by steel mills.
- **High Fatigue Resistance**  
20X higher resistance under cyclical loading compared to traditional steel rebar.

BAR SIZE DESIGNATION	#3 MST-BAR®	#4 MST-BAR®	#5 MST-BAR®	#6 MST-BAR®	#8 MST-BAR®
NOMINAL DIAMETER	0.375 in (10 mm)	0.5 in (13 mm)	0.625 in (15 mm)	0.75 in (20 mm)	1 in (25 mm)
NOMINAL AREA	0.11 in <sup>2</sup> (71 mm <sup>2</sup> )	0.2 in <sup>2</sup> (129 mm <sup>2</sup> )	0.31 in <sup>2</sup> (200 mm <sup>2</sup> )	0.44 in <sup>2</sup> (284 mm <sup>2</sup> )	0.79 in <sup>2</sup> (509 mm <sup>2</sup> )
NOMINAL WEIGHT	0.103 lb/ft	0.185 lb/ft	0.32 lb/ft	0.45 lb/ft	0.8 lb/ft
MINIMUM TENSILE FORCE	16.64 kips (74 kN)	29.67 kips (132 kN)	45.41 kips (202 kN)	64.1 kips (285 kN)	112.18 kips (499 kN)
GUARANTEED TENSILE STRENGTH	145 ksi (1000 MPa)				
ELASTIC MODULUS	8702 ksi (60 GPa)				
TRANSVERSE SHEAR STRENGTH	31.9 ksi (220 MPa)				
GUARANTEED BOND STRENGTH	2900 psi (20 MPa)				
ULTIMATE STRAIN	> 1.7%				
GLASS TRANSITION TEMPERATURE	257 °F (125 °C)				
FIBER CONTENT	≥ 76%				
DEGREE OF CURE	≥ 99%				
MOISTURE ABSORPTION	≤ 0.25% to Saturation				
ALKALINE RESISTANCE	≥ 90% Retention Under Load				

Custom lengths and diameters available.

## APPLICATIONS

Applications include (but are not limited to) the following:

- Commercial Construction
- Coastal & Marine Construction
- Pre-cast Elements
- DOT & Infrastructure
- Waste Water Treatment Plants
- Industrial Warehouse Slabs
- Mining & Tunneling Projects
- Utility Structures & Power Plants
- Telecommunication Construction
- Light-rail Transit Projects
- Thermal Mass Construction
- Parking Structures
- Continuously Reinforced Pavement
- Agricultural Construction
- Concrete Tanks
- Refrigerated Warehouses

## SPECIFICATION COMPLIANCE

MST-BAR® meets the criteria for all of (but not limited to) the following Specifications:

- ASTM D7957 "Standard Specification for Solid Round Glass Fiber Reinforced Polymer Bars for Concrete Reinforcement"
- ACI 440.6 "Specification for Carbon and Glass Fiber-Reinforced Polymer Bar Materials for Concrete Reinforcement"
- CSA S807 GRADE III "Specification for fibre-reinforced polymers"

## DESIGN CODE COMPLIANCE

MST-BAR® meets the criteria for all of (but not limited to) the following Design Codes:

- ACI 440.1R "Guide for the Design and Construction of Structural Concrete Reinforced with Fiber-Reinforced Polymer Bars"
- ACI 440.4R "Prestressing Concrete Structures with FRP Tendons"
- ACI 440.5 "Specification for Construction with Fiber-Reinforced Polymer Reinforcing Bars"
- AASHTO LRFD "Bridge Design Guide Specifications for GFRP-Reinforced Concrete Second Edition"
- CSA S806 GRADE III "Design And Construction Of Building Structures With Fibre-Reinforced Polymers"
- CSA S6 CHAPTER 16 "Canadian Highway Bridge Design Code, Section 16: Fibre-Reinforced Structures."

## QUALITY ASSURANCE & QUALITY CONTROL

MST-BAR® is manufactured in ISO 9001 Certified production facilities. Material Certs are available for every production lot of MST-BAR®. Production lot number and date of manufacture is printed on every bar making traceability easy.

**MSTIBAR**<sup>®</sup>  
COMPOSITE REBAR PRODUCTS

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## ENGINEERING & TECHNICAL SUPPORT

Tuf-N-Lite provides services and resources for contractors, engineers, and structure owners. Find the resource that best fits you and contact us today.



MST-BAR®  
for the Contractor



MST-BAR®  
for the Engineer



MST-BAR®  
for the Owner

### Value Engineering

Interested in using MST-BAR® in your next project? Call your representative with your project details and see how MST-BAR® can keep your job on track and under budget.

### Lunch & Learn

Interested in learning more about GFRP reinforcement design? We want to talk to you! Call and schedule your Lunch & Learn. (remote meetings available)

### Concrete Longevity

What you need to know about the serviceability of your reinforced concrete and how MST-BAR® can substantially increase the life of your structure.

### Jobsite Tech Support

Questions on how to best cut, tie, or place your MST-BAR® on site? Call to speak with an expert and get the most out of your MST-BAR®.

### Peer Review

Join our network of design experts and engineering partners and design with confidence.

### Zero Maintenance Reinforcement

From freeze-thaw weathering to corrosion issues, we have the solution for you. MST-BAR® outperforms traditional steel rebar in every climate and condition providing you with a worry-free foundation.

### Submittal Assistance

Need assistance getting MST-BAR® specified on your project? Let our knowledgeable partners take an item off your checklist.

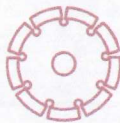
### GFRP Design Software

Accurate calculations and design-specific checks are a mouse click away. Call us and learn how our proprietary software can simplify your workflow.

## HANDLING & SAFE USE



Working with MST-BAR® is quick and simple with best practice guidelines. Always wear gloves when handling MST-BAR® to protect against fiberglass splinters. Direct contact to skin can cause irritation.



Use a diamond blade when field-cutting MST-BAR®. Do not shear the bars. If lap-splicing is necessary, use contact lap splices. Lap length should be no less than 15 inches.

Tie and chair MST-BAR® as you would steel rebar. Tie wire, rebar clips, and plastic zip ties are acceptable methods of securing the bar. Beware of settlement of floating when using MST-BAR® with high slump concrete or when vibrating.

## CONTACT US

To learn more about MST-BAR® composite rebar products, give us a call or visit us on the web

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