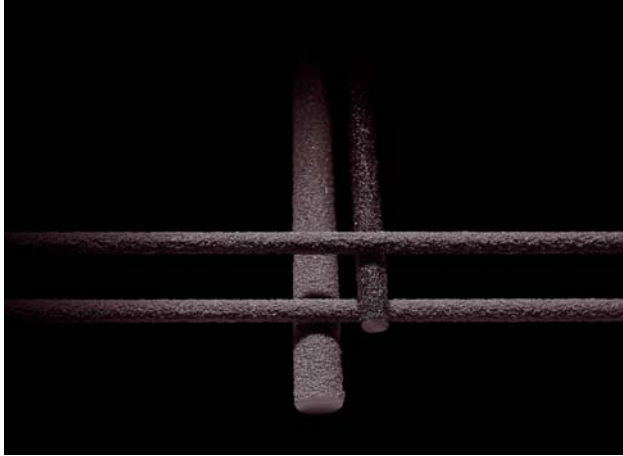




Fiberglass Rebar

Product Data Sheet

Concrete Protection Products, Inc.



An innovative product for reinforcing concrete where the following benefits are required:

- Non-Corroding
- Electromagnetically Neutral
- Weight Reduction
- Thermal / Electrical Insulating

(also known as glass fiber reinforced polymer, or GFRP rebar)

Product Availability

Bar Diameter: Stock - #2 (1/4") through #8 (1.0") in 1/8 inch increments.
(inches) Available - #10 (1.25"), #12 (1.5"), #14 (1.75")

Bar Lengths: Stock - 10-00, 20-00 lengths
(feet) Available - 1-00 to 60-00 in 1/4 inch increments

Bends / Shapes: Stock - 90° right angle bends in bar sizes #2 - #6
Available - Most shapes available in steel are also available in fiberglass, although complicated bends, multiple plane shapes, and long length bends may require the use of multiple pieces with lap splices.
Minimum Bend Radius / Diameter - 4 times bar diameter / 8 times bar diameter



Product Composition

A composite of highly corrosion resistant vinyl ester resin and glass fiber reinforcement formed into a rod shape, and coated with a coarse quartz sand to provide bond adhesion to concrete.

Product Features

- Impervious to attack by chloride ions (salt) and most common chemical agents.
- Tensile strength almost double that of normal steel rebar.
- Transparent to electromagnetic fields and radio frequencies.
- Weighs approximately 1/4 of the weight of an equivalent size steel rebar.
- Electrically and thermally non-conductive.



For information, contact:

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Design Considerations

The mechanical properties of FRP reinforcing bars differ from those of conventional steel rebar in a number of areas. As a result, several issues arise in the development of a design methodology for concrete structures reinforced with such bars. The general design recommendations for flexural concrete elements reinforced with FRP reinforcing bars are presented in **ACI 440.1R-06 (2006), Guide for the Design and Construction of Structural Concrete Reinforced with FRP Bars**, as reported by the American Concrete Institute (ACI) committee 440.

The ACI 440 recommendations are based on principles of equilibrium and compatibility, and the constitutive laws of the materials. The new design philosophy adopted for FRP bars used as reinforcement for concrete allows consideration to be given to either FRP rupture or concrete crushing as the mechanism that controls failure. It is based on limit states design principles. An FRP reinforced concrete member is designed based on its required strength, and then checked for fatigue endurance, creep rupture endurance, and serviceability criteria. In most cases, serviceability criteria or fatigue and creep rupture endurance limits will control the design.

Design engineers should consider the appropriateness of reinforcing concrete with FRP bars, keeping in mind the following basic points in their designs:

- Direct substitution of FRP bars in a concrete member designed with steel bars is not possible in most cases.
- Lower modulus of elasticity and shear strength of composite rebars may limit the applications where FRP bar can be utilized.
- Glass FRP bar should be limited to a maximum sustained stress of 25% of the guaranteed design tensile strength.
- Glass FRP bars are designed for reinforcement of concrete, and should not be used as a pre-stressing or post-tensioning element.

Physical / Mechanical Properties - V•ROD Fiberglass Rebar

<u>Bar</u>	<u>Diameter</u>	<u>Guaranteed Tensile Strength</u>		<u>Tensile Modulus of Elasticity</u>	
		MPa	ksi	GPa	ksi
#2 (6mm)	0.25 inch (6.4mm)	788 MPa	114 ksi	46.1 GPa	6681 ksi
#3 (9mm)	0.375 inch (9.5mm)	765 MPa	111 ksi	46.2 GPa	6696 ksi
#4 (13mm)	0.5 inch (12.7mm)	710 MPa	103 ksi	46.4 GPa	6725 ksi
#5 (16mm)	0.625 inch (15.9mm)	683 MPa	99 ksi	48.2 GPa	6986 ksi
#6 (19mm)	0.75 inch (19.0mm)	656 MPa	95 ksi	47.6 GPa	6899 ksi
#7 (22mm)	0.875 inch (22.2mm)	625 MPa	91 ksi	46.4 GPa	6725 ksi
#8 (25mm)	1.0 inch (25.4mm)	611 MPa	89 ksi	51.0 GPa	7391 ksi

Additional Information

For additional information on Prices, Handling, Storage, Placement, and Assembly, please visit our website at www.fiberglassrebar.com, or contact us directly at the phone / email indicated below.

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