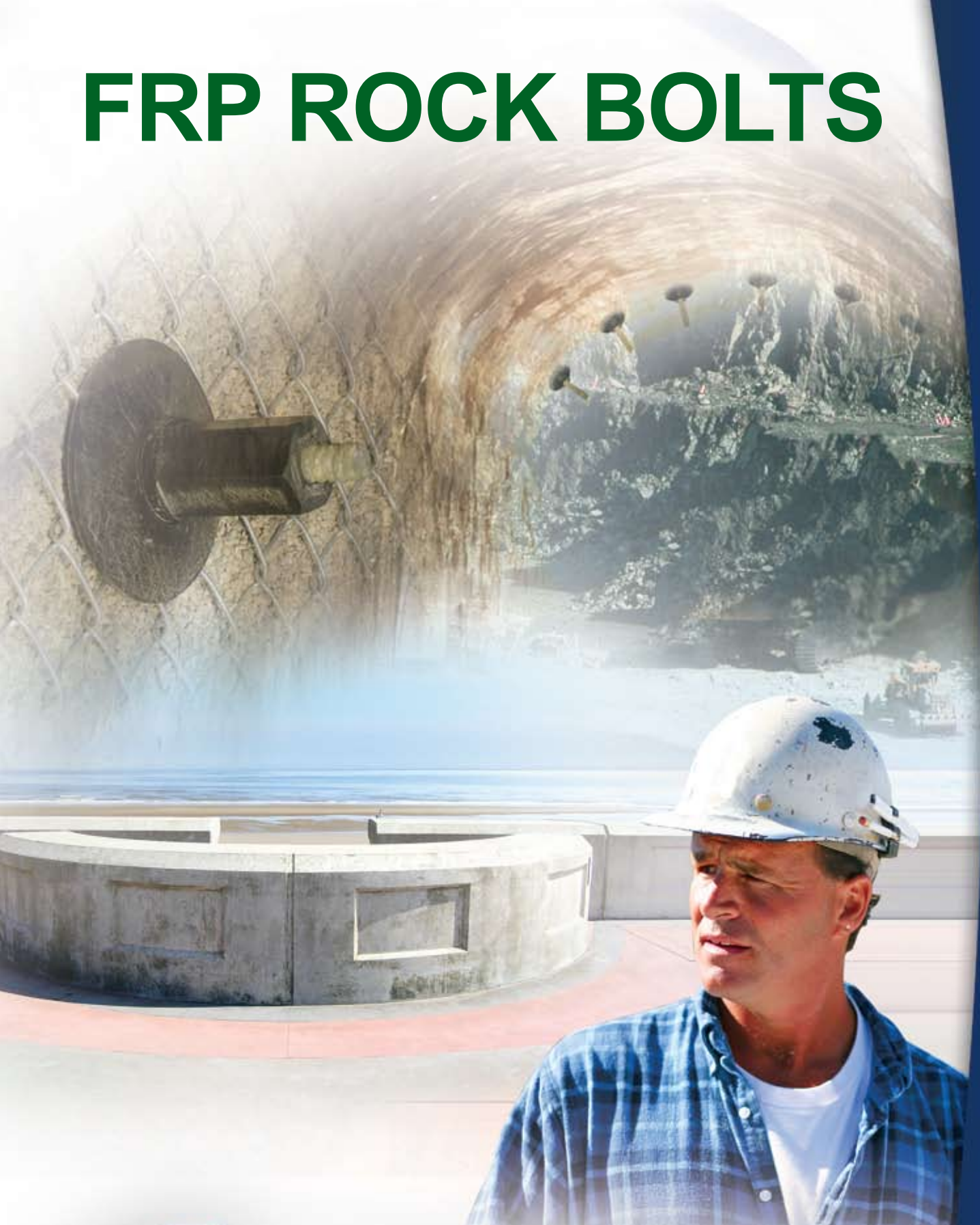


# FRP ROCK BOLTS

HIGH STRENGTH THREADED FIBERGLASS GROUND SUPPORT



**BP COMPOSITES LTD.**  
CUSTOM ENGINEERED SOLUTIONS

# CUSTOM DEVELOPMENT

*Engineered solutions to meet your specific needs.*

## PRODUCTS

- Rock Bolts
  - Left Hand Thread
  - Right Hand Thread
  - Square Head For Spinning
  - Any Length
- Soil Nails - Any Length
- Tiebacks - Any Length
- Composite Nuts
- Couplings and Other Fasteners
- Formties

## FEATURES

- Thread available on any part of any bar
- 100 year plus corrosion resistance
- Extremely high embedment strengths
- ¼ the weight of steel
- 2 times the strength of steel
- Easy to post tension
- Non-magnetic
- Low electric conductivity

## APPLICATION

- Hard Rock Mining
- Ground Stabilization
- Salt Mines
- Tunneling
- Tiebacks
- Temporary Ground Support  
(Easy To Excavate)
- Permanent Ground Support  
(Excellent Corrosion Resistance)







## IS FIBERGLASS REINFORCEMENT THE RIGHT PRODUCT FOR YOU?

### Are you.....

- Frustrated with the costs involved in repairing damage to your excavation equipment caused by steel reinforcement?
- Spending your profits dealing with the corrosion associated with using steel products?
- Watching additional cost, time, and labour increasing month after month?
- Struggling with using a product that is simply not flexible enough to be used in confined or unique applications?
- Upset about having to re-drill holes when your current product snaps?
- Concerned with the health and safety of your people as they haul around a product that is unnecessarily heavy?
- Watching your margins slip as your people mix grout, install and re-work projects unnecessarily?

If you answered yes to these you may be similar to some of our customers who have told us that.....

- “Steel reinforcement damages our boring machines, and is difficult to remove. It costs us a lot in time and money to excavate.”
- “Have you ever had to haul steel around all day? You get tired, you get hurt. This stuff is great. No more back pain.”
- “Even in the most challenging of applications this product is flexible and safe enough to easily adapt to the environment.”

### So, what makes our composite reinforcement so unique?

- It's **easy to cut** and **easy on your equipment**
- **100 year** plus corrosion resistance
- **Flexible** installation in tunnelling applications
- Workers don't get as tired installing it and have **less chance of injury**
- High torque **eliminates premature failure**
- Cap nut and bar system allows for **easy installation**
- Designed for **temporary and permanent** applications
- **Meets North American test requirements** for use in civil and mining applications.

## HIGH STRENGTH THREADED FIBERGLASS GROUND SUPPORT

# SPECIFICATIONS & PROPERTIES

## THREADED BAR

Nominal diameter	22 mm	0.875 in
Cross-Sectional Area	337 mm <sup>2</sup>	0.522 in <sup>2</sup>
Ultimate Tensile Stress	799 Mpa	115.9 ksi
Ultimate Tensile Strength	269.3 kN	60.54 kips
Ultimate Shear Stress	379 MPa	55.0 ksi
Ultimate Shear Strength	127.7 kN	28.7 kips
Bond Stress	14.0 MPa	2.0 ksi
Ultimate Elongation	1.95 %	1.95 %
Nominal Weight	0.63 kg/m	0.423 lbs/ft

## ROUGH BAR

Nominal Diameter	23 mm	0.9 in
Cross-Sectional Area	341 mm <sup>2</sup>	0.529 in <sup>2</sup>
Ultimate Tensile Stress	902 Mpa	130.8 ksi
Ultimate Tensile Strength	307.6 kN	69.2 kips
Ultimate Shear Stress	345 MPa	50.0 ksi
Ultimate Shear Strength	117.6 kN	26.4 kips
Bond Stress	13.2 MPa	1.9 ksi
Ultimate Elongation	2.07 %	2.07 %
Nominal Weight	0.63 kg/m	0.423 lbs/ft

## 4" CAP NUT

Strength	120 kN	26.9 kips
Torque Limit	40 ft/lbs	

## 4" FLAT NUT

Strength	120 kN	26.9 kips
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## 2" NUT

Strength	55 kN	12.3 kips
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- Independent testing performed by University of Sherbrooke in accordance with ISIS Product Certification of FRP Materials guidelines
- Independent testing performed by Intertek Testing Services NA Ltd. according to ACI 440.3R-04 and ASTM D 3916-02.
- Other sizes and configurations are available upon request.



### HEAD OFFICE

8713 - 53 Avenue, Edmonton  
Alberta, Canada T6E 5E9  
Tel: 780.448.9338 | Fax: 780.448.9360

### FLORIDA

10101 Dr MLK Jr St N, #240  
St Petersburg, FL, 33716

### SOUTH DAKOTA

810 N. Main St, #288  
Spearfish, SD, 57783

**1-888-99-REBAR**  
[www.bpcomposites.com](http://www.bpcomposites.com)