

# MasterBrace<sup>®</sup> FIB 300/50 CFS

Unidirectional high strength carbon fiber fabric for the MasterBrace Composite Strengthening System

FORMERLY MBRACE CF 130

**YIELD**

269 ft<sup>2</sup> (25 m<sup>2</sup>) per roll

**PACKAGING**

Available in rolls 20 in (500 mm) wide, 162 ft (50 m) long

**COLOR**

Black

**SHELF LIFE**

3 years when properly stored

**STORAGE**

Store in unopened containers in a clean, dry area between 50 and 90°F (10 to 32°C) away from direct sunlight, flame, or other hazards.

**DESCRIPTION**

MasterBrace FIB 300/50 CFS is a dry fabric constructed of very high strength, aerospace grade carbon fibers. These fabrics are applied onto the surface of existing structural members in buildings, bridges, and other structures using the MasterBrace family of performance polymers. The result is an externally bonded FRP (fiber reinforced polymer) reinforcement system that is engineered to increase the strength and structural performance of these members. Once installed, the MasterBrace System delivers externally bonded reinforcement with outstanding long-term physical and mechanical properties.

**PRODUCT HIGHLIGHTS**

- High strength to weight ratio Can add significant strength to a structure without adding significant dead load
- Excellent resistance to creep and fatigue Withstands sustained and cyclic load conditions
- Extremely durable Extremely resistant to a wide range of environmental conditions
- Easy installation Can be installed quickly, even in areas of limited access
- Low aesthetic impact Easy to conceal, will not significantly change existing member dimensions, will form around complex surfaces

**SUBSTRATES**

- Concrete
- Masonry
- Timber
- Steel

**APPLICATIONS**

- Increase load bearing capacity of concrete beams, slabs, walls and columns
- Improve the seismic ductility of concrete columns
- Improve the seismic response of concrete beamcolumn connections, shear walls and collector elements
- Improve the seismic performance of masonry shear walls and in-fill walls
- Restore structural capacity to damaged or deteriorated concrete structures
- Increase the strength of concrete pipes, silos, tanks, chimneys and tunnels
- Substitute reinforcing steel mistakenly omitted in the construction of concrete and masonry structures
- Improve the blast resistance of concrete and masonry structures
- Strengthening of some steel and timber structures
  - Vertical
  - Horizontal
  - Exterior
  - Interior

**TECHNICAL DATA**

**COMPOSITION**

MasterBrace FIB 300/50 CFS is composed of a dense network of high strength carbon fibers held in a unidirectional alignment with a light thermoplastic glass fiber cross weave yarn

**NOTES:**

- (1) The nominal fabric thickness is based on the total area of fibers (only) in a unit width. From experience, the actual cured thickness of a single ply laminate (fibers plus saturating resins) is 0.020 to 0.040 in (0.6 to 1.0 mm).
- (2) The tensile properties given are those to be used for design. These values are derived by testing cured laminates (per ASTM D3039) and dividing the resulting strength and modulus per unit width by the nominal fabric thickness.
- (3) The 0° direction denotes the direction along the length of the fabric.
- (4) The 90° direction denotes the direction along the width of the fabric.

**PHYSICAL PROPERTIES**

PROPERTY	REQUIREMENT
<b>Fiber Material</b>	High Strength Carbon
<b>Fiber Tensile Strength</b>	720 ksi (4950 MPa)
<b>Areal Weight</b>	0.062 lb/ft <sup>2</sup> [300 g/m <sup>2</sup> ]
<b>Fabric Width</b>	20 inch [500 mm]
<b>Nominal Thickness, t<sub>f</sub><sup>(1)</sup></b>	0.0065 in/ply [0.165 mm/ply]

**0° TENSILE PROPERTIES<sup>(2)(3)</sup>**

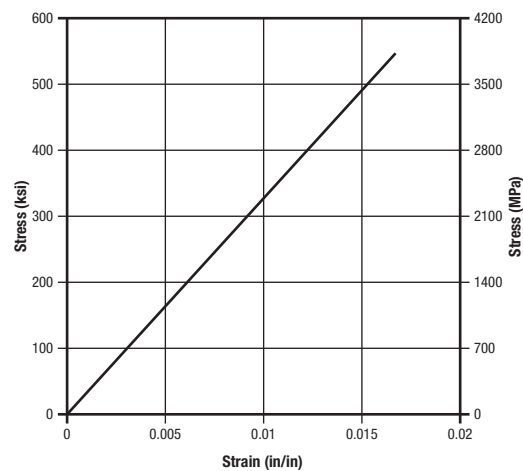
PROPERTY	REQUIREMENT
<b>Ultimate Tensile Strength, f<sub>tu</sub><sup>*</sup></b>	550 ksi [3800 MPa]
<b>Tensile Modulus, E<sub>f</sub></b>	33000 ksi [227 GPa]
<b>Ultimate Tensile Strength per Unit Width, f<sub>tu</sub><sup>*</sup> t<sub>f</sub></b>	3.57 kips/in/ply [0.625 kN/mm/ply]
<b>Tensile Modulus per Unit Width, E<sub>f</sub> t<sub>f</sub></b>	215 kips/in/ply [38 kN/mm/ply]
<b>Ultimate Rupture Strain, ε<sub>fu</sub><sup>*</sup></b>	1.67%

**FUNCTIONAL PROPERTIES**

PROPERTY	REQUIREMENT
<b>CTE</b>	-0.21·10 <sup>-6</sup> /°F (-0.38·10 <sup>-6</sup> /°C)
<b>Thermal Conductivity</b>	65.1-Btu·in/hr·ft <sup>2</sup> ·°F (9.38-W/m·K)
<b>Electrical Resistivity</b>	1.6·10 <sup>-3</sup> Ω·cm

**90° TENSILE PROPERTIES<sup>(2)(4)</sup>**

PROPERTY	REQUIREMENT
<b>Ultimate Tensile Strength</b>	0
<b>Tensile Modulus</b>	0
<b>Ultimate Rupture Strain</b>	n/a



## HOW TO APPLY

### SURFACE PREPARATION

1. MasterBrace FIB 300/50CFS, is applied to surfaces treated with MasterBrace P 3500, MasterBrace F2000 and MasterBrace SAT 4500, Consult the data sheets for these materials for additional details.

### APPLICATION

MasterBrace FIB 300/50 CFS is only applied as a component of the MasterBrace System.

1. MasterBrace FIB 300/50 CFS material should be cut to the proper dimensions (dimensions will vary based on project requirements) using heavy duty shears or a utility knife.
2. Cut sections MasterBrace FIB 300/50 CFS can be temporarily stored by carefully rolling fabric into a 12 inch (600 mm) (approximate) roll. Do not fold or crease the fabric. Fabric should be kept free of dust, oils, moisture and other contaminants at all times.
3. Apply the MasterBrace FIB 300/50 CFS fabric directly into uncured MasterBrace Saturant applied on the substrate. There is no need to "pre-wet" the MasterBrace FIB 300/50 CFS fabric with MasterBrace Saturant prior to applying the fabric against the substrate.
4. Using a rib roller or squeegee, press the fabric against the substrate until visual signs of MasterBrace SAT4500 are observed bleeding through the fabric. The rib roller or squeegee should only be run along the direction of the primary fibers in the fabric.
5. Apply a layer of uncured MasterBrace SAT 4500 over the top of the MasterBrace FIB 300/50CFS fabric to completely encapsulate the fabric. Consult with the MasterBrace SAT 4500 data sheet on details for applying MasterBrace SAT 4500

### MAINTENANCE

Periodically inspect the applied material and repair localized areas as needed. Consult a Master Builders Solutions representative for additional information. Visit us on the web for the most current product information and news: [www.master-builders-solutions.com/en-us](http://www.master-builders-solutions.com/en-us)

### FOR BEST PERFORMANCE

- Use caution when applying MasterBrace FIB 300/50 CFS around sensitive electrical equipment. Carbon fiber filaments can become airborne, infiltrate electrical equipment and cause electrical shorts.

- Make certain the most current versions of product data sheet and SDS are being used; call Customer Service (1-800-433-9517) to verify the most current version.
- Proper application is the responsibility of the user. Field visits by Master Builders Solutions personnel are for the purpose of making technical recommendations only and are not for supervising or providing quality control on the jobsite.

### WARNING

MasterBrace Fiber Reinforcements contain carbon, glass, and/or aramid fibers, MasterBrace FIB 300/50 CFS contains carbon and glass fibers. While handling MasterBrace Fiber Reinforcements, wear appropriate work clothing to minimize contact. Product Safety Data Sheets (SDS) are available and should be consulted and on hand whenever handling these products. These products are for professional and industrial use only and are only installed by trained and qualified applicators. Trained applicators must follow installation instructions.

### HEALTH, SAFETY AND ENVIRONMENTAL

Health, Safety and Environmental Read, understand and follow all Safety Data Sheets and product label information for this product prior to use. The SDS can be obtained by visiting [www.master-builders-solutions.com/en-us](http://www.master-builders-solutions.com/en-us), e-mailing your request to [mbsbcst@mbcc-group.com](mailto:mbsbcst@mbcc-group.com) or calling 1(800)433-9517. Use only as directed. **IN CASE OF EMERGENCY: Call CHEMTEL +1 (800) 255-3924 or if outside the US or Canada, +1 (813) 248-0585.**

### LIMITED WARRANTY NOTICE

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