

MasterBrace[®] FIB 600/50 CFS

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

FORMERLY MBRACE CF 160

YIELD

269 ft² 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 600/50 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. MasterBrace FIB 600/50 CFS is twice the thickness of MasterBrace FIB 300/50 CFS. Two layers of MasterBrace FIB 300/50 CFS can be replaced with one layer MasterBrace FIB 600/50 CFS.

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
- Also available in a bidirectional (0–90°) configuration (Contact Master Builders Solutions Engineering Services for specifications and design assistance.)

SUBSTRATES

- Concrete
- Masonry
- Timber
- Steel

APPLICATIONS

- Increase load bearing capacity of concrete beams, slabs, walls and columns
- 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 seismic ductility of concrete columns
- Improve the seismic response of concrete beam-column connections, shear walls and in-fill walls
- 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 600/50 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 0.040-in to 0.060-in (1.0-mm to 1.5-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	VALUE
Fiber Material	High Strength Carbon
Fiber Tensile Strength	720 ksi [4950 MPa]
Areal Weight	0.124 lb/ft ² [600 g/m ²]
Fabric Width	20 in 500 mm
Nominal Thickness, t_f⁽¹⁾	0.013 in/ply [0.33 mm/ply]

0° TENSILE PROPERTIES ^{(2) (3)}

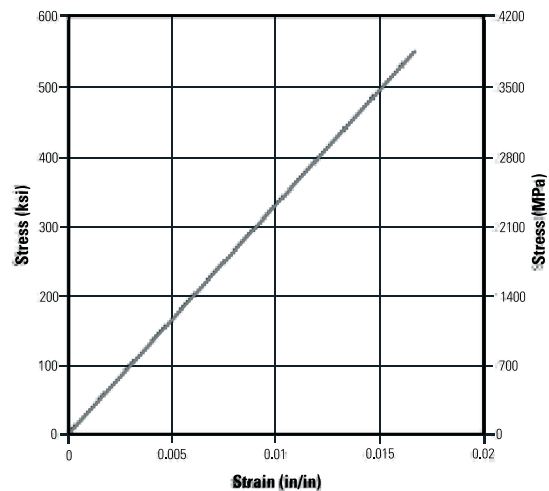
PROPERTY	VALUE
Ultimate Tensile Strength, f_{tu}[*]	550 ksi [3800 MPa]
Tensile Modulus, E_f	33000 ksi [227 GPa]
Ultimate Tensile Strength per Unit Width, f_{tu}[*] t_f	7.14 kips/in/ply [1.25 kN/mm/ply]
Tensile Modulus per Unit Width, E_f t_f	430 kips/in/ply [76 kN/mm/ply]
Ultimate Rupture Strain, ε_{fu}[*]	1.67%

FUNCTIONAL PROPERTIES

PROPERTY	VALUE
CTE	-0.21·10 ⁻⁶ /°F (-0.38·10 ⁻⁶ /°C)

90° TENSILE PROPERTIES ^{(2) (4)}

PROPERTY	VALUE
Ultimate Tensile Strength	0
Tensile Modulus	0
Ultimate Rupture Strain	n/a



HOW TO APPLY

SURFACE PREPARATION

MasterBrace FIB 600/50 CFS 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 600/50 CFS is only applied as a component of the MasterBrace System.

1. MasterBrace FIB 600/50 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 of MasterBrace FIB 600/50 CFS can be temporarily stored by carefully rolling fabric into a 12 in [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 600/50 CFS fabric directly into uncured MasterBrace SAT 4500 applied on the substrate. There is no need to "pre-wet" the MasterBrace FIB 600/50 CFS fabric with uncured MasterBrace SAT 4500 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 uncured MasterBrace SAT 4500 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 600/50 CFS fabric to completely encapsulate the fabric. Consult with the MasterBrace SAT 4500 datasheet 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.

FOR BEST PERFORMANCE

- Use caution when applying MasterBrace FIB 600/50 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 600/50 CFS contains carbon and glass fibers. While handling MasterBrace FIB 600/50 CFS, 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, e-mailing your request to mbsbscst@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

Master Builders Solutions Construction Systems US, LLC ("Master Builders") warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. MASTER BUILDERS MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is shipment to purchaser of product equal to the amount of product that fails to meet this warranty or refund of the original purchase price of product that fails to meet this warranty, at the sole option of Master Builders. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. MASTER BUILDERS WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on Master Builders' present knowledge and experience. However, Master Builders assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. Master Builders reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.

FOR PROFESSIONAL USE ONLY. NOT FOR SALE TO OR USE BY THE GENERAL PUBLIC.