

MBrace™ Fiber Reinforcement Systems

for the MBrace composite strengthening system

DESCRIPTION:

The backbone of the MBrace™ composite strengthening system, MBrace Fiber Reinforcement materials are enveloped in MBrace Saturant resin to yield a range of high performance features.

MBrace Fiber Reinforcement systems include the MBrace CF 530 and MBrace CF 130 carbon fiber and MBrace EG 900 E-glass systems. Each Fiber Reinforcement system within the finished MBrace composite strengthening system permits high strength to cross section ratio, and structural integrity that is similar to bonding steel plates to concrete surfaces.

TYPICAL USES:

- Walls, beams and slabs
- Columns and chimneys
- Silos and tanks
- Pipes and tunnels

ADVANTAGES:

- Increased strength
 - Flexural
 - Shear
 - Confinement
 - Blast resistance
 - Fatigue enhancement
- Lightweight
- Durable
- Control of crack propagation
- Strength to thickness ratio

COLORS:

- Carbon Fiber - Black
- E-glass - White

FIBER REINFORCEMENT SYSTEM TYPES:

MBrace CF 530 Carbon Fiber Reinforcement System High Modulus CF

Typical Physical Properties:

Fiber Reinforcement:	Carbon Fiber, High Modulus
Fiber Density:	0.066 lb/in. ³ (1.82 g/cm ³)
Fiber Modulus:	54 msi (3.80 x 10 ⁶ kg/cm ²)

Tow Sheet Properties

Fiber Areal Weight Density:	8.8 oz/yd ² (300 g/m ²)
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Design Thickness⁽¹⁾:	0.0065 in. (0.165 mm)
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Design Tensile Strength⁽²⁾⁽³⁾:	427 ksi (30,000 kg/cm ²)
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Design Tensile Modulus⁽²⁾⁽³⁾:	54 msi (3.80 x 10 ⁶ kg/cm ²)
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Tensile Elongation, Ultimate:	0.8%
Sheet Width:	20 in. (50 cm)

MBrace CF 130 Carbon Fiber Reinforcement System High Tensile CF

Typical Physical Properties:

Fiber Reinforcement:	Carbon Fiber, High Tensile
Fiber Density:	0.066 lb/in. ³ (1.82 g/cm ³)
Fiber Modulus:	33 msi (2.35 x 10 ⁶ kg/cm ²)

Tow Sheet Properties

Fiber Areal Weight Density:	8.8 oz/yd ² (300 g/m ²)
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Design Thickness⁽¹⁾:	0.0065 in. (0.165 mm)
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Design Tensile Strength⁽²⁾⁽³⁾:	505 ksi (35,500 kg/cm ²)
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Design Tensile Modulus⁽²⁾:	33 msi (2.35 x 10 ⁶ kg/cm ²)
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Tensile Elongation, Ultimate:	1.5%
Sheet Width:	20 in. (50 cm)

NOTES:

(1) Tow sheet design thickness (mm/ply) is based on the total thickness of fibers (only) in a unit width. From experience, the actual cured thickness of tow sheet on average is 0.6 to 1.0 mm (0.024 to 0.039 in.).

(2) Design tensile strength (kg/cm²) and tensile modulus for design (kg/cm²) are derived from the strength or modulus per sheet width divided by the design thickness.

(3) Allowable tensile strength is suggested to be 1/3 of the ultimate tensile strength for long term applications and 2/3 of the ultimate tensile strength for short term applications. See design procedure notes.

FIBER REINFORCEMENT SYSTEM TYPES

(continued):

MBrace EG 900 E-glass Reinforcement System

Typical Physical Properties:

Fiber Reinforcement: E-glass

Fiber Density: 0.093 lb/in.³ (2.58 g/cm³)

Fiber Modulus: 10.5 msi (0.71 x 10⁶ kg/cm²)

Tow Sheet Properties

Fiber Areal Weight Density: 27 oz/yd² (915 g/m²)

Design Tensile Strength⁽¹⁾: 3.5 kips/in.
(6.1 kN/cm-sheet width)
251 ksi
(17,000 kg/cm²)

Design Tensile Modulus: 177 kips/in.
(310 kN/cm-sheet width)
10.5 msi (0.71 x 10⁶ kg/cm²)

Design Thickness⁽²⁾: 0.0139 in. (0.353 mm)

Tensile Elongation, Ultimate, percent: 2.0%

Sheet Width: 19.7 in. (50 cm)

NOTES:

(1) Average ultimate tensile strength was derived from fabric laminate data. Average ultimate tensile stress was derived from the strength per unit width divided by the design thickness.

(2) Glass fabric design thickness is calculated from the total cross sectional area of fibers (only) in a unit width.

PACKAGING:

MBrace CF 530 system:
20 in. W x 330 ft L = 540 ft² (50 m²) per roll

MBrace CF 130 system:
20 in. W x 330 ft L = 540 ft² (50 m²) per roll

MBrace EG 900 system:
20 in. W x 150 ft L = 270 ft² (23 m²) per roll

SAFETY:

Store in cool, dry area [50 to 90 °F (10 to 32 °C)] away from direct sunlight, flame or other hazards.

MBrace fiber reinforcement materials contain carbon and glass fibers. During application of MBrace fiber materials, wear appropriate work clothing to minimize contact. Use caution when handling flammable liquids and eliminate all sources of ignition from work area.

Product Material Safety Data Sheets (MSDS) are available and should be consulted and on hand during application and/or whenever handling these products.

These products are for professional and industrial use only; application directions must be followed.

MAINTENANCE:

Periodically inspect the applied material and repair localized areas needed. Consult your Master Builders representative for additional information.

COMPONENTS PROVIDED BY:

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