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MBrace® FIBRE

Unidirectional Carbon Fibre sheeting Glass and Aramid sheeting used with resin lay up method

Description

MBrace® Fibre sheet reinforcement materials are enveloped in MBrace® Saturant resin to yield a range of high performance features.

MBrace® Fibre Reinforcement Systems include the MBrace® CF 640, MBrace® CF240 unidirectional tow sheet carbon fibre, MBrace® G Sheet AR Eglass and Aramid A sheets. Each Fibre Reinforcement System within the finished MBrace® Fibre Reinforced Polymer system permits high strength to cross section ratio, and structural integrity that is similar to bonding steel plates to concrete surfaces.

Recommended for

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

Features and benefits

MBrace® Carbon Fibre

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

MBrace® Glass

- Retrofit of masonry structures vulnerable to earthquake damage
- Colours
  - Carbon Fibre – Black
  - Glass – White
  - Aramid – Yellow

MBrace® Aramid

- Blast proof
- Impact resistance

Typical physical properties:
MBrace® CF 640
Carbon Fiber Reinforcement System
High Modulus CF

Technical data of fibre (unidirectional)	300g/m²
Modulus of elasticity	640kN/mm²
Tensile strength	4600N/mm²
Weight of C fibre (main direction)	300g/m²
Total weight of sheet	330g/m²
Density	2.1g/cm³
ε Ultimate %	0.4
Thickness for static design weight / density	0.19mm
Theor. Section for static design 1000mm width	190mm²
Safety factor for static design (manual lamination / UDproduct)	1.2 (recommended)
Tensile force of 1000mm width ultimate	$\frac{190 \times 4600}{1.2}$ = 728.3kN
Tensile force of 1000mm width at 0.2% ε for design	364kN

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MBrace® CF 240 - Carbon Fibre Reinforcement System - High Tensile CF
Available in widths of 500mm

Technical data of fibre (unidirectional)	200g/m²	300g/m²
Modulus of elasticity	240kN/mm²	240kN/mm²
Tensile strength	4900N/mm²	4900N/mm²
Weight of C fibre (main direction)	200g/m²	300g/m²
Total weight of sheet	230g/m²	330g/m²
Density	1.7g/cm³	1.7g/cm³
ε Ultimate %	1.55	1.55
Thickness for static design weight / density	0.117mm	0.176mm
Theor. Section for static design 1000mm width	117mm²	176mm²
Safety factor for static design (manual lamination / UDproduct)	1.2 (recommended)	1.2 (recommended)
Tensile force of 1000mm width ultimate	$\frac{117 \times 4900}{1.2}$ = 477.7kN	$\frac{176 \times 4900}{1.2}$ = 718.7kN
Tensile force of 1000mm width at 0.6% ε for design	181kN	273kN

MBrace® A Sheet 120 - Aramid sheet
Available in widths of 300mm

Technical data of fibre (unidirectional)	280g/m²	415g/m²
Modulus of elasticity	120kN/mm²	120kN/mm²
Tensile strength	2900N/mm²	2900N/mm²
Weight of C fibre (main direction)	280g/m²	415g/m²
Total weight of sheet	320g/m²	450g/m²
Density	1.45g/cm³	1.45g/cm³
ε Ultimate %	2.5	2.5
Thickness for static design weight / density	0.2mm	0.29mm
Theor. Section for static design 1000mm width	200mm² (theor fibre area)	290mm² (theor fibre area)
Safety factor for static design (manual lamination / UDproduct)	1.2 (recommended)	1.2 (recommended)
Tensile force of 1000mm width for design	$\frac{200 \times 2900}{1.2}$ = 483.3kN	$\frac{290 \times 2900}{1.2}$ = 700.8kN

MBrace® G Sheet E 50/50 & AR 50/50
Glass Reinforcement System

Technical data of fibre (main and cross directional)	EGlass	ARGlass
Modulus of elasticity	73kN/mm²	65kN/mm²
Tensile strength	3400N/mm²	3000N/mm²
Sheet Weight (total 350g/m²)	175g/m² in both directions	175g/m² in both directions
Density	2.6g/cm³	2.68g/cm³
ε Ultimate %	4.5	4.3
Thickness for static design weight / density	0.067mm	0.065mm
Cross section for static design 1000mm width	67mm² (fibre area only / each direction)	65mm² (fibre area only / each direction)
Safety factor for static design (manual lamination / woven product)	1.4 (recommended)	1.4 (recommended)
Tensile force of 1000mm width for design (impregnated)	$\frac{67 \times 2400}{1.4}$ = 114.86kN each direction	$\frac{65 \times 1700}{1.4}$ = 78.93kN each direction

*** Other sizes available to order**

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MBrace® FIBRE

MBrace® G Sheet E 90/10 A & AR 90/10 A
Glass Reinforcement System

Technical data of fibre (main direction)	EGlass	ARGlass
Modulus of elasticity	73kN/mm²	65kN/mm²
Tensile strength	3400N/mm²	3000N/mm²
Impregnated strand in a composite	2400N/mm² Use for the static design	1700N/mm² Use for the static design
Sheet Weight (total 440g/m²)	400g/m² in main direction	400g/m² in main direction
Density	2.6g/cm³	2.68g/cm³
ε Ultimate %	4.5	4.3
Thickness for static design weight / density	0.154mm	0.149mm
Theor. section for static design 1000mm width	154mm² (fibre area only / main direction)	149mm² (fibre area only / main direction)
Safety factor for static design (manual lamination / woven product)	1.4 (recommended)	1.4 (recommended)
Tensile force of 1000mm width for design impregnated	$\frac{154 \times 2400}{1.4}$ = 264.0kN main direction	$\frac{149 \times 1700}{1.4}$ = 180.93kN main direction
Cross direction	10% of the equal fibre is used in the weft (cross section)	

MBrace® G Sheet E 90/10 B & AR 90/10 B
Glass Reinforcement System

Technical data of fibre (main direction)	EGlass	ARGlass
Modulus of elasticity	73kN/mm²	65kN/mm²
Tensile strength	3400N/mm²	3000N/mm²
Impregnated strand in a composite	2400N/mm² Use for the static design	1700N/mm² Use for the static design
Sheet Weight (total 880g/m²)	800g/m² in main direction	800g/m² in main direction
Density	2.6g/cm³	2.68g/cm³
ε Ultimate %	4.5	4.3
Thickness for static design weight / density	0.308mm	0.299mm
Theor. section for static design 1000mm width	308mm² (fibre area only / main direction)	299mm² (fibre area only / main direction)
Safety factor for static design (manual lamination / woven product)	1.4 (recommended)	1.4 (recommended)
Tensile force of 1000mm width for design impregnated	$\frac{308 \times 2400}{1.4}$ = 528.0kN main direction	$\frac{299 \times 1700}{1.4}$ = 363.07kN main direction
Cross direction	10% of the equal fibre is used in the weft (cross section)	

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Packaging

MBrace® CF 640 system:
Width 500mm, Length 100M

MBrace® CF 240 system:
Width 500mm, Length 100M

MBrace® A Sheet 120
Width 300mm, Length 50M

MBrace® G 920
Available in 500mm width and 40m length

Special rolls available on demand.

Precautions
READ ALL SAFETY DIRECTIONS AND WARNINGS AND REFER TO MATERIAL SAFETY DATA SHEET FOR HANDLING PROCEDURES.

Store in cool, dry area 10 to 32° away from direct sunlight, flame or other hazards.

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

Product Material Safety Data Sheets 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 localised areas needed. Consult your representative for additional information.

03/2001 BASF_CC-UAE revised 12/2010

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