

MasterBrace FIB

Fibrous reinforcement based on unidirectional carbon fiber fabrics of the MasterBrace FRP (Fiber Reinforced Polymer) system. Approved with C.V.T.

MATERIAL DESCRIPTION

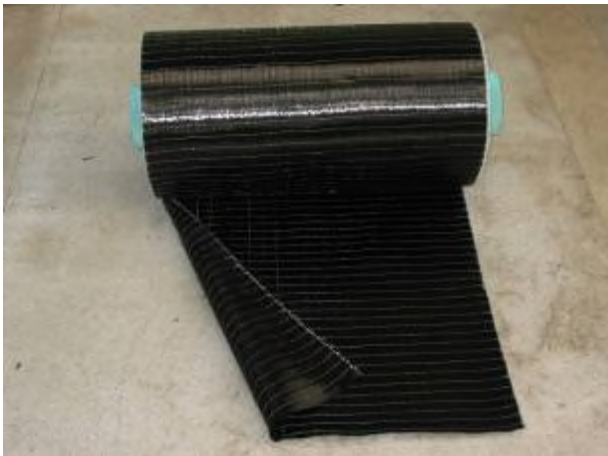
MasterBrace FIB is the fibre reinforcement based on unidirectional woven fabrics in high tensile, high-modulus carbon fibre, aramid and glass of the MasterBrace FIB system.

MasterBrace FIB features:

- extreme light weight and easiness of handling. It may easily be cut and reduced to strips (by scissors or cutter) both lengthwise and crosswise with little waste;
- continuous unidirectional fibres; this allows the composite to be laid in the best way in the directions of stress, especially in the flexural and shear reinforcements, and to decide the design number of layers section by section;
- durability in damp and chemically aggressive environments.

FIELDS OF APPLICATION

MasterBrace FIB is used as a reinforcing material for flexural, shear and confinement applications on all substrates for which the MasterBrace system is suitable (reinforced concrete, wood, masonry, natural stone, steel, etc.).



FEATURES AND BENEFITS

For the purpose of reinforcing flexed structures with resistant elements in the tensioned area (plating), MasterBrace FIB allows the traditional technique of plating with steel plates (beton plaqué) to be replaced with extremely light and easy-to-install materials:

- increase the load-bearing capacity (for example structural redevelopment following an operational

change);

- increase the resistance to fatigue;
- to speed up maintenance and reduce costs.

MasterBrace FIB is available in the high resistance version and in the high modulus version.

PACKAGING

MasterBrace FIB: roll of 25 m² (height 50 cm, length 50 m); different heights on request.

STORAGE

Store the product in a covered, cool and dry place (5 ÷ 30 °C) away from direct contact with the sun, fire or open flames.

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Technical information		MasterBrace FIB 230/50 CFS	MasterBrace FIB 300/50 CFS	MasterBrace FIB 400/50 CFS	MasterBrace FIB 600/50 CFS	MasterBrace FIB 300/50 CFH
Type of fiber		High strength carbon	High strength carbon	High strength carbon	High strength carbon	High modulus carbon
Warping of the fibers		unidirectional	unidirectional	unidirectional	unidirectional	unidirezionale
Class according to Technical Assessment Certificate		210 C	210 C	210 C	210 C	350/1750 C
Fabric weight, gr / m ²		230 ± 10	300 ± 10	400 ± 10	600 ± 10	310 ± 10
Geometric and physical characteristics as per CVT R.0000119 of 11-03-2019		MasterBrace FIB 230/50 CFS	MasterBrace FIB 300/50 CFS	MasterBrace FIB 400/50 CFS	MasterBrace FIB 600/50 CFS	MasterBrace FIB 300/50 CFH
Fiber density, p _{fib}	ISO 10119	1,82 g/cm ³	1,82 g/cm ³	1,82 g/cm ³	1,82 g/cm ³	1,82 g/cm ³
tensile properties of resin-impregnated yarn	ISO 10618	5100 MPa	5100 MPa	5100 MPa	5100 MPa	4800 MPa
Mass of the fabric per unit area, p _x	ISO 3374	230 g/m ²	300 g/m ²	400 g/m ²	600 g/m ²	300 g/m ²
Density of the resin, p _m	ISO 1675	1,04 g/cm ³	1,04 g/cm ³	1,04 g/cm ³	1,04 g/cm ³	1,04 g/cm ³
Equivalent area Art	UNI EN 2561	126 mm ² /m	165 mm ² /m	220 mm ² /m	330 mm ² /m	165 mm ² /m
Equivalent thickness teq	UNI EN 2561	0,126 mm	0,165 mm	0,220 mm	0,330 mm	0,165 mm
Weight fraction of the fibers in the composite	ASTM D2734	45%	45%	45%	45%	45%
Volume fraction of fibers in the composite	ISO 1172	35%	35%	35%	35%	35%
Glass transition temperature	primer (optional)	EN 12614:2004	+56,3°C	+56,3°C	+56,3°C	+56,3°C
	impregnation resin		+56,4°C	+56,4°C	+56,4°C	+56,4°C
Limit temperatures, minimum and maximum, of use	CNR DT200-R1/2013	-10/+41°C	-10/+41°C	-10/+41°C	-10/+41°C	-10/+41°C
Reaction to fire	EN 13501-1:2007	Classe F	Classe F	Classe F	Classe F	Classe F
Fire resistant	EN 13501-2:2007	PND	PND	PND	PND	PND
Mechanical properties as per CVT R.0000119 of 11-03-2019		MasterBrace FIB 230/50 CFS	MasterBrace FIB 300/50 CFS	MasterBrace FIB 400/50 CFS	MasterBrace FIB 600/50 CFS	MasterBrace FIB 300/50 CFH
Elastic modulus of the laminate referred to the net fiber area, E _f	UNI EN 2561	1 str.: 263 GPa 3 str.: 273 GPa	1 str.: 269 GPa 3 str.: 270 GPa	1 str.: 251 GPa 3 str.: 255 GPa	1 str.: 238 GPa 3 str.: 234 GPa	1 str.: 401 GPa 3 str.: 397 GPa
Laminate resistance referred to the net fiber area, f _{fi} Average value	UNI EN 2561	1 str.: 3560 MPa 3 str.: 3987	1 str.: 3938 MPa 3 str.: 3774	1 str.: 3752 MPa 3 str.: 3655	1 str.: 4123 MPa 3 str.: 4350	1 str.: 2511 MPa 3 str.: 2589
Laminate resistance referred to the net fiber area, f _{fib} Characteristic value	UNI EN 2561	1 str.: 3225 MPa 3 str.: 3549	1 str.: 3312 MPa 3 str.: 3375	1 str.: 3429 MPa 3 str.: 3102	1 str.: 3558 MPa 3 str.: 4083	1 str.: 1910 MPa 3 str.: 1955
Characteristic value, Strain at break, ε _{fib}	UNI EN 2561	1 str.: 1,4% 3 str.: 1,5%	1 str.: 1,4% 3 str.: 1,4%	1 str.: 1,4% 3 str.: 1,5%	1 str.: 1,7% 3 str.: 1,9%	1 str.: 0,6% 3 str.: 0,6%

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APPLICATION SHEET

APPLICATION

Cut with scissors or cutter at the foot of the work or in the MasterBrace FIB factory in the dimensions indicated in the project.

It is advisable to carry out this operation by setting up a simple work table.

After applying the first layer of adhesive, the unidirectional fabric will be spread, taking care to press it two or three times in the longitudinal direction of the fiber using a roller with beveled teeth parallel to the direction of the fibers to eliminate the air from the resin layer. To join several strips in the longitudinal direction of the fiber, it is necessary to overlap them for a length of 20 cm.

At the point of overlap, apply a further coat of MasterBrace SAT 4500 on the external surface of the sheet layer on which the overlapping section will adhere. No overlap is required in the lateral direction of the fiber.

The second coat of MasterBrace SAT 4500 must be spread on the surface of the sheet.

If the second layer of fabric must also be glued, the additional layer of fabric will be applied and then a further coat of adhesive following the above instructions.

CURING

MasterBrace FIB must be left to harden for no less than 24 hours (at 20°C) before the reinforced element can be used for service. For temperatures below 20°C it will be necessary to wait for more than 24 hours.

PROTECTION AGAINST UV RAYS

Protect surfaces reinforced with MasterBrace FRP by means of a coating from the MasterProtect line resistant to the action of atmospheric agents.

The application of the protective system must take place after the last layer of MasterBrace SAT 4500 has hardened, starting from a minimum of 24 hours to a maximum of 48 hours (at 20°C); in this case, the protective can be applied directly (for example MasterProtect 220 without the use of primer); temperatures different from 20 °C can cause the time interval indicated above to vary; in case of waiting for a period of time exceeding 48 hours (at 20°C) from the application of MasterBrace SAT 4500, the surface of the adhesive must first be treated / roughened with sandblasting and / or an equivalent system, dust and

then apply protective (for example MasterProtect 220 without using primer).

ENVIRONMENTAL LIMITATIONS

Apply MasterBrace SAT 4500 and the reinforcement system with air and substrate temperatures between +10 and + 30°C.

Application at air and substrate temperatures below 10 °C can be done by adopting special precautions, such as heating the substrate and the resin application environment to a temperature between 10 and 20°C (for a period of time until the resin has hardened), using suitable heaters.

Do not apply the product at temperatures below 5°C as the polymerization time would be extremely lengthened.

The application must take place on a dry support, which has a humidity not exceeding 6% and with a relative environmental humidity not exceeding 85%.

The reinforcement applied must subsequently be protected from any rainwater until the resin has completely hardened.

Do not apply the system when the substrate is wet, when leaning or dew formation is expected.

The operating temperature range for the resin is between -10 and + 40°C (this value refers to the measured surface temperature of the resin and not to the ambient temperature). For different operating temperatures, the technical service of Master Builders Solutions should be contacted.

SAFETY INSTRUCTION

When mixing, always wear gloves, goggles and suitable work clothes to avoid contact with the skin.

In case of accidental contact, wash the affected parts abundantly with soap and water or with an appropriate detergent.

Do not use solvents or thinners.

Do not breathe vapors and aerosols; the application in a closed environment must take place in conditions of continuous air exchange.

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OTHER SERVICES

For price analysis, specifications, supplementary brochures, references, reports and technical assistance, visit the website www.master-builders-solutions.com/it-it or contact infomac@mbcc-group.com.

Scan the QR code to visit the product page and download the latest version of this datasheet.



Since 16/12/1992, Master Builders Solutions Italia Spa has been operating under a Certified Quality System compliant with the UNI EN ISO 9001 Standard. Furthermore, the Environmental Management System is certified according to the UNI EN ISO 14001 Standard and the Safety Management System is certified according to the UNI ISO 45001 Standard.

Master Builders Solutions Italia Spa

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For further information, please consult the local Technician of Master Builders Solutions. The technical advice on how to use our products, either written or verbally given, are based on the current state of our scientific and practical expertise, and does not imply the assumption of any guarantee and/or responsibility for the final results of works executed using our products.

Therefore, the customer is not exempted from the exclusive task and responsibility of verifying the suitability of our products for the intended use and purposes.

This version supersedes all the previous ones.