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MBAR® and MBAR® SPIRAL

Ready to use Carbon Rods (Fibre Reinforced Polymer) for the Reinforcement of Concrete, Masonry and Timber Elements with MBar® FRP System.

Description of Product

MBAR® AND MBAR® SPIRAL are ready to use pultruded carbon fibre rods that provide a high tensile strength (that is higher than steel bars used in the precast industry) and are used for flexural reinforcement of concrete, masonry and timber elements.

Features and Benefits

To replace or augment steel reinforcement in concrete structures. To add reinforcement to timber and masonry elements. Suitable for NSM (near surface mounted reinforcement) of structures.
Ideal when the cover of the steel bars is very low, as MBAR® does not corrode.
Can be used for slim or narrow architectural concrete.

- Reduce deformation under working loads (increase in rigidity).
- Increase the load-bearing capacity (e.g. structural conversion following a change in capacity load).
- Increase the fatigue strength.
- Limit or cover the fissuring states (increase in durability).
- MBAR® is supplied with peel ply, which gives better adhesion to the substrate and to the subsequent coatings.
- Can be buried in the structure
- Ideal for use in historical structures
- The MBAR® and MBAR® Spiral, enable the amount of reinforcement to be calculated in relation to the performance required or the stress flow.
- Allows faster installation, thereby reducing costs.
- Increases the durability of the structure by protecting it against the aggressive action of chlorides and freezing and thawing cycles.

Technical Data/Typical Properties

MBAR® and MBAR® SPIRAL			
	MBAR®		MBAR® SPIRAL
Typical tensile strength	2500MPa		2000 MPa
Typical tensile modulus	165 GPa		155GPa
Diameter mm	8	12	16
Sectional Area mm^2	46.6	107.5	193.6
Ultimate deformation	1.5 %		1.3%
Fibre content %	65		65
Density g/cm^3	1.61		1.54
Inter Laminar Shear Strength	77 MPa		81 MPa
Thermal Expansion m/mm/°C	0.6×10^{-6}		0.6×10^{-6}

MBAR ® Adhesive	Two-component epoxy based adhesive.	
Colour	Pale grey	
Specific gravity	@ 20°C	1.80
Flashpoint	200°C	
Compressive strength MPa	@ 7 days	50
Tensile strength MPa	@ 7 days	6.5
Flexural strength MPa	@ 7 days	50
Full cure 25°C	3 to 5 days	
Bond strength	Greater than that of the concrete	
Pot life	@ 25°C	1 hour
Cure rates	@ 25°C	5 hours
Full cure	@ 25°C	5 days

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Note:
Values above are typical mean values obtained from regular testing. Some variation may occur dependant on batch, size, and test method sensitivity. Allowance should be made for this in the design process.
The designer is advised to satisfy himself, by prior testing if necessary, that the grade chosen will conform to the performance criteria for his specific design.

Application Procedure

Preparation of Substrate

The surfaces to be strengthened MBAR® should be prepared to receive the MBAR® or MBAR® Spiral. All chases should be clean cut to the required width.
A minimum of 3mm should be left around the MBAR®.
A coat of MBRACE® Primer may be required on porous substrates.

Mix the MBAR® adhesive as directed.
Apply the adhesive to the prepared chase and place the MBAR® into the adhesive.
Level the adhesive to ensure that a smooth surface is achieved.

Packaging

MBAR® and MBAR® Spiral available in lengths of 3m*.

MBAR® Adhesive is available in 3kg units.

*For special lengths please contact BASF Construction Chemical (UK).

Storage

Store at ambient temperatures, out of direct sunlight, in cool, dry warehouse conditions.

Shelf Life

Up to 12 months if stored according to manufacturer's instructions.

Watchpoints

Design and detailed specification should be carried out by appropriately qualified and competent person(s).

Trained and experienced specialist contractors should only carry out installation. Site quality control should be the responsibility of an independent organisation appointed by the client or his representatives.

Technical details of other adhesives, primers and coatings can be found on the technical data sheets for the respective products.

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Health and Safety
*For full information on Health and Safety matters regarding this product the relevant Health and Safety Data Sheet should be consulted.

The following general comments apply to all products.

As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs, (which may also be tainted with vapour until the product is fully cured and dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek medical attention. Keep away from children and animals. Reseal containers after use.

Solvent Based Products
Use in well-ventilated areas; avoid inhaling. Suitable respiratory equipment may be needed, e.g. when spraying. Can cause skin, eye irritation. Wear protective eye shields and gloves during use. Do not smoke or allow sparks or naked lights when stored or in use.

Powder Products
Should be handled to minimise dust formation; use light mask if excessive dust unavoidable. Cement powders when wet or moistened can cause burns to skin and eyes which should be protected during use.

Resin Products
Can cause irritation, dermatitis or allergic reaction. Use protective equipment particularly for skin and eyes. Use only in well ventilated areas.

Spillage
Chemical products can cause damage; clean spillage immediately.

Disclaimer:
This information and all further technical advice is based on our present knowledge and experience. However, it implies no liability or other legal responsibility on our part, including with regard to existing third party intellectual property rights, especially patent rights. In particular, no warranty, whether express or implied, or guarantee of product properties in the legal sense is intended or implied. We reserve the right to make any changes according to technological progress or further developments. The customer is not released from the obligation to conduct careful inspection and testing of incoming goods. Performance of the product described herein should be verified by testing, which should be carried out only by qualified experts in the sole responsibility of a customer. Reference to trade names used by other companies is neither a recommendation, nor does it imply that similar products could not be used.


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