Foreva MFC

- High-performance anchors
- Excellent adhesion to concrete
- High durability materials
- Alkaline hydroxides resistant
- Cure at ambient temperature

Structural Strentghening Solution: Carbon Anchors for externally bonded CFRP fabric composites

Foreva® TFC is Freyssinet's structural strengthening solution, which consists of bonding carbon fibre fabric reinforcements to the surface of an element using a two-component epoxy resin. It is intended to increase the bearing capacity of the elements, by joint mechanical action element-reinforcement, thanks to the adhesion of the resin between the two materials. **Foreva® MFC** is a range of carbon anchors systems which is used to enhance the effectiveness of **Foreva® TFC** carbon fabric reinforcements.

Foreva® MFC anchors are unidirectional carbon fibers bundles saturated with an impregnation epoxy resin. One part of the bundle is embedded in a drillhole filled with an anchor epoxy resin while the other part is laminated on the carbon fabric reinforcement.

Carbon anchor systems

- **Foreva® MFC**: terminal connection with a precured rigid part to be embedded in a drillhole.
- **Foreva® MFC-T**: terminal connection using a rigid rod to embed the anchor in a drillhole.
- **Foreva® MFC-Dual**: composite roving butt stitching two carbon fabrics reinforcements.
- **Foreva® MFC-HA**: terminal connection linking a carbon fabric reinforcement to an embedded high adhesion rebar.
- **Foreva® MFC-CFC**: shear connectors nailing the carbon fabric reinforcement to its substrate.

Field of use

Foreva® MFC carbon anchors are suitable for all reinforced or prestressed concrete structures, such as buildings, bridges, or civil engineering structures, for indoors or outdoors applications, in standard environment (for industrial environment, liaise with Freyssinet's Technical Department). They can be used to increase the seismic capacity of carbon fabric reinforcements.

Principles

- Terminal connections are used to extend the effective length of the carbon fabric reinforcements.
- Butt-stitching is used to transfer the tensile force between two carbon fabric reinforcements separated by an obstacle, and which cannot be overlapped.
- Shear connectors are used to avoid concrete cover delamination or debonding between the element and the reinforcement.

Sizing

- Rules for sizing **Foreva® MFC** carbon anchors are available in their respective Product Technical Data Sheets.
- If necessary, Freyssinet can assist you in carrying out the diagnosis of the existing structure to determine its current condition and evaluate the residual capacity of its structural elements before strengthening.

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Foreva MFC

Foreva® MFC carbon anchors not suitable for the following cases:

- Surface cohesion of concrete < 1.5 MPa.
- Concrete compressive strength < 12 MPa.
- Highly aggressive chemical media.

Products

Foreva® MFC is a set of anchors systems exclusive to Freyssinet. They are designed for use only with **Foreva® TFC** carbon fabric reinforcements.

- The impregnation resin used to saturate the carbon fibers is the same than the one used to saturate the carbon fabrics (**Foreva® Epx TFC** or **Foreva® Epx TFC1000**).
- The anchor resin to fill the drillholes is a thixotropic epoxy resin supplied in cartridges, suitable for overhead applications: Eponal 380, Hilti RE500 or equivalent.

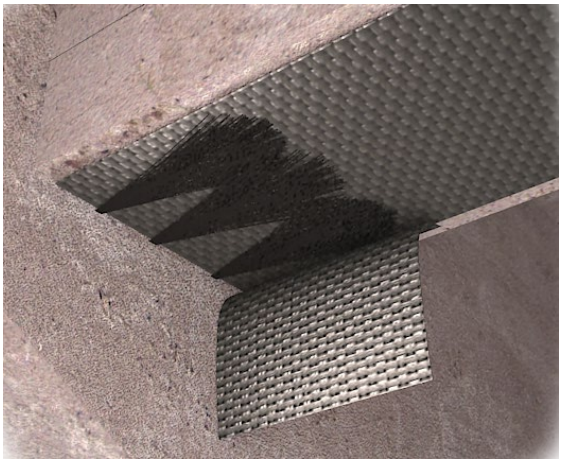
Characteristics	Eponal 380	Hilti RE-500
Color	Light grey	Red
Aspect	Pasty	Pasty
Working time at 23°C	1h15	30 min
Hardness Shore D	80	88

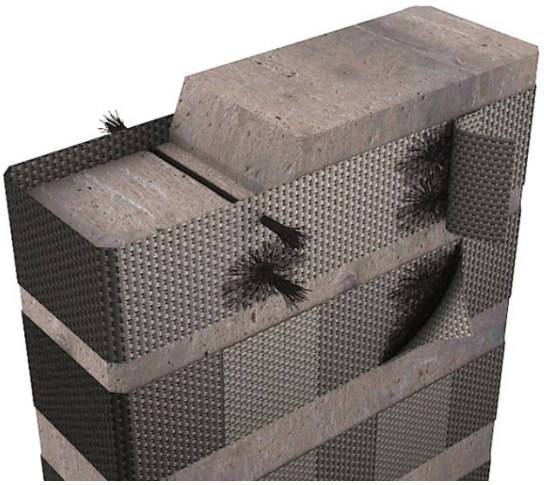
Adhesion on concrete by direct tensile test after curing 7 days 20°C in laboratory conditions	
On dry sandblasted concrete	Min 2.5 MPa concrete rupture
On wet sandblasted concrete (Humidity< 5%)	Min 2.0 MPa concrete rupture

Maximum operating temperatures	
In continuous service (Duration> 24 h)	≥ 41°C
Peak (Duration ≤ 24h)	≥ 53°C

Specialized teams

Foreva® MFC systems are only implemented by Freyssinet's specialized teams to guarantee quality execution. For each site, inspection sheets are filled and attached to the project's Technical File.





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EXTENDING LIFE SPAN OF STRUCTURES