

# FIBRO HFR - HIGH FRACTURE RESISTANCE

Supply and installation of three-component pourable grout with diffuse reinforcement using high-strength steel fibers having a consumption of 25 kg /m<sup>2</sup> (components A + B + C) for each centimeter of thickness created.

The product must be used for:

- Structural reinforcement and seismic upgrade of highly stressed elements and with high ductility performance requirements
- Structural reinforcement and seismic upgrade of reinforced concrete, brick-cement, corrugated sheets, wood and mixed brick-steel beam floors
- Reinforcement, restoration and casing of structures such as beams, even prestressed, pillars, curbs, floors, slabs, etc...
- Reinforcement of reinforced concrete structures, even subjected to hydraulic pressure, particularly suitable for thin "RE-LINING" in combination with the AMPHIBIA waterproof membrane

The material must have the following characteristics:

EC Certification according to EN 1504-3 - Class R4

Specification	Test method	Values
Mixture bulk density	-	> 2.5 kg/l
Flexural strength after 1 day	UNI EN 196-1	> 10 Mpa
after 7 days	UNI EN 196-1	> 15 Mpa
after 28 days	UNI EN 12190	> 18 Mpa
Compressive strength after 28 days	UNI EN 12190	134.5 MPa
Adhesion to the concrete	UNI EN 1542	4.41 MPa
Compressive modulus of elasticity after 28 days	UNI EN 13412	35.7 GPa
Capillary absorption coefficient	UNI EN 13057	0.14 kg*m <sup>-2</sup> *h <sup>-0.5</sup>
Average residual flexural strength CMOD <sub>1</sub> : 0.500 mm CMOD <sub>2</sub> : 1.500 mm CMOD <sub>3</sub> : 2.500 mm CMOD <sub>4</sub> : 3.500 mm	UNI EN 14651	f <sub>R1</sub> : 15.2 MPa f <sub>R2</sub> : 14.0 MPa f <sub>R3</sub> : 12.4 MPa f <sub>R4</sub> : 11.1 MPa
Residual operational tensile strength	UNI EN 14651	f <sub>FIS</sub> : 13.58 MPa
Residual ultimate tensile strength	UNI EN 14651	f <sub>FU</sub> : 10.86 MPa
Pressurised impermeability	UNI EN 12390-8	8 Bar: no passage

as well as Fibro Hfr Volteco or a product with equal or superior characteristics.

The technical data must be supported by test certification issued by an accredited official laboratory and / or be subjected to quality control according to ISO 9001.

For further details on the individual products and installation specifications, refer to the relevant technical data sheets which can be downloaded in the updated version on the website [www.volteco.com](http://www.volteco.com).