

FRP structural reinforcement system with unidirectional carbon fiber high resistance fabric in class 210C

OLY TEX CARBO 600 UNI-AX HR SYSTEM is a structural reinforcement system FRP qualified according to the LG-2015 CVT 247-2019 in class 210C and compliant with CNR DT 200 R1/2013 specific for the interventions of structural consolidation of reinforced concrete elements, reinforced concrete prestressed, masonry, steel and wood.

The system consists of a unidirectional high-strength carbon fiber fabric **OLY TEX CARBO 600 UNI-AX HR** and a binder system of two-component epoxy resins **OLY RESIN 20** and **OLY RESIN 10**.



OLY TEX CARBO 600 UNI-AX HR (high resistance) is a unidirectional carbon fiber fabric of 600 g/m² weight with high specific resistance for structural consolidation operations.



OLY RESIN 20 is a two-component fluid epoxy resin with low viscosity, high adhesion, extremely wetting, ideal for impregnating high grammage fabrics and tapes and for easily penetrating cracks and micro-cracks (up to 0.3 mm thick), with excellent dielectric properties. It is supplied in two pre-dosed containers (A resin + B hardener), of which the "A" part is oversized to allow them easy mixing. **OLY RESIN 20** is CE marked as structural bonding according to EN 1504-4.



OLY RESIN 10 is a thixotropic two-component epoxy filler based on epoxy resins without solvents, supplied in pre-dosed packages with a 1:1 resin-hardener ratio. It has excellent adhesion to various substrates and does not undergo shrinkage due to the chemical reaction without emission of volatile substances, it is recommended for the bonding of FRP systems on surfaces with asperity up to 2 mm. **OLY RESIN 10** is CE marked as structural bonding according to EN 1504-4.

OLY TEX CARBO 600 UNI-AX HR SYSTEM guarantees excellent tensile strength characteristics, allows easy remediation of precarious situations affecting both vertical and horizontal structures, allowing, unlike interventions made with traditional materials, reduced invasiveness, as they allow to keep the dimensions of the unaltered previous elements and the weight of the same and therefore of the entire structure. Composite materials have undoubted advantages: very high tensile strength, low specific weight, high resistance to environmental stresses. Furthermore, they have the advantage of being applicable in a rapid and non-invasive manner. The reinforcement suitably placed in work can subsequently be plastered with the traditional plasters on the market.

Classification and nominal values - CVT 247 - 2019

Class	210C
Tensile elastic module in fibers direction	210 GPa
Tensile strength in fibers direction	2.700 MPa

Classification properties dry fabric

Tensile elastic module in fibers direction	250 GPa
Tensile strength in fibers direction	4.900 MPa

Geometric and physical properties

Properties OLY TEX CARBO 600 UNI-AX HR	Value	Reference legislation
Fiber density, ρ_{fib} [g/cm ³]	1,81	ISO 10119 ISO 1183-1
Fabric mass, p_x [g/m ²]	616	ISO 3374
Resin density, ρ_m [g/cm ³]	1,08±0,05	ISO 1675
Equivalent area, A_{eq} [mm ² /m]	331,49	UNI EN 2561
Equivalent thickness, t_{eq} [mm]	0,331	UNI EN 2561
Fibers fraction weight [%]	46,5	Internal
Fibers fraction volume [%]	34,0	Internal
Glass transition temperature Tg [°C] EN 12614:2004	Epoxy filler	+44,7
	Impregnation resin	+42,0
EN 12614:2004		
Limit temperature, minimum and maximum, of use [°C]	+10/+27	Internal
Application temperature system [°C]	+10/+30	Internal
Reaction to fire	NPD	EN 13501-1:2007

Fire resistant	NPD	EN 13501-2:2007
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Mechanical properties

Properties OLY TEX CARBO 600 UNI-AX HR	Value	Reference legislation
Elastic module of laminate referred to fibers net area [GPa]	n° 1 layer: 211 n° 3 layers: 223	UNI EN 2561
Strength of laminate referred to fibers net area, f_{fib} [MPa]: Average value	n° 1 layer: 2.989 n° 3 layers: 3.093	
Strength of laminate referred to fibers net area, f_{fib} [MPa]: Characteristic value	n° 1 layer: 2.850 n° 3 layers: 2.813	
Ultimate deformation, ϵ_{fib} [%]: Average value	n° 1 layer: 1,42 n° 3 layers: 1,39	

Storage, use and safety precautions

Stone in covered and dry place.

During the preparation and installation of necessary resins for the fabric application personal must wear protective equipment (waterproof gloves, masks and goggles).

In case of eyes contact rinse thoroughly with water.

In case of inhalation breath clean air

In case of skin contact rinse with water

Epoxy resins, because of high adhesion, can damage the work tools.

Therefore, it is advisable to wash the tools before the product harden, with solvents, and to use protective suits, with the aim of preserving work clothes. For more information, refer to the epoxy resin data sheets *OLY RESIN 10* and *OLY RESIN 20*.

Package

Fabric is available in rolls of 50 m, standard length of 10, 20 and 50 cm.

Impregnation resin is available in packs of 6kg.

Binder resin is available in packs of 10 kg and 20 kg.

Instructions for correct installation

1. Preparation and cleaning of support in order to obtain perfectly clean and dry surface and with mechanical characteristic
2. In case of irregular surface, it is necessary to regularize it with suitable hydraulic mortars
3. Where necessary, in case of roughness less than 2 mm application of two-component epoxy filler *OLY RESIN 10 (A+B)*.
4. Brush application of a first two-component epoxy resin layer *OLY RESIN 20 (A+B)* following the instructions in the technical sheet
5. Fabric installation *OLY TEX CARBO 600 UNI-AX HR* with oriented fibers as planned and subsequent treatment with a special bubble breaker roller
6. Apply on fresh resin a second layer of *OLY RESIN 20 (A+B)* and subsequent treatment with a special bubble breaker roller.
7. If the subsequent laying of civil plasters is necessary, it is advisable to carry out a manual dusting with quartz sand on the system, which is still wet, to increase the useful gripping surface.

Epoxy resin consumption

<i>OLY RESIN 10 (A+B)</i>	~ 1,0 ÷ 1,6 kg/m ²
<i>OLY RESIN 20 (A+B)</i>	~ 0,6 ÷ 1,5 kg/m ²

Warnings

The technical specifications and installation methods recommended herein are based on our current knowledge and experience and do not represent any form of guarantee of the final results obtainable with the product. It is the customer's responsibility to check that this data sheet is still effective and has not been replaced with a more recent version, and that the products is suitable for the intended use.

Product for professional use

Specification item

Structural reinforcement of elements in RC and masonry using 600 g/m² high resistance uniaxial carbon fiber fabrics using the following processes:
preparation and cleaning of the support in order to obtain perfectly clean and dry surfaces with adequate mechanical characteristics; application by roller or brush of two-component epoxy primer type OLY RESIN PRIMER; in the case of an irregular surface, it is necessary to regularize it with suitable hydraulic mortars or, in case of roughness less than 2 mm, with epoxy resins in paste type OLY RESIN 10; brush application of a first layer of OLY RESIN 20 (A + B) two-component epoxy resin following the instructions in the relative technical data sheet; laying of unidirectional high modulus aramid fiber fabric such as OLY TEX CARBO 600 UNI-AX HR with oriented fiber as planned and subsequent treatment with a special bubble breaker roller; "fresh" application of a second layer of two-component epoxy resin OLY RESIN 20 (A + B) and treatment with a special bubble breaker roller. If the subsequent laying of civil plasters is necessary, it is advisable to carry out a manual dusting with quartz sand on the system, which is still "fresh", to improve the useful gripping surface.

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For information, technical assistance and further systems for structural reinforcement, visit the website:

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