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OLYMPUS®

TECHNICAL DATA SHEET

OLY TEX CARBO 300
UNI-AX HR SYSTEM

FRP structural reinforcement system with unidirectional carbon fibre fabric with high strength class 210C

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OLY TEX CARBO 300 UNI-AX HR SYSTEM is an FRP structural reinforcement system qualified according to LG-2019 in class C150/2300 - CVT N. 12-2025. The system consists of a unidirectional, high strength carbon fibre fabric *OLY TEX CARBO 300 UNI-AX HR* and a binder system of two-component epoxy resins *OLY RESIN BASE DB* and *OLY RESIN 20 HTG*.

OLY TEX CARBO 300 UNI-AX HR (high strength) is a unidirectional, high-strength 300 g/m² carbon fibre fabric specifically for structural consolidation work.

OLY RESIN BASE DB is an epoxy resin that can be used as a bonding bridge to be applied to the substrate in order to consolidate it and improve its adhesion to the subsequent reinforcement. It is supplied in pre-dosed packages with a 2:1 resin-hardener mixing ratio. It can be applied by roller or brush on a substrate with suitable mechanical characteristics. *OLY RESIN BASE DB* is CE marked as structural bonding according to EN 1504-4 and as an anchoring system in accordance with EN 1504-6.

OLY RESIN 20 HTG is a two-component, thixotropic epoxy resin of medium viscosity, supplied in pre-dosed packages with a resin-to-hardener ratio of 2:1. It can be used for bonding and impregnation of FRP systems. *OLY RESIN 20 HTG* is CE marked as structural bonding according to EN 1504-4.

OLY TEX CARBO 300 UNI-AX HR SYSTEM guarantees excellent tensile strength characteristics and makes it possible to easily remedy precarious situations affecting both vertical structures and horizontals. Unlike interventions using traditional materials, they are less invasive, as they allow the dimensions of the previous elements and their own weight, and therefore the entire structure, to be maintained almost unchanged. Composite materials have undoubted advantages: very high tensile strength, low specific weight, high resistance to environmental stress. In addition, they have the advantage of being quick and non-invasive to apply. The system, which is the subject of this CVT, is suitable for reinforcing undersized or damaged elements in bending, shear, compression and flexural compression, for improving or adapting resistance to seismic, dynamic and impulsive stresses, for improving the stiffness of beam-pillar nodes and for reducing the ultimate deformations of structural elements.

System characteristics and nominal values according to Guideline

Class of membership	***210C***
Tensile modulus in the fibre direction	*210 GPa*
Tensile strength in fibre direction	*2.700 MPa*

Geometrical and physical characteristics

OLY TEX CARBO 300 UNI-AX HR SYSTEM		**Value**	**Reference legislation**
Density of fibre, ρ_{fib} [g/cm^3]		1,78	ASTM D 792 ISO 1183-1
Total mass of fabric per unit area warp, px [g/m^2]		304	ISO 3374
Total mass of fabric per unit area weft, px [g/m^2]		18	ISO 3374
Density of resin, ρ_m [g/cm^3]		1,10±0,05	ISO 1675
Equivalent area, A_{eq} [mm^2/m]		171	Inside method
Equivalent thickness, t_{eq} [mm]		0,171	Inside method
Fraction of weight of fibres in the composite [%]		37	Inside method
Fraction of volume of fibres in the composite [%]		26	Inside method
Glass transition temperature Tg [°C] EN 12614:2004	OLY RESIN BASE DB	≥ 60	ISO 11357-2:2013 (E) LG FRP:2019
	OLY RESIN 20 HTG	≥ 60	
Limit temperatures, minimum and maximum, of use [°C]		-15/+45	LG FRP:2019
System application temperatures [°C]		+5/+30	Inside method
Reaction to fire		F	LG FRP:2019
Fire resistance		NPD	LG FRP:2019

Mechanical properties of FRP system

OLY TEX CARBO 300 UNI-AX HR SYSTEM	Value	Reference legislation
Elastic modulus of the laminate referred to fibre net area, Ef [GPa]	n° 3 layers: 232 n° 6 layers: 229	UNI EN 2561
Laminate strength referred to fibre net area, f_{fib} [MPa] Average value	n° 3 layers: 3.204 n° 6 layers: 3.038	
Laminate strength referred to fibre net area, f_{fib} [MPa] Characteristic value	n° 3 layers: 2.925 n° 6 layers: 2.884	
Tensile breaking strain, ε_{fib} [%] Average value	n° 3 layers:1,24 n° 6 layers:1,23	

Mechanical properties of dry fabric

OLY TEX CARBO 300 UNI-AX HR SYSTEM	Value
Tensile strength (nominal value) MPa	> 4.900
Elastic modulus (nominal value) GPa	250 ± 2%

Storage conditions, precautions for use and safety

Store in a covered, dry place at a temperature between 10°C and 24°C and with a relative humidity of less than 20%. During preparation and application of the resins necessary for fabric application, operators must wear, protective overalls, waterproof gloves, face mask and goggles; In case of contact with the eyes, inhalation, contact with the skin, consult a doctor. For more information, read the safety data sheets of the resin. Due to their high adhesion, epoxy resins can damage working tools and other objects with which they come into contact. Therefore, it is recommended to wash tools before curing products with solvents, and to use protective overalls in order to preserve work clothes.
For more information refer to the safety data sheets of epoxy resins.

Application method

Per For more information on the correct application methods refer to the system preparation and application manual available at www.olympus-italia.com or request further information from the technical support service. The application phases are as follows:

1. Prepare and clean the substrate in order to obtain perfectly clean and dry regular surfaces with adequate mechanical characteristics.
2. In the case of irregular surfaces, regularise them with suitable structural mortars.
3. Apply the two-component epoxy primer *OLY RESIN BASE DB* to the surface to be treated with a roller or brush.
4. Apply a first coat of *OLY RESIN 20 HTG* two-component epoxy resin by roller over the still fresh primer, following the instructions in the relevant technical data sheet.
5. Laying of *OLY TEX CARBO 300 UNI-AX HR* fabric with fibres oriented as per the design and subsequent treatment with a special metal roller.
6. Apply a second 'fresh' layer of *OLY RESIN 20 HTG* and subsequent treatment with a suitable bubble break roller.
7. If several layers are to be laid on top of each other, repeat steps 4 to 6, always 'fresh on fresh' for each layer of fabric to be laid on top of each other.
8. If it is necessary to subsequently lay civil plaster, it is advisable to dust the system while it is still 'fresh' beforehand with quartz sand to increase the roughness of the substrate.

Packaging

The fabric is available in rolls of 50 ml, with standard widths from 10 to 50 cm.
The resins are available in 6 kg packs

Epoxy resin consumption

OLY RESIN BASE DB	*~ 0,25 ÷ 0,30 kg/m²*
OLY RESIN 20 HTG	*~ 0,6 ÷ 1,5 kg/m²*

Warnings

As indicated in Par 4.9.1.1 of the CNR DT 200 R2/2026, for interventions on reinforced concrete structures, prior to the application of reinforcement by adhesion, the Designer, as well as the Director of Works, must proceed to verify the characteristics of the substrate according to the indications given in Chapter 6. In any case, the average compressive strength of the concrete must not be less than 15 N/mm2. Otherwise, the reinforcement technique described in this document cannot be applied. Homogeneity tests should be carried out on the entire area to be reinforced.
For interventions on masonry structures, refer to the indications of para 5.9.1.1 of CNR DT 200 R2/2026.

General Warnings

The technical and mechanical characteristics and laying methods indicated in this sheet are based on an extensive analysis of the state of the art of research and the applications in question, but cannot imply any guarantee on our part as to the final result of the product applied, especially with regard to the laying of the systems, which must be carried out by specialised personnel. The data has been processed with the greatest care and conscientiousness, but without any guarantee of accuracy or completeness and without any liability for the user's further decisions. The data in themselves do not entail any legal commitments or secondary obligations of any other kind. The data do not in principle exempt the customer from independently checking the product with regard to its suitability for the intended use. The purchaser is responsible for checking the suitability of the products described in this document for their intended use and purpose. Olympus srl accepts no liability for the improper use of the material. It is the customer's responsibility to verify that this data sheet and the data contained herein are valid for the product batch in question and are not superseded by later editions and/or new product formulations or certifications. The customer is invited to contact our Technical Department in advance for further clarification. This edition cancels and replaces all previous editions.

To check the latest version of this technical data sheet, information, technical assistance and further systems for structural reinforcement, please contact the Olympus Technical Department:

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