ELLEKON - GFRP CONNECTOR

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The ELLEKON - GFRP (Glass Fiber Reinforced Polymer) composite improved adhesion preformed connector is made of a.r. glass fiber impregnated with epoxy resin. It is part of the system named PROMETHEUS HT holding ETA 23/0398 according to EAD 340392-00-0104 "CRM (COMPOSITE REINFORCED MORTAR) SYSTEMS FOR STRENGTHENING CONCRETE AND MASONRY STRUCTURES.

1. CODE REGISTRY

	DESCRIPTION
TRADE NAME	ELLEKON - GFRP CONNECTOR
PRODUCT CODE	BFO04-(301 to 310)
PRODUCT TYPE	Improved-adherence "L" connector made of alkali-resistant GFRP composite made of epoxy resin
AVAILABLE MEASURES [cm]	Short side: 10 Long side: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100
PACKAGE [pcs]	20
WEIGHT [g/m]	103
QUALIFICATION	PROMETHEUS HT system holds ETA 23/0398 according to EAD 340392-00-0104 "CRM (COMPOSITE REINFORCED MORTAR) SYSTEMS FOR STRENGTHENING CONCRETE AND MASONRY STRUCTURES.

1.1 CONNECTOR GEOMETRIC FEATURES

PROPERTY	VALUE	REFERENCE
NOMINAL DIAMETER [mm]	8,2	EAD 340392-00-0104
NOMINAL SECTION (graduated cylinder) [mm²]	52,28	
NOMINAL AREA REFERRED TO FIBER [mm²]	29,5	CNR DT 203/2006

1.2 CARATTERISTICHE MECCANICHE CONNETTORE

PROPERTY'	VALUE		REFERENCE
	AVERAGE	CHARACTERISTIC	
TENSION RESISTANCE [MPa]	579	540	EAD 340392-00-0104
CONNECTOR TENSION RESISTANCE [kN]	> 28	> 25	
CRISIS LOAD OF THE JOINT BY OVERLOAD (vinylester resin) [kN]	≥ 6	4	
ELASTIC MODULATION, average value [GPa]	> 40		
BREAKAGE DEFORMATION, characteristic [%]	1,11		
LENGTH OF ANCHORING (Lc) [mm]	100		

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1.3 PHYSICAL CHARACTERISTICS CONNECTOR

PROPERTY		VALUE	REFERENCE
FIBER CONTENT IN WEIGHT (average warp weft)		75%	internal method
TEMPERATURE LIMIT OF USE		from -15°C to 70°C	EAD 340392-00-0104
FIBER DENSITY [g/cm³]		2,50÷2,60	
DENSITY OF MATRIX [g/cm³]		1,15÷1,25	
GLASS TRANSITION TEMPERATURE OF THE COMPOSITE		>70°C	
Moisture resistance 1000 h (post-conditioning properties) [%]	Tensile strength (minimum)	87	
	Modulus of elasticity (minimum)	103	
Resistance to saline environments 1000 h (post conditioning property) [%]	Tensile strength (minimum)	99	
	Modulus of elasticity (minimum)	106	
Resistance to alkaline environments 1000 h (post conditioning property) [%]	Tensile strength (minimum)	94	
	Modulus of elasticity (minimum)	104	
FIRE REACTION CLASS		F	

2. USE AND INSTALLATION

2.1 USE

ELLEKON - GFRP CONNECTOR is part of the system called PROMETHEUS HT used for reinforcing masonry by means of the reinforced plastering technique as required by NTC18. The plating of masonry with the PROMETHEUS HT structural reinforcement system involves in combination with HERCUNET - STRUCTURAL NET, the use of GFRP, ELLEKON “L” connectors with improved adhesion and the use of GFRP corner profiles, ANGULAR HERCUNET - STRUCTURAL NET 8080.

In addition to masonry reinforcement, the PROMETHEUS HT system finds use in the consolidation of arches and vaults, floors and columns and pillars.

The system can be applied in conjunction with inorganic lime- or cement-based matrices that meet the requirements for structural applications in overall thicknesses generally between 30 and 50 mm plus any leveling layers. For anchoring connectors, use chemical anchors (epoxy or vinylester resin) qualified for structural grouting and anchoring. For better distribution of stresses between the connector and the mesh, use gussets made from the same mesh of size 16x16 cm or use the optimized CIRCLENET - PA DISSIPATOR.

2.2 INSATALLATION

1. Remove the plaster and any finishing layer and / or filler in the case of vaults going to remove all inconsistent material or in the process of detachment. Perform any necessary intervention (sarcitura of lesions, scuci-cuci, partial reconstruction etc) in order to obtain a healthy and compact support. Perform masonry washing with low-pressure water.

2. Drill the holes for the subsequent placement of connectors in the number and according to the scheme provided in the project. In the case of reinforcement only on one side of the masonry, provide connectors with a length equal to ⅔ of the thickness of the masonry and drill holes with a diameter of about 12 mm. If reinforcement is planned on both sides, consider for each hole two connectors, one of which is approximately equal in length to the masonry thickness and the second such as to ensure an overlap with the first not less than 10 cm. In the section where the two connectors overlap, enlarge the hole to 24 mm.
Clean the holes with suction or blowing and place removable markers in them to prevent their obstruction during subsequent stages. Wet the masonry with low-pressure water and allow the water to be absorbed until a saturated substrate is obtained with a dry surface (s.s.a. condition).

3. Apply by machine or by hand a first layer of mortar about 1.5 to 2 cm thick and smooth it out to have a planar surface. When fresh, put in place the mesh by adhering it with the help of a trowel to the rendering layer. In the case of adjacent mesh sheets, provide an overlap of at least 15 cm. Place corner elements where necessary.

4. Remove the previously placed removable signs, place the divider and insert the connectors after filling the holes with the chosen chemical anchor.

5. Within 24-36 hours from the laying of the first layer, perform the second one of 1.5 - 2 cm thickness going to completely cover the mesh and connectors. In the case of lime-based mortar, wait until the plaster is fully cured before proceeding with any finishing layers.

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3. FURTHER ADVICE

3.1 STORAGE

Store in a covered and dry place in the original packaging in order to protect it before its use from grease, oil, dust or any other material that may affect the adhesion of the resin in the anchoring phase between the connector and the support. Handle and store with care, avoiding shocks that may damage or break the element.

3.2 SAFETY INSTRUCTIONS

With reference to current European regulations (Reg. 1906/2007/EC - REACH) ELLEKON - GFRP CONNECTOR is an article and does not require a Material Safety Data Sheet. During use, the use of protective gloves and goggles is recommended. Follow the safety requirements provided in the workplace. PRODUCT FOR PROFESSIONAL USE

3.3 WARNINGS

The data given correspond to our current technical and application knowledge for the appropriate use of the product and are to be considered, in any case, indicative and general, therefore not binding for the same. We recommend that a prior practical test be carried out in order to verify the suitability of the product with respect to its intended use, purposes and consumption. The purchaser is responsible for verifying the suitability of the products described in this document for its intended use and purposes. Always refer to updated versions of data sheets available at www.dakota.eu

4. TECHNICAL SPECIFICATION

Item	Description	Unit	Price
Dak.D.BFO04.30x	Reinforcement or consolidation of walls of any kind, including single-headed walls, by CRM (Composite Reinforced Mortar) reinforced plaster technique with application of alkali-resistant G.F.R.P. (Glass Fiber Reinforced Polymer) preformed fiber-reinforced composite mesh, 40x40 mm mesh, fiber content by weight 75%, tensile elastic modulus average value 44. 000 N/mmq, characteristic tensile strength 436 MPa, characteristic mesh tensile strength > 97 KN/m, characteristic knot-tear strength > 0.5 kN, tensile strength and elastic modulus decay for humid, alkaline and saline environment < 15% type HERCUNET - STRUCTURAL NET 4040 from Dakota or equivalent. The following are included: cleaning of the masonry elements; washing of the masonry surface; execution of perforations in number of 4/sqm; and supply and insertion of preformed "L" connectors of size 8 x 10 mm and appropriate length in relation to the wall thickness in G.F.R.P. type ELLEKON - GFRP CONNECTOR of Dakota or equivalent having, complete with load distribution handkerchief type CIRCLENET - PA DISSIPATOR of Dakota or equivalent, applied to the wall with insertion for at least 2/3 of the wall thickness (for intervention on 2 sides, overlap between them of at least 10 cm) and solidified by styrene-free vinylester chemical anchor; the incidence of corner reinforcements in fiber-reinforced composite material G. F.F.R.P. (Glass Fiber Reinforced Polymer) type ANGULAR IN HERCUNET - STRUCTURAL NETWORK 8080, counted at a rate of about 20% with respect to the total area to be reinforced; application in a thickness of 3 cm with a trowel finish of NHL 3.5 natural hydraulic lime-based mortar with compressive strength ≥ 15 MPa, max aggregate grain size 1.2 mm CE marked according to UNI EN 998-1 and 998-2 type BIO FORCE ONE by DAKOTA or equivalent. The removal of the existing plaster is excluded. Also included is whatever else is needed to give the job finished, counted to actual size on the exterior wall, application for wall thicknesses up to 60 cm.	pc.	-
Dak.D.BFO04.301	Dimensions 100 x 100.....	pc.	-
Dak.D.BFO04.302	Dimensions 100 x 200.....	pc.	-
Dak.D.BFO04.303	Dimensions 100 x 300.....	pc.	-
Dak.D.BFO04.304	Dimensions 100 x 400.....	pc.	-
Dak.D.BFO04.305	Dimensions 100 x 500.....	pc.	-
Dak.D.BFO04.306	Dimensions 100 x 600.....	pc.	-
Dak.D.BFO04.307	Dimensions 100 x 700.....	pc.	-
Dak.D.BFO04.308	Dimensions 100 x 800.....	pc.	-
Dak.D.BFO04.309	Dimensions 100 x 900.....	pc.	-
Dak.D.BFO04.310	Dimensions 100 x 1000.....	pc.	-