

# Glass Net 315

Glass fibre mesh for CRM strengthening and dry anti-collapse prevention systems.

GFRP Glass Net 315 is a component of the CRM system to be combined with lime- or cement-based mortars. When used in combination with connectors from the Steel Connect range, it allows the creation of dry anti-collapse prevention systems.



1. Certified for CRM structural strengthening
2. Excellent tensile strength
3. High level of durability
4. Easy to install
5. For the strengthening of masonry and concrete structures
6. For the dry anti-collapse prevention system

## Areas of application

### → Intended use:

- Static and seismic upgrade or improvement of masonry and concrete structural elements by using the CRM reinforced plaster/render technique in combination with Glass Net A305 corner piece, Glass Connect L connectors grouted with Resinglass or Steel Dryfast helical bars and lime- or cement-based mortars
- Consolidation of masonry arches, vaults and domes
- Compressive and flexural stress and shear for wall panels
- Dry anti-collapse prevention system for brick and cement floor slabs or l-beams and hollow bricks, in combination with connectors from the Steel Connect range

## Instructions for use

1. Creation of reinforced plaster/render using the CRM (Composite Reinforced Mortar) technique

### → Preparation

Glass Net 315 is ready to use and can be easily cut using shears or a sander. Its weave guarantees stability and ease of installation.

### → Preparation of the substrate

The substrate must be meticulously prepared and cleaned in accordance with the technical data sheet of the chosen mortar: Geocalce G Antisismico, Biocalce Muratura, Geolite, Metric R3 Tixo or Metric R4 Tixo.

For applications on masonry, it is necessary:

- remove all finishing coats until the masonry is exposed;
- remove all weakened parts and inconsistent rendering mortars until a solid, resistant substrate is obtained; roughen it by mechanical scarification or hydro-demolition to a depth of at least 5 mm, equivalent to level 8 of the Test kit for preparation of reinforced concrete and masonry substrates;
- repair any missing parts of the masonry using fragment-filling or break-fill techniques;
- to saturate with water until the substrate is saturated yet with no excess water on the surface;
- on dusty substrates or substrates that are not compact, to apply Primer Uni diluted 1:4 using water until fully saturated
- on strongly uneven substrates, a layer of levelling mortar can be applied.

### → Application

Drill bores of the appropriate diameter depending on the type of connection to be made on the structural element; remove any dust from inside the bores and install the Glass Connect L fibreglass connectors, as indicated in the technical data sheet, anchoring them to the support using Resinglass chemical anchoring agent.

Alternatively, appropriately bent Steel Dryfast stainless steel helical bars can be used. The quantity and arrangement of the connectors will be defined by the designer; 4 connectors per m<sup>2</sup> are recommended.

Lay the Glass Net 315 mesh, which must be placed at the centre-line of the total thickness of the mortar, ensuring an overlap of at least 10 cm between adjacent meshes and with the Glass Net A305 corner element at the edges. In overlapping areas, it is recommended to use the appropriate connectors.

Then wet the substrate until fully saturated and apply the chosen mortar, ensuring complete coverage of the system. The application can also be carried out in several layers depending on the final thickness required, between 3 and 5 cm. Allow the surfaces to cure for at least 24 hrs.

### 2. Creation of a dry anti-collapse prevention system for floor slabs

Install the Glass Net 315 mesh on the intrados of the floor using the appropriate dry anti-collapse connectors Steel Connect C6 for brick and cement floor slabs, and Steel Connect S5 for floor slabs with l-beams and hollow bricks. Refer to the product technical data sheet for correct installation. Alternatively, Steel Dryfast stainless steel helical bars can be used. The quantity and arrangement of the connectors will be defined by the designer; 4 connectors per m<sup>2</sup> are recommended.

# Certificates and marks



## Abstract

### CRM Glass Net system

Supply and installation of a CRM (Composite Reinforced Mortar) system for double-sided, compressive strengthening of load-bearing walls, CE-marked, with European Technical Assessment (ETA), made with bi-directional FRP mesh consisting of AR glass fibre cords completely impregnated with thermosetting resin (total mass 315 g/m<sup>2</sup>) installed with hygroscopic and breathable inorganic mortar based on pure natural hydraulic lime NHL 3.5 – such as CRM Glass Net made with Glass Net 315 in combination with Geocalce G Antisismico by Kerakoll. Characteristics of the mesh: mesh size 50x52 mm, nominal cross-sectional area 8.33 mm<sup>2</sup> (weft) and 5 mm<sup>2</sup> (warp), typical tensile strength 486.11 MPa (weft) and 567.98 MPa (warp), typical ultimate strain 2.05% (weft) and 1.88% (warp), typical tensile elastic modulus 24.67 GPa (weft) and 28.78 GPa (warp), typical knot shear strength 0.62 (weft) and 0.84 kN (warp). Certified characteristics of the mortar: G/M15 mortar class (EN 998/2), R1 PCC resistance class (EN 1504-3), permeability to water vapour 15 to 35 (EN 1745), compressive strength after 28 days  $\geq 15$  N/mm<sup>2</sup> (EN 1015-11), elastic modulus 9.23 GPa (EN 13412), adhesion to the substrate after 28 days  $> 1.0$  N/mm<sup>2</sup> – FB: B (EN 1015-12). Transversal connections are made with 4 elements per m<sup>2</sup>, using “L” shaped fiberglass rebars installed on both sides with an internal overlap of at least 10 cm, for an average thickness of the load-bearing wall of 50 cm, grouted with a chemical anchoring agent - such as Glass Connect L8 in combination with Resinglass by Kerakoll. Characteristics of the rebar: nominal section area 50.24 mm<sup>2</sup>, typical tensile strength 727.3 MPa, elastic modulus 44 GPa, break warp 2.38%, anchoring length 100 mm. Characteristics of the resin: CE-marked, suitable for seismic applications compliant with C1 and C2 performance levels, axial tensile strength 24,3 N/mm<sup>2</sup>. The procedure will be conducted as follows: eventual preparation of the surfaces to be strengthened by demolishing and removing the existing plaster/render; repair of any cracks by binding and/or consolidating with injection of fluid mortar (to be accounted for separately) and final dusting by low-pressure water washing; creation and cleaning of the through-bore of a suitable diameter according to the diameter of the rebars, taking into account the overlapping of the rebars inside the bore; insertion of the connectors inside the bore and fastening by means of a chemical anchoring agent; positioning of the mesh, taking care to distance it from the substrate by means of fastening to the connectors; preparation and laying of the mortar with a plastering machine in a total thickness of 3-5 cm per side.

The quantification is calculated per unit area of reinforced masonry including any overlaps.

### Dry anti-collapse prevention system

Supply and installation of a dry anti-collapse prevention system for brick and concrete floor slabs, made with bi-directional FRP mesh consisting of AR fiberglass cords completely impregnated with thermosetting resin (total mass 315 g/m<sup>2</sup>) – such as the dry anti-collapse prevention system made with Glass Net 315 by Kerakoll. Characteristics of the mesh: mesh size 50x52 mm, nominal cross-sectional area 8.33 mm<sup>2</sup> (weft) and 5 mm<sup>2</sup> (warp), typical tensile strength 486.11 MPa (weft) and 567.98 MPa (warp), typical ultimate strain 2.05% (weft) and 1.88% (warp), typical tensile elastic modulus 24.67 GPa (weft) and 28.78 GPa (warp), typical knot shear strength 0.62 (weft) and 0.84 kN (warp). Connections to the floor slabs are made using 4 elements per m<sup>2</sup>, by means of a dry connection made with self-tapping steel screws for concrete with a hardened thread surface and anti-corrosion coating, CE-certified, with an external diameter of 6.1 mm and a length of 75 mm – such as Steel Connect C6 – 75 by Kerakoll. Technical characteristics of the connector: installation depth  $> 30$  mm in a 5 mm-diameter pre-drilled bore and depth  $> 35$  mm. Typical pull-out resistance 2.24 kN. The procedure will be conducted as follows: eventual preparation of the surfaces to be strengthened by complete removal of damaged plasters/renders, old paint layers and any already damaged or about to be damaged pieces of brick; possible repair and/or strengthening of damaged or damaged joists (to be accounted for separately); drilling of pilot bores (diameter: 5 mm) for the installation of the connectors; positioning of the mesh at the soffit of the floor slabs and dry anchoring using screws installed in the pre-drilled bores with appropriate washers; installation of appropriate perimeter anchoring (to be accounted for separately). The quantification is calculated per unit area of surface covered including any overlaps.

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**Technical Data compliant with Kerakoll Quality Standard**

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**Dry fabric technical information**

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Material	AR glass pre-impregnated with thermosetting resin
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Weight of impregnated mesh	≈ 315 g/m <sup>2</sup>
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**Nominal section of cords:**

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- weft	8.33 mm <sup>2</sup>
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- warp	5 mm <sup>2</sup>
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**Bars/metre per side:**

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- weft	19 n/m
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- warp	20 n/m
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**Mesh size:**

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- weft	52 mm
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- warp	50 mm
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Roll width	= 160 cm
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Roll length	= 25 m
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Shelf life	unlimited
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Pack	40 m <sup>2</sup> rolls
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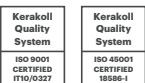
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<b>Performance</b>			
<b>Glass Net 315 for CRM systems</b>			
<b>Mechanical characteristics</b>	<b>Test Method</b>	<b>Weft performance</b>	<b>Warp performance</b>
Tensile strength (average value)	<b>Annex B</b> EAD 340392-00-0104	$\sigma_{u,m} = 522.20 \text{ MPa}$	$\sigma_{u,m} = 609.24 \text{ MPa}$
Tensile strength (characteristic value)	<b>Annex B</b> EAD 340392-00-0104	$\sigma_{u,m} = 486.11 \text{ MPa}$	$\sigma_{u,m} = 567.98 \text{ MPa}$
Tensile strength by unit of width (characteristic value)	ISO 10406-1:2015	76.9 kN/m	56.8 kN/m
Bar tensile strength (average value)	ISO 10406-1:2015	4.35 kN	3.03 kN
Bar tensile strength (characteristic value)	ISO 10406-1:2015	4.05 kN	2.84 kN
Ultimate strain (average value)	<b>Annex B</b> EAD 340392-00-0104	$\epsilon_{u,m} = 2.18\%$	$\epsilon_{u,m} = 2.02\%$
Ultimate strain (characteristic value)	<b>Annex B</b> EAD 340392-00-0104	$\epsilon_{u,m} = 2.05\%$	$\epsilon_{u,m} = 1.88\%$
Modulus of elasticity (average value)	<b>Annex B</b> EAD 340392-00-0104	$E_m = 25.68 \text{ GPa}$	$E_m = 30.34 \text{ GPa}$
Elastic modulus (characteristic value)	<b>Annex B</b> EAD 340392-00-0104	$E_m = 24.67 \text{ GPa}$	$E_m = 28.78 \text{ GPa}$
Knot shear strength (average value)	<b>Annex C</b> EAD 340392-00-0104	$F_{junc} = 0.99 \text{ kN}$	$F_{junc} = 1.02 \text{ kN}$
Knot shear strength (characteristic value)	<b>Annex C</b> EAD 340392-00-0104	$F_{junc} = 0.62 \text{ kN}$	$F_{junc} = 0.84 \text{ kN}$
Mesh glass-transition temperature	EN ISO 11357-2	$T_g = 71.9 \text{ °C}$	
<b>Installation conditions</b>			
Maximum temperature (air and substrate)			+50 °C
Minimum temperature (air and substrate)			-5 °C
Relative air humidity			irrelevant
<b>Service conditions</b>			
Maximum temperature (air and substrate)			+70 °C
Minimum temperature (air and substrate)			-15 °C
Relative air humidity			irrelevant

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## Warning

- Abide by any standards and national regulations
- when handling the material wear protective clothing and goggles, and follow the instructions regarding methods for applying the material
- store the material under cover in a dry place, well away from substances that might damage it
- the product is an item according to the definitions of the EC Regulation No. 1907/2006 and therefore does not require a Safety Data Sheet
- for any other issues, contact Kerakoll Technical Customer Service: + 39 0536.811.516  
[www.kerakoll.com/contatti](http://www.kerakoll.com/contatti)



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