Kimisteel GLV 650

ST8-0622

High strength galvanized steel fabric to be used as reinforcement fabric in structural consolidations.

DESCRIPTION

Kimisteel GLV 650 is a unidirectional reinforcement fabric made of high-resistance galvanized zinc plated filaments.
The product can be used with inorganic matrices to achieve structural consolidation of masonry, reinforced concrete and prestressed reinforced concrete.
The choice of the matrix depends on the kind of substrate on which the product is applied, the mechanical strength, the elastic modulus required for the system, the intended use environment and the vapor permeability required to the system.
Kimisteel GLV 650 is part of Kimisteel GLV 650 B SYSTEM and Kimisteel GLV 650 M SYSTEM which got the CVT n. 207.

ADVANTAGES

- High mechanical strength with reduced thicknesses and weights.
- It can be applied on both wall structures and times as well as for the reinforcement of reinforced concrete structures; May be used with inorganic matrices in relation to mechanical strength, type of use environment and vapor permeability required by the system; pre-tensioning for curl or bandage operations.
- Fast and easy laying even in ready-made work.

USES

- Reinforcement for masonry structures
- Creating reinforced edge beams
- Vault consolidation
- Structural reinforcement for beams and joists
- Pillar and column confinement
- Creating prefabricated concrete elements with light reinforcement
- Creating reinforced clay bricks

WORKS

- Structural reinforcing systems for masonry structures, using galvanized steel fabrics with inorganic matrix (**SA126**)
- Structural reinforcing systems fro RC elements, using galvanized steel fabrics with inorganic matrix (**SA127**)
- Making and application of galvanized or stainless steel connectors (**SA136**)

APPLICATION

For different kind of works please read technical documents and the TDS of the products to be used.

Prepare the surfaces to be reinforced by cleaning thoroughly from any element which may affect the adhesion the reinforcement system and prepare mechanical anchoring systems or drill hole in order to anchor the ends of the fabric itself.

On substrates primed, apply one of the following matrices:

- **Basic MALTA M15/F** mortar in case of masonry surface.
- **Betonfix MONOLITE N** in case of concrete surface.

After the first layer of matrix, while the matrix is still fresh, insert one end of the fabric in the drilled hole or in the mechanical fastening systems previously prepared, lay the fabric, pre-tensioning (if provided) and secure the other end of the strip and, with metal spatula and / or trowel, drown the fabric into the matrix. While the matrix is still fresh, apply a further coat of matrix making sure the fabric will not remain in any area exposed.

The fabric itself can be used to make connecting rods in structural and non-structural reinforcement systems.

Proceed as follows:

- Drilling the holes respecting diameter and length required;
- Cut the fabric, taking into account the wall thickness (the hole should have at least 2/3 of the

masonry length, if the connection is not a through-hole) and the portion of fabric that will have to remain outside the hole (at least 10 cm);
- Roll up the fabric longitudinally on itself;
- Insert the fabric in the hole and inject using **Kimitech** resins or mortars from **Betonfix or Limepor** ranges.

PACKAGING
Rolls: length 25 m; width 10 or 30 cm.

STORAGE
Fabric is moisture sensitive. Keep in a dry place, not too exposed to sunlight.

Characteristics	Kimisteel GLV 650
Weight of steel strands [g/m²]	650
Total weight of fabric [g/m²]	740
Steel tensile elastic modulus [GPa]	182,9
Characteristic tensile strength of the mesh [MPa]	1578
Steel tensile elongation [%]	1,3
Cable diameter [mm]	1
Cable resistance at failure [KN]	> 0,8
Resistant section per unit length [mm²/m]	83
Equivalent thickness [mm]	0,083
Maximum resistance per unit width [kN/m]	130,97

WARNING
Product intended for professional use.
Never allow the product to come into contact with water or store it in particularly damp conditions before use.
The product is an item according to the definitions of Regulation (EC) n. 1907/2006 and therefore does not require a Safety Data Sheet.
When applying in particularly aggressive areas, consult the Technical Department for the best choice of matrix and finish.
The product must be applied so that it is totally submerged in the matrix and there are no areas in which the fabric remains uncovered.
Apply the product outdoor only if a protective plaster is foreseen over the matrix.
During the works, when parts of the fabric are exposed for long time, you have to protect the ends of them against oxidation, applying by brush **Kimicover FIX**.
The information and requirements indicated in this Technical Data Sheet are based on our current knowledge and experience and are to be considered, in any case, purely indicative. They cannot guarantee the final result of the applied product and they have to be confirmed by exhaustive practical applications; therefore the user must test the suitability of the product for the intended application and its purpose. Users must always refer to the latest version of the local technical data sheet related to the product.

TECHNICAL SPECIFICATIONS
SK126-Structural reinforcing systems for masonry structures, using galvanized steel fabrics with inorganic matrix
SK127-Structural reinforcing systems fro RC elements, using galvanized steel fabrics with inorganic matrix
SK136-Making and application of galvanized or stainless steel connectors

(**SK126**) Structural strengthening using galvanized steel fabrics in inorganic matrix and respecting the following phases: shoring the structure if necessary, clean the support removing any materials that can affect the good adhesion of next applications. Accurate sealing of existing cracks and restoration of degraded parts with suitable resins or mortars. In case the surface to be treated is quite irregular, smooth the surface with adequate hydraulic mortars.
If the existing support need a superficial consolidation, prime the surface with the bi-component epoxy resin in aqueous solution **Kimicover FIX** by Kimia S.p.A. or similar product. The product is CE marked as a protective coat accoridng ot the EN 1504-2 for MC and IR principles, with the following characteristics: first setting time at 20°C is 2 hours; complete curing time at 23°C is 7 days; glass transition temperature Tg EN 12614 is 78,5 °C; density (A+B) EN 2811-1 is 1,10 ± 0,05 g/cm³.
If necessary, drill holes with 16mm diameter for transversal connectors. Clean with air the holes and install the connectors made with galvanized steel fabric Kimisteel GLV 650 by Kimia S.p.A. or similar product, rolled up to create a cylindrical shape to be sealed in the hole with adequate resin. Apply the first layer of Basic MALTA M15/F mortar by Kimia S.p.A. or similar product with a consumption of 1,5 Kg/m²/mm. The maximum thickness ot be respect for each layer is 5 mm. The characteristics of the mortar are as following: granulometry EN 1015-1: 1,2 mm; Bulk density of fresh mortar EN 1015-6: 1900 Kg/m3; Compressive resistance at 28 days EN 1015-12: >15 N/mm²; Flexural tensile resistance at 28 gg >4 Mpa. The product will be CE marked as R2 mortar according to EN 1504-3 and as M15 masonry mortar according to EN 998-2, furthermore as GP CS IV mortar for plaster according to EN 998-1. While the mortar is still fresh, apply the galvanized steel fabric Kimisteel GLV 650 by Kimia S.p.A. or a similar product and push gently using a trowel the steel fabric inside the matrix to embed it correctly. The characteristics of the galvanized steel fabric are as following: elastic modulus: 182,9; tensile elongation at failure: 1,3%; strand diameter: 1 mm; weight: 650 g/m²; equivalent thickness: 0,083 mm; weave with flexible steel micro-wires; maximum load for length unit: 130,97 N/ mm. Spread the free part of the connector over the layer of mortar and cover the connector with the next coat of mortar. To anchor the connector a lime-based mortar can be used, Limepor 100 GEL by Kimia S.p.A. or a similar product, CE marked according to EN 998-2, with the following characteristics: fluidity UNI 8997: 70-80 cm; initial setting time EN 1015-9: 195 ± 30 minutes; compressive resistance EN 1015-11 at 28 days > 18 MPa; flexural resistance at 28 days > 4.9 MPa; Thermal conductivity: 0,83 W/mK. Apply a second coat of the mortar used as matrix obtaining a total thickness of 10 mm for the intervention.
The skimming coat can be applied after the complete curing time of the matrix, using a lime-based mortar like Limepor EDO by Kimia S.p.A. or a similar product.

(**SK127**) Structural strengthening using galvanized steel fabrics in inorganic matrix and respecting the following phases: if necessary shoring the structure, clean and repair the concrete support in order to obtain a clean and sound surface, without detaching parts or any element that can affect the good adhesion of the next application. Remove the rust from the existing steel reinforcement bars until the state of “white metal” is achieved. Clean the support from dust, oli, old paints, etc.... Wet the support until saturation and repair the concrete support with adequate mortar. If a superficial consolidation is necessary, prime the surface with the bi-component epoxy resin in aqueous solution **Kimicover FIX** by Kimia S.p.A. or similar product. The product is CE marked as a protective coat according to the EN 1504-2 for MC and IR

principles, with the following characteristics: first setting time at 20°C is 2 hours; complete curing time at 23°C is 7 days; glass transition temperature Tg EN 12614 is 78,5 °C; density (A+B) EN 2811-1 is 1,10 ± 0,05 g/cm³.
If necessary, drill holes with 16mm diameter for transversal connectors. Clean with air the holes and install the connectors made with galvanized steel fabric Kimisteel GLV 650 by Kimia S.p.A. or similar product, rolled up to create a cylindrical shape to be sealed in the hole with adequate resin. Apply the first layer of Betonfix MONOLITE N by Kimia S.p.A. or a similar product respecting a consumption of 1,7 Kg/m²/mm. Maximum thickness of each coat is 5 mm. The characteristics of the mortar are as following: granulometry EN 1015-1: 0,1-0,5 mm; bulk density of fresh mortar EN 1015-6: 2050 ± 30 Kg/m3; compressive resistance at 28 days at 21°C EN 1015-12: > 50 MPa; flexural resistance at 28 days at 21°C > 8 MPa; CE marked as R4 mortar according EN 1504-3, as protective coat for steel reinforcement bars according to EN 1504-7 and as protective coat for concrete surface according to EN 1504-2 for C, MC and IR principles. While the mortar is still fresh, apply the galvanized steel fabric Kimisteel GLV 650 by Kimia S.p.A. or a similar product and push gently using a trowel the steel fabric inside the matrix to embed it correctly. The characteristics of the galvanized steel fabric are as following: wire resistance: elastic modulus: elastic modulus: 182,9; tensile elongation at failure: 1,3%; strand diameter: 1 mm; weight: 650 g/m^2; equivalent thickness: 0,083 mm; weave with flexible steel micro-wires; maximum load for length unit: 130,97 N/ mm. Spread the free part of the connector over the layer of mortar and cover the connector with the next coat of mortar. To anchor the connector the cement-based mortar Betonfix 200 TH by Kimia S.p.A. or a similar product can be used. This product is CE marked as anchoring for steel reinforcement bars according to EN 1504-6, specific weght UNI 9446: 1,40 ± 0,5 g/cm³, bulk density of fresh mortar EN 1015-6: 1910 ± 50 Kg/m³, bulk density of cured mortar EN 1015-6: 1940 ± 50 Kg/m³.
Apply a second coat of the mortar used as matrix obtaining a total thickness of 10 mm for the intervention.
The skimming coat can be applied after the complete curing time of the matrix, using a cement-based mortar like Betonfix RS by Kimia S.p.A. or a similar product.

(**SK136**) Making and application of galvanized steel connectors respecting the following phases: prepare the support removing degraded parts and repairing the surface if needed; drill holes with a minimum diameter of 16mm and depth of 20 cm: clean the holes with compressed air; cut the galvanized steel fabric Kimisteel GLV 650 by Kimia S.p.A. or a similar product depending on the dimensions required on site; bend the cut fabric using the bending machine Kimisteel BENDER by Kimia S.p.A. or a similar product.
The characteristics of the galvanized steel fabric are as following: wire resistance: elastic modulus: elastic modulus: 182,9; tensile elongation at failure: 1,3%; strand diameter: 1 mm; weight: 650 g/m^2; equivalent thickness: 0,083 mm; weave with flexible steel micro-wires; maximum load for length unit: 130,97 N/ mm. Cut the non-structural steel wires and open the free part of the connector. Proceed rolling up the part of the connectors to be inserted in the hole. In order to make easier the rolling up operation, it is advisable to use a rigid bar (like Kimitech TONDO VR 6mm by Kimia S.p.A.) that can be removed once inserted the connector or left in the hole. Then use a tape, steel wire or plastic ties to maintain rolled up the connector. Proceed injecting in the predrilled holes an adequate anchoring product depending on the suppoort a dimension of the holes (Limepor 100 GEL by Kimia S.p.A. or a similar product for holes in masonry structures or Betonfix 200 TH by Kimia S.p.A. or similar product for holes in concrete structures). Insert the connectors and if needed inject more anchoring product until the saturation of the holes. As final phase, open the free part of the connector on the first layer of matrix.