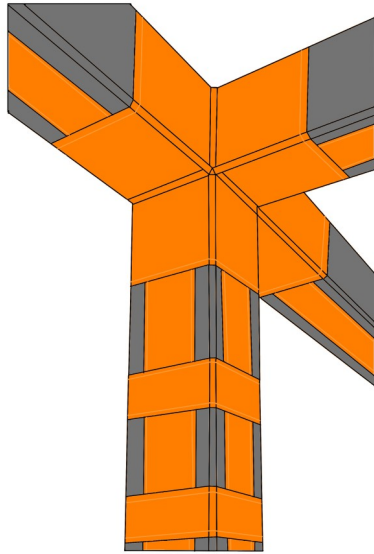


## Structural reinforcement with high resistance carbon fibre tissues soaked with resins

**LV61\_SA\_EN\_R4-0919**



### APPLICATION DATA SHEET

Structural reinforcement with high resistance carbon fibre tissues soaked with resins through:

1. cleaning and regularization of the substrate;
2. priming;
3. laying of the epoxy adhesive;
4. application of the connectors;
5. soaking;
6. anchoring;
- 6b. construction of connectors;
7. skimming.

### 1) CLEANING AND REGULARIZATION OF THE SUBSTRATE

#### Reinforced concrete structures:

If it is necessary to carry out a restoration, prepare the surface completely removing the deteriorated concrete by hand or mechanical chipping or by other suitable means, such as hydro-scarifying, in order to obtain a solid substrate, free of loose parts and sufficiently rough.

Remove the rust from the exposed bars bringing the surface back to "white metal" conditions. Clean the substrate from dust, grease, oils and other contaminants.

Wet the substrate until saturated surface dry conditions are achieved and proceed to the treatment of the irons with

passivating mortar **Betonfix KIMIFER** applied with a brush. Repair the surface with a suitable mortar from the Betonfix range. Wait for the restored part to completely dry before applying the primer.

If the restoration of the concrete surface and reinforcement rods is not necessary, proceed with the shoring of the structures affected by the intervention. Round off any edges (minimum radius of 2 cm).

The concrete surface, before the application of the FRP system, must have a tensile strength greater than 1.5 Mpa.

Clean the substrate in order to eliminate inconsistent parts and any material that could compromise the good anchoring.

Carefully grout any cracks or micro-cracks with suitable mortars (contact our Technical Department).

#### Masonry structures:

Remove any plaster and all the inconsistent or detaching parts, until obtaining a sound, compact and mechanically resistant substrate, in order to avoid the detachment.

Prepare the substrate getting out the dust from the surface to be restored. Treat the surface with cortical consolidating fixative **KIMICOVER FIX** if necessary.

Furthermore, if necessary, proceed restoring the continuity of the masonry element with an adequate mortar from the Tectoria or Basic range mixed with appropriate latex from the Kimitech range. Wait for any regularization strips to dry (at least 48 h) before priming.

### 2) PRIMING

Application on the treated surface of two-component synthetic resin primer in water dispersion **Kimicover FIX** with an approximate minimum consumption of:

- concrete or wood substrates: 0,2 Kg/m<sup>2</sup>;
- masonry substrates: 0,3 Kg/m<sup>2</sup>;
- reed or chalk substrates: 0,5 Kg/m<sup>2</sup>.

### 3) LAYING OF THE EPOXY ADHESIVE

Spread the two-component solvent-free thixotropic epoxy adhesive **Kimitech EP-TX**. The product will have the function of levelling the surface to be reinforced and creating an adhesive layer for the application of the reinforcement.

The minimum consumption is:

- 3,5 Kg/sqm on irregular surface;
- 3 Kg/sqm on wooden surface;
- 2-2,5 Kg/sqm on regularized surface through mortar **Tectoria M15** or **Betonfix FB**;
- 1,6-2 Kg/sqm on smooth reinforced concrete or steel surface.

#### 4) APPLICATION OF THE TISSUE

Place tissue **Kimitech CB** or **Kimitech CBA** (previously cut to size), still dry, in the direction and position required by the project, directly on fresh **Kimitech EP-TX**.

Press the fabric into the resin layer, using a roller for composites (always roll in the direction of fibres, exerting slight pressure paying attention not to move the fabric during this phase).

Roll until the resin emerges between the fibres and completely soaks them, forming a uniform layer on the tissue.

Eliminate any air bubbles that could be trapped between the fabric and the substrate, continuing to roll in the direction of the fibres.

#### 5) SOAKING

Soaking, when still fresh, with solvent-free two-component fluid epoxy resin with low viscosity **Kimitech EP-IN** applied by brush or roller in several coats and slowly until the soaking of the tissue is complete. Consumption will vary according to the weight of the fabric (see the Technical Data Sheet).

Any additional reinforcement layers should be applied fresh on fresh and immediately soaked with resin **Kimitech EP-IN**. If it is not possible, proceed immediately with the application of the next layer of tissue, dust with fresh quartz, wait at least 12 hours (at + 23°C), then apply a layer of epoxy resin **Kimitech EP-IN** (minimum consumption 1 Kg/m<sup>2</sup>) and proceed with the application of further layers. As an alternative to dusting with quartz sand, after at least 12 hours (at + 23 °), sand the surface of the first lamination with abrasive paper (60 grit), carefully remove the dust, then apply a layer of epoxy resin **Kimitech EP-IN** (minimum consumption 1 Kg / m<sup>2</sup>) and proceed with the application of further layers.

In the case of applications that cover a very long surface and using several pieces of tissue, any overlapping with other layers of tissue must be offset from each other along the direction of the fibres, so as not to make the joint position in the various layers coincide.

#### 6) ANCHORING

For the anchors, which are necessary as a safety device against delamination (not included in calculations) at the ends of the reinforcements when working on particularly poor supports, in case of orthogonal thrusts to the laying surface (which can be generated in the case of intrados

reinforcements of vaults) or concave angles (hooping of masonry pillars and stone materials characterized by articulated geometries) the connectors to be used should be made on site (**Kimitech FIOCCO CB**) and/or be preformed (**Kimitech FRP-LOCK**).

#### 6B) CONSTRUCTION OF CONNECTORS

Preparation of the connection systems through:

- a. preparation of the connectors;
- b. drilling and grouting of the connectors;
- c. unravelling and soaking.

##### a. Preparation of the connectors made with **Kimitech FIOCCO CB**:

- cut to length the connector;
- cut of the polypropylene tape at the extremity;
- unravelling of the extremity;
- soaking on site;
- lengthwise rolling up of the tape.

##### b. Drill holes in the substrate, on which the reinforcement with FRP has previously been applied, in order to fasten the connectors used as connection systems and anti-delamination reinforcements.

The hole must be adequately sized in relation to the equivalent diameter of the chosen connector. Insertion of the previously prepared connector and grouting through fluid epoxy resin **Kimitech EP-IN**.

##### c. Unravelling of the connector on the reinforcement's surface and soaking using fluid epoxy resin **Kimitech EP-IN**.

For further information on anti-screening product **Kimitech FRP-LOCK** read the Technical Data Sheet.

#### 7) SKIMMING

When fluid epoxy resin **Kimitech EP-IN**, applied on the surface of the plate, is still fresh, dust fine quartz sand (max ~ 1 mm) in order to guarantee an adequate surface roughness for the skimming to be carried out with a ready-to-use skimming mortar, grey or white, **Betonfix RS**, which must be applied after at least 7 days after the laying of the reinforcement.

Dusting is not necessary if you intend to protect the reinforcement with a simple protective coating.

##### POSSIBLE ALTERNATIVES

*As an alternative to **Betonfix RS** it is possible to perform the skimming by applying ready-to-use one-component water-repellent protective skimming mortar with aggregates of maximum grain size 0.5 mm **Betonfix R30**, white or grey, or with ready-to-use one-component hydrophobic protective skimming mortar with aggregates of maximum grain size 0.7 mm **Betonfix R52**, white.*