

Reinforcement of vaults, domes and arches using composite material bands

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APPLICATION DATA SHEET

Reinforcement of vaults, domes and arches using composite material bands through:

1. cleaning and regularization of the substrate;
2. priming;
3. laying of the epoxy adhesive;
4. application of the tissue;
5. soaking;
6. carrying out of the anchoring;
- 6b. creation of connectors;
7. completion of the procedures.

1) CLEANING AND REGULARIZATION OF THE SUBSTRATE

Demolish the floor and the screed and then empty the vault. Repair any cracks with suitable mortar from the Limepor or Tectoria line. Reconstruct the material continuity and eventually regularize the surface with **Tectoria M15** mixed with appropriate latex from the **Kimitech** line. If necessary, in the case of a non-flat substrate, make regularization tracks. Clean the surface thoroughly using vacuum cleaners or compressed air. Do not wet the substrate.

2) PRIMING

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

- 0,3 Kg/m² (in the case of masonry substrates)
- 0,5 Kg/m² (in the case of reed or chalk substrates)

3) LAYING OF THE EPOXY ADHESIVE

Subsequent spreading of 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 subsequent application of the reinforcement.

The minimum consumption is:

- 3,5 Kg/mq on irregular surface;
- 3 Kg/mq on wooden surface;
- 2-2,5 Kg/mq on regularized surface through mortar **Tectoria M15** or **Betonfix FB**;
- 1,6-2 Kg/mq 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

Subsequent soaking, while 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 / m²) and proceed with the application of further layers. As an alternative to dusting with quartz, 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 / m²) and proceed with the application of further layers.

In the case of applications that cover a very long surface and require the use of more pieces of tissue, any subsequent 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) CARRYING OUT OF THE ANCHORING

For the anchors, which are necessary as a safety device against delamination (out of evaluation) 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 intradossal 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 in situ (**Kimitech FIOCCO CB**) and / or be preformed (**Kimitech FRP-LOCK**).

6B) CONSTRUCTION OF CONNECTORS

Preparation of the connection systems by staple through:

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

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

- to length cutting of the staple;
- 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 flakes used as connection systems and anti-delamination reinforcements.

The size of the hole must be adequately sized in relation to the equivalent diameter of the chosen staple. Insertion of the previously prepared staple 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** consult the Technical Data Sheet.

7) COMPLETION OF THE PROCEDURES

If thick protective coatings are needed, apply some fine quartz sand (max ~ 1 mm) to the fresh soaking resin to ensure adequate surface roughness for subsequent skimming, which should be applied after at least 7 days after the reinforcement is applied.

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