

REINFORCEMENT OF VAULTS, DOMES AND ARCHES USING COMPOSITE MATERIAL BANDS

Reinforcement of arches and vaults

APPLICATION DATA SHEET

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

1. cleaning and regularizing the substrate;
2. priming;
3. laying of the epoxy adhesive;
4. application of the tissue;
5. soaking;
6. anchoring;
7. Skimming

1) CLEANING AND REGULARIZING THE SUBSTRATE

Repair any cracks with suitable mortar from the Limepor or Basic line, reconstruct the material continuity and eventually regularize the surface.

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

On substrates that require pre-consolidation, apply on the treated surface two-component synthetic resin primer in water dispersion KIMICOVER FIX with a minimum consumption of 0.3 kg / m².

3) LAYING OF THE EPOXY ADHESIVE

Spread the two-component epoxy resin Kimitech CMP. 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 1,2 Kg/m².

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 CMP.

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 medium viscosity Kimitech CMP applied slowly by brush or roller in several layers 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 CMP. If it is not possible, proceed immediately with the application of the next layer of tissue, dust with fresh quartz sand, wait at least 12 hours (at + 23°C), then apply a layer of epoxy resin Kimitech CMP (minimum consumption 0,5 – 0,8 Kg / m²) and proceed with the application of further layers. As an alternative to dusting with quartz sand, after at least 12 hours (at + 23°C), sand the surface of the first lamination with abrasive paper (60 grit), carefully remove the dust, then apply a layer of epoxy resin Kimitech CMP (minimum consumption 0,5 – 0,8 Kg/mq) 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) ANCHORING

For the anchors, which are necessary as a safety device against delamination 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 on site (Kimittech FIOCCO CB) and/or be preformed (Kimittech FRP-LOCK).

Preparation of the connectors made with Kimittech FIOCCO CB:

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

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

The size of the hole must be proper in relation to the equivalent diameter of the chosen connector. Insertion of the previously prepared connector and grouting through fluid epoxy resin Kimittech CMP.

Unravelling of the connector on the reinforcement's surface and soaking using fluid epoxy resin Kimittech CMP.

7) SKIMMING

While fluid epoxy resin, applied on the surface of the foil, is still fresh, dust fine quartz sand (max ~ 1 mm) able to guarantee an adequate surface roughness for the subsequent skimming to be carried out, 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 Kimittech CMP for grouting it is possible to use: Kimittech EPOXY CTR, two-component epoxy resin in cartridge.