

Kimitech EP-TX

ST10-0419

Thixotropic two-component epoxy resin



DESCRIPTION

Kimitech EP-TX is a two-component thixotropic adhesive based on epoxy resins without solvents, supplied in pre-dosed packages with 1/1 resin/hardener ratio. It has an excellent adhesion to various substrates and does not cause shrinkage in the hardening that occurs by chemical reaction without emission of volatile substances.

Kimitech EP-TX is CE marked as structural bonding according to EN 1504-4 and as an anchor for steel reinforcement according to EN 1504-6.

The product is part of the Kimia certified systems by CIT n. 392.

USES

- High-strength structural bonding of materials commonly used in construction such as concrete, bricks, stones, wood, metals; "Béton Plaqué"; structural reinforcements of vaults, walls, r.c., using Kimitech and Kimisteel range products with composite fabric and plates systems.
- In the application of fabrics, it ensures a high adhesion to the substrate and an easy laying, eliminating the formation of dangerous air bubbles.

WORKS

- Structural reinforcement by bonding of carbon fiber plates ([SA60](#)).
- Structural reinforcement by bonding and impregnation of carbon fiber fabrics ([SA61](#)).
- Structural reinforcement by bonding and impregnation of fiberglass fabrics ([SA62](#)).
- Structural reinforcement by bonding and impregnation of stainless steel fabrics ([SA63](#)).

APPLICATION



Manual application

For the realization of the various types of intervention, read the technical specifications and the technical data sheets of the materials to be used.

The product is supplied in pre-dosed packages with a 1/1 resin/hardener ratio to be easily applied on site in small doses without mixing errors (the two products are different in color).

Mix part A (resin) perfectly with part B (hardener) until you get an even color and apply with a spatula on perfectly clean, dry, dust-free surfaces and inconsistent parts.

Sandblast both concrete and metal surfaces to remove cement laitance and extrusion slag.

It is always advisable to apply **Kimicover FIX** in porous substrates (compulsory passage in case of application of reinforcement fabrics or plates).

Mix the amount of resin you expect to use within the frost time. In case of protective coating, it can be loaded with **Kimifill 01-03**.

STRUCTURAL REINFORCEMENT WITH COMPOSITE SYSTEMS

Preparation of the surfaces subject to reinforcement and application of two-component water based epoxy primer **Kimicover FIX**.

Carefully mix the two components **Kimitech EP-TX** and apply the product in an even layer with an iron spatula, respecting the consumptions shown in the following Technical Data Sheet; when dry, lay the fabric and, with a suitable metal roller, press lightly on it to facilitate adhesion and avoid the formation of dangerous air bubbles.

When dry, impregnate the fabric with **Kimitech EP-IN** fluid resin. If you wish to make more reinforcement layers, contact our Technical Department.

When laying **Kimitech PLATE**, **Kimitech EP-TX** adhesive layer must be spread both on the substrate and on the surface of the plate involved in bonding.

ADHESION CHARACTERISTIC

- Flexural failure test between butt-bonded concrete prisms with **Kimitech EP-TX**: 100% failure of the

concrete.

- Flexural strength test between concrete and steel bonded to the bottom with **Kimitech EP-TX**: 100% failure of the concrete.
- Failure test for shear concrete elements bonded with **Kimitech EP-TX**: 100% failure of the concrete.

CONSUMPTION

About 1,9 Kg/m²/mm.

For fabric or reinforcement plates bonding:

- 3,5 Kg/mq on irregular substrate;
- 3 Kg/mq on wooden substrate;
- 2-2,5 Kg/mq on a substrate skim coated with Tectoria M15 or Betonfix FB;
- 1,6-2 Kg/mq on a smooth reinforced concrete or steel substrate.

PACKAGING

- Com 10 Kg (A+B).
 - Com 20 Kg (A+B).
- Pallet – 50x20 – 1000 Kg

STORAGE

The product fears moisture, store in tightly closed containers, in a sheltered and dry place. In these conditions it maintains its stability for 24 months.

Characteristics	Typical data
Number of components	2 (A+B)
Total hardening time at 23°C	7 days
Standard colour (A+B)	Light grey
Consistency (A+B)	Thixotropic product
Dry residue (A+B) UNI 8309	> 70 %
Flexural strength at 1 d ASTM D790	> 16 MPa
Tensile strength	> 6 MPa
Tensile elastic modulus	> 5000 MPa
Adhesion strength EN 1542	> 18 MPa
Concrete adhesion	> 3 (substrate failure) MPa
Steel adhesion	> 3 MPa

The adhesion test was carried out with vertical application as required by specific legislation on composite systems.

Characteristics	Limits EN 1504-4	Typical data
Compressive strength [MPa] EN 12190	≥ 30	76,4
Compressive elastic modulus [MPa] EN 13412	≥ 2000	5130
Workability time EN ISO 9514	Declared value	Workability at 20°: 30 mins At 15 mins = 3,3 MPa At 30 mins = 3,3 MPa At 45 mins = 2,1 MPa
Thermal expansion	≤ 100	83,3

coefficient [$\mu\text{m}/\text{m}^\circ\text{C}$] EN 1770		
Glass transition temperature [$^\circ\text{C}$] EN 12614	≥ 40	45
Total shrinkage for structural adhesive agents EN 12617-1	≤ 0,1 %	0,03 %
Shear strength [MPa] EN 12615	≥ 6	Hardened concrete on hardened concrete
		16,7
		Fresh concrete on hardened concrete
		16,4
Adhesion EN 12636	For hardened concrete on hardened concrete the bending strength test must cause a concrete crack. For fresh concrete on hardened concrete the direct tensile test must cause a crack in the concrete.	Flexural failure load (7days) 7537 N (Concrete crack)
		Adhesion tension 3,4 Mpa (Concrete crack)
Open time EN 12189	Declared value $\pm 20\%$	OK
Durability EN 13733	The shear - compression load at the failure of the hardened concrete specimens on hardened concrete or of fresh concrete on hardened concrete after thermal or hot-humid cycles must not be less than the lowest tensile strength of the bonded concrete or the original concrete.	OK

Bonding resin	Kimitech EP-TX
Type of resin	Epoxy
Density (g/cm ³)	1,9 \pm 0,05 g/cm ³
Catalysis ratio by weight	A:B=1:1
Pot Life at 10 °C (min) measured as workability time EN ISO 9514	Workability at 10°: 30 mins
	At 0 min = 3,5 Mpa; At 15 mins = 3,6 Mpa; At 30 mins = 3,6 MPa
Pot Life at 20 °C (min) measured as workability time EN ISO 9514	Workability at 20°: 30 mins
	At 15 mins = 3,3 Mpa; At 30 mins = 3,3 MPa At 45 mins = 2,1 MPa
Pot Life at 35 °C (min) measured as workability time EN ISO 9514	Workability at 35°: 5 mins
	At 0 min = 3,6 Mpa; At 5 mins = 3,7 Mpa
Suggested application temperatures range	10 °C – 35 °C
Glass transition temperature T _g	45°C
Elastic modulus on compression (MPa)	5130
Compressive strength (MPa)	76,4
Thermal expansion coefficient	83,3

[$\mu\text{m}/\text{m}^\circ\text{C}$] EN 1770	
Total shrinkage for structural adhesive agents EN 12617-1	0,03 %

Characteristics	Limits EN 1504-6 "Anchoring of steel reinforcement"	Typical data
Resistance to the extraction of steel bars Relative displacement to a load of 75 KN [mm] EN 1881	$\leq 0,6$	OK
Viscous sliding under load in traction after continuous loading of 50 KN for 3 months [mm] EN 1544	$\leq 0,6$	OK
Glass transition temperature [$^\circ\text{C}$] EN 12614	≥ 40	45
Reaction to fire EN 13501-1	Euroclass	F
Chloride ion content	$\leq 0,05\%$	OK

WARNING

Product intended for professional use.

Do not apply on wet or dusty surfaces. The equipment used for the preparation and laying of the product must be cleaned with **Solvente EPOX** before hardening. The product must be handled with care: use protective gloves and goggles to avoid contact with skin and eyes. Sawdust or aggregates (like **Kimifill**), that will be added to the product, must be completely dry.

The technical characteristics and application methods indicated by us in this bulletin are based on our current knowledge and experience, but can not lead to any guarantee on our part of the final result of the applied product.

The customer is required to verify that the product is suitable for the intended use and to ensure that the technical bulletin is valid and not exceeded by later updates.

TECHNICAL SPECIFICATIONS

SK60 - Structural reinforcement by bonding of carbon fiber plates

SK61 - Structural reinforcement by bonding and impregnation of carbon fiber fabrics

SK62 - Structural reinforcement by bonding and impregnation of fiberglass fabrics

SK63 - Structural reinforcement by bonding and impregnation of stainless steel fabrics

Shoring of the structures involved in the intervention.

Cleaning of the substrate aimed at the total elimination of inconsistent parts and of any material that could affect a good adhesion. Rounding of any edges (minimum radius of 2 cm). Accurate grouting of any crack or microcrack to be carried out with suitable mortars. If the surface of application of the reinforcement is very irregular, it will be regularized

with suitable hydraulic mortars.

Kimicover FIX resin by Kimia S.p.A. will be used as primer. or similar product with a minimum consumption of:

- 0.2 Kg / m^2 (in case of concrete or wood substrates)
- 0.3 Kg / m^2 (in case of masonry substrates)
- 0.5 Kg / m^2 (in case of reed and plaster substrates)

The thixotropic two-component epoxy adhesive will be Kimitech EP-TX resin by Kimia S.p.A. or similar product. Minimum consumption of:

- 3.5 kg / sqm on an irregular substrate;
- 3 Kg / sqm on wooden substrate;
- 2-2.5 Kg / sqm on a substrate regularized with Tectoria M15 or Betonfix FB mortar;
- 1.6-2 Kg / sqm on smooth substrate in r.c. or steel.

(SK60) Kimitech PLATE pultrusion by Kimia S.p.A. or similar product. In order to apply it, clean with Solvente EPOX, sand down the application side, dust off and spread on this same side, with a flat trowel, an even layer of Kimitech EP-TX epoxy adhesive or similar with a consumption of about 1 Kg/m.

(SK61) The carbon fibre reinforcement fabric will be Kimitech CB 320 by Kimia S.p.A. or similar product.

(SK62) The fiberglass reinforcement fabric will be Kimitech XX (insert the commercial name of the chosen fabric) by Kimia S.p.A. or similar product.

(SK63) The reinforcement fabric will be Kimisteel INOX by Kimia S.p.A. or similar product.

(SK61-62) The two-component fluid resin used for the impregnation will be Kimitech EP-IN by Kimia S.p.A. or similar product. Consumption will vary according to the weight and type of the fabric.

(SK61-62) For the anchoring, Kimitech FRP-LOCK connectors by Kimia S.p.A. or similar products.

Solvent-free thixotropic two-component epoxy resin for structural bonding will be prepared and applied by carefully following the instructions on the technical data sheets provided by the manufacturer and must have the following characteristics:

- Total hardening time at 23°C : 7 days;
- Dry residue (A+B) UNI 8309: $> 98 \%$;
- Compressive strength at : 76 Mpa;
- Flexural strength at 1 day ASTM D790: $> 16 \text{ MPa}$;
- Adhesion strength EN 1542: $> 18 \text{ MPa}$;
- Concrete adhesion: > 3 (failure of the substrate) Mpa.

(SK62-63) The product will be tested by notified external laboratories as for: adhesion on concrete and steel; flexural and compressive strength. The product will be CE marked as structural bonding according to EN 1504-4.

(SK60-61) The reinforcement system made with Kimitech CB, Kimitech CBA or Kimitech PLATE reinforcement fabrics will be in possession of CIT, according to point 11.1, case C, of the NTC 2008, according to the qualification procedures of the reinforcement systems made on site at point 5.2 of the "Guideline for the identification, qualification and acceptance control of fiber-reinforced polymeric matrix composites (FRP) to be used for the structural consolidation of existing buildings". The product will be CE marked as structural bonding according to EN 1504-4.