

**Repair, Reinforcement and Restoration /
Structural Reinforcement Products**

REPOX® 405

Epoxy-Based Adhesive for Fiber-Reinforced Polymer Systems

DESCRIPTION

Epoxy-based, double component, solvent-free, high strength, oxide red colored **saturation resin** and **adhesive** developed for **CARBOFIX** Systems.

APPLICATION AREAS

Indoor and outdoor, in structures to be reinforced with **CARBOFIX** Systems, for bonding carbon fiber reinforcement fabrics to the surface and as a concrete reinforcement resin.

TECHNICAL PROPERTIES

Appearance - Color	Component A (Resin) : Liquid – Oxide red Component B (Hardener) : Liquid – Light yellow								
Packaging (7 kg)	Component A: 4.46 kg, Component B: 2.54 kg								
Packaging (20 kg)	Component A: 12.74 kg, Component B: 7.26 kg								
Mixture Density	1.04 ± 0.03 g/cm ³ (TS EN ISO 2811-1)								
Mixture Viscosity	2000 ± 400 mPas (TS EN ISO 3219-2)								
Application Temperature	Between +10°C and 30°C								
Hardness (Shore D)	75 ± 3 (TS EN ISO 868) 7 days								
Compressive Strength	≥ 45 N/mm ² (TS EN 12190) 28 days								
Flexural Strength	≥ 50 N/mm ² (TS EN 12190) 7 days								
Adhesion Strength	≥ 3 N/mm ² - Fracture within the concrete substrate (TS EN 1542) 7 days								
Pot Life (7 kg)	<table> <tr> <th>Temperature</th><th>Duration (TS EN ISO 9514)</th></tr> <tr> <td>10°C</td><td>60 mn</td></tr> <tr> <td>20°C</td><td>30 mn</td></tr> <tr> <td>30°C</td><td>20 mn</td></tr> </table>	Temperature	Duration (TS EN ISO 9514)	10°C	60 mn	20°C	30 mn	30°C	20 mn
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30°C	20 mn								
Complete Curing Time	7 days (23°C TS 4317)								
Application Temperature	Between -10°C and +60°C								

ADVANTAGES

- Suitable for carbon fiber saturation and bonding applications. Has very high adhesion strength.
- Its oxide red color ensures ease of application control.
- Easy to mix and apply, penetrates well.
- Does not contain solvent. Achieves high mechanical and chemical resistance after curing.

CONSUMPTION

0.7 – 1.2 kg/m² for the first layer and 0.6 kg/m² for each subsequent layer of fiber. The consumption of REPOX 405 mixture varies depending on the level of reinforcement, assembly, and bonding, as well as the weight and weave density of the carbon fiber fabric to be used.

PACKAGING

Sets of 7 kg or 20 kg (A+B) tin buckets

APPLICATION

PREPARATION OF THE SURFACE

- Clear the surface of all weakly adhered parts and materials that prevent bonding, such as dust, oil, tar, bitumen, paint, silicone, curing compounds, detergents and form-release oils.
- Chip away the corroded areas and clean the reinforcing steel of rust. After applying an anti-corrosion primer, carry out the repair using suitable **REPOX** series structural repair mortars.
- If the surface is damp, choose **RepoX 400H Moisture-Tolerant Thixotropic Adhesive for Fiber-Reinforced Polymer Systems**.
- Prepare the surface with a suitable mechanical blasting method such as sandblasting or sanding to obtain a rough surface.
- If the application surface is concrete, it must be cured (28 days) and have a minimum compressive strength of 25 N/mm² and tensile strength of 1.5 N/mm². The humidity of the floor concrete should be maximum 4% and the floor temperature should be at least 3°C above the condensation point. The surface temperature must be between 10°C and 30°C.

MIXTURE

REPOX 405 is packaged as two components in appropriate quantities. First mix component A mechanically in itself. Add component B (hardener) to component A (epoxy resin). Mix for 3 – 4 minutes with a drill with a 300 – 400 rpm mixer until a homogeneous consistency is obtained. Avoid mixing for too long and at high speed to minimize air entrainment. Take the whole mixture into a clean container and mix again.

APPLICATION

- Apply REPOX 405 to the surface with a roller. While the material is still wet, stretch **CARBOFIX Tex** carbon fiber fabrics in appropriate sizes in the direction of the (FRP) fibers and adhere to the surface. Then, by pressing with a roller in the direction of the fibers of the polymer fabrics, impregnate REPOX 405 into the fabric without any gap between the product and the surface.
- Depending on the **CARBOFIX Tex** Reinforcement design, overlaps must be at least 10 cm in the fiber direction. For side-by-side applications, overlapping in the transverse (weft) direction, perpendicular to the load-bearing fibers, is not required.
- For multi-layer applications, overlaps must be offset and must not be aligned in the same direction.
- Apply the second adhesive layer with a roller onto the fiber-reinforced polymer fabric already bonded to the surface, following the fiber direction.
- In order to apply plaster on it, after the application of the last layer of **CARBOFIX Tex**, while REPOX 405 is still wet, sprinkle toothed sand on the surfaces to be plastered to create roughness on the surface to facilitate the adhesion of the plaster.
- Consume the mixture in maximum 30 minutes at average +23°C.
- At +23°C, the product achieves full cure after 7 days and becomes resistant to mechanical loads and abrasive chemical effects.

CAUTION

- Avoid application at temperatures below +10°C and above +30°C. Do not apply outdoors during rainy and/or windy conditions.
- REPOX 405 must be mixed using a suitable low-speed drill. Do not mix manually or with a trowel.
- The components of REPOX 405 must be mixed in the correct proportions. Do not add water or solvent to the mixture, and do not dilute with thinner or similar materials.
- Materials should be brought to the application area at least 24 hours in advance to allow acclimatization to ambient conditions.
- The working and curing times of epoxy resin-based products depend on ambient and surface temperatures. At low temperatures, viscosity increases, leading to higher consumption. The chemical reaction slows down, extending pot life and working time. At higher temperatures, the opposite occurs.
- If heating is required at the application area, use only electric warm-air blowing systems.

- Avoid application on frozen surfaces, where freezing is expected within 24 hours, or in areas exposed to direct sunlight and strong wind.
- Do not touch the surface for at least 24 hours after application.
- Carbonation may occur under low-temperature and high-humidity conditions. Prevent water contact and condensation for 48 hours; otherwise, carbonation may develop. In such cases, sand the surface and reapply a thin coating layer.
- After application, clean all equipment using solvent only. Hardened material can only be removed mechanically.

SHELF LIFE

Expires in 18 months. Store unopened packages in cool, dry and shaded environment between +10°C and +25°C. Protect from freezing. If Component A crystallizes, it can be heated at 60-70°C.

HEALTH AND SAFETY

As with all chemical products, contact with food, skin, eyes and mouth should be avoided during usage and storing. In case of contact, rinse with water. If swallowed by accident, do not induce vomiting and consult a doctor. During the application, work wears, protective gloves and goggles should be used according to the work place health regulations. Do not bring food or beverages in application areas. Do not approach with fire. Ventilate the application areas. Keep out of reach of children.

The application instructions and technical values given for the products have been obtained in accordance with our tests and experiences in accordance with international standards at 23±2°C temperature and 50±5% relative humidity conditions. These values may vary depending on ambient conditions. High temperatures shorten the times, low temperatures lengthen them. Before starting the application, the user should test whether the product is suitable for the application and purpose. FIXA Construction Chemicals Ltd. is not responsible. This Technical Data Sheet remains valid until the next revision is published. FIXA reserves the right to change the values specified in this Technical Data Sheet, provided that the new version is published. It is the user's responsibility to check that the document is up-to-date. Please contact our sales department for more information.