





Adhesives – Restoration by structural reinforcement with composite materials

Tecnoepo 701/UNIC

PRIMER and ADHESIVE

- Description*  Two-components product based on epoxy-amino, not charged, formulated as adhesive which cures at room temperatures.
Used together with carbon fibre fabrics VHDRS® CarFib in accordance with the Design Guidelines CNR - DT200/2004.
- Characteristics*  Slightly thixotropic.
High reactivity.
Optimal wetting properties on fibre reinforced substrates of glass, carbon or aramid fibres.
- Use*  As adhesive and impregnation, for the repair or restoration of structural characteristics, with reinforcement techniques using fabrics or laminates in carbon, glass fibre or various hybrid fibres.
- Application*  **Tools:** by brush, or short haired roller.
Temperature of application: 5 ÷ 35 °C and relative humidity of max 60 %.
Clean tools with: MEK or acetone or diluents for epoxy.

METHOD OF USE

PREPARATION OF THE SUBSTRATE

Prior the application of the adhesive, it is necessary to verify the condition of the cementitious substrate: it must be clean and oil free, without greases, delaminating particles and free from cracks and discontinuities. The preparation of the substrate should be done choosing the proper following procedures:

- Elimination with proper equipment of the superficial dust when the substrate seems in good condition. Vacuuming and/or washing with pressured water are always recommended.
- Repair or level with cement based mortars or resin based materials, when the substrate has cracks or anomalies. In any case, apply the coating only on de-dusted and sound substrates;
- Sandblast or shotblast with steel abrasive grit is needed in case of not-cohesive parts.

Avoid the application on substrates contaminated with oil and/or greases.

APPLICATION

On clean substrates and of good consistency, the product can be applied directly without primer: apply the first coat and follow the instructions listed below.

Make sure the room is well ventilated and follow the recommendations stated in the Material Safety Data Sheet on the use of PPE (Personal Protective Equipment).

Proceed with the application of **Tecnoepo 701/UNIC** as below:

- Pour Part B into Part A and mix for 2-3 minutes, or until complete homogenization of the mixture, using a spatula;

Read carefully the recommendations contained in the last page.

- Apply the adhesive (with a short hair roller, in the case of small surfaces with a brush), taking care to distribute the product evenly over the entire area concerned;

- Apply next the reinforcement fabric (carbon, or glass fibre, or hybrid), taking care to make it adhere to the support integrally with the aid of a steel dented roller; repeatedly wiping the roller until the epoxy adhesive surfaces, making the surface of the fabric shiny;
If it is necessary to apply several layers of reinforcement, repeat the same sequence above without waiting for the drying of the first layer applied (wet on wet technique);
- In order to protect the epoxy adhesive, apply a thin layer by roller of **Tecnoepo 701/UNIC** last layer of fabric impregnated and sprinkle immediately with quartz, grain size 0.3 to 0.9 mm; after hardening of the dusted layer, apply a fairing coat (type BS 38/39 MuCis®) in the order of 2-3 mm thickness.

APPLICATION CONDITIONS

Substrate temperature:	+5 °C / +35 °C
Substrate humidity:	≤ 3%
Ambient temperature:	+5 °C / +35 °C
Relative humidity:	max 60%
Dew point:	the substrate and the product shall be at a temperature minimum 3 °C higher than the dew point to avoid the risk of condensation.

PACKAGING

supply - kg

component	a	b	a+b
pail	2.4	0.6	3.0
	5.6	2.0	7,6

STORAGE

Store the original and unopened packaging at a temperature between +5 °C and + 35 °C. Product can be kept 12 months from the production date.

TECHNICAL CHARACTERISTICS

APPLICATION CHARACTERISTICS at 20 ± 2 °C	TEST METHOD	UNIT OF MEASUREMENT	TYPICAL VALUES
Mixing ratio in weight	-	A : B	100 : 36
Total solid content in weight	-	%	≈ 100
Consumption	-	Kg/m ²	0,700
Density	EN ISO 2811-1	kg/l	about 1,03
Workability time of mixture (150 gr.) at 20 °C	EN ISO 9514	minutes	~ 30
Workability time of mixture (150 gr.) at 30 °C	EN ISO 9514	minutes	~ 10
Open time	EN 12189	minutes	~ 60

*If used as primer for the successive cycle with pulstruse laminae, the consumption decreases to 0,300 Kg/m²

PERFORMANCE CHARACTERISTICS	TEST METHOD	UNIT OF MEASUREMENT	TYPICAL VALUES
Thermal expansion coefficient	EN 1770	per °C	41,25 x 10 ⁻⁶
Total shrinkage	EN 12617-1	%	0,12
TG – glass transition temperature	EN 12614	°C	41,5
Inclined shear strength in compression	EN 12188	N/mm ² at 50°	54,5
		N/mm ² at 60°	63,2
		N/mm ² at 70°	99,8
Adhesion steel to steel by direct tensile		N/mm ²	21,5
Flexural strength after 28 days	EN 12190	N/mm ²	47
Compressive strength after 28 days	EN 12190	N/mm ²	64
Modulus of elasticity in compression	EN 13412	MPa	1975

RACCOMANDATIONS: Workability time and temperature after mixing A+B

It is well known that, after mixing of the comp. A (base) with the comp. B (catalyst) of the epoxy resin, an EXOTHERMIC reaction starts, which heats faster the greater the quantity mixed. The higher the ambient temperature and temperature of the mixed mass, the shorter the workability time.

It is therefore recommended to:

- Prepare a mixture of comp. A + comp. B in the amount of up to 0.5 kg (400 grams of comp. A + 144 grams of comp. B)
- In the case it is required to mix larger amounts, distribute the amount in a container with large surface area with a flat bottom, so that the mixture is distributed to a thickness of a few mm: thus it will delay the rise in temperature, prolonging the time of workability.

NOTE: You can also keep the container in fresh running water.

These recommendations are particularly essential in the summer!

To keep in mind that, even in the winter season, in the case of relevant quantities (about 5 Kg.), leaving the mixed product in the original container, after a certain time it triggers the exothermic reaction with potential achieving of very high temperatures, also higher than 100 °C.

In the case of very porous and weak substrate, use *Tecnoepo 700 Primer* and immediately after, while still wet, apply quartz scattering. Wait for the full cure before applying the Tecnoepo 701/UNIC.

The above information is based on our best experiences and lab results and on results of the application of the product in various fields. Tecnochem Italiana is not responsible for negative performances due to not proper use of the product or for defects due to elements not connected with the quality of the product included wrong storage. Technical characteristic in this technical data sheet are up-to-dated periodically. Revision date of this technical data sheet is indicated below.

Edition: 07/2014

Date revision: 10/2014

RESTORATION CYCLE BY STRUCTURAL REINFORCEMENT WITH COMPOSITE MATERIALS

Tecnoepo 701/UNIC

pag. 3/3

Nr. rev.: 1