

ARMOFIX MTX

TWO-COMPONENT THIXOTROPIC EPOXY RESIN FOR
STRUCTURAL BONDING OF ARMOSHIELD C CARBON
FIBRE FABRIC AND GROUTING OF BARS



ARMOFIX MTX is a two-component adhesive specifically designed for grouting bars and bonding ARMOSHIELD C carbon fibre strips for structural anti-seismic reinforcement.

Thanks to its exclusive gel consistency, **ARMOFIX MTX** ensures perfect and easy fabric impregnation, thus guaranteeing excellent adhesion to all substrates. It ensures cohesion and is easy to use even in overhead and vertical applications. **ARMOFIX MTX** is a component of the **ARMOSHIELD-C onsite reinforcement system**, which has obtained the **Technical Assessment Certificate no.11 of 25-01-2019** for intended use.

ADVANTAGES

- ✓ **HIGH BONDING CAPACITY:** ARMOFIX MTX ensures structural bonding on building materials such as concrete, masonry, wood, steel and natural stone.
- ✓ **EXCLUSIVE "GEL FORMULA":** its fluid thixotropic gel-type consistency impregnates the carbon fibre effectively, while ensuring safety and easy application both in vertical and overhead installations.
- ✓ **APPLICABLE ON DAMP SUBSTRATES:** ARMOFIX MTX is quite insensitive to moisture on the substrate, hence enhancing the stability of the application.
- ✓ **EASY TO INJECT** for grouting bars.
- ✓ **VERY HIGH RESISTANCE:** ARMOFIX MTX ensures the highest mechanical performances of bonding, shear strength and compressive strength, as well as good resistance to chemical and environmental attacks and easy application.
- ✓ **NON-TOXIC, SAFE FOR THE ENVIRONMENT AND USERS:** ARMOFIX MTX contains no Volatile Organic Compounds (VOC), nonylphenols or other substances that are harmful for the environment or the health of users.

USES

- ✓ Bonding and impregnation of ARMOSHIELD C carbon fibre strips and sheets for structural reinforcement.
- ✓ Anti-seismic reinforcement of structures with FRP composite materials.
- ✓ Structural restoration of concrete and wood buildings (beam heads, etc.).
- ✓ Structural bonding as in the béton plaqué technique.
- ✓ Grouting, including grouting of ARMOSHIELD BC carbon bars.
- ✓ Vertical gluing of ARMOGRIP aramid fibre connectors.



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SUBSTRATE PREPARATION

The ARMOSHIELD structural strengthening application cycle requires careful preparation of the surface to be treated.

REQUIREMENTS OF SUBSTRATE

Before applying ARMOFIX MTX make sure that the substrate has a minimum tear strength of 1.5 MPa and has no flaking parts, pooling water and humidity does not exceed about 5%.

To ensure proper application in compliance with the regulation, the substrate must also be regular and flat with no surface level differences above ± 2 mm over a length of 1 m. If the substrate does not have these features, restore and/or level it prior to applying the product.

CLEANING

- ▶ Remove all loose or flaking parts in the area to be treated taking care not to damage the structures.
- ▶ Remove stains, efflorescence or soaked-in stains of oil, grease, paint, dust, dirt, concrete release agents, etc.
- ▶ When working on masonry and vaults, brush the surface and remove dust.
- ▶ If the concrete substrate is in good condition, sandblasting or sanding is sufficient.
- ▶ The anchoring holes must be clean. Clean them with pressurized water if the substrate does not react negatively. Dry them up with dry, oil-free compressed air.
- ▶ Metal sheets must be sandblasted to SA2 and degreased using DILUENTE ECO.

REPAIR AND LEVELLING

Concrete

- ▶ If the substrate is deteriorated, remove the damaged layer by scarification or hydro-demolition.
- ▶ Then repair the substrate by treating the rebars with passivating mortar DRACOSTEEL and filling up concrete volume with mortars from the FLUECO line and/or CONCRETE FINISHER smoothing mortars.
- ▶ In the presence of cracks or crevices, restore the load-bearing capacity and monolithic structure by injecting a specific resin (EPOX INIEZIONE RM2 or RM3). Wait about 1 to 2 weeks before applying the fabric; times will depend on the temperature and air ventilation inside the premises.

Masonry

- ▶ Any existing cracks must be previously injected with an ARMOLIME product.
- ▶ Any cracks or damage that are large enough to compromise the continuity of the masonry of the building must be repaired through jacketing, by inserting carbon rods that will be grouted with ARMOFIX MT or ARMOLINE grout.
- ▶ If the masonry is subject to surface weakness and/or crumbling, we recommend treating it with the silicate reinforcement agent ARMOSTONE. You can use ARMOLIME TS for joint repointing.

Preparation of grout lines for fabric application

In order to apply the strips on a flat surface with sufficient mechanical strength, it is always advisable to build layers with a shrinkage-compensating thixotropic mortar such as FLUECO 40 T or FLUECO 80T2 (the latter being more suitable for structures that are subjected to deformation).

PRIMING

The following step involves the application of primer ARMOPRIMER 100 by brush or roller on a dry substrate. If the substrate is weak and porous, use solvent-based PRIMER ES40. Apply the adhesive within 16 hours of primer application.

ADHESIVE APPLICATION

PREPARATION OF COMPONENTS

ARMOFIX MTX is made of:

A – base

B – hardener

Mix components A and B with a spatula or with a low-speed drill or suitable mixer until you obtain a homogeneous mixture. Using only part of the components is advised against: an incorrect mix ratio can result in improper curing.

APPLICATION

Laying of fabrics or reinforcement sheet: **ARMOFIX MTX** is applied using a spatula within 24 hours of the application of ARMOPRIMER 100. Apply a first layer of **ARMOFIX MTX** resin of a thickness of approx. 1 mm. Then place ARMOSHIELD C strips on the surface previously treated as indicated in the project and press them down gently with your hands to ensure they are properly stretched and wrinkle-free.

Apply pressure using ARMOROLLER to guarantee fabric impregnation.

Laying of grouting bar: Use a ram-mounted pump for thixotropic fluids to extrude the product into the hole. Inject the resin from the bottom of the hole to avoid air entrapment and fill the cavity by about 3/4. Adjust the amount of injected product to ensure filling of the grouting collar. Then fit the bar and remove any excess resin.

PRECAUTIONS

- Wear rubber gloves and goggles both while working and while cleaning tools.
- Avoid contact of skin, mucous membranes and eyes with the resin. In case of accidental contact, wash thoroughly with neutral soap and water.
- The adhesive may not adhere properly on a damp substrate.
- If the size of the grouting collar exceeds 1 cm, use our epoxy plaster ARMOFIX MTL or EPOBETON C for flooring.

CONSUMPTIONS

Laying of fabrics or reinforcement sheet: Consumption of **ARMOFIX MTX** strictly depends on the features of the substrate and fabric type. In general, 1.1 - 1.5 kg/m² of **ARMOFIX MTX** resin is recommended for bonding and impregnating a layer of ARMOSHIELD C fabric.

Laying of grouting bar: Theoretically 1.1 kg/dm³ is required, depending on the porosity of the cavity to be grouted.



PRECAUTIONS IN HOT CLIMATES

- ▶ Store ARMOFIX MTX away from direct sunlight.
- ▶ Work in the mildest hours of the day.
- ▶ Do not work at ambient temperatures above +35°C.



PRECAUTIONS IN COLD CLIMATES

- ▶ Store ARMOFIX MTX in a sheltered frost-free place.
- ▶ Do not apply the product if temperature is below +5 °C.
- ▶ Start work in the warmest hours of the day.

PACKAGING AND STORAGE

ARMOFIX MTX is available in the following container sizes:

4 kg + 1 kg = (A+B) 5 kg pails

8 kg + 2 kg = (A+B) 10 kg pails

If stored properly in undamaged unopened, original packaging, in dry conditions at temperatures of at least +10°C, the product maintains its characteristics for a year.



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PRODUCT CHARACTERISTICS

APPEARANCE	paste
CONSISTENCE	thixotropic
DENSITY	Comp. A: 1.06 kg/l - Comp. B: 0.94 kg/l
SHELF LIFE	12 months
PACKAGING	4 kg + 1 kg pails 8 kg + 2 kg pails

APPLICATION SPECIFICATIONS (20°C - 65% R.H.)

MIX COLOUR	Opalescent white
DENSITY - UNI EN 12190	1025 kg/m ³
FULL CURE TIME	10 days
APPLICATION TEMPERATURE	+5 °C to + 35 °C
APPLICATION THICKNESS	approx. 1 mm
CONSUMPTION FOR GLUING AND IMPREGNATION (1 layer)	approx. 1.1 - 1.5 kg/m ² depending on fabric type
CONSUMPTION FOR GROUTING BARS	approx. 1.1 kg/dm ³ depending on the porosity of the cavity to be grouted

PHYSICAL PROPERTIES*	TEST METHOD	ARMOFIX MTX
PROPERTY	REFERENCE STANDARD	
Density (g/cm ³)	UNI EN ISO 1675:1985(E)	1.075
Viscosity at +23 °C (mPa s)	UNI EN ISO 2555:1989(E)	164000
Ratio of catalyst by weight	UNI EN ISO 2555	4:1
Pot life at +23 °C (min)	ISO 10364:1993(E)	80
Tensile modulus of elasticity (MPa)	UNI EN ISO 527-1:1993 (E)	2010
Flexural modulus of elasticity (MPa) (Test specimen thickness 4 mm x 10 mm x 80 mm)	UNI EN ISO 178	1641
Tensile strength (MPa)	UNI EN ISO 527-1:1993 (E)	16.85
Flexural strength (MPa)	UNI EN ISO 178	28.47
Tensile strain (%)	UNI EN ISO 527-1:1993 (E)	3.6
Bond strength to concrete (MPa)	UNI EN 12636	3.4
Glass transition temperature (°C)	EN 12614	53
Limit temperatures of use (°C)	CNR DT200-R1/2013	-10/+38
Fire resistance	-	NPD
Reaction to fire	ISO EN 13501-1	E

(*) Official tests certified by the independent laboratory ELLETIPI - Cert. no. 45835/17 of 17/11/17.

PERFORMANCE CHARACTERISTICS at +20°C and 65% R.H.

PERFORMANCE CHARACTERISTICS	TEST METHOD	REQUIREMENTS ACCORDING TO EN 1504-4	PRODUCT PERFORMANCE
MODULUS OF ELASTICITY IN COMPRESSION	EN 13412	≥ 2000 N/mm ²	3.2 GPa
MODULUS OF ELASTICITY IN FLEXURE (Test specimen thickness 8 mm x 15 mm x 160 mm)	EN ISO 178	≥ 2000 N/mm ²	2.1 GPa
COEFFICIENT OF THERMAL EXPANSION	EN 1770	≤ 100 × 10 ⁻⁶ per K	25 × 10 ⁻⁶ /K
TOTAL LINEAR SHRINKAGE FOR STRUCTURAL BONDING AGENTS	EN 12617-1	≤ 0.1%	0.03%
GLASS TRANSITION TEMPERATURE	EN 12614	≥ 40°C	53°C
SHEAR DURABILITY (TEMPERATURE- HUMIDITY CYCLES)	EN 13733	-Compressive shear stress > tensile strength of the concrete - No rupture in steel test specimens	Meets specification
PERFORMANCE REQUIREMENTS FOR BONDED STEEL PLATING FOR STRENGTHENING			
SHEAR STRENGTH	EN 12188	≥ 12 MPa	20.3 MPa
BOND STRENGTH	EN 12188	50° ≥ 50 MPa	42 MPa
- slant shear strength		60° ≥ 60 MPa	53 MPa
		70° ≥ 70 MPa	78 MPa
PERFORMANCE REQUIREMENTS OF THE BONDING AGENT FOR MORTAR OR CONCRETE			
COMPRESSIVE STRENGTH	UNI EN 12190	≥ 30 MPa	80 MPa
SHEAR STRENGTH	EN 12615	≥ 6 MPa	> 6 MPa
ADHESION TO CONCRETE SUBSTRATE TYPE MC 0.40 (EN 1766)	EN 12636	Cohesive fracture in concrete substrate	Meets specification
OPEN TIME ON CONCRETE SUBSTRATE TYPE MC 0.40 (EN 1766)	EN 12189	Value declared by manufacturer	40 min

SPECIFICATIONS ITEM

Application of the thixotropic structural epoxy resin **ARMOFIX MTX** to concrete, masonry and wood surfaces to glue and impregnate ARMOSHIELD C carbon fibre fabrics and to grout bars. **ARMOFIX MTX** must be used in compliance with the recommendations of the manufacturer **Draco Italiana S.p.A.** who will provide technical assistance upon request. **Specifications items: 4.0.1 - Preparation of concrete substrates / 4.0.2 - Preparation of masonry substrates / 4.1 - Laying of ARMOSHIELD C carbon fibre fabric.**

Legal notes - SLCMP version of 01.03.2017

Draco Italiana s.p.a. has adopted the parameters indicated in this data sheet and the related standards for the calculation of the values and technical data contained herein. Customers shall verify that this data sheet and the values indicated herein apply to their product batch and have not been superseded by later editions. If in doubt, verify that the sheet corresponds to the one available on the website www.draco-edilizia.it at the time the sales contract was executed and/or by previously contacting the Technical Department. Any suggestions on the use of the Products provided by our personnel either orally or in writing upon the Customer's request do not constitute additional obligations to the purchase contract and do not imply a contractual obligation for the company. They are based on our experience and limited to the current state of practical and/or scientific knowledge. They are not binding for the client or for the installer. It is the Customer's responsibility to test our products and verify they are suitable for the type of application and use envisaged.