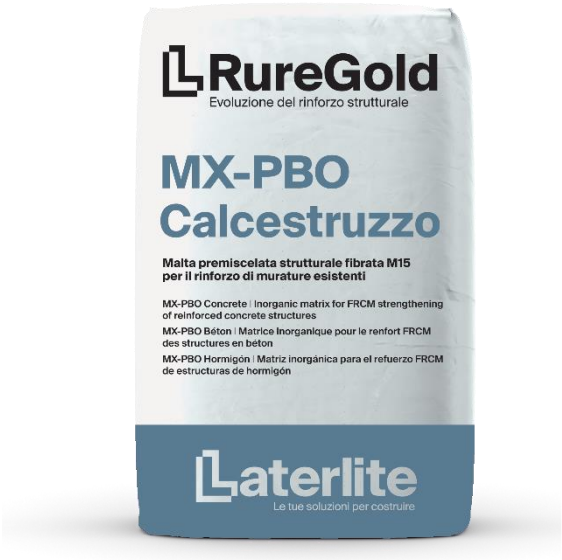
MX-PBO CONCRETE

Fibre-reinforced inorganic matrix for FRCM strengthening solutions on concrete structures



FIELDS OF APPLICATION

Inorganic matrix for use with Ruregold FRCM system PBO meshes for:

- Retrofitting and upgrading the static and seismic behaviour of R.C. buildings.
- Retrofitting and upgrading the static and seismic behaviour of R.C. infrastructure.
- Flexural structural strengthening of beams and concrete beam and block floor joists.
- Structural strengthening against combined axial and flexural forces in columns.
- Shear structural strengthening of reinforced concrete beams, columns, beam-column joints and walls.
- Confinement of reinforced concrete columns.
- Improving the ductility of reinforced concrete elements.

METHOD OF USE

Preparing the inorganic matrix

MX-PBO Concrete does not require any additional material and may be prepared using:

- A planetary type mixer.
- A concrete mixer (do not exceed 60% of the nominal load limit and mix with the axis of rotation almost horizontal).
- A screw mixer (e.g. Gras Calce **Turbomalt** mixer).
- The product may also be mixed manually in a bucket using a paddle mixer, pouring in a part of the contents of the bag and adding the appropriate quantity of water.

Mix as follows:

1. Pour in the contents of the bag of **MX-PBO Concrete** and add approx. 5.5-6.0 litres (1.45-1.58 gal) of clean water.
2. Mix for about 3-4 minutes (4-5 minutes when using a concrete mixer) so as to obtain a smooth, homogeneous mix.
3. Leave the mix to stand for about 1-2 minutes before use.

FINISHING

Once the mortar is fully cured, apply the appropriate finishing, provided it does not contain chalk.

RureGold

IDENTIFICATION DATA

Classification EN 1504-3:2006	Product for repair work on concrete structures: Structural Repair - Class R3
Grain size of aggregates	0 - 3 mm (0.1181 in)
Density of fresh mortar (EN 1015-6)	Approx. 1900 kg/m^3 (118.6 lb/ft^3)
Certification	**CE marked according to EAD 340275-00-0104** 'Externally bonded composite systems with inorganic matrix for strengthening of concrete and masonry structures' in combination with **PBO-MESH 105**, **PBO-MESH 88** and **PBO-MESH 70/18** **DOP n. R0040, n° R0041, n° R0042** **CVT n. 285 del 28/06/2023** according to the 'Guidelines for the identification, qualification and acceptance control of fibre-reinforced inorganic matrix composites (FRCM) to be used for the structural consolidation of existing buildings' in combination with **PBO-MESH 105**, **PBO-MESH 88** and **PBO-MESH 70/18**
Content of recovered, recycled and sub-product material	≥ 2% Certificate available upon request on RureGold.com

TECHNICAL SPECIFICATIONS

PERFORMANCE SPECIFICATIONS	REQUIREMENTS IN ACCORDANCE WITH EN 1504-3	PRODUCT PERFORMANCE SPECIFICATIONS
Compressive strength after 28 days	≥ 25 MPa (3626 psi)	Class R3 ≥ 40 MPa (5801.5 psi)
Modulus of elasticity in compression after 28 days	≥ 15 GPa (2175.5 ksi)	Check passed ≥ 15 GPa (2175.5 ksi)
Chloride content	≤ 0.05 %	Check passed ≤ 0.05 %
Adhesion bond	≥ 1.5 MPa (217.5 psi)	Check passed ≥ 1.5 MPa (217.5 psi)
Reaction to fire (Italian Ministerial Decree 10/03/2005)	-	Euroclass A1

APPLICATION DATA

Mixing water per 25 kg bag	approx. 5.5 - 6.0 litres
Mix consistency	Thixotropic
Application time at 20°C	Densification begins after approx. 10-15 minutes. Mix again and use within a maximum of about 45 minutes
Application temperature	From +5°C (41°F) up to +35°C (95°F)
Coverage	approx. 9.3 kg/m^2 (1.91 lb/ft^2) per strengthening layer (3+3 mm) approx. 13.9 kg/m^2 (2.85 lb/ft^2) per double strengthening layer (3+3+3 mm)
Packaging	Disposable wooden pallet laden with 60 x 25 kg (55.1 lb) bags - total weight 1500 kg (3306.9 lb)
Storage conditions (Regulation (CE) No. 1907/2006 – Annex XVII point 47)	In original packaging, indoors, in a cool, dry, unventilated place
Durability (Regulation (CE) No. 1907/2006 – Annex XVII point 47)	Not more than 12 months from packing date.

SPECIFICATION ITEM

Supply and application of an FRCM structural strengthening system, consisting of a PBO fibre mesh and inorganic matrix, e.g. Ruregold **MX-PBO Concrete**. The carbon fibre has a density of 1.56 g/cm^3 (97.4 lb/ft^3), toughness/tensile strength of approx. 5.8 GPa (841.1 ksi), modulus of elasticity of 270 GPa (3.91*10^4 ksi), and fracture strain 2.5%. The compressive strength of the inorganic matrix, which is specifically designed for concrete substrates, is ≥ 40 MPa (5801.5 psi), while the modulus of elasticity is ≥15 GPa (2175.5 ksi). The PBO fibre FRCM system may be used to increase the resistance to combined axial and flexural forces, and confinement in columns, to bending in beams and slab joists and shear in beams; in addition, it may also be used for localised strengthening at beam - column joints. The system is resistant to high temperatures and freeze/thaw cycles and may be applied directly to moist substrates. System compliant with EAD 340275-00-0104 ('Externally bonded composite systems with inorganic matrix for strengthening of concrete and masonry structures') and the FRCM Guideline of March 2022. Surface preparation and application of the system according to the manufacturer's instructions.

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