Very High Durability Repair & Prevention Systems

From Project to Jobsite

Certified Quality System since **FEBRUARY 1993**

BS 36 TIXO / SF

THIXOTROPIC AUTO-EXPANSIVE ANTI-SHRINKAGE ANTI-CORROSION MORTAR FOR STRUCTURAL REPAIRS OF DETERIORATED CONCETE

CE approved – Certificate n. 1305 - CPD - 0808

EN 1504-3 Classe R4

Type MT2: *"cement mortar, premixed thixotropic, contrasted expansion, with liquid humidity retainer, polyacrylonitrile fibres ,"* complying to ITALIAN HIGHWAYS SPECIFICATIONS "thixotropic mortar type MT2"

Description **BS 36 TIXO/SF** is a special mortar for structural repairs with normal setting time (about 60 minutes), exceptional mechanical resistances. The version **SF** is " **s**hrinkage **f**ree" with hygrometric shrinkage zero or extremely low depending on the real jobsite conditions 'IN AIR'.

Advantages and characteristics.

- Easy to apply by trowel or spraying
- Monolithic with the substrate
- Volumetric stability of the applied product
- Tendency of elements cured in air to curve (no curling!!)

Indicated use

- Structural concrete repairs were is required or essential to have a very high volumetric stability
- For high thickness repairs (3-6 cm), and big surfaces (note however that it is advisable in these cases to incorporate steel reinforcement net)

Method of use Note: the adhesion on the support is a fundamental characteristic for the durability and structural properties of a repair mortar.
It is therefore recommended to consult the paper: *"Valuation and preparation of supports for the best adhesion and structuration with a repair mortar – recommendations for a good finish"*

- A decent substrate preparation by scabbling, sandblasting is essential to achieve maximum adhesion to the substrate. High pressure watercleaning is the most suitable method for optimal preparation. Eliminate spalling and carbonated concrete, expose the rusted steel bars, remove rust by sandblasting and then apply MuCis® PROTEZIONE FERRO (see Technical Datasheet) before applying any other product.
- Wet the contact surfaces until thoroughly soaked, starting some hours before application to eliminate the substrate absorption.
- Excess water, either on the surface or in cavities, must be removed by compressed air or sponges immediately prior to application.
- Average amount of water needed for plastic mixes: 16 lt per 100 kg of dry powder (or 4 lt per bag).
- Mix for 1 minute in the cement mixer which will already contain slightly less than the right amount of water (start with 3 lt per bag). Than add the remainder of water and the bag of 250 gr component B. Compete the mixing for 2-3 minutes till the paste is homogeneous and lump free.
- For big thickness or overhead applications, build up the thickness in several passages to avoid tearing of the material in the plastic phase by the weight.
- Avoid direct sunlight on the applied product. Protect, and eventually keep the surface moist during 3 to 4 days.

Remarks Information according 2003/53/CE:
Storage: can be stored for 12 months in the original unopened packaging, in dry and protected area, at a temperature between + 5°C to 35°C. Do not use the contents of opened sacks if the powder has gone into lumps. Avoid freezing of the B component.

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COMPARISON PERFORMANCE AND REQUIREMENTS

Performance characteristics	Reference substrate (EN 1766)	Testing method	STANDARD EN 1504-3 Requirements Structural Classe R4	RESULT (Typical values)
Compressive strength	None	EN 12190	≥ 45 MPa (28 days)	62 MPa (28 days)
Ionic chloride content	None	EN 1015-17	≤ 0,05%	≤ 0,03%
Adhesive bonding (adhesion to concrete)	MC(0,40)	EN 1542	≥ 2,0 MPa	2,56 MPa
Ritiro/espansione impediti	MC(0,40)	EN 12617-4	Adhesion strength after test ≥ 2,0 MPa	2,6 MPa
Restrained shrinkage/expansion	None	EN 13295	d_k ≤ reference concrete [MC(0,45)]	Exceeds the requirement
Modulus of elasticity	None	EN 13412	≥ 20.000 MPa (28 days)	26.000÷30.000 MPa (28 days)
Thermal compatibility ✱ Part 1, frost-thaw resistance	MC(0,40)	EN 13687-1	Adhesion strength after 50 cycles ≥ 2,0 MPa	≥ 2,0 MPa
Thermal compatibility ✱ Part 2, thunder shower	MC(0,40)	EN 13687-2	Adhesion strength after 30 cycles ≥ 2,0 MPa	≥ 2,0 MPa
Thermal compatibility ✱ Part 4, dry cycle	MC(0,40)	EN 13687-4	Adhesion strength after 30 cycles ≥ 2,0 MPa	≥ 2,0 MPa
Coefficient of thermal expansion	None	EN 1770	No requirements for this test ✱, otherwise declared values	• test✱ exceeds
Capillary absorption	None	EN 13057	≤ 0,5 Kg ·m^{-2} ·h$^{-0,5}$	0,16 Kg ·m^{-2} ·h$^{-0,5}$

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Packaging

	For small jobsite :	For big jobsite:
Component powder A:	Kg. 25 bag (48 bags on 1200 kg pallet)	Kg. 25 bag
Component liquid B:	Kg. 0,25 bottle (48 bottles per box)	Concentrate 0,09 Kg (20 Kg can)

Technical characteristics

Initial setting time: approximately 1 hour at 20°C

• Compressive strength	N/mm^2	21,0 (1day) 30,0 (3days) 42,0 (7 days) 62,0 (28 days)
• Flexural strength	N/mm^2	4,5 (1 day) 5,5 (3 days) 6,5 (7 days) 8,5 (28 days)
• Contrast expansion , curing in air		>0,046 % (1day)
• O-ring test		No crack (>180 days)
• Pull out resistance with steel bar, with improved adhesion	N/mm^2	26
• Modulus of Elasticity	N/mm^2	26000÷30000
• Resistance to sulphates ASTM C88		Degradation zero
• Adhesion to concrete direct	N/mm^2	>2
• Shear adhesion resistance 20° angle	N/mm^2	>6
• Resistance to CO_2 penetration UNI EN 12395	μ	1500 (low)
• CO_2 penetration after 10 Years	mm	2
• ① Freeze and thaw resistance	gr/m^2	350
• ② Chlorides permeability UNI EN 13678:1	Coulomb	450 (low)
• Type of conglomerate		Thixo mortar
• Number of components		two
• Thickness suggested	mm	10÷50 (steel net)
• Application		Manual/spray
• Wet/damp curing		SE
• Sheltered curing		SE
• Typical application		Structural repairs
• Setting time		normal
• Hardening		normal
• Shrinkage compensation		MAXIMAL
• Dosage/yield	$Kg/m^2/mm$	1,9

1 N/mm² = 1 MPa = 10,19 Kg/cm²

✱ The formulation for this type of products can be also made with the addition of corrosion inhibitors MuCis®

① Freeze and thaw resistance in the presence of salt. SIA 162/1/91 gr/m² (< 600 gr/m² = very high freeze and thaw resistance)

② Chlorides permeability. FHWA/RD/81 (100÷1000 COULOMB = very low chlorides permeability)

SE Depending on the applicative conditions (rain, sun, hot temperatures, humidity)

Very High Durability Repair & Prevention Systems

Very High Durability Reinforced Concretes

MuCIS® Multiple Corrosion Inhibiting Synergies

AED Very High Deformation Energy

Safety indications Read carefully the safety indications on the packaging, or consult the relevant Material Safety Datasheet of this product.

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