

MasterEmaco S 1160 TIX



R4 structural thixotropic mortar with normal setting. High durability, high resistance to cracking with total protection of the reinforcement for restorations from 5 to 50 mm.

MATERIAL DESCRIPTION

MasterEmaco S 1160 TIX is a thixotropic, structural cementitious mortar for reconstructions or smoothing with thicknesses ranging from 5-50 mm in a single layer, even on the top (ZERO GRAVITY).

The innovative formulation creates a sort of slow-release "internal water tank" that allows for better maturation, drastically reducing the tendency to crack and allowing application even on particularly absorbent substrates

MasterEmaco S 1160 TIX offers a protective barrier for reinforcements, thus ensuring high durability of the restoration. The product allows interventions to be carried out even without the use of the passivating MasterEmaco P 5000 AP as long as a concrete cover greater than 10 mm is guaranteed.

MasterEmaco S 1160 TIX is fiber-reinforced with special PAN fibers that guarantee an improvement in the performance of the mortar, with particular reference also to durability.

FIELDS OF APPLICATION

MasterEmaco S 1160 TIX has been designed to ensure maximum effectiveness and durability in the various typical building restoration interventions such as thickening and extensive repairs that are carried out with a trowel or with spray applications for thicknesses ranging from 5 to 50 mm. single layer.

Typical interventions are represented by:

- extensive restorations of reinforced concrete structures, including exposed ones (front panels, terraces)
- reinforcements of reinforced concrete structures, including facing ones,
- any concrete product of civil, industrial or commercial building that presents defects or detachment of the concrete.
- Regularization of diaphragm walls and tunnels. Restoration of motorway, road and railway viaducts.
- millimeter smoothing of surfaces of reinforced concrete elements; in case of large surfaces it is advisable to contact the technical assistance service of MasterBuilders Solutions.

MasterEmaco S 1160 TIX can be applied:

- with trowel up to 50 mm vertically and overhead as a repair mortar thanks to the Zero Gravity feature which minimizes waste and ensures maximum yield.



easi LIFE

The easi LIFE project was born to go beyond the consolidated, proposing an innovative approach to sustainability and able to synthesize in the absolute objectivity of a number the real sustainability of a construction solution that takes into account performance, durability and environmental impact:

$$easi\ LIFE = \frac{Performance + Durability}{Environmental\ impact}$$

easi: Empathetic Added Sustainability Index

LIFE: Low Impact For Environment

FEATURES AND BENEFITS

The peculiar characteristics of the MasterEmaco S 1160 TIX structural mortar are:

- resistance to cracking in the plastic phase (short term): to combat micro-cracking in the plastic phase, MasterEmaco S 1160 TIX contains PAN fibers (in polyacrylonitrile);
- resistance to long-term cracking: this fundamental requirement for the durability of the restoration can be assessed through the O Ring test. MasterEmaco S 1120 TIX does not show any cracks even after long curing;
- resistance to aggressive environmental agents: it is impermeable to water, sulphates and chlorides and is not subject to degradation phenomena due to the cyclic action of freezing and thawing, thus ensuring greater protection of the armatures from corrosion;
- high durability: MasterEmaco S 1160 TIX, thanks to its particular formulation, guarantees effective protection for the reinforcements, avoiding corrosion phenomena due to carbonation and / or in the presence of chlorides.
- high adhesion: it also adheres to simply sandblasted concrete and especially in overhead applications it minimizes waste (ZERO GRAVITY);
- excellent aesthetic finish: maximum grain size of 1.2 mm;

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In compliance with the European Regulation (EU No 305/2011 and EU No. 574/2014) the product is provided with the CE marking according to UNI EN 1504-3 and the relative DoP (Declaration of Performance).

CE 1305
EN 1504-3
Cement based mortar (CC) for structural repair of concrete structures
R4 class

CONSUMPTION

The coverage is about 17.5 kg/m² with a coat that is 1 cm thick.

PACKAGING

MasterEmaco S 1160 TIX is available in 25 kg bags.

STORAGE

Store the product in a dry and sheltered place at a temperature anywhere between 5 and +35°C.



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Technical Information			
1504-3 class		R4	
Typology		CC	
Granulometry		Max 1.2 mm	
Chloride content EN 1015-17		<0.05%	
Colour of mix		Grigio	
Mixing ratio		4.00-4.75 l for bag (16-19%)	
Consistency of mix		Tixotropic	
Temperature of application		From 5°C to 35°C	
Packaging		25 kg bag.	
consumption		17.5 kg/m ² for 1 cm	
Workability time (at 20°C)		60 minutes	
Minimum thickness		5 mm	
Maximum thickness in single laye		50 mm	
Essential characteristic in accordance to 1504-3 with a dosage of water of 17.5%		Limits and classes	Performances
Adhesion to concrete	UNI EN 1542 on MC 0.40 substrate (with w/c ratio = 0.40) according to UNI EN 1766	≥ 2,0 MPa	≥ 2,0 MPa
Resistance to freezing-thawing cycles with deicing salts measured as adhesion	UNI EN 1542 after cycles UNI EN 13687/1 on MC 0.40 substrate	≥ 1,5 MPa	≥ 2,0 MPa
Resistance to thunder shower cycles measured as adhesion	UNI EN 1542 after cycles UNI EN 13687/1 on MC 0.40 substrate	≥ 1,5 MPa	≥ 2,0 MPa
Resistance to thermal cycles without deicing salts measured as adhesion	UNI EN 1542 after cycles UNI EN 13687/1 on MC 0.40 substrate	≥ 1,5 MPa	≥ 2,0 MPa
Resistance to accelerated carbonation	UNI EN 13295	Carbonation depth ≤ that of reference concrete MC 0.45 (with w/c ratio = 0.45) according to UNI EN 1766	Specification obsolete
Water impermeability measured as capillary absorption coefficient	UNI EN 13057	≤ 0,5 kg·m ⁻² ·h ^{-0,5}	≤ 0,15 kg·m ⁻² ·h ^{-0,5}
Elastic modulus	UNI EN13412	a 28 gg ≥ 20.000 MPa	28000 MPa
Caratteristiche espansive	UNI 8147	-	1 g > 0,04 %
Crack test (O Ring test)	-	-	No crack after 180 days
Compression strength	UNI EN 12190	a 28 gg ≥ 45 MPa	1 g > 15MPa 7 gg > 45 MPa 28 gg > 60 MPa
Tensile strength in bending	UNI EN 196-1	-	1 g > 4 MPa 7 gg > 6 MPa 28 gg > 8 MPa
Test to determine the thixotropy characteristics - brick test	-	-	Test passed successfully
Impermeability to water measured as resistance to water penetration under direct pressure	UNI EN 12390/8	-	Average penetration depth < 5 mm
Pull-out resistance of steel bars	RILEM-CEB-FIP RC6-78	-	>25 MPa
Test to determine the tendency to cracking in the plastic phase,	ASTM C1579	-	No cracks

APPLICATION SHEET

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PREPARING THE SUBSTRATE

All the necessary precautions must be taken to avoid damaging the structures. The thickness to be removed must be determined by the design engineer on the basis of preliminary surveys aimed at identifying the preservation conditions of the structure.

Inconsistent or contaminated concrete must be removed by means of mechanical chiselling using light demolition equipment powered by compressed air, adopting all the necessary precautions in order to avoid damaging the structures.

The surface of the support concrete must appear macroscopically rough (+/- 5 mm) for the purpose of obtaining the utmost adhesion between the substrate and the repair material. The edges of the intervention area must be at right angles or feature a dovetail arrangement, avoiding V-shaped finishes. Define the area of intervention with a clean cut at least 5 mm deep. Any loose or contaminated concrete must be removed with a suitable technique.

CLEANING REINFORCED BARS

Incoherent or contaminated concrete around the reinforced bars must be removed. All rust on uncovered reinforced bars must be cleaned by means of mechanical brushing or sanding. Subsequently, the Design Engineer/Site Manager, at his/her discretion, decides whether to apply the protective layer for MasterEmaco P 5000 AP rods before reconstructing the section with MasterEmaco S 1160 TIX mortar. Indeed, this treatment is not strictly necessary when using the MasterEmaco S 1160 TIX, since, thanks to the new formula, it guarantees protection of the rods (Steel Protection: $d_k = 0$), provided that the minimum thickness of the rod is at least 10 mm.

PLACING ADDITIONAL STRUCTURAL REINFORCEMENTS

When it is necessary, for structural reasons, to add new reinforcements, you must guarantee at least a 2 cm cover. For work featuring a thickness of 3-5 cm, it is necessary to place an electro-welded mesh (5x5 cm) and with a 5 mm diameter. Since this mesh will have to have a cover of at least 2 cm and be detached from the substrate by at least 1 cm (through the use of suitable spacers), the working thickness in the presence of electro-welded net cannot be less than 4 cm. To ensure a correct anchorage

of the contrast mesh, use reinforcement steel sections inserted in holes with a diameter at least twice that of the bar and sealed with MasterFlow 960. The density and the diameter of said nailing will be established on a case-by-case basis by the Site Manager.

CLEANING AND SATURATION OF CONCRETE

Cleaning and saturation of the substrate concrete must be carried out with pressurised water (80 ÷ 100 atm and using hot water in winter). This operation is crucial in order to prevent the concrete substrate to steal water from the mixture. Inaccurate saturation leads to the loss of adherence and to the cracking of the added material. The use of pressurised water also guarantees effective cleaning of the surfaces in order to remove dust and small inconsistent parts that may be present after the milling of the concrete. The cleaning and saturation of the surfaces are crucial operations for obtaining high adherence values between the substrate and the added material.

APPLICATION TEMPERATURE

MasterEmaco N 1160 TIX can be applied when the ambient temperature is between +5°C and +35°C. When the temperature is between 5 ÷ 10°C mechanical resistances develop more slowly. We therefore recommend storing the bags in a heated environment and applying the mortar in the mid-hours of the morning.

PREPARING THE MIXTURE

It can be mixed in a concrete mixer with a power drill or in the mixer of the spraying machine until a plastic, smooth mixture which is free of lumps is obtained. Mixing by hand is instead not recommended. It is always necessary to mix the entire content of each bag. Each 25 kg bag of MasterEmaco S 1160 TIX must be mixed with 4.00 ÷ 4.75 litres of water.

APPLICATION

In trowel applications to achieve the desired thickness (up to 5 cm), first create a rough coat and then a browncoat. In the case of extended surfaces, MasterEmaco S 1160 TIX can be applied in a single coat for thicknesses from 5 to 50 mm by using spraying machines either with an auger or a piston (not featuring a continuous cycle). During phases when the spray is interrupted (also according to the outside temperature), it is necessary to thoroughly

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clean the pipes and the pump itself with pressurised water and a soft rubber ball designed to clean pipes.

FLOATING

Proper floating is essential to effectively counter the formation of micro-cracks resulting from plastic shrinkage. Floating must be applied with a sponge float after sufficient time has elapsed following the application, depending on the weather.

The time interval between the application and the float finish depends on the first hardening phase of the mortar, which is determined by placing your hand on the surface and your fingers do not sink but leave a light mark on the mortar.

HARDENING

It is always advisable to carry out a correct wet maturation of the surfaces exposed to the air. In the case of particularly adverse conditions characterized by low relative humidity and high ventilation, both in hot and cold climates, in the absence of humid ripening, we recommend using the products of the MasterKure line.

PROTECTION

To lengthen the useful life of the structure, enhancing durability even in areas which require no maintenance, it is always recommended to apply a protective system of the MasterProtect line on the entire structure. This acts as a barrier to the entrance of aggressive environmental agents, also improving the aesthetic appearance of the structure.

SAFETY INSTRUCTION

For information on the correct and safe use, transport, storage and disposal of the product, consult the most recent Safety Data Sheet.

OTHER SERVICES

For price analysis, specifications, supplementary brochures, references, reports and technical assistance, visit the website www.master-builders-solutions.com/it-it or contact infomac@mbcc-group.com.

Scan the QR code to visit the product page and download the latest version of this datasheet.



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Since 16/12/1992, Master Builders Solutions Italia Spa has been operating under a Certified Quality System compliant with the UNI EN ISO 9001 Standard. Furthermore, the Environmental Management System is certified according to the UNI EN ISO 14001 Standard and the Safety Management System is certified according to the UNI ISO 45001 Standard.

Master Builders Solutions Italia Spa

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For further information, please consult the local Technician of Master Builders Solutions. The technical advice on how to use our products, either written or verbally given, are based on the current state of our scientific and practical expertise, and does not imply the assumption of any guarantee and/or responsibility for the final results of works executed using our products.

Therefore, the customer is not exempted from the exclusive task and responsibility of verifying the suitability of our products for the intended use and purposes.

This version supersedes all the previous ones.