

MasterEmaco A640

Expansive binder indicated to produce expansive grout and shrinkage compensated concrete.

MATERIAL DESCRIPTION

MasterEmaco A 640 is a special reoplastic expansive cement that:

- mixed with sand, coarse aggregates and water produces self-levelling, pumpable, non-segregating, high-strength and shrinkage compensated concrete, without further addition of other admixtures.
- mixed with water, MasterEmaco A 640 produces extremely flowable, pumpable, shrinkage compensated, non-bleeding, high strength grout, particularly designed to be injected into ducts of highly tensioned steel cables and bars, and to prevent stress corrosion or into hole for anchoring of the steel bars or rods

FIELDS OF APPLICATION

MasterEmaco A 640 can be used for the following applications.

- mixed only with water, it allows to obtain expansive slurries, superfluid, without bleeding, easily injectable and with high mechanical resistance.
- mixed with sand, aggregates and water, as for a normal cement conglomerate, it allows to obtain shrinkage compensated concrete, self-leveling, pumpable, non-segregable, high mechanical resistance, durable to aggressive environmental agents, without having to resort to further addition of other additives.
- mixed only with water, it allows to obtain an expansive, super-fluid, bleeding-free grout, easily injectable / pourable and with high mechanical resistance, which can be used for filling voids in the construction of semi-flexible floors in bituminous-cement high traffic such as airport runways and port areas.

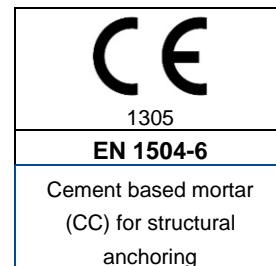


FEATURES AND BENEFITS

Features peculiar MasterEmaco A640 are:

- The slurries obtained with MasterEmaco A 640 can be used to fill the containment sheaths of post-tensioned cables and tie rods.
- With the MasterEmaco A 640 slurry it is possible to prevent the phenomena of "stress corrosion" typical of cables and steel rods subjected to high tensions.
- MasterEmaco A 640 concretes are used to restore by casting any structure that has very deep degradation or that needs to be increased in section (casting thickness ≥ 8 cm).
- The high penetration capacity of the mixture allows perfect filling of voids and obtaining floors with high performance and durability

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 1504-6 and the relative DoP (Declaration of Performance).



CONSUMPTION

- Shrinkage compensated grout: 1,550 kg/lt.
- Shrinkage compensated concrete: 400 kg/m³.

PACKAGING

MasterEmaco A 640 is available in 20 kg bags or in 600 kg bags.

STORAGE

Store in a sheltered and dry place.

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Essential characteristics of a concrete made with MasterEmaco A 640 <i>(Made with 400 kg/m³ of MasterEmaco A 640, cleaned aggregates, frost-proof, without impurity, not reactive with alkali in D_{max} = 25,4 mm, Consistency S5, UNI EN 12350/2, T = 20 °C, U_r > 90 %)</i>		Performances
Bleeding	UNI 8998	Absent
Restrained expansion	UNI 8148	1 g > 0,03 %
Compressive strength	UNI EN 12390/3	1 g > 20 MPa 7 gg > 40 MPa 28 gg > 50 MPa
Flexural strength	UNI EN 12390/5	1 g > 2 MPa 7 gg > 3 MPa 28 gg > 4 MPa
Modulus of elasticity	UNI 6556	30.000 (± 2.000) MPa
Adhesion to concrete	UNI EN 1542	> 1,5 MPa
Bond strength to steel	RILEM-CEB-FIP RC6-78	> 15 MPa
Resistance to the extraction of the bars steel - displacement relative to a load of 75 kN (mm)	UNI EN 1881	<0.6
Waterproof measured as capillary absorption factor	UNI EN 12390/8	< 20 mm
Average depth of penetration of water	UNI EN 13057	< 0,5 kg·m ⁻² ·h ^{-0,5}
Resistance to accelerated carbonation	UNI EN 13295	Pass
Thermal compatibility (freeze and thaw cycles with deicing salt)	UNI EN 13687/1	Pass
Resistance to sulphates (15 cycles)	ASTM C88	No deterioration
Essential characteristics of a slurrice made with MasterEmaco A 640 <i>(water/binder ratio =0,32, T=20°C, U_r > 90 %)</i>		Performances
Expansive characteristics	UNI 8147	At 24 h > 0,03%
Fluidity	Modified cone Marsh	0 min: 15÷25 s 30 min: 25÷35 s
Bleeding	UNI 8998	Absent
Water retention 5 minutes after the mixing	ASTM C-91	> 90 %
Initial setting time, at 30°C	D.M. 3/6/68	> 3 hours
Compressive strength	UNI EN 12190	1 day > 20 MPa 7 days > 55 MPa 28 days > 65 MPa
Flexural strength	UNI EN 196/1	1 day > 4 MPa 7 days > 7 MPa 28 days > 8,5 MPa
Bond strength to steel	RILEM-CEB-FIP RC6-78	7 days >15 MPa
Resistance to the extraction of the bars steel - displacement relative to a load of 75 kN (mm)	UNI EN 1881	<0.6

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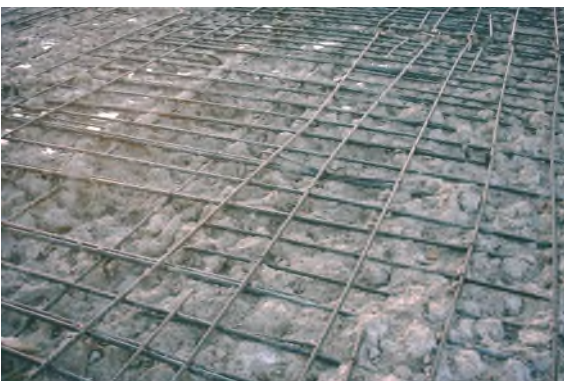
APPLICATION SHEET

REMOVAL OF DETERIORATED CONCRETE

The thickness to be removed will be decided by the designer on the basis of preliminary investigations aimed at identifying the state of the structure.

Loose or contaminated concrete should preferably be removed by water-demolition or alternatively by mechanical chipping using air-operated lightweight concrete breakers and taking all the necessary precautions to avoid damaging the structures.

The surface of the base concrete should be roughened (surface irregularity of about 5 mm in depth). The above macro-roughness is indispensable for the mechanism of restrained expansion, which is essential for mortars with compensated shrinkage to work.



CLEANING THE REINFORCEMENT RODS

Loose or contaminated concrete covering the reinforcement rods should be removed. Any exposed reinforcement rods must be cleaned free of rust by mechanical brushing or sanding; whenever damaged or contaminated concrete has been removed by water-demolition, this generally also guarantees suitable cleaning of the reinforcement rods.

POSITIONING ADDITIONAL STRUCTURAL REINFORCEMENT

When it is necessary to add reinforcement for structural reasons, it should be laid before any welded mesh. A

concrete thickness of 2 cm over the reinforcement must be guaranteed.

POSITIONING CONTRAST WIRE MESH

If the reinforcement found out after the removal of the deteriorated concrete and/or the additional reinforcement is not suitable (little distributed reinforcement and/or with a concrete thickness over the reinforcement > 3 cm) to guarantee an effective contrast to the expansive capacities of the concrete with MasterEmaco A 640, it is necessary to apply a welded mesh that contrast the expansion of the most outside side of the throw.

For the correct anchorage of the welded mesh some steel mesh crops will be inserted in the holes with a diameter double of that of the rod and sealed with MasterEmaco A 640. The density and the diameter of such riveting will be established case by case by the job site manager.

For a successful repair work, correct positioning of the wire mesh is very important:

If the mesh is placed in contact with the support, the outermost part of MasterEmaco will not be contrasted or hindered and will therefore tend to crack and furthermore there would be low values of adherence with the interface. If, on the contrary, the mesh is positioned too far towards the extrados of the mortar layer, cracks will undoubtedly form around the links of the actual mesh.

CLEANING AND SATURATING THE CONCRETE

The base concrete should preferably be cleaned and saturated using water under pressure (80 ÷ 100 atm and warm water in winter). This is indispensable to avoid the concrete base from taking water from the mix. Imprecise saturation would lead to loss of adherence and cracking of the filler material.

Using water under pressure also ensures efficient cleaning of the surfaces, removing dust and small loose parts that may still be present after scarification of the concrete.

Cleaning and saturating of the surfaces are essential to obtain high values of adherence between base and filler material.

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TEMPERATURE

Concrete with MasterEmaco A 640 may be applied without any contra-indication when the ambient temperature is between +5 °C and +40°C.

When the temperature is 5 ÷ 10°C mechanical strength is slower to develop; in any case it is advisable to keep the sacks of MasterEmaco A 640 in a heated environment, to use heated mixing water (30 ÷ 50°C), to saturate the base with warm water and to apply the concrete mid-morning. Do not apply at a temperature below + 5 °C, as should be the case for any concrete whenever no special measures are adopted.

When the temperature is 30 ÷ 40°C, it is advisable to keep the bags of MasterEmaco A 640 in a cool place, to use mixing water at a low temperature and to apply concrete during the coolest hours of the day.

PREPARING THE MIX

Prepare in site shrinkage compensate at flowable or super-flowable S4-S5 consistency concrete, introducing in the mixer:

- 400 kg/m³ of MasterEmaco A 640
- suitable grading curve, not reactive, well cleaned and without impurity, aggregates;
- water necessary to obtain the required consistence.



The maximum diameter of the aggregates will have to be chosen in function of the throw and density thickness of the reinforcement rods.

APPLICATION

At the moment of the application, the base will have to be saturate to dry surface, in other words all the free water present on it will possibly have to be removed.

The throw will be executed at flowable or super-flowable consistency, with continuity and without any interruption, by an only side to support the air outlet; it's also necessary to provide the perfect compaction and levelling of all the concrete put in work.

CURING

To obtain the most from concrete with MasterEmaco A 640 on site, correct curing is necessary.



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.

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



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This version supersedes all the previous ones.