

MasterCrete FC I200

A class R4 cementitious mortar that is pourable, expansive, fast-setting, reinforced with synthetic fibres and formulated for use even at temperatures below 0°C, with thicknesses ranging from 1 to 15 cm.

Material description

MasterCrete FC I200 is a high-performance, single-component, pourable structural cementitious mortar (class R4 in accordance with EN 1504-3), composed of high-performance hydraulic binders capable of rapid hardening and setting even at temperatures below 0°C. Its formulation is completed by selected aggregates, synthetic polyacrylonitrile (PAN) fibres and special additives that give **MasterCrete FC I200** expansive properties under conditions of constrained expansion and air curing.

MasterCrete FC I200 is suitable for the structural repair of deteriorated concrete structures, with application thicknesses ranging from 1 to 15 cm. Furthermore, the special formulation ensures high dimensional stability, minimising the risk of cracking due to hydraulic shrinkage and guaranteeing excellent adhesion to both the old concrete and the reinforcement bars.

Main uses

The pourable structural cementitious mortar **MasterCrete TH I200** allows for the structural repair of concrete structures, by pouring into formwork or in areas confined by the existing substrate, ensuring maximum effectiveness and durability. It can be applied manually, for thicknesses ranging from 1 to 15 cm.

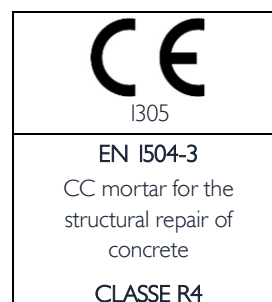
Some examples of application are:

- repair of concrete infrastructural structures: viaducts, bridges, tunnels, underpasses, dams, canals, pipelines, etc.;
- installation of pre-formed joints and road manhole covers, where rapid return to service is required;
- restoration and repair of concrete elements and structures of any type and size in civil, industrial, or commercial buildings that exhibit deteriorated concrete, defects, or detachments;
- jacketing of reinforced concrete structures and reconstruction of the reinforced concrete and prestressed concrete structures, especially those subject to dynamic loads.

Features

- **Plastic shrinkage crack resistance:** **MasterCrete FC I200** is reinforced with polyacrylonitrile (PAN) synthetic fibres, which reduce the risk of surface micro-cracking during the plastic phase of the product.
- **Resistance to hydraulic shrinkage cracking:** thanks to its special formulation, **MasterCrete FC I200** enables the creation of monolithic and durable repair works; the product's expansion properties, when applied to a suitably prepared substrate and allowed to cure correctly, enable the 'chemical pre-compression' effect generated by controlled expansion to be utilised, thereby achieving excellent levels of interaction between the old and new materials and counteracting the stresses arising from restricted shrinkage.
- **Excellent adhesion** to properly prepared concrete substrates.
- **Excellent waterproofing properties**, in accordance with EN 12390 Part 8, against water and, consequently, against any aggressive substances it may carry, such as chlorides and sulphates.

In compliance with the European Regulations (EU No. 305/2011 and EU No. 574/2014), the product is CE marked in accordance with UNI EN 1504-3 (class R4) and the relevant DoP (Declaration of Performance).



Consumption

Approximately 20.3 kg/m² per cm of thickness.

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Packaging and storage

MasterCrete FC I200 is available in 25 kg bags. Keep the product in its original packaging in a dry, protected location at a temperature between +5°C and +35°C. Under the above conditions, the product has a shelf life of 12 months.

Preparation and method of application

Preparing the substrates

- Remove all sections of deteriorated and/or contaminated concrete from the surface, as well as any concrete that is not fully bonded and is starting to come away, so as to achieve a solid and macroscopically rough substrate with surface irregularities of at least 5 mm. The aggregates must be visibly exposed. The edges of the repair area, for localised repairs, must be at right angles, allowing a minimum application thickness of 1 cm for the mortar.
- Remove any rust from exposed reinforcing bars by brushing (manual or mechanical) or sandblasting.
- Treat the reinforcing bars with a corrosion-resistant coating from the **MasterCrete range**. This treatment may also be applied to any new supplementary reinforcement.
- Install any supplementary reinforcement and its connections in accordance with the design specifications.
- Saturate the substrate with water until it is fully saturated but free of surface water (s.s.a.); ensuring clean, saturated surfaces is essential to guarantee high adhesion between the substrate and the applied material and to prevent cracking of the product.

Preparing the formwork

For applications involving the use of formwork, the latter must be made of sufficiently strong material and treated to be non-absorbent; e.g. in the case of wooden formwork, this can be achieved through saturation or by using release agents from the **MasterFinish RL line**. They must also be effectively secured and reinforced, and demonstrate adequate integrity to prevent the loss of material.

Preparation of mortar

Mix **MasterCrete FC I200** for approximately 4–5 minutes in a concrete mixer, together with an amount of water equal to 3/4 of the total specified in the technical data sheet, gradually adding the remaining mixing water until a homogeneous mixture is obtained (do not exceed the maximum amount of water indicated in the technical data sheet).

Since the product sets quickly, the amount of product to be prepared must be adjusted according to the application schedule.

If the concrete is to exceed 15 cm in thickness, depending on the characteristics of the project, an aggregate with a suitable particle size distribution may be added to **MasterCrete FC I200**.

If in doubt, contact the Master Builders Solutions technical service.

Installation

The product must be applied manually.

In the case of formwork, the concrete must be poured from one end to allow the mortar to properly fill the entire volume, thereby expelling air and preventing the formation of voids within the concrete.

In the case of complex geometric shapes or high reinforcement density, the flow and compaction of the concrete can be optimised using tools such as rods or chains, or by gently vibrating the concrete itself.

Ageing and maturation

It is recommended to cure surfaces exposed to the air for the first 24 hours using a wet method or by spraying a curing and anti-evaporation agent from the **MasterKure range**. This solution is particularly recommended in environmental conditions characterised by low relative humidity and high ventilation.

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Application temperatures

Application environment temperature needs to be between -10°C and +35°C.

Warnings

- Do not apply directly on plaster, crumbly, mixed or painted surfaces.
- Do not apply **MasterCrete FC I200** on smooth substrates; a mechanical roughening is necessary.
- Do not add additional water or fresh mortar to the mixture that has already begun to set.
- Do not add water beyond the dosage recommended in the technical data sheet.
- Do not use the product to create layers less than 1 cm in thickness.

Technical data

Product identification data	
Packaging	25 kg bags
Powder colour	Grey
Maximum size of the aggregate	2.5 mm
Mixing ratio	2.88 - 3.38 litres of water per bag (11.5-13.5%)
Consumption	approximately 20.3 kg/m ² per cm of thickness
Fresh density	approximately 2250 kg/m ³
Mixture consistency	Semi-fluid
Workability time (+20°C)	20 minutes
Application environment temperature	-10°C to +35°C
Class (EN 1504-3)	R4
Type	CC cementitious mortar
Chloride ion content (EN 1015-17) – minimum requirement ≤0.05%	< 0.05%
Applicable layer thickness (minimum/maximum)	1 cm / 15 cm

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Performance

(The performance data shown below was obtained in accordance with UNI EN 1504-3 with a water content of 12.5%)

Feature	Test method	Regulatory requirement	Product performance			
			T / °C	-5°C	0°C	+20°C
Compressive strength [Values in table are in Mpa]	UNI EN 12190 UNI EN 196-1	≥ 45 MPa at 28 days	3 hours	> 9	> 15	> 20
			4 hours	> 15	> 20	> 38
			8 hours	> 25	> 35	> 50
			1 day	> 50	> 55	> 60
			7 days	> 65	> 65	> 70
			28 days	> 80	> 80	> 80
Flexural strength	UNI EN 196-1	none	1 day > 8 MPa 7 days > 9 MPa 28 days > 10 MPa			
Elastic modulus	UNI EN 13412	≥ 20,000 MPa at 28 days	29,000 ± 2,000 MPa			
Adhesion to concrete	UNI EN 1542 (MC 0.40 substrate – UNI EN 1766)	≥ 2.0 MPa	> 2.0 MPa			
Resistance to freeze-thaw cycles with de-icing salts	UNI EN 1542 after the UNI EN 13687/1 cycles on an MC 0.40-type substrate.	≥ 2.0 MPa	≥ 2.0 MPa			
Resistance to accelerated carbonation	UNI EN 13295	Carbonation depth ≤ compared to that of the reference concrete type MC 0.45 (with a/c ratio = 0.45) according to UNI EN 1766	Specification superseded			
Capillary absorption coefficient	UNI EN 13057	≤ 0,5 kg·m ⁻² ·h ^{-0.5}	≤ 0,2 kg·m ⁻² ·h ^{-0.5}			
Reaction to fire (Euroclass)	EN 13501-1	-	A1			

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Additional performance

(The performance data shown below was obtained with a water content of 12.5%)

Feature	Test method	Regulatory requirement	Product performance
Resistance to positive hydraulic pressure	UNI EN 12390-8	Test pressure: 5 bar	5 bar - Average penetration < 20 mm 5 bar - Maximum penetration < 50 mm
Resistance to pull-out of steel bars	RILEM CEM FIP RC6-78	-	> 20 MPa

Safety instructions

For guidance on the correct and safe use, transport, storage and disposal of the product, please see the latest Safety Data Sheet (SDS).

Scan QR code to visit the product page and download the latest version of this technical sheet and any additional documentation.



Other services

For additional technical information, brochures, references, technical reports and technical assistance please visit www.master-builders-solutions.com/it-it or alternatively contact infomac@masterbuilders.com.

Disclaimer

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.

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.

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