

# MasterEmaco<sup>®</sup> T 1200 PG

(EMACO FAST FLUID)

**Pourable non-shrink fast-hardening dry mortar, containing a polymer fiber, designed for a structural repair of concrete and reinforced concrete under a tight schedule. It may be used at the ambient temperatures as low as -10°C.**

\* In case of boundary above-zero and below-zero temperatures, the application thickness is as follows: -10°C – 20-100 mm; +30°C – 10-60 mm.

## DESCRIPTION

MasterEmaco T 1200 PG is a ready-to-use product available in the form of a dry concrete mortar. When mixed with water, it forms a non-shrink and non-segregating compound with a high adhesion to steel and concrete, even if used in hostile environments.

Due to its intrinsic properties, MasterEmaco T 1200 PG may be used to recover concrete and reinforced concrete structures by pouring to a thickness of 10 to 100 mm (or more, if coarse aggregate is added) in cases where the strength build-up rate is the most important requirement (in particular, at low temperatures).

MasterEmaco T 1200 PG is recommended for use in the ambient temperature range from -10°C to +30°C.

Depending on the ambient temperature, summer formulations for the use in the temperature range from +17° C to +30° C and winter formulations (W) for the use in the temperature range from -10°C to +17°C are available.

## RECOMMENDED USE

MasterEmaco T 1200 PG is recommended for the use in the following cases:

- Repair of concrete pavements of roads, airfields, parking areas and bridges;
- Repair of hydraulic structures and water transport facilities;
- Underwater concreting and repair at variable water levels;
- Repair of reinforced (including pre-stressed) structures - girders, supports, bridge plates, etc.;
- Repair of heavily reinforced surfaces where hand and machine application is impossible;
- Grouting precast structure joints (concrete supports, plates, etc.);
- Repair (recovery) of concrete exposed to aggressive environments containing

chloride and sulphate ions, including seawater protection;

- Grouting of metal constructions;
- Fixing metal elements in concrete foundation.

## Indicative strength indices \*\*

Temperature, °C			Compressive strength, MPa			
Dry mortar	Water	Environment	2 hrs	4 hrs	24 hrs	28 days
+20	+20	+20	30	40	50	80
+20	+20	-5	25	30	40	65
+5	+5	+5	3	20	30	55
-5	+5	-5	-	10	20	50
+20	+60	-10	20* **	25* **	35* **	55* **

\*\* Data were obtained in laboratory tests.

\*\*\* Strength data were obtained while complying with all requirements and while operating at T=-5...-10°C.

## PACKAGING

MasterEmaco T 1200 PG is packed in 30kg waterproof bags.

## SHELF LIFE AND STORAGE CONDITIONS

Guaranteed shelf life of MasterEmaco T 1200 PG, stored in a closed undamaged package, is 6 months.

Store the product in enclosed dry rooms with a maximum air humidity of 70%, at conditions, which ensure safety of the packaging and provide moisture protection. Do not use the product from a damaged package.

## REPAIR INSTRUCTIONS

The following recommendations and suggestions are based on the practical experience of using the MasterEmaco products.

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## 1. REPAIR SURFACE PREPARATION

### a) Damaged concrete removal

Use diamond tools to cut the damaged area edges perpendicular to the repair surface to a minimum depth of 10 mm. Destroyed concrete shall be removed by using a light perforator, needle gun or sandblasting unit. Minimum roughness of the sub-base surface is 5 mm. This operation is important to ensure good adhesion of MasterEmaco T 1200 PG to the surface under repair.

### b) Rebar cleaning

Remove rust from rebars. If the structure under repair is used in environments aggressive to concrete and steel, it is recommended to use MasterEmaco P 5000 AP to treat the reinforcement (at above-zero temperatures).

Attention: do not use MasterEmaco P 5000 AP at sub-zero temperatures.

## 2. INSTALLATION OF ANCHORS

In case of a low-strength concrete, on which the repair material is applied, anchors shall be anticipated.

Anchors shall be installed in accordance with the operating procedure for fixing steel anchors in concrete and masonry, using the MasterEmaco and MasterSeal 590 fast-hardening compounds (at temperatures not lower than +5°C), developed by BASF Construction Chemicals.

## 3. SUB-BASE WATER IMPREGNATION (for work performed at temperatures of 0°C and above)

Prior to placing MasterEmaco T 1200 PG, thoroughly soak the repair surface with water. Use compressed air or rag to remove excess water.

Prior to pouring MasterEmaco T 1200 PG, the surface must be damp, but not wet.

While working at sub-zero temperatures, the sub-base shall not be dampened.

For better adhesion of the product to the surface, it is recommended to apply an adhesive layer (thin layer of MasterEmaco T 1200 PG).

To remove ice and snow and heat the sub-base, use a burner to treat the area under repair.

## 4. SUB-BASE HEATING (work performed in the temperature range from 0°C to -10°C)

Prior to placing MasterEmaco T 1200 PG, the surface under repair shall be heated to above-

zero temperatures. Use thermomats, infrared emitters or torch lamps for heating. This operation is required to remove possible sleet from the prepared sub-base and prevent heat loss by the repair compound during hydration reaction.

## 5. FORMWORK

Formwork shall be made of a strong material and shall be leak-proof and securely fixed to withstand the repair compound pressure after pouring.

The formwork shall have a special air release hole, located atop, in case of vertical structural elements (e.g., support sides), or on one side only, in case of horizontal structural elements (beam lower surface). Before pouring, the formwork must be impregnated with water so that it did not withdraw water from the repair compound to dehydrate it. The formwork shall be sealed to prevent leaks of the repair compound. For this purpose, thick-consistency MasterEmaco T 1200 PG or other suitable products, for example, MasterSeal 590, may be used. Do not use various fabrics for sealing the formwork, since problems, associated with the fabric removal, may occur.

At the below-zero ambient temperatures, the formwork shall be covered from the outside with heat-insulating material to prevent heat loss by the repair compound.

## 6. MIXING

Prior to mixing MasterEmaco T 1200 PG with water, the following is required:

- 1) Make sure that all the necessary materials (mixer, trolleys, buckets, trowels, etc.) are close at hand;
- 2) Check that the product is available in sufficient amounts;
- 3) Verify the performance of the preliminary operations described in the section "Repair instructions".

Mix only that amount of the repair compound, which can be used within 15 minutes.

To properly prepare the repair compound, follow the below-mentioned instructions:

- 1) Open the bags with the MasterEmaco T 1200 PG dry mortar, required for work, shortly before mixing;
- 2) Pour water at the rate of 3.45 liters of water per one 30 kg MasterEmaco T 1200 PG bag (B/T = 0.115).

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At the ambient temperatures above +30°C, use cold water for mixing. This will extend the survivability of the concrete mix.

At the ambient temperatures below 5°C, use hot water for mixing (from +30 to +45°C).

While mixing with water, the temperature of the dry repair mortar shall be not lower than +5°C. This will accelerate the exothermic reaction.

3) Turn on the mixer and quickly and continuously add MasterEmaco T 1200 PG;

4) Once all MasterEmaco T 1200 PG dry mortar is added, continue mixing for at least 4 minutes. The ready-to-use mix should be of wet consistency and lump-free.

For mixing small amounts of MasterEmaco T 1200 PG, a slow-speed drill (max 300-400 rpm) with a spiral nozzle may be used. Mixing by hand is not allowed. If a layer with a thickness of more than 100 mm is required, add washed gravel (crushed stone) in an amount of up to 30% by weight of the dry mixture.

Please, contact experts of BASF Construction Chemicals in case of specific work performance requirements.

## 7. APPLICATION

Pour the prepared MasterEmaco T 1200 PG repair compound continuously, without vibration. Pouring shall be arranged from one side to prevent air entrapment.

Placed mix ramming is advisable.

Surface of the product laid on the horizontal surface may be smoothed by a grater.

## 8. MAINTENANCE

The repaired areas shall be hold for 24 hours at the conditions, excluding water evaporation. To create the above mentioned conditions, either film-forming materials are used, or the repaired surface is subjected to a certain watering regime.

At sub-zero temperatures, the repaired area should be covered with a heat-insulating material or rags to prevent heat loss during exothermic reaction as well as to avoid cracking.

## PRECAUTIONS

The product contains cement that causes irritation. Avoid contact with eyes and skin. In case of contact, thoroughly wash the affected area with water and consult a doctor, providing the information about the product properties.

## SPECIFICATIONS

Index name	Index
Maximum size of a filler, mm	2.5
Fibre filler	Polymer
Mortar agility by flow cone, mm	260-280
Agility persistence, min.	minimum 10-20
Determination of enlargement - shrinkage, %, maximum	0,05
Compressive strength, MPa, minimum	
2 hours	25
4 hours	35
1 day	45
28 days	80
Tensile strength at bending, MPa, minimum	
2 hours	3,5
4 hours	4,5
1 day	6
28 days	9
Bond strength to concrete, MPa, minimum	2,5
Freeze resistance grade for concretes as roads and airfield pavements used in mineralized environment, minimum	F <sub>2</sub> 200
Freeze resistance grade for all types of concretes, except concretes as roads and airfield pavements, used in mineralized environment, minimum	F <sub>1</sub> 600



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Grade of water resistance, minimum	W16
Ratio of sulfate resistance (1 year), %	minimum 0,9
Material consumption, kg/m <sup>3</sup>	2100

\* Tests were performed according to STO 70386662-010-2014 "MasterEmaco fast-hardening dry repair mortars (EMACO®)"

Physical and mechanical properties of the product may differ if:

- Surface preparation requirements are not met;
- Product preparation requirements are not met;
- Product handling requirements are not met.

At sub-zero temperatures of the ambient air, sub-base, etc., the product hardening and strength build-up rates tend to slow down.

Represented information is based on our current experience. In case of various factors affecting the result, information does not mean legal responsibility. For additional information, please contact your local advisor.

### Limited company "BASF Stroitelnye Sistemy"

Office in Moscow: +7 495 225 6436

Office in St. Petersburg: +7 812 332 0412

Office in Kazan: +7 843 212 5506

Office in Krasnodar: +7 861 202 22 99

Office in Minsk: +375 17 202 2471

Office in Kiev BASF T.O.V.: +380 44 5915595

E-mail: [stroysist@basf.com](mailto:stroysist@basf.com) [www.master-builders-solutions.basf.ru](http://www.master-builders-solutions.basf.ru)

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