

# MasterEmaco<sup>®</sup> T 1100 TIX

(EMACO FAST TIXO)

**Non-shrink fast-hardening thixotropic mortar, containing a polymer fiber, designed for a structural repair of concrete and reinforced concrete under tight schedule. It may be used at the ambient temperatures as low as -10°C. Application thickness varies from 10 to 100 mm.**

\* 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 1100 TIX is a ready-to-use product available in the form of a dry concrete mortar with a maximum aggregate size of 2.5 mm. When mixed with water, it forms a reoplastic, thixotropic, non-segregating compound with a high adhesion to steel and concrete, even if used in hostile environments. MasterEmaco T 1100 TIX is a non-shrink product both in a plastic and hardened state.

MasterEmaco T 1100 TIX does not contain metal aggregates and chlorides. While performing repair operations, the product is recommended to be applied onto the surface by spraying or using a trowel, to the total thickness of 10 to 100 mm. MasterEmaco T 1100 TIX is recommended for use in cases where the strength build-up rate is the most important requirement (as well as hardening at low temperatures without additional warming).

MasterEmaco T 1100 TIX is used in the 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 +17°C to -10°C are available.

## RECOMMENDED USE

MasterEmaco T 1100 TIX is recommended for the use in the following cases:

- Repair of hydraulic structures and water transport facilities;
- Repair of concrete slabs of roads and airfields;
- Repair of machine shop coatings, especially in the mineral oil and lubricant spill areas;
- Repair of reinforced (including pre-stressed) structures - girders, supports, bridge plates, etc.;

- Repair (rehabilitation) of concrete, exposed to aggressive environments containing chloride and sulfate ions;
- Repair of vertical and ceiling surfaces without formwork construction.

On the ceiling or vertical surface, it is recommended to apply a layer of material of up to 100 mm. A layer of up to 50 mm is allowed to be applied in one pass. The second layer is applied, when the fingers, pressing the layer, do not drown and only leave a light footprint on it.

While repairing horizontal and inclined surfaces, the material may be applied with a maximum layer thickness of 100mm in one pass.

## PACKAGING

MasterEmaco T 1100 TIX is packed in 30kg waterproof bags.

## SHELF LIFE AND STORAGE CONDITIONS

Guaranteed shelf life of MasterEmaco T 1100 TIX, 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 adequate safety of the packaging and provide moisture protection. Do not use the product from a damaged package.

## Indicative strength indices\*\*

Dry mortar	Temperature, °C		Compressive strength, MPa			
	Water	Environment	2 hrs	4 hrs	24 hrs	28 days
+20	+20	+20	20	30	40	60
+20	+20	-5	15	25	35	40
+5	+5	+5	3	20	30	45
-5	+5	-5	-	15	20	40
+20	+60	-10	10***	20***	30***	40***

\*\* Data were obtained in laboratory tests.

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

## REPAIR INSTRUCTIONS

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

### 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 1100 TIX with 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 1100 TIX, thoroughly soak the repair surface with water. Use compressed air or rag to remove excess water.

Prior to placing MasterEmaco T 1100 TIX, 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 (use more liquid MasterEmaco T 1100 TIX).

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 1100 TIX, the surface under repair shall be heated to above-zero temperatures. Use thermomats or infrared emitters for heating. This operation is required to remove possible aufeis from the prepared sub-base and prevent heat loss by the repair formulation during hydration reaction.

### 5. MIXING

Prior to mixing MasterEmaco T 1100 TIX 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 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 1100 TIX dry mortar, required for work, shortly before mixing.

2) Pour water at the rate of 4.35 liters of water per one 30 kg MasterEmaco T 1100 TIX bag (water solid ratio = 0.145).

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 1100 TIX.

4) Once all MasterEmaco T 1100 TIX dry mortar is added, continue mixing for at least 4 minutes. The ready-to-use mix should be plastic and lump-free.

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For mixing small amounts of MasterEmaco T 1100 TIX, a slow-speed drill with a spiral nozzle may be used. Mixing by hand is not allowed.

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

## 6. APPLICATION

Prepared MasterEmaco T 1100 TIX repair compound may be applied with trowels or by using plastering machines. While applying the product by hand, it is recommended to prepare a primer layer from MasterEmaco T 1100 TIX with a more liquid consistency; then, apply the primer onto the surface, rubbing it into the sub-base with a brush with stiff bristles. After that, apply a base layer using the “wet-on-wet” method. Optionally, use a wooden, plastic or synthetic sponge trowel to smoothen the surface. Post-application trowel treatment may be started only when the repair compound have already set, i.e. when the fingers, pressing the compound, do not drown, but leave a light footprint.

## 7. MAINTENANCE

At temperatures above +5°C, 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 temperatures below +5°C, 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	150-170
Agility persistence, min.	minimum 10-20
Determination of enlargement - shrinkage, %, maximum	0,05
Compressive strength, MPa, minimum	
2 hours	20
4 hours	30
1 day	40
28 days	60
Tensile strength at bending, MPa, minimum	
2 hours	3
4 hours	4
1 day	5
28 days	8
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
Grade of water resistance, minimum	W16
Ratio of sulfate resistance (1 year), %	minimum 0,9
Material consumption, kg/m <sup>3</sup>	1950



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\* Tests were performed according to STO 70386662–010–2014 "MasterEmaco 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.

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