

# MasterEmaco<sup>®</sup> S 466

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(EMACO S 66)

**Shrinkage compensated, fast-hardening, pourable dry mortar reinforced with polymer fiber, intended for structural repair of concrete and reinforced concrete. The pouring thickness is 40 to 100 mm.**

## DESCRIPTION

MasterEmaco S 466 is a ready-to-use dry mortar for repair by pouring to a thickness of 40 to 100 mm. The material contains a filler with a size of up to 10 mm. When mixed with water, it forms a rheoplastic, poured, non-delaminated repair mortar. MasterEmaco S 466 does not include metal aggregates and chlorides.

## RECOMMENDED USE

- Repair of cement concrete slabs of roads, airfields and outdoor parking areas;
- Repair of structural members (reinforced or pre-stressed beams under dead and live loads, floor slabs, bridge plates, etc.);
- Repair of sea and river transport facilities;
- Repair of machine shop structures, especially those exposed to mineral oils, lubricants, etc.;
- Repair of damaged members of concrete and reinforced concrete structures;
- Repair of structural members exposed to recurrent loads;
- Cementing of sliding supports, exposed to high live and dead loads;
- Grouting of the area between concrete floor slabs and foundation walls;
- Reinforcement of foundations;
- Reinforcement of the cracked rock base soil with steel cables and a precision anchor fastener;
- Concreting of joints of precast concrete structures.

### MasterEmaco S 466 is not recommended for:

- Precision grouting (MasterFlow 980 or MasterFlow 928 are recommended for use);
- Without additional protection in case of contact with environments with pH < 5.5.

## PACKAGING

MasterEmaco S 466 is supplied in 30kg moisture proof sacks.

## COVERAGE

2250 kg of the MasterEmaco S 466 dry mortar are required to produce 1 m<sup>3</sup> of the repair compound.

## SHELF LIFE AND STORAGE CONDITIONS

Guaranteed shelf life of MasterEmaco S 466, stored in a closed undamaged packaging, is 12 months.

Store in an enclosed dry room at a maximum humidity of 70% and a room temperature not lower than 5°C. Do not use the product from a damaged packaging.

## TEMPERATURE CONSIDERATIONS

MasterEmaco S 466 may be used at the ambient temperatures of +5°C to +35°C. At low ambient temperatures (+5°C to +10°C), the strength tends to build-up more slowly. If high early strength is required, the following is recommended:

- Store sacks with MasterEmaco S 466 in cold-protected areas;
- Use hot water for mixing (+30°C to +40°C);
- After pouring, cover MasterEmaco S 466 with heat insulating materials.

If the ambient temperature is below +5°C, use the MasterEmaco T 1000 series materials.

If the ambient temperature is very high (above +30°C), a rapid loss of fluidity by the repair compound is the only problem to be faced with.

In this case, the following is recommended:

- 1) Store sacks with MasterEmaco S 466 in a cool place;
- 2) Use cold water for mixing;
- 3) Mix the repair mortar in the coolest period of the day.

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## WATER CONSUMPTION\* FOR MIXING MASTEREMACO S 466 (Table 1)

| Amount of water, liters per 30kg sack |         |
|---------------------------------------|---------|
| Minimum                               | Maximum |
| 2.5                                   | 2.8     |

\*Approximate water consumption. Actual mixing water consumption is specified in the product quality datasheet.

### REPAIR NOTES

The following recommendations and suggestions are based on the practical experience of using MasterEmaco S 466.

### REPAIR SURFACE PREPARATION

Edges of the defective area shall be cut with a diamond tool to a minimum depth of 40 mm, in perpendicular to the surface. Use a light perforator, needle gun or water/ sand blasting machine to remove concrete debris. To provide good adhesion of the repair mortar and the substrate, roughen the surface and provide 5mm-high furrows.

This operation is very important, since a well-prepared rough surface is required for the MasterEmaco S 466 application. Furthermore, the following is required:

- 1) Remove rust from rebars and install additional reinforcement, if required. If the structure to be repaired is used in concrete and steel corrosive environments, treat the reinforcement with MasterEmaco P 5000 AP;
- 2) Using MasterSeal<sup>®</sup> 590, remove all active leaks on the surface being repaired;
- 3) Clean the surface from grease, paint, lime, dirt or dust.

### REINFORCEMENT INSTALLATION

The minimum thickness of the applied MasterEmaco S 466 layer is 40 mm. Leave at least a 20mm gap between the reinforcement and the surface.

### SURFACE IMPREGNATION WITH WATER

Prior to pouring MasterEmaco S 466, thoroughly impregnate the surface, being repaired, with water. Proceed with wetting every 10-15 minutes

for at least 3 hours. Use compressed air or rags to remove excess water. Prior to pouring MasterEmaco S 466, the surface should be made damp, but not wet.

### FORMWORK

The formwork should be made of a durable material; it should be leak proof and securely fastened to withstand the repair compound pressure after pouring. For pouring MasterEmaco S 466, a special opening, located atop, if vertical structural members are considered (e.g., support side), or only on one side, if horizontal structural members are considered (the bottom of the beam), should be provided in the formwork. Before pouring, the formwork shall be impregnated with water so that it would not absorb water from the repair mortar, thus dehydrating it. The formwork should be sealed to prevent the repair mortar leakage. For this purpose, a thick-consistency MasterEmaco S 466 or other suitable materials may be used. Do not use any fabric for formwork sealing, since it will be difficult to remove it after MasterEmaco S 466 has set or started hardening.

### MIXING

Prior to mixing MasterEmaco S 466 with water, the following is required:

- Check whether the available amount of MasterEmaco S 466 is sufficient enough for work completion, considering the coverage (2250 kg of the MasterEmaco S 466 dry mortar for mixing 1m<sup>3</sup> of the repair mortar);
- Make sure that all necessary materials (mixers, trucks, buckets, trowels, etc.) are close at hand;
- Verify the performance of the preliminary activities described in the Repair Notes section.

For correct mixing, follow the instructions below:

- 1) Open the sacks with the MasterEmaco S 466 dry mortar, required for work performance, shortly before mixing;
- 2) Pour minimum amount of water specified in Table 1 into the mixer;
- 3) Turn the mixer on, and quickly and continuously add MasterEmaco S 466.

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Use the entire sack with MasterEmaco S 466 for mixing;

- 4) Once all required amount of MasterEmaco S 466 has been added, continue mixing for at least 3-4 minutes, until lumps disappear and the mix becomes homogenous;
- 5) Add water, if required (within the amounts indicated in Table 1), until the desired consistency is reached, and stir again for 2-3 minutes.

Water content may slightly differ from the one indicated in Table 1, dependent on the ambient temperature and relative humidity. More or less water may be required during hot & dry weather or cold & wet weather, respectively.

A mixer (max 300-400 rpm) with a spiral nozzle may be used for mixing small batches. Mixing MasterEmaco S 466 by hand is not recommended.

### APPLICATION

The prepared repair mortar should be poured continuously, without vibration. Pour the mix from one side to avoid air entrapment. Make sure that MasterEmaco S 466 has completely filled the space between the formwork and the old

structure. For this purpose, a mild steel strip may be used.

### TREATMENT

If MasterEmaco S 466 was poured into a formwork, the formwork may be removed not earlier than 24 hours after the completion of the pouring process.

While repairing horizontal surfaces (e.g., floors), a proper water treatment regime should be provided for the repaired areas for at least 24 hours, to be extended up to 2 days in case of hot, dry, windy weather. For this purpose, use standard cement-bearing material treatment methods (cover the surface with a film or wet burlap; spray water) or apply special MasterKure<sup>®</sup> film-forming compositions.

### PRECAUTIONS

MasterEmaco S 466 contains cement, irritating the skin and mucous membranes. Avoid eye and skin contact. In case of irritation, thoroughly wash the affected area with water and consult a doctor, providing information about the product.



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### SPECIFICATIONS\* (Table 2)

| Index name   | Index               |    |
|--|---------------------|----|
| Maximum size of a filler, mm   | 10                  |    |
| Fibre filler   | Polymer             |    |
| Mortar agility by settling cone, mm  | 210-260             |    |
| Agility persistence, min.  | minimum 30          |    |
| Enlargement in limited state, %  | 0,05-0,09           |    |
| Compressive strength, MPa, minimum   |                     |    |
|  | 1 day               | 28 |
|  | 28 days             | 60 |
| Tensile strength at bending, MPa, minimum  |                     |    |
|  | 1 day               | 4  |
|  | 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> 300  |    |
| Freeze resistance grade for all types of concretes, except concretes as roads and airfield pavements, used in mineralized environment, minimum | F <sub>1</sub> 1000 |    |
| Grade of water resistance, minimum   | W16                 |    |
| Ratio of sulfate resistance (1 year), %  | minimum 0,9         |    |

\* Tests were performed according to STO 70386662-010-2014 "MasterEmaco dry repair mortars (Emaco)"

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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