

MONOCRETE PPE TH



2

CONCRETE REPAIR

Rehabilitation thixotropic mortar for repair of reinforced concrete structures

1. Product characteristics

Single-component dry mortar volume compensated mixture containing PP fibers, re-dispersible polymers and further improving additives. Meets the requirements of class R3 according to EN 1504-3.

- designed for concrete repair (principle 3, 4 and 7 method 3.1, 3.2, 3.3, 4.4, 7.1 and 7.2 according to EN 1504-3)
- good workability, is thixotropic, applied manually or by spraying
- compensated in volume
- perfect adhesion to the concrete base and reinforcement
- is frost resistant and resistant deicing salts
- as required by Act No. 258/2000 Coll. and Ministry of Health Decree No. 409/2005 Coll. it is eligible for direct contact with drinking water

2. Use

MONOCRETE PPE TH is a single-component dry mortar that meets the requirements of class R3 according to EN 1504-3. Polymer-cement mortar **MONOCRETE PPE TH** is intended especially for repairs of damaged concrete and reinforced concrete vertical surfaces and ceilings (principle 3, 4 and 7 method 3.1, 3.2, 3.3, 4.4, 7.1 and 7.2 according to EN 1504-3). It comes in three grain sizes. **MONOCRETE PPE TH** can be coated either with directly applicable type of secondary protection in dependence on exposure of the repaired structure or can be further surfaced by application of the **DENSOFIX** spread coating.

3. Physical and mechanical parameters

Requirements / results according to EN 1504-3 class R3

| | Testing method | Requirements | Results |
|---|----------------|-----------------------------|-------------------------------|
| Compressive strength (MPa) | EN 12190 | > 25 | R3 |
| Chloride Ion Content | EN 1015-7 | < 0.05 % | < 0.01 % |
| Adhesive Bond (MPa) | EN 1542 | >1.5 | > 2.0 |
| Carbonation Resistance | EN 13295 | $d_k \leq$ control concrete | complies |
| Restrained shrinkage-expansion (MPa) | EN 12617-4 | Adhesion after test | ≥ 1.5 |
| | | ≥ 1.5 | |
| Elastic Modulus (GPa) | EN 13412 | > 15 | > 15 |
| Coefficient of Thermal Expansion (K ⁻¹) | EN 1770 | - | $12.3 \pm 0.4 \times 10^{-6}$ |

Physical and mechanical parameters

| MONOCRETE PPE TH | | f | r | c |
|---|---------|-------------------|----------|----------|
| Color | | Non-standard grey | | |
| Bulk density (kgm ³) | | 1 540 ± 40 | | |
| Bulk density of fresh mortar (kg/m ³) | | 2 200 ± 50 | | |
| Grain size (mm) | | 0 ÷ 1 | 0 ÷ 4 | 0 ÷ 8 |
| Tensile bending strength (MPa) | 7 days | > 4.0 | > 4.5 | > 4.8 |
| | 28 days | > 7.0 | > 7.5 | > 8.5 |
| Compressive strength (MPa) | 7 days | > 20 | > 23 | > 25 |
| | 28 days | > 36 | > 40 | > 44 |
| Dynamic E-module (GPa) | | < 23 | < 26 | < 28 |
| Frost resistance | | > T150 | | |
| De-icing chemicals resistance according to ČSN 73 1326 Method A | | D1 > 75 | | |

4. Test certificates

Meets the requirements of EN 1504-3, TP ŘSD Sec. 31 and TP SSBK III.

The product is certified according to Act no. 22/1997 Coll. and the EP and Council Regulation (EU) no. 305/2011 (CPR). Continuous independent quality control of production ensures the AZL 1687 LABBET®.

Supervision of the quality system, EMS and OHS is carried out by Notified Body No. 3029.

5. Instruction for preparation and application

During the processing of dry mortar mixes **MONOCRETE PPE TH** it is generally necessary to comply with the principles contained in the relevant technological process **BETOSAN** for repair of reinforced concrete structures (TP No.1/06).

Base. Any incoherent, loose, weatherworn or otherwise visibly damaged concrete shall be completely removed from the surface of the repaired base. Corroded reinforcement shall be carefully released and cleaned of any corrosive products before application of repair material, humidification of the base surface shall be properly and continually performed for at least 120 minutes. The properly humidified concrete shall be dully dump, and not covered with dump shining water film. If necessary, it is possible to anchor the material to the base with the adhesive bridge **111 DENSOCRETE**.

Preparation of repair mortar. The mortar is prepared by simple mixing with water. During stirring it is necessary to use a low-speed mixer with forced circulation. The recommended mixing ratio is specified in the following table:

| Indication/type of mortar | max. size of fillers | Recommended mixing ratio | | Thickness of applied layer in single working area | |
|----------------------------------|----------------------|--------------------------|----------------|---|-----------|
| | | Dry component (kg) | Water (liters) | min. (mm) | max. (mm) |
| | | | | | |
| MONOCRETE PPE TH f fine | 1 mm | 25 | 3.70 ÷ 3.95 | 5 | 12 |
| MONOCRETE PPE TH r medium | 4 mm | 25 | 3.45 ÷ 3.70 | 10 | 25 |
| MONOCRETE PPE TH c coarse | 8 mm | 25 | 3.40 ÷ 3.65 | 20 | 40 |

The recommended batch of water can be adjusted to reach optimum workability. If added water exceeds the recommended quantity by 10%, risk of cracking is significantly enhanced. It can also lead to drop of mechanical properties.

Workability of the product is 50 - 60 minutes under 20 °C.

Neither **temperature of base** nor **temperature of ambient air** shall be below + 5 °C and above + 30 °C.

Mortar application can be done either manually or by dry or wet spraying. The mortar can be manually applied either by rendering or fining off.

First layer (connecting) needs to be applied in such a way to ensure that no unfilled spaces are created (behind reinforcement, in caverns etc.). After initial application it is recommended to spread the mortar into pores and uneven spaces. This can be done well with flat paint brush with short hair, or by a toothed trowel. Proper adhesion of the material to substrate in application stage is basic condition for good quality adhesion in the final state. In localized repairs it is necessary to pay appropriate attention to edge regions or repaired area, where the edge needs to be properly compacted, without entrapped air pockets or other non-homogeneities. The repair is always done from place of deepest degradation, in such a way that the final layer it to be continuous over entire area, if possible.

Surface finalization. After initial setting of the last layer, smoothing by a dry polyurethane finisher is used for surfacing. Wet surfacing is not allowed. If the surface is to be smoothed with fine spread coating (e.g. **DENSOFIX**), ruling off by a wooden tamper is sufficient.

Surface treatment. Repaired surfaces shall be properly treated immediately after completion to avoid especially direct exposure to sun, wind effect and other factors accelerating undesirable evaporation of the batch water. Use of the treatment agents **DENSOCURE W** and **DENSOCURE R** proved well.

6. Specific consumption

Specific consumption of dry mortar is 1.7 ÷ 1.8 kg/m² at 1 mm of layer thickness. In spray application, it is necessary to count with loss of 10 ÷ 12 %.

7. Packing and storage

The product is packed into 25 kg PE-lined paper bags. **MONOCRETE PPE TH** must be efficiently protected against moisture during transportation and storage. Shelf life in undamaged packing is 6 months.

After the expiration of min. shelf life, which is stated on the packaging, ingredients are not fully effective at reducing chromium VI below 2 ppm.

8. Health protection at work

Handling the **MONOCRETE PPE TH** dry rehabilitation mortar does not require any extraordinary hygienic precautions. The product contains alkalis and therefore any contamination of mainly eyes or mucous membrane must be prevented. Health and labor safety rules applicable to work with cement or lime mortars are to be adhered to. Issued MSDS meets the requirements of EC-Regulation 1907/2006, Article 31.

Because the product meets the criteria for classification as hazardous, it is necessary to provide the recipient or carriers with MSDS.

In countries where regulation REACH (para. 33.1): EU regulation on chemicals and their safe use (REACH: EC 1907/2006) is valid, professional users and distributors must be provided with following information automatically and without request:

This product is subject to Regulation (EC) No. 1907/2006 (REACH). It does not contain any substances that could be released from product under normal or reasonably foreseeable conditions of use. Therefore, there are no registration requirements for substances in articles within the meaning of Article 7.1 of the Regulation. Based on our current knowledge, this product does not contain SVHC (substances of very high concern) from candidate list published by the European Chemicals Agency in concentrations above 0.1% (w / w).

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9. Waste disposal

During disposal of contaminated packages or clearing debris from product, it is necessary to follow the Act No. 185/2001 Coll. on waste, as amended.

10. Important notice

All information mentioned above, especially advice for processing and application of our products, is based on our knowledge from the development of chemical products and on years of experience with applications in practice at standard conditions, and proper storage and use. Due to the differing conditions during processing, high count of products, varying nature and modifications of base and other external influences, the procedure based on the information provided or on other written or oral recommendations, may not always ensure satisfactory working results. BETOSAN s.r.o. assumes no liability for provided advice or recommendation. The applicator must prove, that he submitted complete information on time and in writing which is necessary for a proper detailed assessment by BETOSAN s.r.o. The applicator must test the suitability of the products for the intended application. Proprietary rights of third parties, above all, must be taken into account. All received orders are subject to our current "General sales and delivery conditions". Please always make sure that you follow the most recent issue of the Technical Data Sheet. It is available, along with other information, at our Technical Department or at www.betosan.cz

11. CE marking

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|---|--|
|  1301 | |
| BETOSAN s.r.o. Na Dolinách 28, 147 00 Prague 4 | |
| 07 | |
| 2-5/072013 | |
| EN 1504-3:2005 | |
| MONOCRETE PPE TH Mortar for repair of reinforced concrete structures | |
| Compressive strength | class R3 |
| Chloride Ion Content | < 0.01% |
| Adhesive Bond | > 2.0 MPa |
| Carbonation Resistance | complies |
| Restrained shrinkage-expansion | ≥ 1.5 MPa |
| Elastic Modulus | > 15 GPa |
| Coefficient of Thermal Expansion | $12.3 \pm 0.4 \times 10^{-6} \text{ K}^{-1}$ |
| Dangerous substances | meets 5.4 |
| Reaction to fire | Europe class A1 |

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