

EXOCEM FP

Thixotropic mortar with compensated shrinkage with polypropylene fibers



Ruredil
Technical data
sheet

The Material

EXOCEM FP is a premixed material containing cement, selected aggregates, superfluidifying additives, materials to control shrinkage in its plastic phase (UNI 8996) and in its hardened phase (UNI 8147), and polypropylene fibers. After the addition of water, a thixotropic mortar is obtained, which is highly adhesive to concrete, bricks and iron, with high durability and suitable for repairs and structural coatings without shrinkage.

The Properties

Polypropylene fibers form a secondary tridimensional reinforcement in the mix, which opposes any cracking due to less than ideal curing conditions, such as plastic shrinkage or vibrations (for example due to vehicle traffic). In particular, EXOCEM FP was tested by the C.I.S.E. in Milan (test bulletin SEV-BC-89-002). The tests showed the properties of this mortar that does not form cracks, in its plastic phase and when hardened, even if it undergoes long vibration time on a shaking table after preparation, which simulates the stresses bridge structures are exposed to, due to vehicle traffic.

EXOCEM FP also has:

- high compressive and bending strength;
- ease and speed of installation and finishing;
- elastic modulus and thermal expansion coefficient similar to that of concrete;
- resistance to sulphate (no degradation);
- resistance to chemical agents such as chlorides (de-icing salts, sea water, etc.), sulphates, acid rain, carbon dioxide;
- high impermeability to water and aggressive aqueous solutions;
- resistance to freezing and thawing cycles in the presence of deicing salts;
- no shrinkage cracks;
- no bleeding

For a surface finish that ensures high esthetical quality, use RASOCEM RA or RASOCEM NI.

Field of Application

- Repair of damaged concrete items
- Replacement of reinforced concrete beams, pillars, etc., even in traffic
- Rigid prefabrication couplings
- Structural coatings



Compliant with EN 1504-3 Standard

EXOCEM FP meets the requirements defined in the UNI EN 1504/9 Standard ("Products and systems for the protection and repair of concrete structures: definitions, requirements, quality control, and conformity assessment. General principles for the use of products and systems") and the minimum requirements of the EN 1504/3 Standard ("Structural and non-structural repair") for structural mortars of class R4.

Application Procedure

Preparation of the Substrate

The substrate must be carefully cleaned from dust and any traces of rust, oil and grease. Roughen the surface, possibly using a hammering tool, removing any damaged concrete. This is necessary to ensure perfect adhesion of EXOCEM FP to the substrate. For additions of more than 20 mm, apply several coats. In special cases, for large surfaces and thicknesses greater than 50 mm, reinforcement with steel wire mesh can be used not adhering to the milled surface and fastened with nails.

Saturation with Water

Moisten the surface by saturating it with water, and taking care to remove any excess water.

Preparation of Material

It is recommended to prepare the mortar with a mechanical mixer, and avoid mixing by hand. Pour about 90% of the water required in the mixer, then operate the mixer by adding EXOCEM FP without interruption to avoid the formation of lumps.

Stir the mix for 2-3 minutes; if necessary, add the remaining water to reach the desired consistency and mix for another 3-4 minutes. In hot climates, small increases in water content can be tolerated compared to the values provided in the table, while the opposite occurs in cold and damp conditions.

Use

Apply EXOCEM FP with a trowel or sprayer. Finishing can be performed by smoothing the surface with a wood or plastic plasterer's trowel. This operation should start during the initial setting of the mortar, seen when fingers do not sink into the mortar.

It is advisable to apply the product at temperatures between +5°C and +40°C; low temperatures (< 5°C) considerably slow down mortar setting; due to high temperatures (> 40°C), the mortar will rapidly become unworkable.

Hardening

The presence of polypropylene fibers and specific anti-shrinkage additives in the mix avoids the formation of cracks and fissures, even without the application of a protective agent. However, in environments with strong ventilation or sun exposure, it may be necessary to plan wet setting or the application of an anti-evaporation agent (Curing Eco).

Technical characteristics

Technical Specifications of the Mortar	
Mix water per 100 kg of dry premixed product	15 – 16 liters
Consistency of the mortar (EN 13395-1)	170 +/- 10 mm
Specific density of wet mortar (EN 1015-6)	2,10 ± 0,05 g/cc
Volume of wet mortar per 100 kg of dry premixed product	approx. 55 liters
Yield (consumption of dry premixed product)	approx. 1,8 kg/m ² /mm
Contrasted expansion 1 day	> 0,04%
Compressive Strength 1, 7, 28 days (EN 12190)	>30; >37; >54 MPa
Bending Strength 1, 7, 28 days (EN 196-1)	>3,5; >4,5; >7 MPa
Elastic Modulus after 28 days (EN 13412)	> 24 GPa
Strength of adhesion to smooth bar after 28 days - RILEM-CEB-FIP- RC6-78	> 4 MPa
Strength of adhesion to bar with improved adhesion after 28 days -RILEM-CEB-FIP- RC6-78	> 32 MPa
Adhesion to concrete after 28 days (EN 1542)	> 4 MPa (the support breaks)
Reaction to fire (EN 13501-1)	Euroclasse A1
Resistance to Sulphates (ASTM C88)	No degradation after 15 cycles

Storage

EXOCEM FP must be kept in its original sealed packaging at a temperature between +5°C and +40°C, in a covered and dry place. After the packaging is opened, use the entire contents, as it contains cement and is sensitive to moisture all'umidità.

Safety Information

Always consult the technical documentation and the health and safety sheet before use. EXOCEM FP is a cementitious product. It may cause skin and eyes irritation. It is recommended to always wear protective clothes, gloves and glasses.

Note

Do not use EXOCEM FP for

- anchoring;
- formwork items;
- in contact with fluids with pH lower than 5.

DATA SHEET

Chemical-physical specifications:

Specific density: 2.10 +/- 0.05 (wet mortar)
Consistency: 170 +/- 10 mm (wet mortar)



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Approximate composition:

Preparation with cement, sand, polypropylene fibers, filler, and technological additives.

Definition of performance:

Thixotropic mortar with shrinkage compensated by polypropylene fibers.

Packaging

25 kg bags

Yield: (consumption of dry premixed product)
approx. 1,8 kg/m²/mm

Code

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