

EXOCEM FP70

Shrinkage-compensated, polymer fibre-reinforced thixotropic mortar for repair works in very aggressive environments



The material

EXOCEM FP70 is a premixed cement-based product containing selected aggregates, superplasticizers, shrinkage-control agents for both plastic phases (UNI 8996) and hardening phases (UNI 8147) and polypropylene fibres. Thixotropic mortar obtained with the addition of water, highly adhesive to concrete, brick and iron. Extremely durable and suitable for shrinkage-free structural coating and repair works.

EXOCEM FP70 is particularly durable in very aggressive environments.

Properties

Polypropylene fibres create a secondary three-dimensional core that compensate the formation of cracks caused by curing problems such as plastic shrinkage or vibration (road traffic).

This mortar can be said to be crack-resistant during plastic and hardening phases, even when subjected to heavy vibration immediately after preparation, as demonstrated in the many tests performed where samples were subjected to vibration for long time periods, thus simulating road traffic strain and stress of bridge structures.

In addition, EXOCEM FP70 is characterized by:

- high compressive and flexural strength;
- adhesion to concrete > 4MPa at 28 days (subbase breakage);
- adhesion to steel > 4Mpa with smooth bar; > 32MPa at 28 days with improved adhesion bars;
- easy and quick application and finish;
- modulus of elasticity and coefficient of thermal expansion similar to that of concrete;
- sulphate-resistant (no degradation);
- resistant to chemicals such as chlorides (thawing salts, sea water etc.), sulphates, acid rain, carbon dioxide;
- highly impermeable to water or aggressive aqueous solutions;
- resistant to freeze-thaw cycles, even in the presence of thawing salts;
- no cracking caused by shrinkage;
- no bleeding.

Use RASOCEM RA o RASOCEM NI to guarantee good surface finish of excellent aesthetic quality.



In conformity with standard EN 1504-3

EXOCEM FP70 is in compliance with the requirements set forth in standard UNI EN 1504/9 ("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 minimum requirements in conformity with standard EN 1504-3 ("Class R4 High Strength Structural Repair Mortars").

Physical-mechanical properties

Compressive and flexural strength.

Curing (days)	Compressive strength (MPa)	Flexural strength (MPa)
1	22,0	7,0
7	60,0	9,5
28	70,0	11,5

Modulus elasticity in compression at 28 days: > 30 GPa

Product performance above refers to mortar prepared with 25kg bag and 13,5% of water, equal to 3,375 litres.

Field of application

- Repair works of damaged concrete units;
- refilling of reinforced concrete beams, pillars, etc. (even subjected to road traffic strain);
- prefabricated rigid joints;
- structural coating.

Application Procedure

Subbase preparation

Subbase must be perfectly clean, completely free from dust, grease, rust or oil. Use brush-hammer to make surface rough and remove deteriorated concrete. This operation is required to guarantee maximum adhesion of EXOCEM FP 70 to subbase.

Layers of more than 20 mm of thickness shall require the application of further coats. In some cases, large surfaces shall require the use of an electro-welded mesh which does not adhere to concrete scarification, correctly fixed with nails.

Water-saturated subbase

Pre-soak substrate and then remove excess water.

Material preparation

Manual mortar mixing should be avoided. Use of mechanical mixer is recommended instead.

Pour approximately 90% of required water quantity, start the concrete mixer and then add EXOCEM FP70 uninterruptedly to prevent the formation of lumps. Add remaining water in case of need and mix approximately 3-4 minutes until desired consistency is reached.

Under hot weather conditions water content may be increased with respect to table indications. On the contrary, mix water content may be reduced in case of cold and humid conditions.

Application

Apply EXOCEM FP70 with trowel or spray gun. Plastic or wooden plastering trowel may be used for rendering concrete surface smooth. This operation should be performed at the beginning of mortar setting process, when it is possible to press surface with a finger without going deep into it.

It is advisable to apply the product with temperatures comprised between +5°C and +40°C; in fact, low temperatures (<5°C) considerably slow down setting process whereas high temperatures (>40°C) considerably and quickly reduce mortar workability.

Curing

The use of polypropylene fibres and anti-shrinkage additives prevent the formation of cracks and fissures and required no additional protective coats. However, application in outdoor environments exposed to strong ventilation or sunlight may require wet curing or the application of anti-evaporation agent such as (Curing Eco).

Technical characteristics

Technical data of mortar	
Mortar consistency (UNI EN 13395-1)	flow = 160 mm
Mix water per 100kg of premixed product	13,5 - 14,5 litres
Fresh mortar per 100kg of EXOCEM FP70	53 litres
EXOCEM FP70 per 1 m ³ of fresh mortar	1850 - 1920 kg
Fresh mortar yield	1,85 - 1,92 Kg/ m ² /mm
Specific weight of fresh mortar	2,15 ± 0,05 (g/cc)

Mortar performance	
Restrained expansion (UNI EN 8147)	1g>0,04%
Sulphate-resistant (ASTM C88)	No degradation after 15 cycles
Pull-out resistance of steel bars (RILEM-CEB-FIP RC6-78)	>25 MPa

Storage

EXOCEM FP70 should be stored tightly closed in the original container, in a dry and covered place, at any temperature between +5°C and +40°C. This moisture-sensitive cement-based product must be used once the bag is opened.

Safety Instructions

Please refer to technical documentation and safety data sheet of product before use. EXOCEM FP70 is a cement-based product. It may cause eye and skin irritation. It is advisable to always use suitable protective clothing and goggles.

Note

Do not use EXOCEM FP70 for

- anchoring;
- formwork systems;
- whenever in contact with liquids with pH < 5.

DATA SHEET

Chemical-physical specifications:

Specific weight 2,15+/-0,05 (fresh mortar).
Consistency 160+/-10mm (fresh mortar).



Indicative composition:

Cement-based with sand, polypropylene fibres, aggregates and technological additives.

Product use:

Shrinkage-compensated, polymer fibre-reinforced thixotropic mortar for repair works in very aggressive environments.

Packaging

25 kg bags

Yield:

Approximately 1,85-1,92 kg/m²/mm of fresh mortar

Code

0105035020

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