

EXOCEM G3 PVA

Castable mortar with compensated shrinkage for mass casting of structures subjected to shock loads



The Material

EXOCEM G3PVA is a premixed cement-based product with low hydration heat, selected aggregates, super-fluidifying admixtures and high modulus polyvinyl alcohol fibers.

After the addition of water, a castable mortar is obtained, which is strongly adhesive to any type of substrate (concrete and iron), with high toughness and durability.

This special formulation allows making mass castings, counteracting the phenomenon of cracking caused by hydration heat. This composite has a great ability to absorb energy after stress cracking. Therefore, it is suitable for the restoration of structures subjected to impact loads or dynamic loads in general. It is also suitable for repairs and high strength structural coatings, with no shrinkage. The high ductility of this premixed product, combined with high mechanical strength, allow the reduction of the thicknesses of application (over 30%) compared to those necessary in the case special high strength concretes or ready-for-use premixed mortars are used.

The properties

The presence of polyvinylalcohol fibers in the cement matrix improves the mechanical characteristics of the composite, making it more ductile and with toughness equal to that obtained using metal fibers without undergoing degradation due to corrosion of the fibers. The three-dimensional contribution of the fibrous reinforcement acts in the post-cracking stage, increasing the capacity of the material to absorb energy and thereby slowing down the progress of the cracking process.

- High compressive and bending strength.
- Capacity to sustain loads after first cracking failure.
- Adhesion to concrete greater than 4 MPa at 28 days (the support breaks).
- Adhesion to steel greater than 4 MPa with smooth bar; greater than 25 MPa at 28 days with bar with improved bonding.
- Ease and speed of laying and finishing.
- Resistance to chemical agents such as chlorides (de-icing salts, sea water, etc.), sulphate, acid rain, carbon dioxide.
- Resistance to repeated freezing and thawing.

Physical-mechanical behavior

Compressive and flexotraction strength.

Curing (days)	Compressive strength (MPa)	Flexural strength (MPa)
1	55.0	5.0
7	65.0	7.0
28	80.0	8.0

The performances shown above are obtained by mixing the content of an entire bag of product (25 kg) with 9.5 % of water, equal to 2.375 liters.



Complies with EN 1504-3 standard

EXOCEM G3PVA 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 evaluation of conformity. 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 R4-class structural mortars.

Fields of application

- Reinstatement of reinforced concrete beams, pillars.
- Repairing of decks of bridge structures.
- Repairing of tunnel caps.
- Repair of special flooring (airport runways, etc.).
- Replacement of reinforced slab with mesh.
- Repair of structural elements particularly exposed to aggressive agents (acid rain, carbonation, deicing salts).

Method of application

Preparation of the substrate

The substrate must be thoroughly cleaned from dust as well as any traces of rust, oil and grease. Roughen the surface, possibly using a bush-hammer, removing the deteriorated concrete. This is necessary to ensure perfect adhesion to the substrate by EXOCEM G3PVA.

Water saturation

Wet the substrate saturating it with water, taking care to remove any excess water.

Preparation of the mortar

It is recommended to prepare the mortar with mechanical mixer, avoiding mixing by hand. Pour in the dough about 90% of the water required, then operate the mixer by adding EXOCEM G3PVA without interruption in order to avoid the formation of lumps.

Mix for 2-3 minutes; add the remaining water, if necessary, to reach the desired consistency and stir for another 3-4 minutes.

In hot climates, small increases in water content can be tolerated, compared to the values in the table, while the opposite occurs in cold and damp conditions.

Mortar laying

After mixing with the suggested methods, start the casting from one side to avoid formation of air bubbles. It is advisable to apply the product at temperatures between +5 °C and +40 °C; low temperatures (<5 °C) considerably slow down mortar setting; high temperatures (> 40 °C) quickly reduce mortar workability.

Specifications

Consistency	flow =260 mm
Liters of H ₂ O per 100 kg EXOCEM G3 PVA	9 – 10
Liters of fresh mortar per 100 kg EXOCEM G3 PVA	49
Kg EXOCEM G3 PVA per 1 m ³ of fresh mortar	2000 - 2070
Yield of fresh mortar	2.00 - 2.07 kg/m ² /mm
Relative density of fresh mortar	2.25 ± 0.05 (g/cc)

CATALOGUE SPECIFICATIONS

Chemical/physical specifications:

Relative density: 2.25 +/- 0.05 (fresh mortar)
Consistency: 260 +/- 20 mm (fresh mortar)



Composition:

Cement-based product, selected river aggregates admixed with water reducers with polycarboxylates base.

Definition of performance:

Castable mortar with compensated shrinkage for mass castings of structures subjected to shock loads.

Our company is certified according to UNI EN ISO 9001:2008 standard by ICMQ and Certiquality for the "Design, production and trade of chemical and special products for the building sector." Our quality system is based on the sale through catalog, a contractual tool between our Company and Customers. Ruredil, with this tool, guarantees to its Customers that the product to be delivered complies with the specific chemical and physical properties specified in this catalog sheet. This sale relieves us from the issuance of the certificate of analysis which, by its nature, only guarantees the performance of a specific supply.

Packaging

25 kg bags

Yield:

Around 2.00 to 2.07 kg/m²/mm of fresh mortar

Code

0105030020

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Storage

EXOCEM G3PVA should be stored in original unopened packaging at temperatures between +5 °C and +40 °C in a roofed and dry place.

Once the package has been opened, use all the content because, being cement-based, it is sensitive to moisture.

Safety indications

Please consult the technical documentation and the health and safety sheet before proceeding to use. EXOCEM G3PVA is a cement-based product. It may cause irritation to skin and eyes. It is recommended to always wear protective clothing, gloves and suitable protective eyewear.

Curing

When casting has been completed, it is recommended to protect the surface of the mortar exposed to the air from evaporation, wetting it repeatedly for at least 12 hours. Alternatively, you can use anti-evaporation products CURING ECO.

Note

- Do not use EXOCEM G3PVA for
- Applications with a trowel and spray
- In contact with liquid with pH below 6.