FINOMIX®
DRY MORTARS

Technical Data Sheet

Release 2: 14/02/2020

RP 4000

fiber-reinforced high strength repairing mortar

(for layers up to 6cm thick)

class R4

- Class CC R4 according to EN 1504-3
- High thixotropy - Application thickness up to 6cm
- Very high mechanical properties
- Controlled shrinkage - Excellent dimensional stability

FINOMIX®
DRY MORTARS

RP 4000

fiber-reinforced high strength repairing mortar

DESCRIPTION

Cement-based, one-component thixotropic repair mortar of controlled shrinkage, modified with silica fume, polymers and synthetic fibers, suitable for highly demanding repairs of reinforced concrete structures.
It exhibits very high mechanical properties, modulus of elasticity similar to high-specifications concrete, very good dimensional stability and high bonding strength to concrete and steel.
Classified as CC R4 cementitious mortar for the repair of concrete structures according to European standard EN 1504-03.

APPLICATIONS

RP 4000 is suitable for highly demanding repairs to concrete elements. Its thixotropic formula allows for the application on horizontal, vertical or overhead surfaces. It can be applied in layers up to 60m thick by hand, with a trowel or a suitable piston or worm-screw type spraying machine.
Indicative applications:

- Restoring of deteriorated reinforced concrete structures due to carbonation.
- Restoring of deteriorated concrete surfaces and pillars due to corrosion of steel reinforcement.
- Smoothing of surfaces defects, such as casting joints, holes created by formwork spacers, exposed rods, etc.
- Filling of rigid joints.
- Construction and repair of surfaces which are subject to wear.

PROPERTIES / ADVANTAGES

- Very high mechanical strength in compression and flexure.
- Modulus of elasticity similar to that of high performance concrete.
- Increased water tightness.
- Excellent adhesion on old concrete, provided that it has been soaked with water before application, and also on reinforcing steel bars, especially if they are treated with RP 4020.
- Easily workable mixture with high thixotropic properties suitable to be applied in thick layers (6cm).
- Shrinkage compensated formula.
- High resistance to abrasion.

HARMONIZED STANDARDS / REGULATIONS

- **EN 1504-3:2004:** Concrete repair product for structural repair CC mortar (based on hydraulic cement), class R4. Meets the requirements of the standard.
- **EN 1504-9:2008:** Products and systems for the protection and repair of concrete structures - General principles for the use of products and systems. Meets the requirements of the standard according to Principle 3 (CR - Concrete Restoration), 4 (SS - Structural Strengthening) & 7 (RP - Preserving/Restoring Passivity).
- **Regulation (EC) No. 305/2011:** CE marked product with Declaration of Performance (DoP): RP4000/CPR-7-13/039/10-2013.

APPLICATION INSTRUCTIONS

- Deteriorated and loose concrete must be removed until the substrate is solid, strong and rough.
- Concrete and reinforcing rods must be cleaned until free of dust, rust, cement residue, grease, oils and previously applied paints by sand-blasting to Sa 2½ (ISO 8501-1).
- Soak the substrate with water. Allow excess water to evaporate or remove it using compressed air.
- Add the bag content into the necessary clean water under continuous stirring for at least 3 minutes, until a homogenous mixture is formed having the desired consistency. It is recommended to use a low speed electric mixer (300rpm). Avoid manual mixing as it requires greater quantities of water which are detrimental to some characteristics of the product, such as mechanical strength and shrinkage.
- RP 4000 is applied with a trowel or a suitable spraying machine in layers up to 6cm thick. First create a scratch coat by pressing the repair mortar on the substrate to form a thin layer and fill pores or pits in the surface. Ensure the entire surface to be repaired is covered by the scratch coat. The repair mortar is then applied by firmly pressing and compacting its layer.
- When applying in multiple layers, the surface of each layer must be roughened in order to achieve the best possible adhesion. Each layer must be applied before the previous one has completely set, about 2-3 hours at +23°C.
- The finished surface must be immediately protected from dehydration for 48 hours.

CLEANING OF EQUIPMENT

Clean all tools and application equipment with water immediately after use. Hardened material can only be mechanically removed.

RECOMMENDATIONS

- Temperature during application should be between +5°C and +35°C.
- Do not add cement, aggregates or other additives.
- Do not mix the product with dirty or salty water.
- Don't use excess water for mixing as it will affect the performance of the product.
- Avoid application under direct sunlight or in strong winds.
- Postpone application if high temperatures or frost are expected for the following 24 hours after application.
- Do not add water when the mixture begins to set.
- During the curing period protect the fresh surface from dehydration, rainfall and frost.
- Apply the migrating corrosion inhibitor **RP 4010** on the cleaned surface. **RP 4010** restores the alkalinity of the carbonated concrete area and also protects reinforced concrete elements from corrosion due to chloride ingress. Refer to the relevant Technical Data Sheet for further details.
- Apply two layers of **RP 4020** on the exposed steel reinforcement. **RP 4020** forms a barrier coating that protects the reinforcement against corrosion. **RP 4020** is also used as a bonding layer between the old concrete and **RP 4000** repairing mortar. Apply **RP 4020** on the concrete surface to be restored and for as long as it remains damp, apply the repairing layer of **RP 4000** on it. Refer to the relevant Technical Data Sheet for further details.

TECHNICAL CHARACTERISTICS

PRODUCT CHARACTERISTICS		
Appearance		cementitious powder
Colour		grey
Bulk density		1.40 ±0.05 kg/lt
Chloride ion content (EN 1015-17)		< 0.05%
Maximum aggregate grain		2.4 mm
APPLICATION CHARACTERISTICS (+23°C / 50% R.H.)		
Mixing ratio		18-19% w/w (4.50-4.75 kg water / 25kg bag) (0.90-1.00 kg water / 5kg bag)
pH		> 11
Density		2.15 ±0.05 kg/lt
Pot life		60 minutes (22°C)
Application temperature		minimum: +5°C / maximum: +35°C
Application thickness		≤ 60 mm
Consumption		approximately 18-19 kg/m^2 for a 1cm thick layer
PERFORMANCE CHARACTERISTICS		
Hardened density		2.05 ±0.05 kg/lt
Capillary absorption (EN 13057)		≤ 0.40 kg·m^{-2}·h$^{-0.5}$
Compressive strength (EN 12190)	after 24 hours	≥ 20.0 N/mm^2
	after 7 days	≥ 40.0 N/mm^2
	after 28 days	≥ 55.0 N/mm^2
Flexural strength (EN 196-1)	after 24 hours	≥ 4.0 N/mm^2
	after 7 days	≥ 7.0 N/mm^2
	after 28 days	≥ 9.0 N/mm^2
Modulus of elasticity in compression after 28 days (EN 13412)		24 GPa (class R4 requirement: ≥ 20 GPa)
Adhesion to concrete (EN 1542, MC 0,40)		≥ 2.0 N/mm^2
Carbonation resistance (EN 13295)		d_k ≤ control concrete (MC 0,45)
Restrained shrinkage / expansion (EN 12617-4, MC 0,40)		≥ 2.0 N/mm^2
Thermal compatibility Part 1, Freeze-Thaw (EN 13687-1, MC 0,40)		≥ 2.0 N/mm^2

Note: Measurements were conducted in a laboratory environment. The varying conditions present on-site (temperature, humidity, ventilation, substrate absorbency) may affect the material's properties.

SAFETY PRECAUTIONS

- The product contains cement which has an alkaline reaction with water and is classified as irritant.
- Always wear appropriate personal protective equipment for eyes and skin (protective clothing, gloves and goggles).
- If skin contact occurs, rinse well with plenty of clean water.
- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- Consult product's Safety Data Sheet for further instructions on safety handling.
- PRODUCT FOR PROFESSIONAL USE.

PACKAGING - STORAGE

Available in:

- 5kg plastic bags.
- 25kg paper bags.

Storage: 12 months from production date, if stored in original, sealed packaging, protected from direct sunlight and moisture.

LEGAL NOTICE

The technical characteristics and recommendations for the use and application of the **FINOMIX** range of products are based on the knowledge and experience of the company. The above information shall be considered merely indicative and subject to confirmation after long-term practical application. For this reason, anyone who intends to use the product must ensure that it is suitable for the envisaged application. Since the specific site conditions during the applications are beyond the control of our company, the user alone is fully responsible for any consequences deriving from the use of the product. **FINOBETON S.A.** (**FINOMIX**) has the right to modify the properties of its products without prior notice. This release voids any previous publications issued for this technical specifications sheet.

FINOBETON S.A.
16 Pithagora Str., 73134 Chania, Greece
tel. +3028210 27150 ▪ fax +3028210 27005
info@finomix.gr ▪ www.finomix.gr

FINOMIX® DRY MORTARS
building trusting relationships

ISO 9001 QUALITY MANAGEMENT SYSTEM
ISO 14001 ENVIRONMENTAL MANAGEMENT SYSTEM
ISO 45001 OCCUPATIONAL HEALTH & SAFETY