



RM40

High performance, thixotropic, fiber-reinforced cementitious repair mortar for concrete structural repair

R3 EN 1504-3



Description

High performance, thixotropic, fiber-reinforced, cementitious repair mortar. Ideal for structural concrete repairs and generally where high strength, low shrinkage and good adhesion are required. It is classified as an R3 mortar for concrete repairs, according to EN 1504-3.

Technical Specifications

Dry density	: $\approx 1.20 \text{ Kg / L}$
Density of mixture	: $\approx 2.00 \text{ Kg / L}$
Maximum grain size	: 3.00 mm
Mixing ratio (water / RM40)	: $6.25 - 6.50 \text{ L / 25 Kg}$
Substrate temperature	: $+5^{\circ}\text{C min. / } +35^{\circ}\text{C max.}$
Application temperature	: $+5^{\circ}\text{C min. / } +35^{\circ}\text{C max.}$
Reaction to fire	: Class A1
Compressive strength	: $\approx 53.00 \text{ N / mm}^2$
Flexural strength	: $\geq 8.00 \text{ N / mm}^2$
Modulus of elasticity	: $\approx 22 \text{ GPa}$
Thickness per layer	: $5 \text{ mm min. / } 40 \text{ mm max.}$
Pot life	: $\approx 45 \text{ minutes at } 23^{\circ}\text{C}$
<u>Consumption</u>	
Indicatively, $\approx 16 \text{ Kg/m}^2$ per cm of thickness.	

Requirements according to European Standard EN 1504-3

(Performance with water mixing ratio 20%):

	TEST METHOD	CLASS R3	CLASS R4	RM40 TEST RESULTS
Compressive strength	EN 12190	$\geq 25 \text{ N/mm}^2$	$\geq 45 \text{ N/mm}^2$	$\approx 53.0 \text{ N/mm}^2$
Capillary absorption	EN 13057	$\leq 0.5 \text{ Kg.m}^{-2}.\text{h}^{-0.5}$	$\leq 0.5 \text{ Kg.m}^{-2}.\text{h}^{-0.5}$	$\approx 0.03 \text{ kg.m}^{-2}.\text{h}^{-0.5}$
Bonding strength	EN 1542	$\geq 1.5 \text{ N/mm}^2$	$\geq 2.0 \text{ N/mm}^2$	$\approx 2.1 \text{ N/mm}^2$
Chloride ion content	EN 1015-17	$\leq 0.05 \%$	$\leq 0.05 \%$	$\approx 0.025 \%$
Modulus of Elasticity	EN 13412	$\geq 15 \text{ GPa}$	$\geq 20 \text{ GPa}$	$\approx 22 \text{ GPa}$
Thermal Compatibility Part 1: Freeze/Thaw Cycles	EN 13687-1	$\geq 1.5 \text{ MPa}$	$\geq 2.0 \text{ MPa}$	$\approx 1.65 \text{ MPa}$
Carbonation resistance	EN 13295	$d_k \leq \text{Control concrete (MC (0.45))}$		Pass

Application Examples

RM40 is ideal for the following applications:

- Repair of concrete structural elements (columns, beams, concrete slabs, etc).
- Filling gaps in concrete floors.

Instructions for Use

- Concrete Restoration (Principle 3, Methods 3.1 and 3.3 of EN 1504-9) and general repairs of concrete structures.
- Resurfacing and/or strengthening of damaged structures (Principle 4, Method 4.4 of EN 1504-9).
- Strengthening the bearing capacity of existing concrete structures.
- Filling gaps and voids or repairing damaged edges on structural elements.

SUBSTRATE PREPARATION

CONCRETE

The substrate must be structural stable, dry and free of dust, grease, oils, efflorescence and salts. Loose, disintegrated and generally brittle parts of concrete must be removed by hand or appropriate mechanical means (such as medium or high-pressure water blasting, high-pressure air etc.) to ensure good adhesion of the mortar on the substrate.

Do not use vibrating or collision equipment, as they may cause further damages to the concrete structures.

Grit the substrate to lightly roughen and cut the edges vertically (90° angle) and for at least 5 mm around the substrate to be repaired, as to remove possible thin or loose parts. Saturate the substrate with clean water and allow drying (ideally for at least 24 hours). Do not let standing water in the cavities.

METAL STEEL REINFORCEMENT

Before applying **RM40**, rust must be completely removed from all the exposed metal reinforcement rods, using mechanical means (e.g., rotating metal brush, sand blasting or water blasting) and then protected using corrosion inhibiting cement mortar CorroPro® CP44.

MIXING

All equipment and containers should be clean, free of dust, residues of previous mixtures and/or other building materials, etc. to not adversely affect the setting time and the mechanical properties of the product.

Depending on the desired consistency, mix 25 Kg (1 bag) of **RM40** with 6.25 – 6.50 L of clean potable water. Mix using a low-speed electric stirrer for at least 5 minutes, until a homogeneous, free of lumps mixture is achieved and the right consistency is obtained. Allow the mixture to settle for approximately 5 minutes and then stir again.

The pot life of the mixture is at least 1 – 2 hours depending on the weather conditions. In this case, stir the mixture regularly, without adding additional water.

APPLICATION CONDITIONS

Use **RM40** only at temperatures between +5°C and +35°C. During periods of low temperatures (5 – 10°C), it is advisable that warm water (approx. 30°C), is used for the mixing and if possible, the application to be performed during noontime. On the contrary, use cool water (approx. 20°C), for the mixing during high temperatures (up to 35°C) and if possible, the application to be performed in the coolest hours of the day (early in the morning or late in the afternoon hours) avoiding the direct sunlight.

APPLICATION

Repairs of concrete columns, beams, slabs, and floor repairs can be done by trowel, while on larger surfaces it can be applied by spraying. Ensure that the cavity or the repaired surface is adequately filled, and the mortar is thoroughly compacted with the trowel.

Apply the mortar in a layer of 5 – 40 mm. Thicker applications can be achieved by multiple layers. In such case, each layer is applied after the previous one has allowed drying and set, but within 24 hours from previous layer. It is also recommended to let the previous layer rough so that better adhesion with the next layer is achieved.

CURING

Protect the final surface from rapid water evaporation by keeping it wet (water spraying) for at least 2 days. This is very important, especially in conditions of severe drought with high temperatures and strong winds. If possible, protect the finished surface during the winter season from low temperatures and/or frost.

DECORATION

After **RM40** has cured, (2-3 weeks from application), can be evened out with finishing plasters such as WATERPROOF FINISH, ULTRA MIX, EXTERIOR PELEMURA. Also, the surface can be waterproofed with cementitious waterproofing mortar PELELASTIC PE50, or overlaid with ceramic tiles and natural stones using PELECRETE adhesives.

CLEANING OF EQUIPMENT

Clean all tools and mixing equipment thoroughly with plenty of water after completion of work, while the mixture is still fresh. In case that the mixture has been set, then tools can be cleaned only by mechanical means

REMARKS / LIMITATIONS

- Use only fresh, clean, potable water for both mixing and cleaning.
- Avoid using material which was stored in open bags for a long period of time.
- Never add water or new material to the mixture which has started to set to improve the workability.
- Do not add cement, gypsum, sand, or any other materials to the supplied product, as this may negatively affect the final properties of the product.
- Avoid using the product under extreme weather conditions (strong winds, direct sunlight etc.).

PACKAGING

25 Kg multiwall paper bags (one layer of which is made of PE-HDPE) and 5 Kg PE bags.

STORAGE

RM40, in 25 Kg packaging, can be stored for 3 months and in 5 Kg packaging for 12 months from production date, in its original, unopened packaging in dry conditions. The storage place must be covered and protect the product from direct sunlight, water, and moisture, while the product must not be in direct contact with the floor.

Health and Safety Measures

- The product contains cement, which reacts as alkaline with water, moisture, sweat and/or other body fluids so it is classified as irritant. Follow normal precautions as with all cementitious materials and products.
- Harmful in contact with skin.
- Harmful if inhaled or if swallowed.
- May cause respiratory irritation.
- Keep out of reach of children.
- Wash body and clothes thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Wear respiratory protection.
- Please refer to Safety data Sheet for more information and advice regarding the safe handling, storage, use and disposal of the material.

Note 1: All Technical Data provided on section "Technical Characteristics" are based on laboratory trials and tests, under conditions which may significantly differ from the ambient application conditions. Therefore, the actual technical characteristics may vary due to conditions or circumstances beyond company's control.

Note 2: The information provided by our Technical Data Sheets or given by our employees, agents or distributors concerning the use of our products, is based upon extensive research and experience and are provided in good faith in order to help you. We guarantee the consistent high quality of our products; however, as we have no control over site conditions of the executions of work, we cannot accept any liability for any loss or damage, which may arise as a result thereof.

Note 3: All cement-based products, must be stored in dry sheltered places, on wooden pallets. Even under these circumstances, the products are influenced by the atmospheric moisture after a period of time. Since this period is not defined or standard, we strongly advise our customers not to use hardened products or if, generally, its quality due to storage is uncertain.