

EMACO[®] NANOCRETE R3

Lightweight, mid strength, polymer modified, fibre reinforced, structural repair mortar

DESCRIPTION

Emaco Nanocrete R3 is a single component, lightweight, polymer modified, high build structural repair mortar. **Emaco Nanocrete R3** is a ready-to-use material that contains portland cement, well graded sands, specially selected polymer fibres and additives. Applied nanotechnology has been used to significantly reduce shrinkage. **Emaco Nanocrete R3** has been specifically formulated to produce a mortar with the compressive strength and modulus characteristics defined in class R3 of EN 1504 part 3. When mixed with water, it forms a highly thixotropic mortar that can easily be hand, trowel or spray applied in thicknesses up to 75 mm in one layer. It is particularly suited to vertical and overhead work where hand-profiling is required.

FIELD OF APPLICATION

Emaco Nanocrete R3 is used for the structural repair of lower strength concrete elements such as:

- balcony edges, soffits and decks,
- multi-storey car parks,
- window ledges,
- lintels and beams commercial or domestic buildings,
- building facades,
- precast panels,
- cantilevers or, anywhere where concrete structures need to be repaired or reprofiled by hand.

Emaco Nanocrete R3 can be applied inside and outside, on horizontal, vertical and overhead surfaces, in dry and wet environments.

FEATURES AND BENEFITS

- Formulated with new shrinkage compensation systems and fibre reinforcement to minimise crack tendency
- Medium strengths and lower modulus of elasticity allow the repair of medium strength concrete without problems of differential movement
- Excellent adhesion to concrete
- Highly thixotropic and lightweight allows high build in a single layer
- Outstanding workability - can be applied up to 75 mm in horizontal or vertical applications, or even 50 mm overhead
- Easy to create profiles and corners without formwork
- Very low shrinkage and excellent crack resistance
- Durable and weather resistant

- Good water and chloride impermeability
- Low chromate (Cr[VI] < 2 ppm)
- Chloride-free.

PROPERTIES

PROPERTY	VALUES
Appearance	Grey powder
Grain size	Max 1.2mm
Layer thickness	Min. 5mm Max. 75mm
Density	Approx. 2.0 g/cm ³
Mixing water per 25kg bag	Approx. 5.5 – 6litres
Working time	45 – 60 minutes
Temperature for application (support and material)	Between +5 and +35°C

APPLICATION

(a) Surface preparation: Concrete

Concrete must be fully cured with a minimum direct tensile strength of 1.0 MPa. All surfaces must be clean and sound to ensure good adhesion. All loose traces of concrete or mortar, dust, grease oil, etc. must be removed.

Damaged or contaminated concrete should be removed to obtain a keyed surface. Aggregate should be clearly visible on the surface of the concrete structure after preparation.

Non-impact/vibrating cleaning methods, e.g. grit or high water pressure blasting are recommended.

Cut the edges of the repair vertically to a minimum depth of 5 mm.

(b) Surface preparation: Reinforcing steel

Clean all exposed reinforcement to a minimum grade of Sa 2 according to ISO 8501-1 / ISO 12944-4.

Only in case of chloride contamination of the concrete, or when depth of cover is less than 5 mm or when the steel is left exposed before the repair work is completed, should the reinforcement be protected by using **Emaco Nanocrete AP** (see technical data sheet).

(c) Priming Concrete

The prepared substrate should be pre-soaked, preferably for 24 hours, but at least 2 hours before applying **Emaco Nanocrete R3**. The surface must be mat-damp, but without standing water.

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Bonding slurries can improve the adhesion of the mortar, especially for hand applications:

- Mix **Emaco Nanocrete R3** to a stiff brushable slurry consistency, and apply onto the pre-dampened surface using brush.
- Alternatively, **Emaco Nanocrete AP** can also be applied as the bonding slurry.

Apply **Emaco Nanocrete R3** on the primed surface wet on wet. Do not allow the bonding layer to dry out completely.

(d) Mixing

It is strongly recommended that only full bags are mixed. Damaged or opened bags should not be used.

Mix **Emaco Nanocrete R3** with clean water only, in a forced action pan mixer, or with a suitable paddle attached to a powerful slow speed electric drill for 3 minutes until the required lump-free, plastic consistency is achieved.

Mixing water needed: 5.5 to 6 litres per 25kg bag depending upon consistency required. (Use stiffer consistency for overhead hand application)

Allow the mortar to rest for 2 - 3 minutes and then remix briefly, adjusting the consistency as required, without exceeding the maximum water demand.

(e) Mortar application

Air and substrate temperatures must be a minimum of +5°C and a maximum of +30°C. The minimum temperature must be maintained during application and for at least 24 hours thereafter for optimum curing of the product.

The surface must be mat-damp, but without standing water.

Emaco Nanocrete R3 can be hand, trowel or spray applied. Apply mixed product directly to the prepared damp substrate, or wet in wet onto the primed surface.

A thin scrape coat or contact layer before building up to the required thickness, wet on wet, will improve the wet adhesion and cohesion of the mortar, especially in case of hand application.

Apply to the desired layer thickness of 5 to max. 75 mm and level using a screeding beam, trowel or wooden board. Can be applied in thicker layers in smaller patches or where additional reinforcement is present.

Smoothing with a trowel or finishing by float or sponge can be done as soon as the mortar has begun to stiffen.

CLEANING OF TOOLS

While still wet clean with water. Once dry/cured the material can only be removed mechanically.

CURING

The following curing methods are advised:

- polyethylene film
- damp cloths
- **Masterkure[®]** curing agents

ESTIMATING DATA

One 25kg bag will yield approximately 13.75 litres of mortar. Approx. 1.8 kg of mixed product per m² and mm layer thickness (approx. 1.5 kg of dry powder per m² and mm layer thickness).

This consumption is theoretical and depends on the roughness of the support, for which reason it should be adjusted in each particular job by means of "in situ" tests.

PACKAGING

Emaco Nanocrete R3 is available in 25kg bags.

SHELF LIFE

Store in cool and dry warehouse conditions. Shelf life in these conditions is 12 months in unopened original bags

WATCH POINTS

- Do not apply at temperature below +5°C not above +30°C
- Do not add cement, sand or other substances that could affect the properties of the material.
- Never add water or fresh mortar to a mortar mix which has already begun to set.

PRECAUTIONS

Usual preventive measures for the handling of chemical products should be observed when manipulating this product, for example do not eat, smoke or drink while working and wash your hands when taking a break or when the job is completed. Specific safety information in the handling and transport of this product can be found in the Material Safety Data Sheet. Avoid contact with eyes and prolonged contact with skin. In case of contact with eyes, immediately flush with plenty of water for at least 15 minutes. Call a physician. In case of contact with skin, wash skin thoroughly.

The disposal of the product and its container should be carried out according to the legislation in force. Responsibility for this lies with the final owner of the product.

For detailed Health, Safety and Environmental recommendations, please consult or follow all instructions on the product Material Safety Data Sheet.

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TECHNICAL DATA

Compressive strength	EN 12190	
- after 1 day		≥ 12 MPa
- after 7 days		≥ 25 MPa
- after 28 days		≥ 35 MPa ²
E-Modulus (28 days)	prEN13412	≥ 15 GPa
Adhesion (28 days)	EN 1542	≥ 1.5 MPa
Adhesion after Freeze/Thaw (50 cycles with salt)	EN 13687-1	≥ 1.5 MPa
Adhesion after Thunder/Shower (50 cycles)	EN 13687-2	≥ 1.5 MPa
Adhesion after dry cycling (50 cycles)	EN 13687-4	≥ 1.5 MPa
Carbonation resistance	prEN 13295	≤ reference concrete
Capillary absorption	EN 13057	≤ 0.5 Kg/m ² h ^{0.5}
Cracking tendency (I)	Coutinho type ring	No cracking after 180 days
Cracking tendency (II)	DIN type V-channel	No cracking after 180 days

Hardening times are measured at 21°C ± 2°C and 60% ± 10% relative humidity. Higher temperatures will reduce these times and lower temperatures will extend them. Technical data shown are statistical results and do not correspond to guaranteed minimal. Tolerances are those described in appropriate performance standards

AN/EmacoNanocrete R3/v4/241110

STATEMENT OF RESPONSIBILITY

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