

EMACO[®] NANOCRETE R4 FLOWABLE

Cementitious pourable shrinkage compensated structural repair mortar

DESCRIPTION

Emaco Nanocrete R4 Flowable is a ready-to-use, cementitious repair mortar. Mixed with water it provides a rheoplastic, non segregating mortar with high strengths. **Emaco Nanocrete R4 Flowable** contains synthetic fibres to resist plastic cracking.

RECOMMENDED FOR

Emaco Nanocrete R4 Flowable is used for the structural repair of concrete elements such as:

- Columns, piers and cross beams of all bridges
- Cooling towers and chimneys and other industrial environments
- Water treatment and sewerage facilities
- Tunnels, pipes, outfalls and all below ground construction especially in harsh ground conditions
- Marine structures

FEATURES AND BENEFITS

- *Formulated with shrinkage compensation systems and fibre reinforcement to minimise crack tendency by controlling the Nanostructures in the matrix*
- *Highly fluid - can be applied from to 40 to 100 mm without the need of secondary reinforcement*
- *High early and ultimate strengths*
- *Outstanding workability for easy placing and finishing*
- *High modulus and excellent adhesion to host concrete ensuring load transfer*
- *Excellent freeze/thaw resistance*
- *High carbonation resistance*
- *Sulphate resistant*
- *Very low permeability to water and chlorides*
- *Low chromate (Cr[VI] < 2 ppm)*
- *Chloride-free.*

PROPERTIES

| PROPERTY | VALUES |
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| Appearance | Grey powder |
| Grain size | Max 1.5 mm |
| Layer thickness | Min. 40mm Max. 100mm |
| Density | Approx. 2.3 g/cm ³ |
| Mixing water per 20kg bag | Approx. 1.0 – 2.0 litres |
| Working time (15-20°C) | 45 – 60 minutes |
| Temperature for application (support and material) | Between +5 and +35°C |

APPLICATION

Surface preparation - Concrete must be fully cured with a minimum direct tensile strength of 1.5 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 shall be removed to obtain a keyed surface. Non-impact/vibrating cleaning methods, e.g. grit or high pressure water blasting are recommended. The aggregate should be clearly visible on the surface of the concrete after preparation. Cut the edges of the repair vertically to a minimum depth of 5 mm. Clean all exposed reinforcement to a minimum grade of Sa 2 according to ISO 8501-1 / ISO 2944-4. Ensure back of rebar is also clean. Only in case of chloride contamination of the concrete, or when depth of cover is less than 5 mm should the reinforcement be protected by using **Emaco Nanocrete AP** (*see technical data sheet*).

Priming Concrete - **No special primer is required.** To obtain extra strong bonding, the damp substrate can be primed with a brush coat of the same material (2 parts powder to 1 part water).

Mixing - It is strongly recommended that only full bags are mixed. Damaged or opened bags should not be used. Mix **Emaco Nanocrete R4 Flowable** in a forced action pan mixer, or with a suitable paddle attached to a powerful electric drill for 3 minutes until a lump-free, plastic consistency is achieved. Only use drinking quality water. Mixing water needed: 1.0 to 2.0 litres per 20kg bag depending upon consistency required. Allow the mortar to rest for 2 - 3 minutes and then remix briefly, adjusting the consistency when required, without exceeding the maximum water demand.

Mortar application - The minimum temperatures must be maintained during application and for at least 24 hours thereafter for optimum curing of the product. The prepared substrate should be pre-soaked, preferably for 24 hours, but at least 2 hours before applying **Emaco Nanocrete R4 Flowable**. The surface must be mat-damp, but without standing water. **Emaco Nanocrete R4 Flowable** can be should be poured continuously, without vibrating it. It should be poured at a fluid or superfluid consistency, from one side only to avoid air entrapment. Make sure the mortar completely fills the space between the form and the structure. For this purpose, flexible steel strapping can be used. If applied on vertical surfaces, forms must be used.

NOTE

- 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.



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CURING

Following curing methods are advised - polyethylene film, damp cloths, **Masterkure** curing agents.

ESTIMATING DATA

One 20kg bag will yield approximately 10.0 litres of mortar when mixed with 1.7 litres of water.

Approx. 2.15 kg of mixed product per m² per mm layer thickness (approx. 2 kg of dry powder per m² and mm layer thickness). This consumption is theoretical and depends on the roughness of the support amount of rebar, wastage etc, for which reason it should be verified in each particular job by means of "in situ" tests.

CLEANING

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

PACKAGING

Emaco Nanocrete R4 Flowable is available in 20kg bags.

STORAGE

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

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.

Emaco Nanocrete R4 Flowable is not suitable for precision grouting applications. Use a **Masterflow** grout product for these applications

TECHNICAL DATA

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| Compressive strength - after 1 day - after 28 days | AS 1478.2 Appendix A (Restrained) | ≥ 30 MPa ≥ 70 MPa |
| E-Modulus (28 days) | prEN13412 | ≥ 2.5 GPa |
| Adhesion (28 days) to concrete | | ≥ 6 MPa |

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 minima. Tolerances are those described in appropriate performance standards

All BASF Construction Chemicals Australia & New Zealand data sheets are updated on a regular basis, it is the user's responsibility to obtain the most recent issue **AENcreteR4Flowable/2/0908**

STATEMENT OF RESPONSIBILITY

The technical information and application advice given in this **BASF Construction Chemicals** publication are based on the present state of our best scientific and practical knowledge. As the information herein is of a general nature, no assumption can be made as to a product's suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by law. The user is responsible for checking the suitability of products for their intended use.

NOTE

Field service where provided does not constitute supervisory responsibility. Suggestions made by **BASF Construction Chemicals** either orally or in writing may be followed, modified or rejected by the owner, engineer or contractor since they, and not **BASF Construction Chemicals**, are responsible for carrying out procedures appropriate to a specific application.

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