Nucem Concrete

Polymer Modified Cementitious Concrete

Description

Nucem Concrete is a prepacked shrinkage compensated, polymer modified cement based concrete, supplied with either an acrylic or SBR latex polymer. Nucem Concrete is formulated to comply with the requirements of EN1504 Part 3 Class R4 as well as conforming to the DTp Model Specification for the 'Repair of Concrete Highway Structures' BD 27/86 Clause 6. It is based on Portland Cements complying with Clause 1702, DTp Specification for Highway Works and non reactive aggregates. Nucem Concrete is specially designed for the restoration of spalled and damaged concrete caused by reinforcement corrosion or frost attack.

Advantages

- Pack contains all constituents including gauging liquid
- Conforms to EN1504 Part 3 Class R4
- Guaranteed low water/cement ratio
- Excellent adhesion to dense concrete and steel
- Contains no added chlorides
- Non-reactive aggregates in accordance with DTp Specification for Highway Works Clause 1704.6
- Excellent workability and finishing properties
- Good resistance to water, frost & salt penetration
- Controlled Sodium Oxide to less than 3 kg/m^3
- Manufactured under BSI QA Scheme, ISO 9001, EN1504
- Suitable for next day waterproofing

Applications

- Repair of damaged concrete both insitu and precast
- Repair of damaged floors, bridge decks and road wearing surfaces
- Screeding where abrasion and/or water resistance is required
- Repairs to spalled columns and beams using formwork

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EN 1504-3

Concrete repair product for structural repair

PCC Mortar (based on polymer modified hydraulic cement)

Compressive strength	Class R4 (>45 MPa)
Chloride ion content	≤0.05 %
Adhesive bond strength	>2.0 MPa
Adhesion after freeze/thaw (50 cycles with salt)	>2.0 MPa
Elastic modulus	>20 GPa
Dangerous substances	Complies with 5.4

Surface Preparation

The substrate must be clean and sound, and free from grease, oil, dust and laitance must be removed by scarifying. The edges of the repair must be recessed at least 20mm. Where spalling is caused by reinforcement corrosion, all steel must be exposed and cleaned to remove all loose scale and rust, preferably by grit blasting.

Technical properties of Nucem Concrete.

Properties	Standard	Performance Requirement	Declared Value
Appearance			Grey Powder & White Liquid
Chloride-ion content	EN1015-17	≤ 0.05%	≤ 0.05%
Maximum aggregate size			6mm
Water/cement ratio			0.38
Cement content			≥ 400 kg/m^3
Layer thickness-minimum			20mm
Density			2300 kg/m^3
Working time			30-45 Minutes
Temperature for application			5°C to 30°C
Compressive strength @ 20°C	EN 12190	≥ 45 MPa	1 Day @ 20 MPa 7 Day @ 50 MPa 28 Days @ >60 MPa
Modulus of elasticity, In compression	EN13412	≥ 20 GPa	26 GPa
Flexural strength	BS6319-3		10 Mpa
Modulus of elasticity, in flexure	BS6319-3		26 GPa
Adhesion - concrete	EN1542	≥ 2.0 MPa	≥ 2.0 MPa
Adhesion after freeze/thaw (50 cycles with salt)	EN13687-1	≥ 2.0 MPa	≥ 2.0 MPa
Adhesion after thunder showers (30 cycles)	EN13687-2	≥ 2.0 MPa	≥ 2.0 MPa
Adhesion after dry cycling (30 cycles)	EN13687-4	≥ 2.0 MPa	≥ 2.0 MPa
Skid resistance	EN13036-4		Class 1
Carbonation resistance	EN13295	d_k ≤ ref. concrete	Passes
Capillary absorption	EN13057	≤ 0.5 kg/m^2/$Hr^{0.5}$	≤ 0.5 kg/m^2/$Hr^{0.5}$
Cracking tendency	Coutinho ring test		No cracking after 180 days

Technical Data shown are statistical results and do not correspond to guaranteed minima.

Tolerances are those described in appropriate performance standards.

Priming

Nucem Primer is prepared by adding the contents of the base to the hardener container and mixing thoroughly. Usable life 2-3 hours.

The prepared surface and cleaned reinforcement steel should be coated with the Nucem Primer using a stiff brush ensuring it is thoroughly worked into the surface. Nucem Primer can be sprayed using specialist equipment.

Nucem Primer may be applied to either dry or damp surfaces. When applying to a section less than 20mm thick and the substrate has dried, it is advisable to dampen the surface before priming

Within 3 hours while primer is tacky, apply Nucem Concrete. Should the primer dry the area should be re-primed prior to the application of the Nucem Concrete.

Coverage of Nucem Primer is 3 - 5 m^2 per 1.0 kg pack.

Mixing

Mix as for normal concrete ensuring that the materials are thoroughly mixed before use. The use of a forced action pan mixer will ensure thorough mixing. Wet the bowl and drain. Add two thirds of the gauging liquid to the mixer then all the powder component and mix for 30-60 seconds. Add all or part of the remaining gauging liquid to bring to the required consistency.

Do not over mix.

Application Instructions

Apply mixed Nucem Concrete to the substrate previously primed with Nucem Primer while the primer is still tacky. Compact the Nucem Concrete to ensure maximum durability and finish as for normal concrete.

All equipment should be cleaned immediately after use by washing with water.

Curing

Nucem Concrete should be protected from rapid drying out by using normal methods of curing, and precautions taken to avoid frost attack. Chemcure R90 may be used, but must be mechanically removed if the surface is to receive subsequent treatments.

Over coating

After a suitable curing period the Nucem Concrete may be over coated with decorative coatings or a waterproof membrane.

Packaging

Nucem Concrete:	27.5 kg units (yield 12.0 litres)
Nucem Primer:	1.0 kg and 5 kg units (3 - 5 m^2 per kg)

Storage

The shelf life is 6 months when stored unopened in dry, normal conditions and away from direct sunlight. Protect from frost.

Health & Safety

Product Safety Data Sheets (SDS) are available from Nufins. SDS sheets are provided to help customers satisfy their safe handling, use and disposal needs as well as assist with any conformance requirements made locally by health and safety regulations.

SDS are continually updated to provide the latest information to our customers. We therefore recommend contacting our head office to obtain the most recent and accurate SDS before handling and using any product.

Limitations

Protect installed material from adverse weather and frost. If necessary, tenting and warming the work area should be considered during and after placement.

Application should not be carried out below 5°C. Materials should be stored in dry conditions between 15°C and 20°C.

Protect installed material from adverse weather and frost. Environmental controls may be required.

Disclaimer

The information contained herein is to the best of our knowledge true and accurate and is given in good faith but without warranty. The user will be deemed to have satisfied themselves independently as to the suitability of our products for their own particular purpose. In no event shall Nufins be liable for consequential or incidental damages.

Users must always refer to the most recent issue of the Technical Datasheets, copies of which will be supplied on request.