

Spraycem 301

Spray Applied Cementitious Repair Mortar

Description


A pre-packed one component polymer modified spray applied repair mortar. Spraycem 301 has been designed for machine applications using the dry process and is particularly suitable on large repairs to reinforced concrete structures which have been damaged due to reinforcement corrosion or frost attack. Bridges, retaining walls, tunnels, reservoirs, building facades and marine structures are all suitable structures for repair using Spraycem 301.

Advantages

- Excellent durability and resistance to water, frost and salt attack
- Rapid strength development without the use of accelerators
- Excellent high build characteristics
- Low rebound
- Controlled low water/cement ratio
- Excellent adhesion to correctly prepared substrates
- One component, only requires addition of water
- Formulated using non-reactive aggregates, with regard to the alkali-silica reaction
- Complies with BD27/86

Technical Information

Density	2050-2150 Kg/m ³
Yield	84 x 25 Kg units per m ³
Coverage	55 Kg/m ² @ 25mm thickness
Cement Content	>400 Kg/m ³
Bond Strength	2-3 MPa, concrete failure
Initial Set	Typically 3.5-4.5 hours
Sulphate Content	< 3.0%
Equivalent Sodium Oxide	0.136 ppm

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Nufins, Kingston House, 3 Walton Road, Pattinson North, District 15, Washington, Tyne & Wear. NE38 8QA 13 0086-CPD-594215	
EN 1504-3 Concrete repair product for structural repair CC Mortar (based on hydraulic cement)	
Compressive strength	Class R3 (>25 MPa)
Chloride ion content	≤0.05 %
Adhesive bond strength	>1.5 MPa
Adhesion after freeze/thaw (50 cycles with salt)	>1.5MPa
Carbonation resistance	Passes
Elastic modulus	>15 GPa
Dangerous substances	Complies with 5.4

Compressive strengths (MPa) cured and tested at 20°C

24 hours	72 hours	7 days	28 days
10-20	20-30	35-45	55-65

1.8 Litres mixing water used to produce test pieces.



Technical properties of Spraycem 301

Properties	Standard	Performance Requirement	Declared Value
Appearance			Grey Powder
Water addition			Proportioned to give required consistency
Chloride-ion content	EN1015-17	≤ 0.05%	≤ 0.05%
Nominal aggregate size			4mm
Water/cement ratio		<0.4	0.30
Minimum application thickness			20mm
Working time			20-40 Minutes
Final set			4-8 Hours
Density			2050-2150 kg/m ³
Temperature for application			5°C to 35°C
Modulus of elasticity, in compression	EN 13412	≥ 15 GPa	18 GPa
Flexural strength	BS 6319-3		13 MPa
Tensile strength	BS6319-7		4.3 MPa
Adhesion - concrete	EN1542	≥ 1.5 MPa	>2.0 MPa
Adhesion after freeze/thaw (50 cycles with salt)	EN13687-1	≥ 1.5 MPa	>2.0 MPa
Adhesion after thunder showers (30 cycles)	EN13687-2	≥ 1.5 MPa	>2.0 MPa
Adhesion after dry cycling (30 cycles)	EN13687-4	≥ 1.5 MPa	>2.0 MPa
Coefficient of Thermal Expansion			12 x 10 ⁻⁶ /°C
Skid resistance	EN13036-4		Class 1
Carbonation resistance	EN13295	$d_k \leq \text{ref. concrete}$	Passes
Capillary absorption	EN13057	$\leq 0.5 \text{ kg.m}^{-2}.\text{h}^{-0.5}$	$\leq 0.5 \text{ kg.m}^{-2}.\text{h}^{-0.5}$
Cracking tendency	Coutinho ring test		No cracking after 180 days
Carbon dioxide diffusion co-efficiency			$u2.82 \times 10^4$
Water absorption			$0.13 \text{ kg/m}^3/\text{hr}^{-0.5}$
Chloride diffusion coefficient			$6.2 \times 10^{-13} \text{ m}^2/\text{s}^{-1}$

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

Tolerances are those described in appropriate performance standards.

Mixes made using 1.8 Litres water per 25kg bag.

Surface Preparation

Concrete substrate should be clean and sound. All loose material and surface laitance must be removed preferably by grit or water blasting. Where spalling is caused by reinforcement corrosion, all steel must be exposed and cleaned to remove all loose scale and rust preferably by grit or water blasting. Prepared steel will be protected by the alkaline nature of the Spraycem 301 as is the case with ordinary concrete but additional protection can be provided by the application of Nucem Primer, if considered necessary. Exposed steel reinforcing bars should be firmly secured to avoid movement during the application process as this will affect the mortar compaction, build and bond.

Spraycem 301 is normally applied to concrete prepared as above which has been thoroughly saturated with water immediately before application.

Nucem Primer may be utilised as a bonding agent between the old concrete and the Spraycem 301 where additional protection is required when the existing concrete contains chlorides. The Nucem Primer should be applied to the thoroughly dampened substrate using a brush, working the material well into the surface. The Spraycem 301 should then be applied immediately wet on wet.

Spraying

Spraycem 301 should be emptied from the bags directly into the hopper of the dry spray process machine. The amount of water added should be controlled by the nozzelman. Too little water will increase rebound and dust emission, too wet and the material will slump. If sagging occurs during the application to vertical or overhead surfaces, the Spraycem 301 should be completely removed and reapplied at a reduced thickness onto the correctly prepared substrate.

Finishing

Spraycem 301 is finished by striking off with a straight edge and closing with a steel float. Wooden/plastic floats or damp sponges may be used to achieve the desired surface texture. The completed surface should not be overworked.

Curing

Normal curing procedures should be applied immediately after finishing and precautions taken to avoid frost attack. Resin based curing membranes should not be used if the concrete is to receive a subsequent surface coating.

Low temperature working

Normal precautions for winter working with cementitious materials should be adopted. The material should not be applied when the substrate and/or air temperature is 5°C and falling. At a static 5°C temperature or at 5°C and rising, the application may proceed.

High temperature working

At ambient temperatures, above 35°C, the material should be stored in the shade.

Packaging

Spraycem 301:	25 kg units (yield 12 Litres)
Nucem Primer:	1.0 kg units (coverage 3 - 5 m ²) and 0.5 kg units (coverage 1.5 - 2.5 m ²).

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

The minimum application thickness should be 10mm. Application should not be carried out when the temperature is below 5°C.

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.

Technical Support

Through our technical department and laboratories we can offer a comprehensive service to specifiers and contractors. Technical contacts are available to provide further information and arrange demonstrations.