

Deck Repair Rapid

Rapid Setting Horizontal Repair Mortar

Description

A pre-packed acrylic polymer modified cementitious mortar. Deck Repair Rapid is characterised by its high early strength development, rapid moisture loss and shrinkage compensation. The material complies with the requirements of EN1504 Part 3 Class R4, as well as conforming to highways standards Series 5700, BD27/86 Clause 6 & DMRB CS 462. It is ideal for repair of bridge decks prior to early waterproofing, highway concrete pavements and other locations which require a fast return to service, such as emergency reinstatement of damaged or deteriorated concrete in bus depots, car parks, rail platforms, docks, airport runways and aprons.

Advantages

- Rapid strength development
- Accepts HGV & forklift traffic after 2 - 3 hours
- Suitable for same or next day waterproofing
- Excellent bonding properties
- Good workability & finishing characteristics
- Ideal for internal or external use in cold, wet conditions
- Excellent resistance to water, frost & salt permeation
- Suitable for thin and deep sections from 10mm up to 300mm*
- Chloride free & low chromate (CRVI <2ppm)
- Low water/cement ratio & shrinkage compensated
- Complies with DMRB CS 462 & EN 1504-3 Class R4

Technical Information

| Water Addition (litres) | Usable Life (Mins) | Compressive Strength, MPa | | | | | |
|-------------------------|--------------------|---------------------------|------|------|-------|------|-------|
| | | 1 Hr | 2 Hr | 4 Hr | 24 Hr | 7Day | 28Day |
| 2.0 (Stiff Mortar) | 15 | 20 | 23 | 26 | 39 | 63 | 71 |
| 2.5 (Mobile Mortar) | 20 | 6 | 16 | 18 | 28 | 51 | 60 |
| 3.0 (Pourable) | 25 | 5 | 10 | 11 | 26 | 40 | 52 |

| | |
|---|--------------------|
| CE | |
| 0086 | |
| 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 PCC Mortar (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 |

Design Criteria

Deck Repair Rapid is designed for horizontal repairs at depths of 10mm to 70mm nominal.

*For depths greater than 70mm and up to 300mm maximum, Deck Repair Rapid should be bulked out with 10mm silt free graded aggregate, in the ratio of 25kg Deck Repair Rapid with up to 25kg of bulking aggregate. **Nufins technical department must be consulted to assess suitability, prior to bulking out works.**

Repairs to vertical elevations can be achieved with the aid of formwork.



Technical Properties of Deck Repair Rapid

| Properties | Standard | Performance Requirement | Declared Value |
|---|--------------------|---|--|
| Appearance | | | Grey powder |
| Chloride-ion content | EN 1015-17 | ≤0.05 % | ≤0.05 % |
| Maximum aggregate size | | | 4 mm |
| Layer thickness -minimum -maximum | | | 10 mm 70 mm* |
| Working time (@ 20°C) | | | 10-25 minutes |
| Initial set (@ 20°C) | | | 15-60 minutes |
| Final set (@ 20°C) | | | 30-90 minutes |
| Density | | | 2150-2300 kg/m ³ |
| Mixing water, per 25 kg pack. | | | 2.0-3.0 litres |
| Water/cement ratio | | | 0.39 @ 3.0 litres per 25 kg |
| Temperature for application | | | 0°C to 35°C |
| Compressive Strength 2.5 litres per pack @ 20°C | EN 12190 | ≥45 MPa | 16 MPa @ 2 hours 18 MPa @ 4 hours 28 MPa @ 24 hours 51 MPa @ 7 days 60 MPa @ 28 days |
| Compressive Strength 2.5 litres per pack @ 5°C | EN 12190 | | 6 MPa @ 4 hours 25 MPa @ 24 hours 50 MPa @ 7 days 55 MPa @ 28 days |
| Tensile strength @ 2.5 litres per pack | BS 6319-7 | | 2.0 MPa @ 3 hours 5.4 MPa @ 28 days |
| Modulus of elasticity, in compression | EN 13412 | ≥20 GPa | 24 GPa |
| Adhesion - concrete | EN 1542 | ≥2.0 MPa | ≥2.0 MPa |
| Adhesion after freeze/thaw (50 cycles with salt) | EN 13687-1 | ≥2.0 MPa | ≥2.0 MPa |
| Adhesion after thunder showers (30 cycles) | EN 13687-2 | ≥2.0 MPa | ≥2.0 MPa |
| Adhesion after dry cycling (30 cycles) | EN 13687-4 | ≥2.0 MPa | ≥2.0 MPa |
| Skid resistance | EN 13036-4 | | Class 1 |
| Carbonation resistance | EN 13295 | $d_k \leq \text{ref. concrete}$ | Passes |
| Capillary absorption | EN 13057 | $\leq 0.5 \text{ kg.m}^{-2}.\text{h}^{0.5}$ | $\leq 0.5 \text{ kg.m}^{-2}.\text{h}^{0.5}$ |
| 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.

* For applications greater than 70mm, please refer to 'Design Criteria' on page 1

Surface Preparation

The substrate must be clean, sound, and free from grease, oil, dirt, debris, dust, laitance and loose material. The edges of the repair must be recessed at least 10mm to avoid feather edging. Damaged or contaminated concrete should be mechanically removed, to expose only sound concrete with a direct tensile strength of $\geq 1\text{MPa}$.

Where spalling is caused by reinforcement corrosion, all steel must be fully exposed and cleaned to remove all loose scale and rust, preferably by grit blasting.

Priming

Saturate the base and vertical surfaces of prepared patches for at least 1 hour, using clean water. Remove standing water and maintain surfaces damp prior to placement of repair mortar.

Mixing & Placement

Deck Repair Rapid should be mixed in a forced action mixer.

Prior to mixing, wet the drum and discard water. Repeat this regularly at breaks and meal times.

Measure out 3 litres of clean water and pour 3/4 of this into the mixing drum. Gradually add all of the Deck Repair Rapid to the rotating drum, adding sufficient of the remaining water to achieve the required consistency.

Bulking-out for deep section repair;

For patches with depths $\geq 70\text{mm}$ the mortar should be bulked-out normally with 7.5kg – 12.5kg of 10mm aggregate or pea gravel which is added to the mixer drum at this point.

Mixing time is 2 - 4 minutes until the product is thoroughly blended.

Use immediately. Place mortar directly from the mixer drum onto the prepared damp substrate to a minimum 10mm depth, using the appropriate hand tools such as float and tamping beam to achieve the required thickness. Work quickly across patches and ensure thorough compaction through the full depth to ensure maximum durability.

It is vital that mortar is laid wet on wet, therefore sufficient labour and mixing capacity should be provided for larger patch repairs.

Do not fill patches in build-up layers where successive layers will be applied over hardened mortar, unless project specific advice has been sought.

Finish surfaces as required with a plastic or steel float.

Cleaning

Mixing equipment and tools should be cleaned immediately after use and regularly through the day to avoid product build up, using clean water.

Low Temperature

Deck Repair Rapid can be used from 0°C up to 35°C maximum. However, when the temperature is below 5°C we recommend that the mixing water is between 10-20°C and the bags to be used have been stored in temperatures above 10°C overnight and prior to use.

Mortar should not be installed in temperature of 3°C or below on a falling scale, without frost protection measures. At low temperature it is important to ensure that the substrate is not frozen. Protect installed material from adverse weather and frost. If necessary, the work area should be tented and heated during and after placement. Please contact Nufins technical department for further advice.

Storage

The shelf life is 6 months when stored unopened in dry, normal conditions and away from direct sunlight. Protect from frost. In hot weather, bags that are stored on site should be kept under shade.

Curing

Curing should be employed immediately after finishing sections of larger areas, as work progresses. Deck Repair Rapid should be protected from rapid drying out, using normal methods of curing such as taped down polythene sheeting, as well as wet hessian if required, in line with good concreting practise.

UV degradable resin curing membrane such as *Chemcure R90* may be used, but this must be fully removed by mechanical equipment if the surface will receive subsequent treatments.

Over coating

After the required curing period Deck Repair Rapid may be coated with waterproof membrane.

Indicative early over coat times for guidance;

| | |
|-------|---------------|
| 20°C | 4 – 6 hours |
| >10°C | 12 – 16 hours |
| >5°C | 24 hours |

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

Excess mixing water addition will reduce strength and possibly induce shrinkage cracking, as experienced with all cementitious compounds. Due to the fast setting nature of the product, strength development is very dependent on ambient and substrate temperatures.

For maximum number of bags or batch volumes and for large area hit-and-miss installations, please contact Nufins technical department for guidance.

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.