



constructive solutions

Nitomortar S*

High strength, abrasion-resistant epoxy reinstatement mortar

Uses

For fast and permanent patch repair of concrete, particularly where high strength, abrasion and chemical resistance is required. It is ideally suited for:

- Sewage tanks
- Sea walls
- Industrial floors
- Use as a bedding mortar
- Joint arris repairs

Advantages

- High ultimate strength - suitable for structural use
- Early development of strength minimizes disruption
- Abrasion-resistance: suitable for heavily trafficked areas
- Highly resistant to a wide range of chemicals
- Will cure under damp conditions - cured product is highly impermeable to water
- Pre-weighed components ensure consistency

Specification

High strength epoxy repair mortar

The high strength repair mortar shall be Nitomortar S, a three-component epoxy resin. The cured mortar shall achieve a compressive strength of 70 N/mm², a flexural strength of 20 N/mm² and a tensile strength of 10 N/mm² when tested at 28 days. The water absorption of the cured mortar shall not exceed 0.2%.

Description

Nitomortar S is a three-component material supplied in pre-weighed quantities ready for on-site mixing and use.

It is based on a high quality, solvent-free, epoxy resin system; with special aggregates to provide high strength and excellent abrasion resistance.

Technical support

Fosroc offers a comprehensive technical support service to specifiers, end users and contractors. It is also able to offer on-site technical assistance, an AutoCAD facility and dedicated specification assistance in locations all over the world.

Properties

The following results were obtained at a temperature of 20°C unless otherwise specified.

Pot Life	: @ 20°C	@ 35°C
	: 45 minutes	20 minutes
Initial hardness	: 45 hours	16 hours
Full cure	: 7 days	4 days
Fresh wet density	: Approximately 2000 kg/m ³ (fully compacted)	
Compressive strength (BS 6319, Part 2)	: 70 N/mm ² @ 7 days	
Flexural strength (BS 6319, Part 3)	: 20 N/mm ² @ 7 days	
Tensile strength (BS 6319, Part 7)	: 10 N/mm ² @ 7 days	
Water absorption	: 0.2 % (concrete - 2.0 to 2.5%)	
BRE Impact Resistance BS 8204 Part 1: 1987	: Category A	

Fully cured blocks of Nitomortar S were continually immersed at 20°C in a wide range of aggressive chemicals found in industrial environments. Tests were performed by constant immersion over a set period, followed by visual inspection and testing for Shore D hardness.

Acids (m/v)

Citric acid 10%	: Resistant
Tartaric acid 10%	: Resistant
Hydrochloric acid 25%	: Resistant
Sulphuric acid 10%	: Resistant
Phosphoric acid 50%	: Resistant
Lactic acid 10%	: Resistant
Nitric acid 10%	: Resistant

Alkalis (m/v)

Sodium Hydroxide 50%	: Resistant
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Solvents & organics

Diesel fuel / petrol 100%	: Resistant
Hydrocarbons 100%	: Resistant

Aqueous solutions

Sugar solutions (sat.)	: Resistant
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Note: All the above results have been determined by laboratory controlled tests and are in excess of those expected in practice. Nevertheless, success in use will be determined by the implementation of good housekeeping practice.

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Design criteria

Nitomortar S can be applied in sections up to 50 mm thickness in horizontal locations, and 12 mm in vertical locations, in a single application and without the use of form work, dependent upon the repair geometry. Nitomortar S can be used for emergency repairs where fast strength gain is important. When properly compacted, the mortar is highly impermeable. In certain instances, Nitomortar S can be used on metal substrates. Contact the local Fosroc office for advice in this respect. For fast repairs in vertical and overhead locations where a higher-build, lightweight formulation is required, the use of Nitomortar HB*† is recommended.

Instructions for use

Preparation

Clean the surface and remove any dust, unsound material, plaster, oil, paint, grease, corrosion deposits or algae. Roughen the surface and remove any laitence by light scabbling or grit-blasting. Saw-cut or cut back the extremities of the repair locations to a depth of at least 5 mm to avoid feather-edging and to provide a square edge. Break out the complete repair area to a minimum depth of 5 mm up to the sawn edge. Oil and grease deposits should be removed by steam cleaning, detergent scrubbing or the use of a proprietary degreaser.

The effectiveness of decontamination should then be assessed by a pull-off test. Expose fully any corroded steel in the repair area and remove all loose scale and corrosion deposits. Steel should be cleaned to a bright condition paying particular attention to the back of exposed steel bars. Grit-blasting is recommended for this process.

Substrate priming

Horizontal substrates should be primed using Nitoprime 25IR. Predominantly vertical and metal substrates should be primed using Nitocote Primer Sealer*. In both cases, the primer should be mixed in the proportions supplied, adding the entire contents of the 'hardener' tin to the 'base' tin. The two components should be thoroughly mixed together by hand for 3 minutes. The mixed primer should be scrubbed well into the prepared substrate, taking care that all imperfections in the surface are properly coated and avoiding 'ponding' in depressions. If the primer is absorbed within 30 minutes, a second coat should be applied before continuing.

Nitomortar S can be applied as soon as the primer has started to gel but still has surface 'tack'. This is normally between 30 minutes and 4 hours dependent on the ambient and substrate temperatures. If the primer cures hard, a second application must be made before application of Nitomortar S. The usable life of the mixed primer is approximately 60 minutes at 20°C or 30 minutes at 35°C.

Mixing

Care should be taken to ensure that Nitomortar S is thoroughly mixed to produce a fully homogeneous, trowellable mortar. Nitomortar S must be mixed mechanically. The 'hardener' & 'base' components should be stirred thoroughly in order to disperse any settlement before mixing them together. The entire contents of the 'hardener' container should then be emptied into the 'base' container and manually mixed for 3 Minutes, then emptied into a forced action mixer of adequate capacity (e.g. Cretangle or Pennine). Add the aggregate slowly with the mixer running and continue for 2 - 3 minutes until all the components are thoroughly blended. Under no circumstances should part packs be used.

Application

Apply the mixed Nitomortar S to the prepared substrate by wood float, pressing firmly into place to ensure positive adhesion and full compaction. Thoroughly compact the mortar around any exposed reinforcement. In restricted location, or where exposed reinforcing steel is present, application by gloved hands is an acceptable alternative but, in all cases, the product must be finished to a tight surface with a steel trowel. Nitomortar S can be applied in sections up to 50 mm thickness in horizontal locations or up to 12 mm thickness in vertical locations in a single application and without the use of form work. Thicker vertical sections may sometimes be possible dependent on the profile of the substrate and the volume of exposed reinforcing steel but should generally be built up in layers. When larger areas are being rendered, a chequer board application technique is recommended.

Note: Minimum applied thickness of Nitomortar S is 5 mm.

Build-up

Additional build-up can be achieved by application of multiple layers. Exposed steel reinforcing bars should be firmly secured to avoid movement during the application process as this will affect mortar compaction, build and bond. Where thicker sections are required, the surface of the intermediate applications should be scratch-keyed to provide a suitable surface for subsequent layers. The application of additional layers should follow between 8 and 24 hours (@ 20°C) after the first application. This time should be reduced at higher temperatures. Re-priming and a further application of Nitomortar S may then proceed. If sagging occurs during application, the Nitomortar S should be completely removed and reapplied at a reduced thickness on to the correctly re-primed substrate.

Finishing

Nitomortar S is finished by the use of a wood float and closed with a steel trowel. The completed surface should not be overworked.



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Curing

Curing protection is not necessary for Nitomortar S.

Cleaning

Nitoprime 25IR, Nitocote Primer Sealer and Nitomortar S should be removed from tools, equipment and mixers with Fosroc Solvent 102* immediately after use.

Additional Information

Overcoating with protective/decorative finishes

Nitomortar S is extremely durable and resistant to a wide range of acids, alkalis and industrial chemicals and will provide excellent protection to the concrete and embedded steel reinforcement within the repaired location. The surrounding parts of the structure may benefit from the application of a protective coating, thus bringing them up to the same protective standard as the repair itself. Fosroc recommends use of the Nitocote range of epoxy resin, chemical-resistant, protective coatings. For surrounding areas not subjected to chemical attack or physical wear, Fosroc recommend the use of Dekguard range of anti-carbonation, anti-chloride protective coatings. These products provide a decorative and uniform appearance as well as protecting areas of the structure which might otherwise be at risk from the environment. Nitocote epoxy resin protective coatings should be applied within 24 hours. Dekguard products should not be applied until the Nitomortar S is at least 3 days old. For further advice, consult the local Fosroc office.

Limitations

Nitomortar S should not be used when the temperature is below 5°C and falling. Do not mix part packs under any circumstances. Nitomortar S should not be exposed to moving water during application. Exposure to heavy rainfall prior to the final set may result in surface scour. If any doubts arise concerning temperature or substrate conditions, consult the local Fosroc office. The material should not be applied at less than 5 mm thickness. Greater thicknesses than those specified above can be achieved by the application of subsequent layers. Larger areas should be applied in a 'chequer board' fashion. For higher build characteristics to vertical locations or for overhead application, Nitomortar HB is recommended.

High temperature working

At ambient temperatures above 35°C, Nitoprime 25IR, Nitocote Primer Sealer and Nitomortar S will have shorter pot lives and open working time. The materials should be stored in the shade or in an air-conditioned environment and should not be applied in direct sunlight.

Estimating

Supply

Nitomortar S	: 16 kg packs
Nitoprime 25IR	: 1 & 3 kg packs
Nitocote Primer Sealer	: 1 & 4 litre packs
Fosroc Solvent 102	: 4 & 20 litre cans

Coverage

Nitoprime 25IR	: 3.5 - 4.3m ² /kg
Nitocote Primer Sealer	: 4.0 - 5.0m ² /litre

Note: The coverage figures for Nitoprime 25IR and Nitocote Primer Sealer are theoretical - due to wastage factors and the variety and nature of possible substrates, practical figures will be reduced.

Storage

All products have a shelf life of 12 months at 20°C if kept in a dry store in the original, unopened bags or packs. Store in dry conditions in the original, unopened bags or packs. If stored at high temperatures, the shelf life may be reduced to 4 to 6 months.

Precautions

Health and safety

Nitoprime 25IR, Nitocote Primer Sealer, Nitomortar S and Fosroc Solvent 102 should not come in contact with skin or eyes, or be swallowed. Ensure adequate ventilation and avoid inhalation of vapours. Some people are sensitive to resins, hardeners and solvents. Wear suitable protective clothing, gloves and eye protection. If working in confined areas, suitable respiratory protective equipment must be used. The use of barrier creams provides additional skin protection. In case of contact with skin, remove immediately with resin removing cream followed by washing with soap and water. Do not use solvent. In case of contact with eyes, rinse immediately with plenty of clean water and seek medical advice. If swallowed, seek medical attention immediately - do not induce vomiting.

Fire

Nitomortar S & Nitocote Primer Sealer are non-flammable. Nitoprime 25IR and Fosroc Solvent 102 are flammable. Keep away from sources of ignition. No smoking. In the event of fire, extinguish with CO₂ or foam. Do not use a water jet.

Flash points

Nitoprime 25IR	: 39°C
Fosroc Solvent 102	: 33°C



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The Right Chemistry for Construction

Fosroc is one of the world's major manufacturers of advanced technology chemical based products for the construction and refurbishment industries. It operates internationally through a network of operating companies, licensees, distributors and agents.

Having over 70 years experience and using global resources for research and technical development, Fosroc has built a substantial worldwide reputation in manufacturing the most comprehensive range of high performance construction chemicals:

- Concrete admixtures
- Surface treatments
- Grouts and anchors
- Concrete repair
- Industrial flooring
- Protective coatings
- Joint sealants
- Waterproofing
- Adhesives
- F.R.P Structural Strengthening
- Specific building products

* Denotes the trademark of Fosroc International Ltd.

↑ See separate data sheet



Important note

Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard Conditions for the Supply of Goods and Service.

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