



# Nitomortar® S

## High strength, abrasion - resistance epoxy reinstatement mortar

### Uses

Nitomortar S is used for the fast and permanent reinstatement of concrete, particularly where high strength, abrasion - resistance and resistance to chemicals is required. The product is designed for horizontal use but can be applied vertically, although generally in thinner sections. It is ideally suited for acid tanks, sea walls, industrial floors and for use as a bedding mortar. 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.

### Advantages

- **High ultimate strength** - suitable for structural use
- **Early development of strength** minimises disruption
- **Abrasion resistance** - suitable for heavy traffic areas
- **Highly resistant** - to a wide range of chemicals
- **Will cure under damp conditions** - cured product is highly impermeable to water
- **Typically twice as strong** as good quality concrete
- **Pre-weighed components** ensure consistency

### Description

Nitomortar S is based on a high quality solvent-free epoxy resin system. The special silica aggregates provide high strength and excellent abrasion resistance. Nitomortar S is a three - component material supplied in pre-weighed quantities ready for on-site mixing and use.

### Technical support

Fosroc offers a comprehensive range of high performance, high quality concrete repair and construction products. In addition, Fosroc offers a technical support package to specifiers, end-users and contractors, as well as on-site technical assistance in locations all over the country.

### Design criteria

Nitomortar S can be applied in sections upto 50mm thickness in horizontal locations and 12mm in vertical locations in a single application and without the use of formwork. The material should not be applied at less than 5mm thickness.

Greater thicknesses than those specified above can be achieved by the application of subsequent layers. Larger areas should be applied in a 'checker board' fashion. Local Fosroc office shall be contacted for further information.

### Properties

The following results were obtained at a temperature of 30°C unless otherwise specified.

<u>Test method</u>	<u>Typical result</u>
<b>Compressive strength (BS 6319, Pt 2)</b>	60N/mm <sup>2</sup> @ 7 days
<b>Flexural strength (BS 6319 Pt 3)</b>	20N/mm <sup>2</sup> @ 7 days
<b>Tensile strength (ASTM C 307)</b>	10N/mm <sup>2</sup> @ 7 days
<b>Pot life</b>	20 mins @ 35°C
<b>Initial hardness</b>	24 hours
<b>Full cure</b>	7 days
<b>Fresh wet density</b>	Approximately 2000kg( fully compacted)
<b>Chemical resistance</b>	The low permeability of Nitomortar S retards chemical attack in aggressive environments.

Performance of Nitomortar S blocks continually immersed at 20°C.

Citric acid	10%	Resistant
Tartaric acid	10%	Resistant
Hydrochloric acid	18%	Resistant
Sodium Hydroxide	50%	Resistant
Diesel fuel / Petrol	100%	Resistant
Sulphuric acid	10%	Resistant
Sugar solutions	Saturated	Resistant
Lactic acid	10%	Resistant
Hydrocarbons	100%	Resistant
Phosphoric acid	50%	Resistant
Nitric acid	10%	Resistant
Acetic acid	5%	Resistant

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## Specification clauses

### High strength epoxy repair mortar

The high strength repair mortar shall be Nitomortar S, a three component epoxy resin with a density not greater than 2000 kg/m<sup>3</sup>. The cured mortar shall achieve a compressive strength of 60 N/mm<sup>2</sup>, a flexural strength of 20N/mm<sup>2</sup> and a tensile strength of 10N/mm<sup>2</sup> when tested at 7 days.

## Application instructions

### Preparation

Clean the surface and remove any dust, unsound material, plaster, oil, paint, grease, corrosion deposits or algae. Roughen the surface and remove any laitance by light scabbling or grit blasting. Saw cut or cut back the extremities of the repair locations to a depth of at least 5mm to avoid featheredging and to provide a square edge. Break out the complete repair area to a minimum depth of 5mm upto 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 purpose.

### Reinforcing steel priming

The cleaned steel should be coated within 3 hours. Apply one full coat of Nitozinc Primer and allow to dry before continuing. If any doubt exists about having achieved an unbroken coating, a second application should be made and, again, allowed to dry before continuing.

### Substrate priming

The substrate should be primed using Nitoprime 25. 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, 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 'puddling' 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 homogenous, trowellable mortar.

The 'hardener' and '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 thoroughly mixed for 3 minutes, then emptied into a forced action mixer of adequate capacity. Add the aggregate slowly with the mixer running and continue for 2 to 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 locations, 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 mortar can be applied in sections upto 50mm thickness in horizontal locations or upto 12mm thickness in vertical locations in a single application and without the use of formwork.

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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 checkerboard application technique is recommended.

**Note :** The minimum applied thickness of Nitomortar S is 5mm.

## Buildup

If sagging occurs during application, the Nitomortar S should be completely removed and reapplied at a reduced thickness on to the correctly reprimed 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

## Over coating 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 locations. 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 recommend the 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 the 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.

## Cleaning

Nitoprime Zincrich, Nitoprime 25 and Nitomortar S should be removed from tools and equipment with Nitoflor Sol immediately after use.

## Estimating

## Packaging & Coverage

	<u>Packaging</u>	<u>Coverage</u>
Nitomortar S	10 litre pack	2m <sup>2</sup> @ 5 mm thickness
Nitoprime 25	1 & 4 litre packs	5.5-6.5m <sup>2</sup> /litre
Nitoflor Sol	5 & 20 litre tins	-

**Note :** The coverage figures given above are theoretical due to wastage factors and the variety and nature of possible substrates, practical coverage figures will be reduced.

## Storage

## Shelf life

All products have a shelf life of 12 months at 30°C if kept in a dry store in the original, unopened bags or packs.

## Storage conditions

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 instructions

Nitoprime Primer, Nitoprime 25, Nitomortar S and Nitoflor Sol should not come in contact with skin or eyes, or be swallowed. Adequate ventilation shall be provided and inhalation of vapours shall be avoided. Some people are sensitive to resins, hardeners and solvents. Suitable protective clothing, gloves and eye protection shall be worn. If working in confined areas, suitable respiratory protective equipment must be used.



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The use of barrier creams provide additional skin protection.

In case of contact with skin, it shall be removed immediately with resin removing cream followed by washing with soap and water. Solvent should not be used. In case of contact with eyes, it shall be rinsed immediately with plenty of clean water and medical advice shall be sought. If swallowed, medical attention shall be sought immediately - Vomiting should not be used.

## Fire

Nitomortar S mortar is nonflammable.

Nitozinc Primer, Nitoprime 25, Nitoflor Sol are flammable. It shall be kept away from sources of ignition. Smoking is prohibited during handling / application of the product. In the event of fire, use of fire extinguishers like carbon-dioxide or foam, is suggested. Use of water jet is not suggested.

## Flash points

Nitozinc Primer	16°C
Nitoprime 25	25°C
Nitoflor Sol	33°C

## Additional information

Fosroc have produced several educational training videos which provide more detail about the mechanisms which cause corrosion within reinforced concrete structures and the solutions which are available to arrest or retard these destructive mechanisms. Further information is available from the publication 'Concrete Repair And Protection - The Systematic Approach'.

For further information about products, training videos or publications, contact the local Fosroc office.

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### Important note :

Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard terms and conditions of sale, copies of which may be obtained on request. Whilst Fosroc endeavours to ensure that any advice, recommendation specification or information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products whether or not in accordance with any advice, specification, recommendation or information given by it.

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