Fosroc Nitomortar HB

constructive solutions

High build epoxy reinstatement mortar

Uses

For the fast and permanent reinstatement of concrete, particularly for emergency repairs in vertical and overhead situations. Typical applications would include, but not be limited to, the following :

- Where resistance to chemicals is required.
- Localised, lightweight patch repairs

For fast repairs to floors and other locations subjected to wear and abrasion, the use of the associate product Nitomortar S is recommended.

Advantages

- Lightweight formulation enabling extra high build and thereby saving time and expense
- Obviates the need for formwork
- Early development of strength minimises disruption
- Highly resistant - unaffected by a wide range of chemicals
- Extremely low permeability
- Equal to the strength of high quality concrete within 3 days
- Pre-weighed components ensure consistency

Description

Nitomortar HB is based on a high quality solvent-free epoxy resin system. The special lightweight filler is specifically designed to give excellent 'hanging' properties for vertical and overhead work. Nitomortar HB is a three-component material supplied in pre-weighed quantities ready for on-site mixing and use.

Design criteria

Nitomortar HB can be applied in sections up to 50 mm thickness in vertical and overhead locations in a single application and without the use of formwork. Thicker sections up to 75 mm are possible in smaller locations, dependent on the actual configuration of the repair area and the volume of exposed reinforcing steel.

The material should not be applied at less than 10 mm thickness. Greater thicknesses than those specified above can be achieved by the application of subsequent layers. Larger areas should be applied in a 'chequerboard' fashion. Consult the local Fosroc office for further information.

Where high compressive strength and abrasion resistance is required, the use of Nitomortar S is recommended.

Properties

The following results were obtained at a temperature of 23 ± 2° C unless otherwise specified.

Test method		Typical result	
Compressive strength (BS 6319, Pt 2)	:	45 N/mm² @ 28 days	
Flexural strength (BS 6319, Pt 3)	:	15 N/mm² @ 28 days	
Tensile strength (BS 6319, Pt 7)	:	7 N/mm² @ 28 days	
Compressive modulus (ASTM C 469-65)	:	4.5 kN/mm² @ 28 days	
		23°C	**35°C**
Pot Life	:	40 mins	20mins
Initial hardness	:	24 hours	16 hours
Full cure	:	7 days	4 days
Fresh wet density	:	Approximately 1160 kg/m³ (fully compacted)	
Chemical resistance	:	Performance of Nitomortar HB blocks at 20°C:	
Acids (m/v)			
Citric acid 10%	-	Resistant	
Tartaric acid 10%	-	Resistant	
Hydrochloric acid 25%	-	Resistant	
Sulphuric acid 10%	-	Resistant	
Lactic acid 10%	-	Resistant	
Phosphoric acid 10%	-	Resistant	
Nitric acid 10%	-	Resistant	
Acetic acid 5%	-	Resistant	
Alkalis (m/v)			
Sodium hydroxide 50%	-	Resistant	
Solvents & organics			
Diesel fuel/petrol	-	Resistant	
Hydrocarbons 100%	-	Resistant	
Aqueous solutions			
Saturated Sugar	-	Resistant	

Note : Please contact your local Fosroc Office if the product is being fully immersed.

Specification

Lightweight epoxy repair mortar

The lightweight repair mortar shall be Nitomortar HB, a three-component epoxy resin with a density not greater than 1160 kg/m³. The cured mortar shall achieve a compressive strength of 40 N/mm², a flexural strength of 15 N/mm² and a tensile strength of 7 N/mm² when tested at 28 days.

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 laitance by light scabbling or grit-blasting. Saw cut or cut back the extremities of the repair locations to a depth of at least 10 mm to avoid feather-edging and to provide a square edge. Break out the complete repair area to a minimum depth of 10 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.

Priming

Reinforcing steel priming

The cleaned steel should be coated within 3 hours. Apply one full coat of Nitoprime Zincrich 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 Nitocote Primer Sealer. 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, avoiding ‘ponding’ in depressions. If the Nitocote Primer Sealer is absorbed within 30 minutes, a second coat should be applied before continuing.

Nitomortar HB 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 Nitocote primer sealer cures hard, a second application must be made before application of Nitomortar HB. 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 HB is thoroughly mixed to produce a fully homogeneous, 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’ and ‘base’ containers should then be emptied into the mixing vessel and thoroughly mixed for 3 minutes.

While mixing continuously, the entire bag of aggregate should then be added slowly and the three components blended together for a further 2 to 3 minutes, ensuring that the aggregate is thoroughly wetted out with the mixed resins. Under no circumstances should part packs be used.

Multi-pack mixing is possible by using a forced action mixer of suitable capacity e.g. Cretangle or Pennine.

Application

Apply the mixed Nitomortar HB 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 HB can be used in applications of up to 50 mm thickness in vertical or overhead locations depending upon the repair geometry. Thicker sections should be built up in layers.

When large areas are being repaired (generally over 2 m^2) a chequerboard application technique is recommended.

It is sometimes possible for smaller repairs to be completed in greater thicknesses, generally up to 75 mm, in a single application dependent on the actual configuration of the repair area and the volume of exposed reinforcing steel. If in doubt regarding application, consult the local Fosroc office.

Note: Minimum applied thickness of Nitomortar HB is 10mm.

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. Repriming with Nitocote primer sealer and a further application of Nitomortar HB may then proceed.

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

Finishing

Nitomortar HB is finished by the use of a wood float and closed with a steel trowel wiped with a cloth dampened with Fosroc Solvent 102. The completed surface should not be overworked.

Curing

Curing is not necessary for Nitomortar HB.

Cleaning

Nitoprime Zincrich, Nitocote primer sealer and Nitomortar HB should be removed from tools, equipment and mixers with Fosroc Solvent 102 immediately after use.

High temperature working

At ambient temperatures above 35°C, Nitocote primer sealer and Nitomortar HB will have shorter pot lives and working lives. The materials should be stored in the shade or in an air-conditioned environment and should not be applied in direct sunlight.

Overcoating with protective/decorative finishes

Nitomortar HB 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 HB is at least 3 days old. For further advice, consult the local Fosroc office.

Limitations

- Nitomortar HB should not be used when the temperature is below 5°C and falling.
- Do not mix part packs under any circumstances.
- Due to the lightweight nature of Nitomortar HB, the product should not be used in areas subjected to traffic, point loading or abrasion.
- Nitomortar HB 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.

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 world.

Fosroc Nitomortar HB

Estimating

Supply

Nitomortar HB	:	10 litre packs
Nitoprime Zincrich	:	1 litre cans
Nitocote primer sealer	:	1 and 4 litre packs
Fosroc Solvent 102	:	5 litre cans

Coverage and yield

Nitomortar HB	:	1.0 m^2 per pack (at 10 mm thickness)
Nitoprime Zincrich	:	7.4 m^2/litre
Nitocote primer sealer	:	4.0 - 5.0 m^2/litre

Note: The coverage figures for Nitoprime Zincrich and Nitocote primer sealer 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 20°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

Nitoprime Zincrich, Nitocote primer sealer, Nitomortar HB 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 provide 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 HB and Nitocote Primer Sealer are non-flammable..

Nitoprime Zincrich and Fosroc Solvent 102 are flammable. Keep away from sources of ignition. No smoking. In the event of fire, extinguish with CO_2 or foam. Do not use a water jet.

Flash points

Nitoprime Zincrich	:	16°C
Fosroc Solvent 102	:	33°C

For further information, refer to the Product Material Safety Data Sheet.

*** Denotes the trademark of Fosroc International Limited**

† **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. **All Fosroc datasheets are updated on a regular basis. It is the user's responsibility to obtain the latest version.**

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