



Fosroc Nitomortar EL

Abrasion-resistant epoxy resin lining mortar

Uses

A trowellable epoxy mortar with maximum chemical and abrasion resistance for the protection of concrete and similar substrates. Ideal for rehabilitation of manholes, lining of outfalls, sewage works and all similar structures which are in contact with chemical contaminants.

Advantages

- Unaffected by a wide range of acids, alkalis, industrial chemicals and sewage
- Excellent resistance to abrasion and impact
- Superior bond strength to virtually all substrates, dry or damp
- Primer not required for concrete surfaces
- Early development of strength minimises disruption
- Cured material provides a long lasting waterproof barrier
- Pre-weighed components ensure consistency

Description

Nitomortar EL is based on high quality solvent-free epoxy resin systems. The special silica aggregates provide high strength and excellent abrasion resistance. It is specially designed to give excellent 'hanging' properties for vertical and overhead work. Nitomortar EL 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 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.

Design criteria

Nitomortar EL can be applied in sections up to 12 mm thickness in vertical and overhead locations in a single application without the use of formwork. Greater thicknesses than those specified can be achieved by application of subsequent layers. Consult the local Fosroc office for further information.

For higher build characteristics to vertical or overhead locations, Nitomortar HB^{††} is recommended.

Properties

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

Test method	Typical results
Compressive strength	
(BS 6319, Pt 2)	: 70 N/mm ² @ 7 days
Tensile strength	
(BS 6319, Pt 7)	: 12 N/mm ² @ 7 days
Flexural strength	
(BS 6319, Pt 3)	: 28 N/mm ² @ 7 days
Pot life	
	: 2 hours @ 20°C
	1 hour @ 35°C
Initial hardness	
	: 24 hours @ 20°C
Full cure	
	: 7 days @ 20°C
Fresh wet density	
	: Approximately 1750 kg/m ³ (fully compacted)

Chemical resistance

Performance of Nitomortar EL blocks continually immersed at 25°C.

Acids (m/v)

Hydrochloric Acid 30%	: Resistant
Sulphuric Acid 17%	: Resistant
Phosphoric Acid 25%	: Resistant

Alkalis (m/v)

Sodium Hydroxide 40%	: Resistant
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Solvents & organics

Petrol	: Resistant
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Aqueous solutions

Bleach	: Resistant
Sea water	: Resistant
Detergent	: Resistant

Additional tests have shown no significant physical or chemical change after 100 days.

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Specification clause

Abrasion-resistant epoxy lining mortar

The abrasion-resistant epoxy lining mortar shall be Nitomortar EL, a three component solvent-free epoxy resin mortar with a density of 1750 kg/m³. The cured mortar shall achieve a compressive strength of 70 N/mm², a flexural strength of 28 N/mm² and a tensile strength of 12 N/mm² when tested at 7 days.

Instructions for use

Preparation

Clean the surface and remove any dust, unsound or contaminated material, plaster, oil, paint, grease, corrosion deposits or algae.

Surface should preferably be prepared using high pressure water jetting or light abrasive blasting, followed by thorough washing to remove dust and remaining particles.

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.

Prior to the application of Nitomortar EL, all active hydrostatic leaks must be stopped by using Renderoc Plug**†, a hydraulic cement specifically formulated to stop water ingress or Nitofill**† WS60 and Nitofill**† UR63 expanding polyurethane crack injection and water stop system.

Substrate priming

Under normal circumstances concrete surfaces do not require a primer. However, concrete or other substrates which are highly porous or where build/sag requirements are critical should be sealed with a single coat of Nitocote Primer Sealer.

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 Nitocote Primer Sealer is absorbed within 30 minutes, a second coat should be applied before continuing.

Nitomortar EL can be applied as soon as the primer has started to gel but still has surface tack. This is normally between 20 minutes and 4 hours dependent on ambient and substrate temperature.

Mixing

Care should be taken to ensure that Nitomortar EL is thoroughly mixed to produce a fully homogeneous trowellable mortar.

Nitomortar EL must be mixed by mechanical means. The 'hardener' and 'base' components must be stirred thoroughly to disperse any settlement before mixing them together. The entire contents of the 'hardener' and 'base' components should then be emptied into a suitable, clean mixing drum and thoroughly mixed using a slow speed electric drill (350 - 500 rpm) fitted with an approved spiral stirrer for approximately 5 minutes until a uniform colour and consistency has been produced.

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

Large quantities can be mixed in suitable forced action mixer (e.g. Cretangle or Pennine) but no more than can be reasonably used within the pot life of the product should be prepared at any one time.

Application

Apply the mixed Nitomortar EL to the prepared substrate at a minimum thickness of 3 mm by spatula or steel float, pressing firmly into place to ensure positive adhesion and full compaction. To avoid sagging on vertical surfaces, do not apply in thicknesses over 12 mm.

Application thickness will vary with profile and alignment of substrate. Where necessary mortar should be built up in layers.

Build-up

Additional build-up can be achieved by application of multiple layers. Where thicker sections are required, the surface of the intermediate applications should not be closed, to provide a suitable surface for subsequent layers. The application of additional layers should follow between 24 and 36 hours (@ 20°C) after the first application. This time should be reduced at higher temperatures. Application of Nitomortar EL may then proceed.

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



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Finishing

To close the surface and to create a smooth, impermeable finish lubricate the trowel with clean water. This may give a slight whitening of the surface but does not affect performance.

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

Important note: Do not use solvent to thin components or to lubricate trowel as this will prevent proper cure.

High temperature working

At ambient temperatures above 35°C Nitomortar EL and Nitocote Primer Sealer will have shorter pot life and working life. The materials should be stored in the shade or in air-conditioned environments and should not be applied in direct sunlight.

Curing

Curing protection is not necessary for Nitomortar EL.

Overcoating with protective/decorative finish

Nitomortar EL is extremely durable and resistant to a wide range of industrial chemicals and will provide excellent protection to the substrate.

The surrounding parts of the structure will generally benefit from the application of a protective coating too, 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 coatings.

For surrounding areas not subjected to chemical or physical wear Fosroc recommend the use of the Dekguard** range of anti-carbonation, anti-chloride coatings, thus bringing them up to the same protective standard as the repair itself. 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 coatings should be applied within 24 hours. For further advice, consult the local Fosroc office.

Cleaning

Nitomortar EL and Nitocote Primer Sealer should be removed from tools, equipment and mixers with Fosroc Solvent 102 immediately after use.

Limitations

- Do not mix part packs under any circumstances.
- Nitomortar EL should not be exposed to moving water during application. Exposure to heavy rainfall prior to final set may result in surface scour. If any doubt arises concerning temperature or substrate condition, consult the local Fosroc office.

Estimating

Supply

Nitomortar EL	: 10.0 litre pack
Nitocote Primer Sealer	: 1.0 and 4.0 litre packs
Fosroc Solvent 102	: 5.0 litre packs

Coverage and yield

Nitomortar EL	: 3.3m ² /pack (applied at 3mm thick)
Nitocote Primer Sealer	: 4.0 - 5.0 m ² /litre

Notes : The coverage figures for 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 30°C if kept in a dry shaded 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 and/or high humidity conditions the shelf life may be reduced to 4 to 6 months.



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Precautions

Health and safety

Nitomortar EL, Nitocote Primer Sealer 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/face protection.

If working in confined areas, suitable respiratory protective equipment must be used. The use of barrier creams provide additional skin protection. Should accidental skin contact occur, remove immediately with a resin removing cream followed by 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 EL and Nitocote Primer Sealer are non-flammable.

Fosroc Solvent 102 is 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

Fosroc Solvent 102 : 33°C

For further information, refer to the product materials safety data sheet.

Additional Information

Fosroc manufactures a wide range of complementary products which include :

- waterproofing membranes & waterstops
- joint sealants & filler boards
- cementitious & epoxy grouts
- specialised flooring materials

Fosroc additionally offers a comprehensive package of products specifically designed for the repair and refurbishment of damaged concrete. Fosroc's 'Systematic Approach' to concrete repair features the following :

- hand-placed repair mortars
- spray grade repair mortars
- fluid micro-concretes
- chemically resistant epoxy mortars
- anti-carbonation/anti-chloride protective coatings
- chemical and abrasion resistant coatings

For further information on any of the above, please consult your local Fosroc office - as below.

* Denotes the trademark of Fosroc International Limited

† See separate data sheet



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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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