New Guard Coatings Group

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Fosroc®
Nitoflor SL3000 U

constructive solutions

Flow applied medium to heavy duty cementitious polyurethane floor topping

Uses

Nitoflor SL3000 U is designed for use in a wide range of medium to heavy duty industrial environments where a lasting solution to floor maintenance is required. Nitoflor SL3000 U has a high order of chemical, abrasion and physical performance making it ideal for food and beverage production, dairy processing, pharmaceutical and engineering process areas.

Description

Nitoflor SL3000 U is a medium-heavy duty, flow applied cementitious polyurethane floor topping system. It is a three component product (base, hardener and filler) available in a range of standard colours. Laid at 3-6mm it provides a high order of abrasion, chemical and physical performance.

Advantages

- Ease of application
- Easy to clean
- Water-based and non-tainting
- Seamless
- High abrasion and impact resistance

Chemical Resistance

Nitoflor SL3000 U is resistant to a wide range of commonly used chemicals in the food, dairy and pharmaceutical industries such as concentrated citric acid (fruits), spirit vinegar (50% acetic acid), lactic acid (food & dairy products) and common alcohols (methanol & ethanol). Nitoflor SL3000 U is also resistant to a wide range of inorganic acids, fuels, hydraulic oils, mineral oils and solvents. Good housekeeping practices should be employed. Please consult Fosroc for further advice.

Some staining or discolouration may occur with some chemicals, depending on dwell time, temperature, type of chemical and degree of housekeeping employed. This does not necessarily affect the product service integrity or durability.

Substrates

Concrete, polymer modified screeds, grano concrete.

Typical Properties

BS 8204-6 (3-4 mm)	FeRFA Type 5 Floor (medium duty)
BS 8204-6 (5-6mm)	FeRFA Type 7 Floor (heavy duty)

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Fosroc Nitoflor SL3000 U

EN 13813 SR - B2,0 - AR0,5 - IR20
Synthetic resin screed material for use internally in buildings not subject to reaction to fire regulations.

Reaction to fire	NPD
Release of corrosive substances	SR
Water permeability	NPD
Wear Resistance	AR0,5
Bond strength	B2,0
Impact resistance	IR20
Sound insulation	NPD
Sound absorption	NPD
Thermal resistance	NPD
Chemical resistance	NPD

Note: The typical physical properties given above are derived from testing in a controlled laboratory environment. Results derived from testing field-applied samples may vary, dependent on actual site conditions.

The slip resistance figures given above are affected by application techniques and prevailing site conditions. Slip resistance can reduce over time due to poor maintenance, general wear or surface contaminants. Nitoflor SL3000 U has a smooth finish so can be expected to become slippery when wet. Good housekeeping practices must be observed.

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Cure Schedule at 20ºC

Working life of full packs :	
Nitoflor SL3000 U	10-15 minutes

Note: Usable working life of material following mixing and immediate spreading as per the application instructions

Finished floor:	
Cure time to light pedestrian traffic	12 hours
Cure time to light wheeled traffic	24 hours
Cure time to medium duty traffic	48 hours
Cure time to heavy duty traffic (4-6mm)	7 days
Full chemical resistance	7 days

Note: The above cure times are approximate and given as a guide only. These times can vary due to prevailing site conditions.

Instructions for preparation and use

Fosroc Nitoflor SL3000 U should be installed by specialist applicators, who must follow the procedures laid down in guideline documents such as BS 8024 Part 6:2008 Code of practice – Synthetic Resin Floorings, and the Fosroc Method Statement - PU Cementitious Flooring.

Application Conditions

Ideal ambient, material and substrate temperature range is 15 25ºC to achieve best results. The product components should be stored in a cool area (or warm area in the case of low ambient temperature), using localised forced cooling or heating equipment as appropriate, in order to bring product temperature within the ideal range. The product can be applied outside this ideal temperature range (subject to a minimum of 10ºC and maximum of 32ºC) however the surface finish may be subject to e.g. trowel and/or spike roller marks. In these cases physical properties and durability of the floor are not affected.

The substrate and applied floor must be kept at least 3ºC above the dew point to reduce the risk of condensation or blooming on the surface, from before priming to at least 48 hours after application of Nitoflor SL3000 U.

Surface Preparation

Inadequate preparation may lead to loss of adhesion and failure. In coatings or flow-applied systems, there is a tendency for the finish to mirror imperfections in the substrate. Grinding or light vacuum-contained shot blasting is therefore preferred over planing for these systems. Percussive scabbling or acid etching is not recommended.

Anchorage grooves should be cut to a minimum depth and width of 2x the flooring thickness to be laid, at the edges, day joints, up-stands, drains, doorways and at regular points across the floor, and all debris removed.

New concrete floors

The base should be a minimum of Grade RC30 of BS 8500-2: 2002 and should not contain a water repellent admixture. The surface strength when assessed using a rebound hammer should be above 25 or the surface tensile strength should exceed 1.5 MPa.

The laitance and any surface sealer or curing membrane should be removed by mechanical means such as shot blasting or grinding to expose the coarse aggregate. After surface preparation, all loose debris and dirt should be removed by vacuum equipment.

For concrete bases in contact with the ground, a damp proof membrane should have been incorporated into the slab design, in accordance with the requirements of CP102 (Code Of Practice For The Protection Of Buildings Against Water From The Ground).

Old concrete floors

All laitance and surface contamination should be removed by mechanical means such as shot-blasting or grinding to expose the coarse aggregate. After surface preparation, all loose debris and dirt should be removed by vacuum. Heavy oil or grease deposits should be removed either mechanically, or by steam cleaning, or by biological treatment, then by high pressure water blasting followed by the application of a penetrating primer. Where oil or grease contamination has been severe or of long duration, these methods may prove unsatisfactory and in these cases removal of the affected base is necessary.

In existing buildings without a functioning damp-proof membrane, the application of a surface-applied membrane should be considered. Hydrostatic pressure may, under certain circumstances, cause adhesive failure between the flooring and the substrate. Where this is likely to occur, such as in areas where the ground water table is higher than the substrate, and where external tanking has not been applied, pressure relief must be provided, e.g. by direct drainage.

A close visual examination should be made to verify cleanliness and soundness. Any weak or suspect areas should be repaired.

Fosroc®
Nitoflor SL3000 U

Application Instructions

Priming

Nitoflor SL3000 U should be applied as a primer/scratch coat at a coverage rate of up to a nominal 1 mm thickness; actual coverage rate will depend on concrete surface texture and porosity. This scratch coat is designed to prime and seal the floor. Mix (see Application) and spread evenly by trowel, ensuring that anchorage grooves are fully wetted out. The scratch coat should be allowed to cure for 12 - 48 hours at 20ºC before applying the Nitoflor SL3000 U. If the scratch coat has been allowed to cure for >48 hours then the coat must be thoroughly abraded and a fresh layer of scratch coat applied. If severe pin-holing is evident in the scratch coat, indicating that air is rising from the substrate, then remedial action should be taken. Contact your local Fosroc office for advice. Failure to do so may result in increased risk of pin-holing of the surface topping.

Application of Nitoflor SL3000 U

Fosroc Nitoflor SL3000 U is a three-component product.

A forced-action rotary paddle mixer is recommended for mixing the product. Thoroughly mix and drain the contents of the coloured liquid base component into a large plastic container, and scrape down with a flat bladed scraper to ensure complete draining. Thoroughly drain the hardener component and mix for 1 minute or until a homogeneous mix is obtained. Load the aggregate component whist mixing, and continue mixing for 3 minutes or until a lump-free mix is obtained.

Immediately discharge and spread the mix over the application area with a notched trowel to the required coverage rate, level with a steel float and de-aerate using a spiked roller, rolling only into the previously applied adjacent area. Spike rolling should be carried out within 3 minutes of application in order to avoid interfering with flow and surface finish. Ensure that anchorage grooves are fully wetted out with material. Do not return to spike roll older applied areas as the product is fast-setting and this action will leave spoiling marks on the applied floor.

The finished floor should be protected from other trades using Kraft paper or similar breathable material. Polythene should not be used. Protect the installed floor from damp, condensation and water for at least 4 days.

Supply

Nitoflor SL3000 U	19.7 kg packs

Coverage

Nitoflor SL3000 U (primer/scratch coat)	Coverage appropriate to texture and porosity of floor Nominal 10 m^2/pack
Nitoflor SL3000 U (floor topping)	3.3 m^2/pack at 3 mm 1.7 m^2/pack at 6 mm

Note: Coverage figures given are theoretical. Actual site practical coverage figures may vary, due to wastage factors and the type and condition of the substrate.

Colours

Fosroc Nitoflor SL3000 U is available in a range of standard Fosroc colours. Fosroc Nitoflor SL3000 U is not colour fast and may yellow over time. The rate of change will depend on UV light and heat levels and cannot be predicted. This will be more pronounced with lighter colours and blue shades and does not compromise the product's in-service performance or chemical resistance characteristics.

Cleaning

Regular cleaning is essential to maintain and enhance the life expectancy, slip resistance and appearance of the floor. Fosroc Nitoflor SL3000 U can be easily cleaned using industry standard cleaning chemicals and techniques. Consult your cleaning chemical and equipment supplier for more information.

Health and Safety

Fosroc Nitoflor SL3000 U should not come into contact with the skin and eyes, or be swallowed. Ensure adequate ventilation and avoid inhalation of vapours.

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, rinse with plenty of clean water, then cleanse 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.

Refer to Product Safety Data Sheet for further information.

Fosroc®
Nitoflor SL3000 U

Storage, Mixing & Application

Fosroc Nitoflor SL3000 U has a shelf life of 12 months (6 months for the aggregate component) if stored off the ground in unopened packs in a dry store under cover at 10 - 30ºC. Storage outside this temperature range or repeated fluctuations in storage temperature can reduce the storage life. Protect from frost.

Fire

Fosroc Nitoflor SL3000 U is non-flammable.

Limitations

Do not proceed with application if atmospheric relative humidity is, or is anticipated to be within the tack-free period, >90% or if the surface temperature is <3ºC above the dew point. Application should not commence when the substrate temperature or the ambient temperature is, or is anticipated to be, <10ºC during the application or within the tack-free period. The design strength of concrete surfaces must be a minimum of 25MPa compressive strength at 28 days.

The manufacture of Fosroc Nitoflor SL3000 U is a batch process and despite close manufacturing tolerances, colour variation may occur between batches.

Slip resistance can reduce over time due to poor maintenance, general wear or surface contaminants. Nitoflor SL3000 U has a smooth finish so can be expected to become slippery when wet. Good housekeeping practices must be observed.

Application can take place outside the ideal temperature range of 15 - 25ºC, subject to a minimum of 10ºC and a maximum of 32ºC, however the surface finish may be subject to e.g. trowel and/or spike roller marks.

Fosroc Nitoflor SL3000 U is not colour fast and may yellow over time. The rate of change will depend on UV light and heat levels and cannot be predicted. This will be more pronounced with lighter colours and blue shades and does not compromise the product's in service performance or chemical resistance characteristics.

Note

The information contained in this document, and all further technical advice given, is based on our present knowledge and experience. However, it implies no liability or other legal responsibility on our part, including with regard to existing third party intellectual property rights, especially patent rights. In particular, no warranty, whether express or implied, or guarantee of product properties in the legal sense is intended or implied. We reserve the right to make any changes according to technological progress or further developments. The customer is not released from the obligation to conduct careful inspection and testing of incoming goods. Performance of the product described herein should be verified by testing, which should be carried out only by qualified experts in the sole responsibility of a customer. Reference to trade names used by other companies is neither a recommendation, nor does it imply that similar products could not be used.

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Technical Advice

For further information on this or any other Fosroc product, please contact your local Fosroc office

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Fosroc® Nitomortar HB

constructive solutions

High build epoxy reinstatement mortar

Uses

For the fast and permanent reinstatement of concrete, particularly where resistance to chemicals is required. Nitomortar HB can be used for small, localised patch repairs and, because of its lightweight nature, is ideally suited for use in vertical and overhead locations, and for emergency repairs where fast strength gain is important. When properly compacted, the mortar is highly impermeable.

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

Advantages

- Lightweight formulation enabling high build, 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 performance 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.

Properties

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

Test method	Typical result
Compressive strength (EN12190:1999):	40 N/mm² @ 7 days
Flexural strength (BS 6319, Pt 3):	15 N/mm² @ 7 days
Tensile strength (BS 6319, Pt 7):	7 N/mm² @ 7 days
Compressive modulus (ASTM C 469-65):	4.5 kN/mm² @ 7 days
Pot life:	45 minutes @ 20°C 20 minutes @ 35°C
Initial hardness:	24 hours
Full cure:	7 days
Fresh wet density:	Approx.1160 kg/m³ (fully compacted)
Chemical resistance:	The low permeability of Nitomortar HB retards chemical attack in aggressive environments

Test method		Typical result
Performance of Nitomortar HB blocks continually immersed at 20°C:		
Citric acid	10%	Excellent
Tartaric acid	10%	Excellent
Hydrochloric acid	25%	Excellent
Sodium hydroxide	50%	Excellent
Diesel fuel/petrol	100%	Excellent
Sulphuric acid	10%	Very good
Sugar solutions	Saturated	Very good
Lactic acid	10%	Very good
Hydrocarbons	100%	Very good
Phosphoric acid	10%	Very good
Nitric acid	10%	Good
Acetic acid	5%	Limited

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 10 mm to avoid feather-edging and to provide a square edge.

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DOP: UK9-90

0370-CPR-0845

Fosroc® Nitomortar HB

EN1504-3: Structural and non-structural repair methods 3.1, 7.1 4 and 7.2

Compressive strength	≥ 15 MPa
Chloride ion content	≤ 0.05%
Adhesion strength by pull-off test	≥ 0.08 MPa
Thermal compatibility: freeze-thaw cycling with immersion	≥ 0.08 MPa
Carbonation resistance	dk ≤ control concrete
Capillary absorption (water permeability)	≤ 0.5kg/(m².h$^{0.5}$)
Stiffening time	Declared value
Determination of workability	Declared value

Fosroc® Nitomortar HB

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.

Reinforcing steel priming

The cleaned steel should be coated within 3 hours. Apply one full coat of Nitoprime Zincrich Plus 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 dry substrate should be primed using Nitoprime 28. 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 Nitoprime 28 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 Nitoprime 28 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.

Nitomortar HB must be mixed mechanically. 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 (e.g. Cretangle). 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 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 applied in sections up to 30 mm thickness in vertical locations or overhead locations in a single application and without the use of formwork. Thicker sections should be built up in layers but are sometimes possible for smaller repairs, generally up to 50mm, in a single application dependent on the actual configuration of the repair area and the volume of exposed reinforcing steel.

When larger areas are being rendered (generally over 2 m²) a chequerboard application technique is recommended.

Note: the minimum applied thickness of Nitomortar HB is 10 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. Repriming with Nitoprime 28 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.

Low temperature working

Nitoprime 28 and Nitomortar HB can be applied in cold conditions down to 5°C. The materials should not be applied when the substrate and/or air temperature is 5°C and falling. At 5°C static temperature or at 5°C and rising, the application may proceed.

Note: cure time and strength gain rate will be increased at low temperatures.

High temperature working

At ambient temperatures above 35°C, Nitoprime 28 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.

Fosroc® Nitomortar HB

Curing

Unlike cementitious materials Nitomortar HB does not require curing immediately after finishing, but does require protection from rain and wet conditions during the initial 24 hours after placement.

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.

Cleaning

Nitoprime Zincrich Plus, Nitoprime 28 and Nitomortar HB should be removed from tools, equipment and mixers with Fosroc Solvent 102 immediately after use.

Estimating

Supply

Nitomortar HB:	9.3 kg pack
Nitoprime Zincrich Plus:	1.9litre and 800ml cans
Nitoprime 28:	0.45 kg 'Handy' packs 4.2 kg 'Industrial' packs
Fosroc Solvent 102:	5 and 25 litre tins

Coverage and yield

Nitomortar HB:	8.0 litres / 9.3 kg pack
Nitoprime Zincrich Plus:	8 m²/litre
Nitoprime 28:	24 m² / 0.45 kg pack 22 m² / 4.2 kg pack

Notes: the coverage figures for Nitoprime Zincrich Plus and Nitoprime 28 are theoretical — due to wastage factors and the variety and nature of possible substrates, practical coverage figures will be reduced.

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. Neither should it be exposed to moving water during application. Exposure to heavy rainfall prior to the final set will result in surface softening and scour. Nitoprime 28 is not a damp tolerant primer. If any doubts arise concerning temperature or substrate conditions, consult the local Fosroc office.

Storage

Store in dry conditions in the original, unopened packaging. All products have a shelf life of 24 months at 20°C if kept these conditions. If stored at high temperatures, the shelf life may be reduced to 4 to 6 months.

Precautions

Health and safety

For further information see appropriate Product Safety Data Sheet.

Fire

Nitomortar HB is non-flammable.

Nitoprime Zincrich Plus, Nitoprime 28 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 Plus:	41°C
Fosroc Solvent 102:	33°C
Nitoprime 28	27°C

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