Nitoflor Hardtop

constructive solutions

Non metallic, monolithic surface hardening compound for fresh concrete floors

Uses

Nitoflor Hardtop provide a highly abrasion resistant surface to concrete floors by the dry shake-on method which ensures that the hardwearing surface bonds monolithically to the base concrete. They are ideally suited for all industrial areas subject to the heaviest traffic, e.g.

- loading bays,
- Trucking lanes,
- Car parks,
- Workshops,
- Machine shops,
- Ramps and spillways.

Advantages

- Non metallic - does not rust or stain.
- Provides a hard, abrasion resistant surface
- Forms monolithic bond with base concrete
- Easy and economical to apply
- Supplied ready to use, no additive required

Description

Nitoflor Hardtop is quality controlled, factory blended powder which are ready to use on site. They contain special hard-wearing aluminium oxide abrasive aggregates which have been selected for abrasion and wear resistant properties as well as shape and size. These latter considerations, together with the use of high performance workability admixtures, produces a material which is easy to trowel into the surface of fresh, wet concrete. Nitoflor Hardtop cure monolithically to provide a dense, non-porous surface which is extremely hard-wearing and abrasion resistant. Monolithic cure ensures that problems normally associated with thin 'granolithic' screeds, viz., shrinkage, cracking, etc., are completely overcome.

Being non-metallic, Nitoflor Hardtop provide a non-slip surface which will never rust and disintegrate.

Technical support

Fosroc offers a technical service to specifiers, end users and contractors, as well as on-site technical assistance in locations all over the country.

Colours : Grey & Green

Specification clause

Non metallic surface floor hardener

All concrete floors shall be surfaced or broadcast with Nitoflor Hardtop a non-metallic monolithic surface floor hardening compounds containing rust free, hardwearing aggregates. The aggregates shall have a Moh's hardness of not less than 8-9 for Nitoflor Hardtop.

Compressive strength

Nitoflor Hardtop shall possess a minimum compressive strength of 70N/mm^2 @ 28 days when tested as per ASTM C109 (w/p ratio - 0.10).

Application instructions

Base concrete

The base concrete should have a minimum cement content of 300 kg/m^3. The concrete mix should be designed to minimise segregation and bleeding. Although there should not be any bleed water, but a wet "sheen" can still be clearly seen on the concrete surface, is the ideal situation for Nitoflor Hardtop to have its first application.

Use of Fosroc Conplast or Auramix range is strongly recomended in order to acheive a water cement ratio below 0.55. The base concrete should have desired workability/slump as per site requirement. The base concrete should be laid and compacted in accordance with good concrete practice. Accurate finished profile and minimum laitance build-up should be ensured. Particular attention should be paid to bay edges and corners to ensure full compaction.

Nitoflor Hardtop is applied for different types of industrial use and the application rates are given below.

Application rate (kg/m^2)	Intended traffic use
7.0	Heavy
5.0	Medium
3.0	Light

It is recommended that the floor be marked off into bays of known area. Sufficient material should then be laid out to meet the required spread rates.

Abrasion Resistance

The abrasion resistance of Nitoflor Hardtop has been tested as per ASTM C779 (Revolving Disk Method) to measure the depth of wear in mm.

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Average Depth of wear in mm (As per ASTM C779 Revolving Disc Method).

Revolving cycle time	Control	Nitoflor Hardtop 3kg/m^2	Nitoflor Hardtop 5kg/m^2	Nitoflor Hardtop 7kg/m^2
30 min	0.45 mm	0.243 mm	0.21 mm	0.16 mm
60 min	0.723mm	0.423 mm	0.37 mm	0.327mm

Application of Nitoflor Hardtop can begin when the base concrete has stiffened to the point when light foot traffic leaves an imprint of about 3mm-7mm.

Note: 3mm to 7mm imprint is only a guide and actual imprint to be established by doing a mock-up at site.

Application Process

Nitoflor Hardtop is applied in two stages.

(a) The first application is made using 50% to 70% of the total material. Nitoflor Hardtop is evenly broadcast onto the concrete surface. When the material becomes uniformly dark by the absorption of moisture from the concrete this first application can be floated. Wooden floats or, on large areas, the power trowel with disc may be used. It is important, however, that the surface is not over worked.

(b) Immediately after floating, the remaining Nitoflor Hardtop is sprinkled evenly over the surface. Again moisture is absorbed and the surface can be floated in the same way as before.

Final finishing of the floor using a power trowel can be carried out when the floor has stiffened sufficiently so that damage will not be caused. Repeated power trowelling would further improve the abrasion resistance

Timing of Application

The timing of application Nitoflor Hardtop is important and critical. If applied too early, bleed or excess water will wash away the cementitious content of the products, thereby making them ineffective. Also denser aggregates sink into the concrete.

If the application of Nitoflor Hardtop is done too late, there will not be sufficient water/moisture to absorb the material into the concrete. Material forcibly applied and trowelled thus, will cause cracks on the surface later, as there is no water/moisture to hydrate the product.

Note: It is recommended to carryout a mock-up with Nitoflor Hardtop at site to finalise the Hardtop application timing as it extremely dependent on temperature , humidity and concrete mix and site condition.

Bay edges

Where Bay edges are likely to suffer particularly heavy wear or impact and where saw-cut transverse control joints are to be located, it is desirable to give these areas additional protection, by the following method prior to full treatment of the entire surface:

Immediately after leveling the freshly placed concrete, Nitoflor Hardtop should be sprinkled by hand at a rate of 5kg/sq.m in a strip of 100mm wide along the bay edge and hand troweled into the surface.

Curing

Tests have shown that proper curing of concrete floors treated with products such as Nitoflor Hardtop is essential to ensure the physical properties of the floor.

The most efficient method of curing by using Concure S, curing membrane which conforms to ASTM specifications. However, in indoor applications where curing conditions are less arduous alternative approved methods of curing such as polythene sheeting or water ponding are acceptable

Ready to use

Nitoflor Hardtop is supplied ready to use on site. Cement or aggregates should never be added to Nitoflor Hardtop.

Coloured floors

When a coloured floor is required, it is strongly recommended that a job site trial area is laid.

Surface treatments

Penetration type surface treatments are recommended to give low porosity and dust proof property.

Limitations

- For concretes with optimised water cement ratios and for vacuum dewatered floors, Nitoflor Hardtop shall not be broadcast in excess of 3 - 4 kg /m^2. For such applications, consult Fosroc.
- Nitoflor Hardtop is not advised for broadcast over concrete in subzero temperatures, such as, floorings for cold storages etc. However, concrete on which Nitoflor Hardtop has been applied can be subjected to sub zero temperatures after curing. The application of the dry shake powder must not be carried

out in strong wind or in dry conditions.

Never add water to the surface where the dry shake has been applied.

At low relative humidities (below 40%), efflorescence can appear on the surface.

At high relative humidites (above 80%), bleeding, slower curing and hardening can occur and extended finishing operations be required.

Estimating

Packaging

Nitoflor Hardtop is supplied in sealed 25 kg HDPE bags.

Storage

If kept in original undamaged packing, the shelf life of Nitoflor Hardtop should be atleast 12 months under normal warehouse conditions.

Precautions

Health & Safety instructions

Nitoflor Hardtop contains portland cement and are therefore alkaline when in contact with water. Prolonged contact with the skin should be avoided. Any eye contamination should be washed immediately with plenty of clean water and medical advice sought.

Fire

Nitoflor Hardtop is not flammable.

Additional information

Fosroc manufactures a wide range of producsts specifically designed for the specialist flooring industry. These include : complementary products which include :

- Specialised epoxy/PU floor coating and topping
- chemically-resistant coatings
- trowel-applied, highly abrasion-resistnt screeds.

Among them are products suitable for use in :

- the food and drinks industry
- the pharmaeutial industry and
- in areas subjected to heavy industrial use.

Where the control of static electricity is an important considera- ic have developed conductive and dissipative seam- ystems. In addition, a wide range of complementary s available. This includes joint sealants, waterstops, waterproofi ng membranes and specialised products for the repair and refurbishment of damaged reinforced concrete.

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.

Nitoflor Hardtop

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