

# Nitoflor Hardtop Standard

## Non metallic, monolithic surface hardening compound for fresh concrete floor

### Uses

Nitoflor Hardtop Standard 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

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

### Description

Nitoflor Hardtop Standard is quality controlled, factory blended powder which are ready to use on site. They contain special quartz-silica 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 Standard cure monolithically to provide a dense, non-porous surface which is extremely hardwearing 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 Standard 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.

**Colour** : Green & Grey

### Properties

Abrasion resistance (ASTM C779, Revolving Disc methods

Nitoflor Hardtop Standard has been tested as per ASTM C779, Revolving Disc method against control concrete for abrasion resistance.

## Specification clause

### Non metallic surface floor hardener

All concrete floors shall be surfaced or broadcast with Nitoflor Hardtop Standard, a non-metallic monolithic surface floor hardening compounds containing rust free, hardwearing aggregates. The aggregates shall have a Moh's hardness of 7-8 for Nitoflor Hardtop Standard.

### Compressive strength

Nitoflor Hardtop Standard shall possess a minimum compressive strength of of 64N/mm<sup>2</sup> in 7days and 75N/mm<sup>2</sup> in 28days as per ASTM C109.

## Application instructions

### Base concrete

The base concrete should have a minimum cement content of 300 kg/m<sup>3</sup>. 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.

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

Application rate (kg/m <sup>2</sup> )	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 coverage.

Relative abrasion resistance (ASTM C779, Revolving disc method).

The abrasion resistance of Nitoflor Hardtop standard 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.

Revolving cycle time	Control	Nitoflor Hardtop Std 3kg/m <sup>2</sup>	Nitoflor Hardtop Std 5kg/m <sup>2</sup>	Nitoflor Hardtop Std 7kg/m <sup>2</sup>
30 min	0.45 mm	0.267 mm	0.223mm	0.176 mm
60 min	0.723mm	0.443 mm	0.4mm	0.353 mm

Application of Nitoflor Hardtop Standard can begin when the base concrete has stiffened to the point when light foot traffic leaves an imprint of about 3mm-7mm. Any bleed water should by now have evaporated but a wet "sheen" can still be clearly seen on the concrete surface.

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

Nitoflor Hardtop Standard are applied in two stages.

(a) The first application is made using 50% to 70% of the total material. Nitoflor Hardtop Standard 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 Standard 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 Standard 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 standard 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.

This is advisable to carryout a mock-up with Nitoflor Hardtop along-with the available concrete at site to finalise the Hardtop application timing as it is extremely dependent on temperature and humidity present at site.

## 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 Standard is essential to ensure the physical properties of the floor.

The most efficient method of curing by using Concure S, curing membrane. 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 Standard is supplied ready to use on site. Cement or aggregates should never be added to Nitoflor Hardtop Standard.

## 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 Standard shall not be broadcast in excess of 3 - 4 kg /m<sup>2</sup>. For such applications, consult Fosroc.

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■ Nitoflor Hardtop Standard is not advised for broadcast over concrete in subzero temperatures, such as, floorings for cold storages etc. However, concrete on which Nitoflor Hardtop Standard 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 humidities (above 80%), bleeding, slower curing and hardening can occur and extended finishing operations be required.

## Estimating

## Packaging

Nitoflor Hardtop Standard is supplied in sealed 25 kg HDPE bags.

## Storage

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

## Disposal

All cementitious products and Inert epoxy fillers can be used for landfilling. All empty Cementitious products and inert epoxy filler used HDPE/PP Woven/BOPP bags dispose through the approved vendor only. Don't through the road side\empty sites etc.

## Precautions

### Health & Safety instructions

Nitoflor Hardtop Standard 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 Standard is not flammable.

## 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

Where the control of static electricity is an important consideration, Fosroc have developed conductive and dissipative seamless floor systems. In addition, a wide range of complementary products is available. This includes joint sealants, waterstops, waterproofing membranes and specialised products for the repair and refurbishment of damaged reinforced concrete.

For further information about products 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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