

# Fosroc® Nitoflor Hardtop S



constructive solutions

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## 'Dry shake' floor hardener for new concrete floors

### Uses

Nitoflor Hardtop S provides a highly abrasion resistant surface to fresh concrete floors by the 'dry shake' method which ensures that the hard wearing surface bonds monolithically to the base concrete. It is ideally suited for all industrial areas subjected to heavy traffic, e.g. power stations, heavy industry, agricultural buildings, warehouse floors, loading bays and workshops.

### Advantages

- Supplied ready to use — no additives required
- Provides a hard, abrasion resistant surface
- Forms monolithic bond with fresh concrete base
- Non-metallic aggregate — will not rust when wet
- Non dusting
- Anti-slip

### Description

Nitoflor Hardtop S surface hardening compound is a quality controlled, factory blended powder which is ready to use on site. It consists of special hard wearing aggregates selected for their physical properties of abrasion and wear resistance, Portland cement and special additives to improve workability. This combination produces a material which is easy to trowel into the surface of fresh, wet concrete. Nitoflor Hardtop S cures 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, e.g. curling, shrinkage, cracking, etc. are completely overcome.

Nitoflor Hardtop S is available in natural (concrete grey) colour as standard.

### Specification clauses

Floors shall be surfaced where shown with Nitoflor Hardtop S, a 'dry shake' floor hardener containing non-metallic, rust-free aggregates. The compound shall have the ability to improve the abrasion resistance of concrete by 225%.

Nitoflor Hardtop S powder shall be applied to the freshly-laid concrete floor by the 'dry shake' method. It shall be applied at the point where light foot traffic leaves an imprint of about 3 to 6 mm.

The powder shall be applied in two stages, in full accordance with the manufacturer's instructions. Special attention shall be paid to bay edges in accordance with the manufacturer's written requirements.

## Properties

### Abrasion resistance

Nitoflor Hardtop S application rate per m <sup>2</sup> concrete	First app. Kg/m <sup>2</sup>	Second app. Kg/m <sup>2</sup>	BS8204 classification
3Kg	2	1	ARI
5Kg	3	2	Special

Average wear of 0.02mm for special class. 20 time increase on 40N/mm<sup>2</sup> concrete (concrete society technical report no.34, 2nd edition)

### Hardness (Mohs scale)

The selected aggregates contained within Nitoflor Hardtop S have a hardness value of 7 on the Mohs original scale.

### Application instructions

Nitoflor Hardtop S should be applied at an even application rate. It is recommended that the floor be marked off into bays of known area. Sufficient materials should then be laid out to meet the recommended spread rate.

### 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 control bleeding, although some limited bleed is desirable to ensure sufficient moisture is available to wet out the Nitoflor Hardtop S when it is first applied.

The use of water reducing admixtures from the Fosroc Structuro or Conplast range is strongly recommended in order to achieve a water:cement ratio below 0.55. The base concrete should have an on-site slump of between 75 and 100 mm.

The base concrete should be laid and compacted in accordance with good concrete practice, taking care to ensure accurate finished profile and minimum laitance build-up. Particular attention should be paid to bay edges and corners to ensure full compaction of the base concrete — see application instructions.

Vacuum dewatering is not recommended.

Application of Nitoflor Hardtop S should begin without delay when the base concrete has stiffened to the point when light foot traffic leaves an imprint of about 3 to 6 mm. Any bleed water should now have evaporated, but the concrete should have a wet sheen.

On large floors it will be necessary to work progressively behind the laying team to ensure application at the correct time.

Nitoflor Hardtop S is applied in two stages.

- The first application (see table) is broadcast at an even rate onto the concrete surface. When the material becomes uniformly dark by the absorption of moisture from the base concrete, this first application can be floated. Wooden floats or, on large areas, a power float disc may be used. It is important, however, that the surface is not overworked.

# Fosroc® Nitoflor Hardtop S

- (b) Immediately after floating, the second application of Nitoflor Hardtop S is applied evenly over the surface at right angles to the first. Again, when moisture has been absorbed the surface can be floated in the same way as before.

Final finishing of the floor using the blades of a power float can be carried out when the floor has stiffened sufficiently so that damage will not be caused.

## 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 one of the following methods prior to full treatment of the entire surface:

- (a) Immediately after levelling the freshly placed concrete, Nitoflor Hardtop S should be sprinkled by hand at a rate of 0.5 kg/lin.m. (5 kg/m<sup>2</sup>) in a strip 100 mm wide along the bay edge and hand-trowelled into the surface.
- (b) Immediately after levelling the freshly placed concrete, remove a wedge of the concrete 10 mm deep at the slab edge and tapered up to slab level. Replace this with a very stiff paste of Nitoflor Hardtop S, mixed thoroughly with a small amount of water. Ensure it is fully compacted on to the base concrete.

These reinforced areas will be further strengthened when the subsequent full treatment is applied.

Timing of the application of Nitoflor Hardtop S is important and care should be taken to ensure adequate labour, machinery and material is available to complete the whole area while sufficient moisture is available to fully react with the powder to provide a good dense finish. Conversely, the full benefit will not be achieved if the material is applied too early when bleed water is still present.

Any addition of water to wet out the surface on either the first or second application of Nitoflor Hardtop S will be detrimental to the overall quality of the floor.

It is essential that the correct recommended rate of application is achieved over the entire floor area in order to avoid possible localised variations in shading.

## Cleaning

All equipment should be washed with clean water immediately after use and before the material has hardened.

## Curing

Proper curing of concrete floors treated with Nitoflor Hardtop S is essential to the physical properties of the finished floor. The most effective method of curing is to use Concure WB which should be applied on to the finished floor 10 minutes after the power floating operation has been completed.

The use of polythene sheeting, wet hessian and damp sand or ponding are not recommended. The use of salt water or brackish water should not be considered under any circumstances.

## Surface treatments

Subsequent surface treatments are not normally necessary with Nitoflor Hardtop S because of the high density, low porosity finish.

## Estimating

### Supply

Nitoflor Hardtop S:	25 kg bags
Concure WB:	20 litre container

### Coverage

Nitoflor Hardtop S:	5 kg/m <sup>2</sup> / 3 kg/m <sup>2</sup>
Concure WB:	3.5 to 5 m <sup>2</sup> /litre

Applications should comply with the recommended rate to obtain the published performance characteristics. Any reduction may have a detrimental effect on the finished floor's abrasion resistance and, in the case of pigmented floors, the quality and consistency of the finish.

## Limitations

Do not use Nitoflor Hardtop S in areas exposed to acids and their salts or other materials known to rapidly attack or deteriorate concrete containing ordinary Portland cement.

Do not apply to concrete containing calcium chloride or concrete having greater than 3% air entrainment.

Where a coloured floor is required, it is strongly recommended that a site trial is undertaken to assess possible local variations caused by aggregates and sands used in the base concrete.

## Storage

Store in unopened bags in cool dry internal conditions. The product has a shelf life of 12 months from the date of manufacture if kept in a dry storage in the original, unopened bags.

If stored at high temperatures and/or high humidity conditions the shelf life may be reduced to less than 6 months.

## Precautions

### Health and safety

For further information see appropriate Product Safety Data Sheet.

### Fire

Nitoflor Hardtop S is non-flammable.

# Fosroc® Nitoflor Hardtop S

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## Additional information

It is strongly recommended that a heavy duty sealant such as Nitoseal MS300 be used to seal internal joints of factory and warehouse floors to take account of the increased capacity of the treated floor.

For further information on these products, and others within the Fosroc range, please contact your local Fosroc office or representative.

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### Important note

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## Fosroc Limited

Drayton Manor Business Park  
Coleshill Road, Tamworth,  
Staffordshire B78 3TL. UK

[www.fosroc.com](http://www.fosroc.com)

**telephone:**  
+44 (0) 1827 262222

**fax:**  
+44 (0) 1827 262444

**email:**  
[uk@fosroc.com](mailto:uk@fosroc.com)



Certificate number FM 610