Fosroc®
Nitoflor® Sicaltop

Application Guide

Application guidelines for applying Nitoflor Sicaltop

IMPORTANT NOTE: These guidelines should be read well in advance of commencing any product application. If any doubts or concerns exist, users should contact Fosroc for specific advice.

Application Instructions

1. Introduction to dry shake materials

Nitoflor Sicaltop, a dry shake integral flooring product is available as a factory premix ready for application over freshly placed concrete to improve wear resistance and in some case improve slip resistance of concrete floors.

2. Concrete base – mix design

The application of Nitoflor Sicaltop occurs over a freshly laid concrete slab.

The mix design of the concrete base must be such as to produce a placeable and finishable mix with a slump of approximately 70 - 80mm, no more than 3% entrained air and a design strength which must not be less than 25MPa. The use of suitable concrete admixtures is recommended to minimise the occurrence of plastic state segregation bleeding or drying shrinkage cracking.

The successful application of Nitoflor Sicaltop is conditional upon a sufficiently high water content in the concrete mix to ensure both concrete placement and hydration of the floor hardener. If water reducing admixtures are incorporated in the concrete mix design, particularly superplasticisers, this must be taken into consideration.

Note 1: If applying coloured Nitoflor Sicaltop care must be taken to ensure that excess soluble salts or impurities are not present in the concrete mix from the sand, aggregates, gauge water, etc., which could cause scumming, efflorescence and masking of the surface colour finish.

Do not use calcium chloride or other corrosive salts or acids in concrete base when applying coloured Nitoflor Sicaltop.

Note 2: The concrete temperature should be maintained at no less than 10°C nor more than 30°C. Floors should not be installed out in the open without protection from hot drying sun or wind, under dusty conditions, or if rain is threatening.

3. Placing, consolidating, levelling & floating

Place concrete to specified thicknesses between screed points or firmly-fixed edge forms without segregating the mix. Use square-tipped shovels to move concrete into place. Do not use rakes.

Consolidate thoroughly. A small pencil vibrator inserted vertically will assist in obtaining void free consolidation at corners and along edges. Do not use vibrators to shift the concrete.

Screed level with a heavy strike-off bar or vibrating screed. Immediately bring the surface true to correct levels or falls, free from depressions by using a bull-float; a long handled, broad, wooden or aluminium float. This operation must be completed before any free moisture rises to the surface.

The surface must then be heavy-wood floated as soon as the concrete will bear the weight of an operator. The aim of this operation is to close up all pockets and produce a mortar-rich, even, flat surface on which to apply Nitoflor Sicaltop. This operation depresses the coarse aggregate so that it will not tend to create trowel blemishes in the final finished surface and release entrapped air from the surface layer of concrete. Such air otherwise may rise as the concrete warms up and cause blisters in the floor surface after trowelling.

The concrete in the areas adjacent to forms, doorways, walls, etc., should be floated first, as it stiffens-up faster than concrete in the body of the slab. If there is excessive water, (bleed) on the surface, remove it prior to floating. This is best done by a rubber hose or sheet of plastic draped by two workmen slowly across the surface. Re-check the surface with the straightedge and eliminate any high or low spots.

High temperatures and windy conditions will speed-up drying out of the concrete and thereby reduce the time available for application. Under windy (hot or cold) conditions, it is essential that sensibly positioned hessian windbreaks be constructed. Premature drying out of the slab due to exposure to direct sunlight can be off-set by roofing-over of the area before application of Nitoflor Sicaltop. The use of evaporative retarders such as Concure AV can help overcome premature drying conditions on-site. If these conditions cannot be avoided, it may be necessary to omit the final heavy wood floating operation and proceed with the application of the dry shake product.

If rain is threatening do not proceed with the application if the slab area is exposed.

4. Laying-out the dry shake

Calculate accurately the quantity of Nitoflor Sicaltop to be incorporated in each concrete bay to be installed, based on a knowledge of the area of the bay and the amount of the individual product specified per square metre. The latter information, in the absence of a specification, can be obtained from the dosage information printed on the product bag label or from the product data sheet.

Place the appropriate number of bags of Nitoflor Sicaltop adjacent to the marked out bays.

5. Hand applying the first dry shake

Having closely followed the procedure for placing, consolidating, levelling and floating (Item 3), determine that the receiving surface has stiffened sufficiently. The correct stiffness of the concrete base prior to the application of the first dry shake can be estimated by placing an open, spread, slightly cupped hand onto the surface and applying arm pressure. The indentations made by the spread fingers should not be greater than 3mm and should decrease in depth, slowly, once the arm pressure is removed - see also notes on time factor (Item 6).

Immediately follow through with the dry shake application and finishing operations. Do not delay until all the concrete is placed before commencing these operations otherwise the surface may be too stiff to accept the dry shake.

Apply two thirds of Nitoflor Sicaltop by sprinkling it on by hand, allowing it to sift through the fingers, as close to the surface as possible, so as to obtain a uniformly thick application over the surface. On NO account throw the Nitoflor Sicaltop from a height and/or over a distance, as segregation will occur and cement may be blown away.

Apply the shake as soon as possible to the areas adjacent to forms, doorways, walls, etc., since these areas lose moisture rapidly. These areas should also be floated first.

As soon as the first Nitoflor Sicaltop dry shake material has absorbed sufficient moisture from the base concrete, use the bull float to level out the moistened dry shake material before wood floating or power floating to incorporate the plasticised dry shake into the slab surface. In areas adjacent to the edge forms, where a machine will not reach, compact and level using a wood float. Refer to Section 9 for details on forming joint edges.

5a. Machine application of the dry shake

Particularly on large pours, an alternative to hand application of the dry shake is to apply the Sicaltop using a Flextool Sicaltop/Colour Spreader (part BM-TV-830). This mechanical spreader lays the dry shake in a uniform 830mm wide strip into the fresh concrete. Timing is important as the operator must walk on the fresh concrete but large areas can be treated in a short period. Once the dry shake has been applied and taken up some of the moisture from the concrete, the surface is power trowelled using a pan float to work the dry shake into the concrete. A second application can then proceed in the same way if necessary to achieve the required dosage rate. Enquire with your local Fosroc branch for more information on this equipment and further details on its correct use.

6. Hand applying the second dry shake

Immediately after floating the first dry shake, distribute the second part of the dry shake in a similar manner at right angles to the previous application. This operation should proceed immediately behind the floating as it proceeds, particularly in hot weather conditions, when the timing sequence of the various operations is critical to successful product application.

A soon as the final Nitoflor Sicaltop dry shake material has absorbed sufficient moisture, bull-float to level out the moistened dry shake application followed by floating of the surface with a wood float or power trowel. Continue to consolidate the surface with power trowel by making several passes over the slab at right angles to each other.

After all the dry shake product has been applied and consolidated, check-screed the surface to locate any high or low spots, which should be eliminated immediately.

Note: All of the dry shake material must be applied and floated before the concrete base has stiffened up too far and whilst it is still plastic enough to provide sufficient moisture for the wetting-up of the final dry shake application. The available working time of the concrete base is normally between 1 and 2 hours after placing, depending on the ambient temperature and exposure conditions prevailing.

If the final dry shake is applied too late, then serious defects such as flaking or scaling may result.

To assist application in dry weather conditions, the application of a fine mist of Concure AV (evaporative retarder) will extend the open time available to apply the Sicaltop.

DO NOT SPRINKLE WATER ON THE SURFACE TO FACILITATE PLACEMENT.

This practice reflects a failure to properly organise the application and may result in surface discolouration, pitting, or other defects. The same type of result is also obtained if the final trowelling is carried out too early, when the surface is too soft or wet due to bleeding water to the surface.

Each step MUST be carried out at a pace which keeps abreast of the stiffening of the concrete base under the prevailing conditions.

7. Trowel finishing

When the surface has commenced to stiffen, which is indicated by it losing some of its sheen, give it an initial light trowelling with a steel trowel or mechanical trowel with blades as flat as possible to close and glaze the surface.

As the surface continues to “lighten up” use the trowel “on edge” if trowelling by hand and with the blades slightly tilted if using a mechanical trowel. At this stage only a little paste should cling to the trowel blade. This procedure should produce a smooth dense surface finish free from pin-holes ripples or blemishes.

With natural (grey) coloured floors, the surface can be burnish-trowelled by hand at a stage where the floor slab has stiffened still further, so that no cement paste clings to the trowel. Use short circular rubbing strokes with a steel trowel “on-the-flat” to produce a polished, darkened surface which will assist in producing a surface which of maximum durability and wear resistance. Final steel trowel finishing of coloured floors should be carried out using a straight stroking action in a single direction, rather than semi-circular sweeping action which would otherwise produce a finish comprising a visible pattern of sweep lines.

8. Curing

As soon as final trowel finishing is completed and the surface is firm enough not to be marred by the chosen method of application, promptly carry out curing of the floor slab to optimise strength development, wear and impact resistance. Do not allow the surface to dry out at any time during the curing period, particularly in hot weather or in windy conditions, otherwise the durability of the floor will be adversely affected.

8.1 Liquid membrane forming curing compounds

Depending on the eventual in-service exposure condition, select a curing compound from the extensive Fosroc range, such as Concure X90. Apply strictly in accordance with the instructions and precautions outlined in the Technical Data Sheet.

8.2 Damp curing

Natural coloured, non-metallic dry shake applications may be damp cured with well-lapped polythene sheeting over-covered with 50mm of clean fine sand, which is kept damp with fresh water for a period of 7 days. Ensure that the film edges are taped and sealed. Do not damp cure coloured dry shake products.

Excessive impact or traffic abuse should be avoided during the early weeks of service to avoid damage to the new floor.

9. Joint construction

In the process of applying the dry shake to the floor, additional dry shake material can be used at construction and expansion joint edges so as to produce a reinforced bullnose to give extra strength to the edge.

10. Approval testing

In the case of coloured Nitoflor Sicaltop, always first make a job site test trial application for final coloured appearance approval before proceeding with the job. This is necessary since many factors can affect the final shade and appearance of a coloured floor.

Fosroc cannot take responsibility for the quality of workmanship or variation in coloured appearance due to the influence of extraneous materials in the concrete, careless or improper application of the dry shake, variable finishing and curing, as well as staining and damage by construction or after-trades before the floor is turned over to the owner.

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