Nitoflor TF5000

3 - 6mm thick chemical and abrasion resistant epoxy resin colour screed

Uses

Nitoflor TF5000 provides an extremely high strength floor topping with exceptional resistance to the surface mechanical wear and attack from chemical spillage, is impervious and, at the same time, has a safe non-slip finish for personnel and vehicular traffic.

Ideally suited for heavy engineering plants, chemical handling and process areas, steelworks, dairies, breweries, oil refineries, paint workshops, battery rooms, plating factories, sugar and food industries.

Also widely used for areas of lighter duty where above average durability and low maintenance costs are required.

In areas where high degrees of cleanliness is required, the surface of Nitoflor TF5000 can be sealed with Nitoflor FC range of epoxy resin floor coating.

Advantages

- Durable : Exceptional resistance to abrasion and to a wide range of chemicals
- Non-slip : Good gripping surface to both vehicular and pedestrian traffic
- Easily laid: Designed for easy laying to a fair finish
- Seamless: Eliminates potential sources of failure
- Proven performance: Successful use proven in a wide variety of aggressive locations.
- Colour range: Available in different colour combinations.

Description

Nitoflor TF5000 is a three part solvent-free combination of epoxy resin, modified amine hardeners filled with specially graded and selected high crushing strength, chemically inert aggregates.

It is laid by trowel as a durable chemical resistant screed at 3 to 6 mm thickness depending on the requirement. This nominal thickness provides an impervious topping which is highly chemical resistant by the very careful choice of amine curing agent and graded aggregate.

The system includes Nitoprime 25, a two part epoxy resin primer. Nitoflor TF5000 & Nitoprime 25 supplied in preweighed units ready for on site mixing and application. The finished, cured floor has a slightly granular texture of uniform colour. A two part epoxy sealing coat of Nitoflor FC140 is recommended as a topcoat for Nitoflor TF5000. Nitoflor FC140 is available in a range of attractive colours.

Before application on a steel substrate, shot blasting must first be done to SA 2½ finish and then primed with Nitoprime 28.

Specification

Flow-applied epoxy floor topping

The designated floor areas shall be surfaced with Nitoflor TF 5000 3.0 - 6mm thick epoxy resin screed after priming the surface with Nitoprime 25 when it is in tacky condition . The epoxy screed shall achieve a minimum compressive strength >45 N/mm^2 when tested as per ASTM C579 and a flexural strength >13 N/mm^2 at 7 days when tested to BS6319 and having tensile strength 7 N/mm^2 when tested as per BS6319 at 27°C. It shall be capable of accepting top coating within 24 hours and Light vehicular traffic at 48 hours.

Technical support

Berger Fosroc provides a technical advisory service supported by a term of specialists in the field.

Properties

Curing characteristics

Nitoflor TF5000	27^{0}C
Pot life	> 60 minutes
Mixed Density	2.2 g/cc
Abrasion	
Initial hardness	18 hrs.
Full cure	7 days
Nitoprime 25	
Pot life	2 - 3 hrs
Maximum overlay time	30 min

Mechanical characteristics

Property	Test method	Nitoflor TF5000	Average concrete
Compressive strength (N/mm^2)	ASTM C579	>45	20
Flexural strength (N/mm^2)	BS6319 part 3	>13	6

Nitoflor TF5000

Tensile strength (N/mm^2)	BS6319 part 7	>7	3
Tensile Modulus (N/mm^2)	BS 6319 part 7	>550	
Pull off Adhesion strength (N/mm^2) (Elcometer pull off test)	ASTM D 4541	>2.5	

Chemical resistance

Fully cured blocks of Nitoflor TF5000 have been tested in a wide range of aggressive chemicals commonly found in industrial environments. Tests were performed by constant immersion at 30^0C.

Chemicals	Grade(Attack)
Hydrochloric acid 18%	B
Sulphuric acid 10%	A
Sulphuric acid 50%	B
Citric acid 10%	A
Urea saturated	A
Xylene	A
Sugar solution	A
Car Oil	A
Distilled water	A
Nitric acid 10%	*
Sulphuric acid 25%	*
Phosphoric acid 50%	C
Ammonia 10%	A
Butanol	A
White Spirit	A
Salt solution	A
Bleach	A

Key : A : Excellent B : Good C : Slightly colour change

* Suitable for areas of occasional spillage where good housekeeping must be ensured.

All the above properties have been determined by laboratory controlled tests and are typical of those expected in practice.

Application instructions

Surface preparation

It is essential that Nitoflor TF5000 is applied to sound, clean and dry surfaces in order that maximum bond strength is achieved between the substrate and the flooring system.

New Concrete floors

Should be at least 28 days old (moisture content should be less than 5%). Laitance deposits on new concrete floors are best removed by light grit-blasting, mechanical scrabbling or grinding. On smaller areas thorough acid etching using Reebaklens may be considered. After etching the floor should be thoroughly washed with clean water and then allowed to dry.

Old Concrete Floors

Again mechanical cleaning methods are strongly recommended on old concrete floors particularly where heavy contaminations by oil and grease have occurred or existing coatings are present. This may well have been absorbed several mm. into the concrete. To ensure adhesion, all contamination should be removed.

All dust and debris should be removed prior to laying Nitoflor TF5000.

Priming

All surfaces to be treated with Nitoflor TF5000 should be primed with Nitoprime 25, and all steel surfaces should be primed with Nitoprime 28 a solvent based epoxy resin primer designed for maximum absorption and adhesion to substrates. Add the entire contents of the hardener tin to the base tin and mix thoroughly. Once mixed, immediately apply the primer in a thin continuous film to the clean prepared surfaces. Work the primer into the surface using stiff brushes, avoid over application and puddling. On porous floors the Nitoprime 25 will be absorbed very quickly leaving characteristic light coloured dry patches. It is recommended that a second priming coat be applied.

Allow the solvent in the Nitoprime 25 to evaporate, at which stage the primer has become tacky. This time is dependent on climatic conditions. See 'Properties' for maximum overlay times.

Mixing

It is important that Nitoflor TF5000 is mixed correctly.

A suitable forced action mixer such as a paddle fitted into a heavy duty, slow speed, electric hand drill and a similar equipment, is recommended for mixing.

The entire contents of hardener tin should be poured into the base container and mixed thoroughly until homogeneous.

Nitoflor TF5000

It is recommended that the aggregates in the bag is blended well manually before adding to the mixed resin and hardener. Then add the aggregate slowly to the mixed resin and hardener, continue mechanical mixing for a further 2-3 minutes, until all the components are thoroughly blended. Once mixed, the materials must be used within the specified pot life (see under 'Properties'). After this time, unused materials will have stiffened and should be discarded.

Application

The mixed Nitoflor TF5000 should be spread to uniform thickness on the primed surface using a steel trowel. The material should be tamped with a wooden float to ensure complete compaction and finally finished to a closed even texture using a steel trowel. Screeding rods are useful to maintain a minimum compacted thickness of 5mm. (5000 microns).

Expansion joints

Expansion joints in the existing substrate should be continued through the Nitoflor TF5000 topping.

Coving

Nitoflor TF5000 can be used to form perimeter edge coving upto a height of 150mm.

Sealing

Although Nitoflor TF5000 is impervious, in constantly wet operation areas, or where a high degree of cleanliness is required, Nitoflor TF5000 screed may be sealed with Nitoflor FC range of epoxy floor coating products. For this, Nitoflor TF5000 screed must be atleast 1 day old and high spots such as cold joints and trowel marks rubbed down.

Cleaning

All tools and equipment should be cleaned immediately after use with Nitoflor Sol or Xylene.

Estimating

Packing and coverage

	Pack size	Approximate coverage rate/Pack
Nitoprime 25	1 & 4ltr.	5.5 - 6.5 m^2/ltr
Nitoflor TF5000	12 ltrs.	2.4m^2 at 5mm thickness/pack

The above coverage rates are given for guidance only as actual quantities used will vary with surface conditions of the substrate.

Storage

Nitoprime 25 and Nitoflor TF5000 have a shelf life of 12 months when stored in a dry place below 35^{0}C in unopened containers.

Storage conditions

Store in dry conditions between 5oC and 30oC, away from sources of heat and naked fl ames, in the original, unopened packs.

If stored at high temperatures the shelf life will be reduced.

Disposal

All cementitious products and Inert epoxy fillers can be used for landfilling. Any left out of epoxy base and hardener (expired or small bottom quantity) before disposing to empty cans/tins/pail buckets, take out the material and mix both base and hardener, make it solid and then dispose through authorized PCB vendor. Used empty epoxy Base & Hardener pail buckets/Tins, (Ensure completely drained out the material) dispose through approved vendor only.

Precautions

Health & Safety instructions

Some people are sensitive to epoxy resins and solvents. So, gloves, barrier creams, protective clothing and eye goggles should be worn when handling these products. If accidental contact occurs, it should be removed before it hardens with resin removal cream followed by washing with soap and water. Solvent should not be used. Should eye contamination occur then it shall be washed with plenty of clean water and immediate medical attention shall be sought. Good ventilation should be ensured smoking is prohibited during application / usage of the product.

Fire

Nitoprime 25 and Nitoflor Sol are flammable. Adequate ventilation should be ensured. Smoking is prohibited during application / handling of the product.

Flash Point

Nitoprime 28	30^{0}C
Nitoprime 25	25^{0}C
Nitoflor Sol	33^{0}C

Nitoflor TF5000

Do's and Don'ts

Do's

- Cleaning regularly with Mop and Soft washing agent or with soft mopping device.
- Trolley and Forklift movement with rubber or Teflon wheel
- All normal activity without any mechanical damage of the floor.
- Consult with manufacturer if any cut to be made over the floor.
- Clean the floor immediately, if any strong chemical or hot liquid fall on the floor.

Don'ts

- Use any Harsh chemicals, acid base or any cleaning solution without confirming the manufacturer
- Dragging of sharp, heavy object and trolley with metal wheel
- Allow any Impact with heavy object on the floor
- Carry out any hot activity like welding or with any activity which create fire
- Drill or core cutting without confirmation from manufacturer
- Make it expose to high temperature> 60ºC

Additional information

Berger Fosroc manufacturers a wide range of complementary products which include :

- waterproofing membranes & waterstops
- joint sealants & filler boards
- cementitious & spoxy grouts
- specialised flooring materials

Berger Fosroc additionally offers a comprehensive package of products specifically designed for the repair and refurbishment of damaged concrete. Berger 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 our local Berger Fosroc office - as below.

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