



constructive solutions

# Nitocote® ET402

## Coal tar extended epoxy resin coating

### Uses

Provides chemical and abrasion resistance to prevent corrosion of concrete surfaces for applications such as :

- Seawater tanks, channels and intakes.
- Manhole linings.
- Sewage works and effluent plants.
- Chemical processing.
- Foundation waterproofing
- Jetties, piers and docks

### Advantages

- Low cost service life - excellent chemical and abrasion resistance, does not support bacterial growth.
- Cost saving - primerless system.
- Added value system - acts as an impermeable waterproof coating.
- Versatile usage - can be applied to green concrete by brush, roller or spray.

### Description

Nitocote ET402 is based on epoxy resins, modified with coal tar. It is supplied as a two pack material in pre-weighed quantities ready for on-site mixing and use.

Nitocote ET402 is applied as a two coat application. It is generally applied at a wet film thickness of 200 micron per coat, but can be applied at greater thicknesses to suit exposure conditions. Nitocote ET402 is available in marine grade for applications necessitating biocidal and micro-biostatic effect.

### Specification

The corrosion resistant coating shall be Nitocote ET402, a coal tar extended, epoxy resin coating. The coating shall possess a high-build capability, to facilitate varying application thicknesses. It shall further possess excellent bond and chemical resistance properties and shall comply to BS 7542 & ASTM C309 curing efficiency standards.

### Properties

Colour	: Black/Brown
Solids by volume @ 25°C	: 90%
Specific gravity	: 1.54 at 27°C
Pot life	: at 25°C 75 minutes at 40°C 40 minutes
Tack free time	: 2 to 3 hours at 35°C
No of coats	: 2
Wet film thickness per coat	: 200 microns
Dry film thickness per coat	: 180 microns
Overcoating time	: 6 hours at 35°C 3 hours at 45°C
Full cure	: 4 days at 35°C
Curing Efficiency (BS 7542)	: 93%
Water Absorption (ASTM D570)	: <0.01%
Impact Resistance (BS 3900 Pt E3)	: Passed
Bond Strength (BS 1881 Pt 207)	: Min 1N/mm <sup>2</sup>
Water Permeability for 5 bar 5 bar pressure@72 hrs (BSEN 12390 (Part 8))	: 0.00 mm
Salt Spray Test (BS 1881 Pt. 124 :1988)	: Nil @ 200 microns tested over 1000 hours
Chemical resistance	: Tests were carried out in accordance with ASTM D543. Test was conducted at room temperature of 23°C and specimens were soaked in the solution for a period of 7 days.
Moisture required in concrete for coating.	: <5% moisture
Concrete Curing Period to start the coating.	: 7days
Acids (m/v)	
Hydrochloric acid 10%	: Excellent
Sulphuric acid 10%	: Very good
Nitric acid 10%	: Very good
Phosphoric acid 10%	: Very good
Alkalis (m/v)	
Ammonia 15%	: Excellent

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Sodium Hydroxide 25% : Good

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## Solvents & organics

Oils, vegetable and minerals: Excellent

Ferric Chloride 15% : Very good

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## Aqueous solutions

Water : Excellent

Sea water : Excellent

Raw sewage : Very good

Consult the local Fosroc office for specific recommendations to meet each operating condition.

## Instructions for use

### Preparation

All surfaces to be treated with Nitocote ET402 must be clean and free from dust or loose material.

### Concrete surfaces

All laitance must be removed by grit blasting, or other suitable removal methods. The general standard of surface preparation should be in accordance with ACI 503R-89, Chapter 5, Paragraph 5.4. Following the preparation of a concrete surface, care should be taken to ensure that any surface irregularities are filled with Nitomortar FC\* or Nitomortar FC(B)\*.

### Metal surfaces

Any metal surfaces should be grit blasted to a bright finish, meeting the requirements of Swedish Standard SA 2½ or equal.

### Priming

#### Concrete surfaces

Priming is not required on properly prepared concrete surfaces - see Preparation section.

#### Metal surfaces

All metal surfaces should be coated immediately after preparation. If this is not possible and to eliminate formation of rust, prime the metal surfaces using Nitoprime 25\*.

### Mixing

The contents of the resin can should be thoroughly stirred to disperse any possible settlement. The entire contents of both the hardener and resin cans should be poured into a

suitable sized mixing vessel. It is recommended that the two components are mixed together mechanically using a slow speed electric drill fitted with a Mixing Paddle. Mixing should be carried out continuously for 3 to 5 minutes, until a uniform consistency is achieved.

Nitocote ET402 is a solvented product and it is recommended that mixing should take place in an open, well ventilated area.

### Application

A minimum 2 coat application is generally recommended to ensure a full, unbroken coating is achieved.

### Brush application

Once mixed, the material should be immediately applied, ensuring that a continuous coating is obtained. The first coat is applied to achieve a uniform coating with a wet film thickness not less than 200 microns, and should be allowed to dry for at least 6 hours at 35°C before the application of the second coat.

The second coat should be applied between 6 hours and 4 days (at 35°C) after the application of the first coat, at 45°C this will be reduced to 3 hours. The second coat should be applied as above again achieving a wet film thickness not less than 200 microns.

### Spray application

Where large areas are to be coated, it is advisable to consider spray application. Consult the local Fosroc office for further details and recommendations

### Cleaning

Tools and equipment should be cleaned with Nitoflor Sol immediately after use.

Hot weather working practices

Whilst the performance properties of Nitocote ET402 at elevated temperatures are assured, application under such conditions can sometimes be difficult. It is therefore suggested that, for temperatures above 35°C, the following guidelines are adopted as a prudent working regime:

- i Store unmixed materials in a cool (preferably temperaturecontrolled) environment, avoiding exposure to direct sunlight.
- ii Keep mixing and placing equipment cool, arranging shade



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protection if necessary. It is especially important to keep cool those surfaces of the equipment which will come into direct contact with the material itself.

- iii Try to eliminate application in the middle of the day, and certainly avoid application in direct sunlight.
- iv For hand application, ensure that there are sufficient operatives available to complete application within the pot life of the material.
- v Have a ready supply of Nitoflor Sol available for immediate cleaning of tools after use.

## Repairing and overcoating

Any applications of Nitocote ET402 which have become damaged can be readily overcoated.

The existing surface should well abraded, using a stiff wire brush, or similar, to ensure that a good mechanical bond will be achieved between the two layers.

Overcoating works can then proceed as for new work, always ensuring that the prepared substrate is free from any moisture.

## Limitations

- Nitocote ET402 should not be applied over other existing coatings, but can be applied on top of itself (see above).
- For cold weather working (down to 5°C), it is recommended that materials are stored in a heated building and only removed immediately before use.
- Accelerated heating methods are not to be utilised under any circumstances.
- In contact with moisture/high humidity during cure, the colour of the coatings will change to brown/red.

## Estimating

### Supply

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Nitocote ET402 : 10 litre packs  
Nitoprime 25 : 1 and 4 litre packs  
Nitoflor Sol : 5 litre packs

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### Coverage

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Nitocote ET402 : 2.5 sq.m/litre @ 400 microns WFT in 2 coats, 360 DFT in 2 coats.

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Nitoprime 25 : 2.5 sq.m/litre @ 444 microns WFT in 2 coats, 400 DFT in 2 coats.

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**Note:** Coverage figures quoted are theoretical, and based upon application to a properly prepared substrate of nominal MC30 concrete. Since application conditions vary greatly; due to substrate porosity, quality of surface preparation, application

## Storage

Nitocote ET402 has a shelf life of 12 months, when stored in warehouse conditions below 35°C.

## Precautions

### Health and safety

Nitocote ET402, Nitoprime 25 and Nitoflor Sol should not come in contact with skin or eyes, nor should they be swallowed. Avoid inhalation of vapours and ensure adequate ventilation. Some people are sensitive to resins, hardeners and solvents. Wear suitable protective clothing, gloves and eye/face protection. Barrier creams provide additional skin protection. Should accidental skin contact occur, remove immediately with a resin removing cream, Industrial Skin Cleanser, followed by washing with soap and water - do not use solvent. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. If swallowed seek medical attention immediately - do not induce vomiting.

Organic Vapour mask (with filter type) is mandatory for the persons, while doing application.

Person may feel vomiting sensation during application if proper PPE is not worn, mainly in confined application areas. It is advisable to have proper ventilation in place as per applicable standards while working in less ventilated areas.

### Fire

Nitocote ET402 and Nitomortar FC are non-flammable. Nitoprime 25 and Nitoflor Sol are flammable. Do not use near a naked flame.

### Flash points

Nitoprime 25 : 55°C

Nitoflor Sol : 33°C

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## 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

For further information on any of the above, please consult your local Fosroc office - as below.



## Fosroc Chemicals (India) Pvt. Ltd.

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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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