

Guidelines for Spraying Fosroc® Nitocote EP500



constructive solutions

Introduction

Where relatively large areas of epoxy coating are required, Nitocote EP500 may be applied using suitable airless spray equipment. The technique offers the following advantages over hand applied coatings when the various application parameters are met.

- a. Excellent bond to the substrate concrete.
- b. Higher build without sagging or slumping.
- c. Rapid placement of material.

Principles of operation

Nitocote EP500 can be applied using suitable airless spray equipment after mixing the base and hardener components together.

Spray application of Nitocote EP500 is a skilled process and requires experienced operatives to achieve good results. The operatives have a significant influence on the quality of the completed job. It is, therefore, strongly recommended that experienced applicators should be employed who are familiar with the process. Where such experience is not available, the applicators should demonstrate their capability through monitored trials.

Pre-conditioning Materials

It is important to pre-condition the Nitocote EP500 components to suitable temperature before attempting application. Ideal temperature for both components is in the range 20 to 25°C.

Store unmixed materials in dry conditions, in original unopened packs, avoiding exposure to direct sunlight.

In high temperature environments, keep equipment cool, arranging shade protection if necessary. It is especially important to keep cool those surfaces of the equipment that come into direct contact with the material itself.

Avoid application during the hottest times of the day, arrange temporary shading as necessary.

At ambient temperatures above 35°C, Nitocote EP500 will have a shorter pot life and working life. The material should not be applied in direct sunlight.

At lower temperatures, Nitocote EP500 should be applied only when the substrate temperature and the ambient temperature is above 5°C and rising.

Make sufficient material, plant and labour available to ensure that application is a continuous process.

Surface preparation

To ensure all potential contamination and laitance has been removed, the surface should preferably be prepared using high-pressure water jetting (up to 3000psi) or light abrasive blasting, followed by thorough washing to remove dust and remaining particles.

Oil and grease deposits, should be removed by steam cleaning, detergent, scrubbing or the use of a proprietary degreaser. The effectiveness of decontamination should then be assessed by a pull-off test.

Prior to the application of Nitocote EP500, all active hydrostatic leaks must be stopped by using Vandex Plug, a hydraulic cement material specifically formulated to stop water ingress. A saturated surface dry (SSD) substrate (or drier) condition is required prior to the application of the Nitocote EP500.

To those areas where concrete repairs have been carried out using Nitomortar AP (or other epoxy materials), the Nitocote EP500 can be applied within a 48 hour period of the original application of the Nitomortar AP as long as the surface is clean and has not been wet, through immersion or condensation. If more than 48 hours elapses between applications, or if the coating becomes wet through immersion, rain or dew the surface must be mechanically prepared by abrasive blasting prior to subsequent overcoating.

Thickness of application

Nitocote EP500 should be applied between 2mm and 5mm thick in each application. The coating can be built up to the required thickness by applying wet on wet material. Experience has shown that the maximum thickness stated on the data sheets can be exceeded without slumping or sagging.

The practical thicknesses achievable on site will depend on the orientation of the substrate and the consistency / temperature of the material.

Finishing

Successful spray application of Nitocote EP500 will result in an "orange peel" finish which is often acceptable to the client. If a smoother finish is required the coating can be steel trowel finished. The surface will normally be finished immediately after spray application.

Application Equipment

Pumps

The following equipment has shown to be suitable for spray applying Nitocote EP500:

Pump – Graco King 68:1 or Graco Extreme 80:1, cart mounted airless sprayer c/w high pressure filter with 13mm outlet

Hose – Graco 13mm airless hose no more than 15 metres (a couple metres of 7mm whip on the end will make the gun easier to handle)

Spray gun – Graco hydramastic airless gun with reversible tip and 13mm gun swivel. Tip size at the gun can be as small as 11 thou (eg 411 or 511) but final choice will depend on temperature and required rate of application; the smaller the tip size the better the fan spray pattern and the better the "off gun" finish.

Compressed air is required, minimum compressor is 85cfm @ 100psi. Air hose diameter minimum is 19mm.

Pump set up notes –

(a) remove suction hose / tube and replace with a pipe (about 50mm dia) so that the pump can be immersed directly into the product (some pumps will need to be elevated slightly so to allow this, so as to stop the actual bottom end going into the product).

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(b) All high pressure filter elements should be removed from the pump and gun.

(c) when spraying, it is recommended to change pails, not pour newly mixed material into existing pail.

(d) pump operator should be aware of material pot-life. If sprayer is left idle for more than 50% of pot-life, it should be flushed out with Fosroc Solvent 10 (eg. At 20°C material should not be left in the pump for longer than 15 minutes).

(e) It is anticipated that the pump will require re-packing on a regular basis. Extra care with solvent flushing and cleaning will extend pump packing life.

(f) It is anticipated that the spray tips will require replacement over a period of time.

(g) Steel trowels are required for finishing of the spray applied Nitocote EP500.

General information

Mixing

Before mixing the Nitocote EP500, the contractor shall ensure that sufficient and correct areas are prepared and ready to receive the sprayed epoxy coating.

Only mixes using complete packs of Nitocote EP500 shall be allowed and part mixes are not permitted. Nitocote EP500 shall be mechanically mixed. Mix at a slow speed (400/500 rpm) using appropriate equipment such as a 140 x 600 mm helical mixing paddle fitted to a heavy-duty 1600W mixer or equivalent.

Nitocote EP500 is supplied to site as 16 litre packs. The base material is white in colour and the hardener is dark grey. When mixed together, the product is grey in colour.

The Base and Hardener components shall be each stirred thoroughly to disperse any settlement before mixing them together.

The complete contents of the Hardener should be emptied into the Base container and be mixed thoroughly using a slow speed mixer fitted with an appropriate spiral stirrer for approximately 5 minutes until a uniform colour and consistency has been produced.

Do not thin components, as solvents will prevent proper cure.

The spraying technique employed for each job will depend on the nature of the work and the materials used. Wherever possible, it is recommended that trials are performed with the material and equipment on elements which exhibit the same features as the job to ensure the spraying technique employed is appropriate. The general guidelines presented here offer a starting point for these trials.

Application

Nitocote EP500 is spray applied using specialised equipment (e.g. Graco King 68:1 or Graco Extreme 80:1) and applicators are **strongly** advised to carry out trials prior to proceeding with any contract.

To avoid applied material sagging on vertical or overhead surfaces, do not apply Nitocote EP500 at thicknesses greater than 5mm per layer. This layer thickness depends on the slump of the material, that in turn is a function of the thickness of the coating, the temperature of the material, and the sheer developed by the mixing, pumping, and spraying processes. The thickness of the epoxy mortar coating may vary as required to suit the geometry of the substrate.

Where the material is applied in layers, any subsequent coats of the Nitocote EP500 can be applied within a 24 to 48 hour period of the original application, if the surface is clean and dry (as long as there hasn't been any effluent flow, condensation or contamination over these areas).

It is important to note that the time intervals between coats should be kept to an absolute minimum, and the 24 to 48 hour window is dependant on the temperature at which the material was originally applied and the substrate temperature.

If more than 48 hours elapses between coats surface must be dried and prepared by roughening surface using abrasive grit blasting.

N.B. The product needs to cure for a minimum of 12 hours at 18°C before being abraded.

At an application temperature of 25°C the maximum re-coat time is 48 hours.

Note that the sewer environment can be very humid. If the coating becomes wet through immersion, rain or dew then the epoxy surface must be mechanically prepared prior to subsequent overcoating in order to ensure a strong bond.

Where the applied product is already of 5mm thickness (or that required thickness nominated by the contract), and has cured for more than 12 hours at 18°C, no treatment need be carried out unless the product has been physically damaged or is to be over-coated.

Where the immersed or contaminated product has cured for less than 12 hours at 18°C, it should be allowed to complete a minimum of 12 hours cure.

The immersed or contaminated product should then be pressure washed, dried (using a clean, dry cloth or hot, clean air), then dry grit abraded, and any loose residue removed (e.g. by brushing) before starting application of the fresh product.

Any visibly contaminated product must be removed, by cutting out if necessary.

Any uncoated concrete similarly subject to immersion or contamination should be thoroughly pressure washed and be SSD or drier prior to application of the product.

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An alternative to abrasive blasting is to sand seed any uncompleted areas, or end lap areas equal to the epoxy spray fan width, at the end of a day's application.

This sand to be a washed, dried, magnetically separated, graded 1mm or 2mm sand.

The sand is to be hand cast evenly onto the wet applied surface by hand, at the end of a shift to provide a mechanical key for the subsequent layers.

At the start of a new shift, Nitocote EP500 will be applied with a lap length equal to the epoxy spray fan width.

The completed material final surface should not be over worked. The finished surface should be smooth to touch. To close the final surface to a smooth finish, use a steel trowel.

Any mechanical damage, abrupt irregularities or surface imperfections, such as blisters, runs or sags are to be removed and/or re-applied (Localised Defects).

All core holes to be hand patched with the Nitomortar AP. Nitomortar AP is to be applied in accordance with the current product Technical Data Sheet procedures.

Curing

Nitocote EP500 typically reaches its initial hardness after approximately 4 hours at around 25°C. After 6 hours at 25°C it can be put back into service and is fully cured in 7 days at 25°C.

As part of a Quality Control procedure, visual checks are to be carried out to verify the cure of the product, which will monitor streaks, any striping and a consistent concrete grey colour.

Further information in this regard is contained in the Technical Data Sheets.

Localised Defects

Any localised defects will be removed and reapplied. This will be done by first saw cutting and removing the defective area. The area around the repair will then be abraded before re-application of the epoxy mortar.

DFT Augmentation

Where augmentation of the applied dry film thickness of the liner is required the surface must be prepared by roughening the surface using light abrasive blasting. Additional Nitocote EP500 will then be applied to build the surface up the required DFT.

Safety

All necessary measures should be adopted in accordance with the requirements of all Health & Safety Acts or other nationally recognised legislation. In particular, lighting, ventilation and protective clothing shall be adequate for the safe and proper execution of the work.

Before work commences, refer to the product data sheet and Safety Data Sheet (SDS).

IMPORTANT NOTE

These guidelines are offered by Fosroc as a 'standard proposal' for the application of Nitocote EP500. It remains the responsibility of the Customer to determine the correct method for any given application.

Fosroc does not accept any liability either directly or indirectly for any losses suffered in connection with the use or application of the product whether or not in accordance with any advice, specification, recommendation or information given by it.

Important notice

A Safety Data Sheet (SDS) and Technical Data Sheet (TDS) are available from the Fosroc website. Read the SDS and TDS carefully prior to use as application or performance data may change from time to time. In emergency, contact any Poisons Information Centre (phone 13 11 26 within Australia) or a doctor for advice.

Product disclaimer

This Application Guide summarises our best knowledge of the product, including how to use and apply the product based on the information available at the time. You should read this Application Guide carefully and consider the information in the context of how the product will be used, including in conjunction with any other product and the type of surfaces to, and the manner in which, the product will be applied. Our responsibility for products sold is subject to our standard terms and conditions of sale. Parchem does not accept any liability either directly or indirectly for any losses suffered in connection with the use or application of the product whether or not in accordance with any advice, specification, recommendation or information given by it.