

# Nitobond EP\*



## Epoxy resin concrete bonding agent

### Uses

For bonding fresh wet cementitious materials to existing cementitious surfaces. For use on horizontal surfaces or on vertical surfaces where mortar or concrete can be supported by formwork. The long 'open' life makes it suitable for use with formwork or where additional steel reinforcement has to be fitted. The product is ideal for roads, bridges, pavements, loading bays and factories, and for bonded or granolithic floor toppings. Nitobond EP is equally suited to internal and external applications.

Nitobond EP may also be used as part of a repair system where a substrate/repair barrier is required or where the substrate is likely to remain permanently damp or wet.

- Can be applied on to dry or damp substrates
- Exhibits high mechanical strength
- Positive adhesion - exceeds that of the tensile strength of the host concrete
- Slow cure allows time to erect steel reinforcement and formwork
- Solvent-free - can be used in enclosed locations

### Description

Nitobond EP is based on solvent-free epoxy resins containing pigments and fine fillers. It is supplied as a two-component material in pre-weighed quantities ready for on-site mixing and use. The 'base' component is white and the 'hardener' component is green, providing visual evidence that adequate mixing has been achieved.

### Standards compliance

ASTM C881: Type I, II, III, IV and V, grade 2 class E & F.

### Specification

#### Epoxy bonding agent

The bonding agent shall be Nitobond EP, a two-component solvent-free epoxy resin. The two components shall be differentially pigmented in order to ensure visually that correct mixing has taken place prior to the application. The product shall achieve 70 N/mm<sup>2</sup> compressive strength, 36 N/mm<sup>2</sup> tensile strength, 30% elongation, 14 N/mm<sup>2</sup> bond strength and water absorption of 0.05%, when tested in accordance to ASTM C881: Type I, II, III, IV and V, grade 2 class E & F.

### Properties

Test method	Typical result
<b>Compressive strength (ASTM D695)</b>	: 70 N/mm <sup>2</sup>
<b>Tensile strength (ASTM D638)</b>	: 36 N/mm <sup>2</sup>
<b>Elongation (ASTM D638)</b>	: 31%
<b>Slant Shear Strength (BS 6319, Part 4)</b>	: 38 N/mm <sup>2</sup>
<b>Thermal Compatibility (ASTM C884)</b>	: Passed
<b>Bond strength (ASTM C882)</b>	: 14 N/mm <sup>2</sup>
<b>Pull off strength (BS 1881: Part 207)</b>	: 2.82 N/mm <sup>2</sup>
<b>Water Absorption (ASTM D570)</b>	: 0.05%
<b>Gel time (ASTM C881, CI 11.2)</b>	: >10 hours @ 20°C 5 hours @ 40°C
<b>Viscosity (ASTM D2393)</b>	: 64 Poise
<b>Full cure</b>	: 5 days @ 35°C 4 days @ 45°C
<b>Maximum overlay time</b>	: 12 hours @ 35°C 5 hours @ 45°C
<b>Minimum overlay time</b>	: 1 hour @ all temps

### Design criteria

Nitobond EP is designed with an overlay time of 12 hours at 35°C and 5 hours at 45°C, making it more suitable for use where additional steel reinforcement and formwork has to be fitted or where temperatures are high. The minimum application temperature for Nitobond EP is 5°C. Consult the local Fosroc office for further information.



## **Instructions for use**

### **Preparation**

Clean all surfaces and remove any dust, unsound material, plaster, oil, paint, grease, corrosion deposits or algae. Roughen the surfaces, remove any laitance and expose the aggregate by light scabbling or grit-blasting.

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

### **Mixing**

Any steel reinforcement and formwork should be prepared, cut to size and shape, and made ready for assembly before mixing commences.

Care should be taken to ensure that Nitobond EP is thoroughly mixed. The 'hardener' and 'base' components should be stirred separately before mixing to disperse any settlement.

The entire contents of the 'hardener' tin should then be poured into the 'base' tin and the two materials thoroughly mixed using a suitable slow-speed drill and mixing paddle for 2 minutes until a fully uniform colour is obtained. The sides of the tin should then be scraped and mixing should continue for a further 2 minutes.

### **Application**

Nitobond EP should be applied as soon as the mixing process has been completed. It should be brush or spray-applied to the prepared surfaces, being sure to achieve an unbroken coating across the entire substrate.

The coated substrate should be left for a minimum of one hour before the new concrete, screed or mortar is placed.

The maximum overlay times (see Properties) should also be carefully observed. Failure to apply the new concrete, screed or mortar within the maximum overcoating time will result in Nitobond EP becoming 'hard', thus creating a slip plane rather than a bonding action.

If the maximum overlay time is missed, then the Nitobond EP must be mechanically removed and a fresh application made. The concrete, screed or mortar should then be applied in accordance with the overcoating minimum and maximum stated above.

As soon as the Nitobond EP has been applied, any required steel reinforcement and/or formwork should be erected and fixed securely in place.

### **Cleaning**

Nitobond EP should be removed from tools, equipment and mixers with Fosroc Solvent 102 immediately after use. Hardened material can only be removed mechanically.

### **High temperature working**

Whilst the performance properties of Nitobond EP 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 temperature controlled) environment, avoiding exposure to direct sunlight.
- (ii) Keep mixing and placing equipment cool, arranging shade 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) Have a ready supply of Fosroc Solvent 102 available for immediate cleaning of tools after use.

### **Technical support**

Fosroc offers a comprehensive technical support service to specifiers, end users and contractors. It is also able to offer on-site technical assistance, an AutoCAD facility and dedicated specification assistance in locations all over the world.

## Estimating

### Supply

<b>Nitobond EP</b>	:	1 and 4 litre packs
<b>Fosroc Solvent 102</b>	:	5 litre cans

### Coverage

<b>Nitobond EP</b>	:	3.5 - 4.0 m <sup>2</sup> /litre
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**Note:** The coverage figures for Nitobond EP products are theoretical - due to wastage factors and the variety and nature of possible substrates, practical coverage figures will be reduced.

Nitobond EP 'fast set' suitable for cold weather working can be made available when specifically requested.

## Storage

### Shelf life

Nitobond EP has a shelf life of 12 months. Fosroc Solvent 102 has a shelf life of 24 months if kept in a dry store in the original unopened packs.

### Storage conditions

Store in dry conditions in the original unopened packs. If stored at high temperatures, the shelf life may be reduced.

## Limitations

- Nitobond EP should not be applied when the temperature is below 5°C or is 5°C and falling. If any doubts arise concerning temperature or substrate conditions, consult the local Fosroc office.

## Precautions

### Health and safety

Nitobond EP and Fosroc Solvent 102 should not come in contact with skin or eyes, or be swallowed. Ensure adequate ventilation and avoid inhalation of vapours. Some people are sensitive to resins, hardeners and solvents. Wear suitable protective clothing, gloves and eye protection. If working in confined areas, suitable respiratory protective equipment must be used. The use of barrier creams provide additional skin protection. In case of contact with skin, remove immediately with resin removing cream followed by washing with soap and water.

Do not use solvent. In case of contact with eyes, rinse immediately with plenty of clean water and seek medical advice. If swallowed, seek medical attention immediately - **do not** induce vomiting.

### Fire

Nitobond EP is non-flammable.

Fosroc Solvent 102 is flammable. Keep away from sources of ignition. No smoking. In the event of fire, extinguish with CO<sub>2</sub> or foam. Do not use a water jet.

### Flash points

<b>Fosroc Solvent 102</b>	:	33°C
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For further information, refer to the Product Material Safety Data Sheet.



### 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.

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