



Nitowrap FRC*

High performance high strength carbon fibre system for structural reinforcement

Uses

Nitowrap FRC is used for strengthening columns and beams of load bearing structures specifically where improvement to shear strength and deformation properties is required. Typical applications include piers, columns, connecting beams and slabs of railway and road bridges, buildings and towers.

Advantages

- High tensile strength and elastic modulus
- Good dimensional stability
- High impact resistance
- High chemical resistance
- Very low electrical conductivity
- Non corroding
- Easy to handle and use
- Suitable in poor access locations
- Good thermal expansion
- High shear stress and cut resistance
- Having an unlimited shelf life

Description

Nitowrap FRC is a high strength, high elastic modulus carbon fibre sheet which when used in conjunction with a specially developed primer, improves structural performance by strengthening and improving shear strength and deformation properties.

Design criteria

Nitowrap FRC high performance fibre is encapsulated in Nitowrap Encapsulation Resin to provide properties of high strength and high elastic modulus.

Its low density properties, specific strength and modulus are extremely high compared with conventional materials such as steel and concrete.

Nitowrap FRC is extremely easy to handle and apply with no noise and minimal site equipment necessary allowing quick and easy reinforcement of structural members without major disruption.

Nitowrap FRC is lightweight, has high impact resistance, excellent tensile strength, is extremely stable at high and low temperatures and has excellent chemical resistance under a variety of exposure conditions.

Technical support

Fosroc offers a technical support package to specifiers, end users and contractors, as well as unrivalled on site technical assistance in locations all over the world.

Properties

Grade	FRC 200	FRC 300HS	FRC 300HM
Weight (g/m ²)	200	300	300
Design thickness (mm)	0.111	0.167	0.165
Tensile strength (kgf/cm ²)	390	590	500
Tensile strength design (kgf/cm ²)	35,500	35,500	30,000
Tensile modulus design (kgf/cm ²)	2.35x10 ⁶	2.35x10 ⁶	3.8x10 ⁶

Primer properties

Specific gravity	: 1.15 @ 23°C
Pot life @ 20°C	: 90 minutes
Drying time @ 20°C	: 10 hours
Adhesion to concrete (kgf/cm ²)	: > 27

Instructions for use

Preparation

Concrete surfaces must be dry, smooth, sound and free from debris and loose material. Surfaces must be fully cured and free from contamination.

Thorough preparation of the substrate is vital with light grit blasting recommended to remove all deleterious substances and provide a suitable key. All dust and debris must be removed prior to proceeding. Blow holes or imperfections should be filled with Nitomortar FC(B)*† prior to application of Nitowrap Primer*.

Priming

The base and hardener components of Nitowrap Primer should be thoroughly stirred before the two are mixed together. Pour the hardener into a suitably sized mixing vessel and add the base resin into the hardener. The use of a heavy-duty slow speed, flameproof or air driven drill fitted with a Fosroc Mixing Paddle (MR3) is desirable. Mix these components in the quantities supplied taking care to ensure all containers are scraped clean.

Apply Nitowrap Primer to the prepared substrate using a stiff brush, working the primer well into the substrate at a coverage rate of 0.3 kg/m².

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Application

Arrange enough material, manpower and equipments to carry out the application within the resin's pot life.

The base and hardener components of Nitowrap Encapsulation Resin should be mixed as per mixing instructions of Nitowrap Primer.

Apply the Nitowrap Encapsulation Resin to the primed surface, using roller, at a rate of 0.6 kg/m². Immediately after application of the resin, the pre-cut Nitowrap FRC (maximum 4 m length) should be applied using rubber or plastic scraper. Remove the release paper from the Nitowrap FRC and roll it with an impregnation roller in a direction parallel to the fibers in the carbon sheet.

After 30 minutes of the impregnation and within 3 hours, apply a second coat of Nitowrap Encapsulation resin at a coverage rate of 0.6 kg/m² to completely encapsulate Nitowrap FRC.

Following cure of the second application of Nitowrap Encapsulation Resin, apply Dekguard PU*† finishing coat.

Limitations

- Nitowrap FRC should be overcoated with a UV resistant coating within 6 hours of application
- In external applications, the finished area should be covered with a weatherproof cover until the final coating is completed.

Estimating

Supply

Nitowrap FRC	:	100 m roll (0.5 m wide)
Nitowrap primer	:	15 kg pack
Nitowrap encapsulation resin	:	15 kg pack

Coverage

Nitowrap primer	:	0.3 kg/m ²
Nitowrap encapsulation resin	:	0.6 kg/m ²

Storage

Nitowrap FRC has an unlimited shelf life. Nitowrap Primer and Nitowrap Encapsulation Resin have a shelf life of 12 months when stored in standard warehouse conditions. Nitowrap FRC should be stored in covered warehouse conditions out of direct sunlight.

Precautions

Fire

Nitowrap FRC is non flammable.

The Right Chemistry for Construction

Fosroc is one of the world's major manufacturers of advanced technology chemical based products for the construction and refurbishment industries. It operates internationally through a network of operating companies, licensees, distributors and agents.

Having over 70 years experience and using global resources for research and technical development, Fosroc has built a substantial worldwide reputation in manufacturing the most comprehensive range of high performance construction chemicals:

- Concrete admixtures
- Surface treatments
- Grouts and anchors
- Concrete repair
- Industrial flooring
- Protective coatings
- Joint sealants
- Waterproofing
- Adhesives
- F.R.P Structural Strengthening
- Specific building products

* Denotes the trademark of Fosroc International Ltd.

† See separate data sheet



Important note

Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard Conditions for the Supply of Goods and Service.

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